TPUG magazine

May, 1984 $2.95

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

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

Economic forecasting with your 8032.

Randy Robot— the robot with a VIC 20 heart!

VIC 20 word processor reviews.

(C)T7 & (C)T8 documentation

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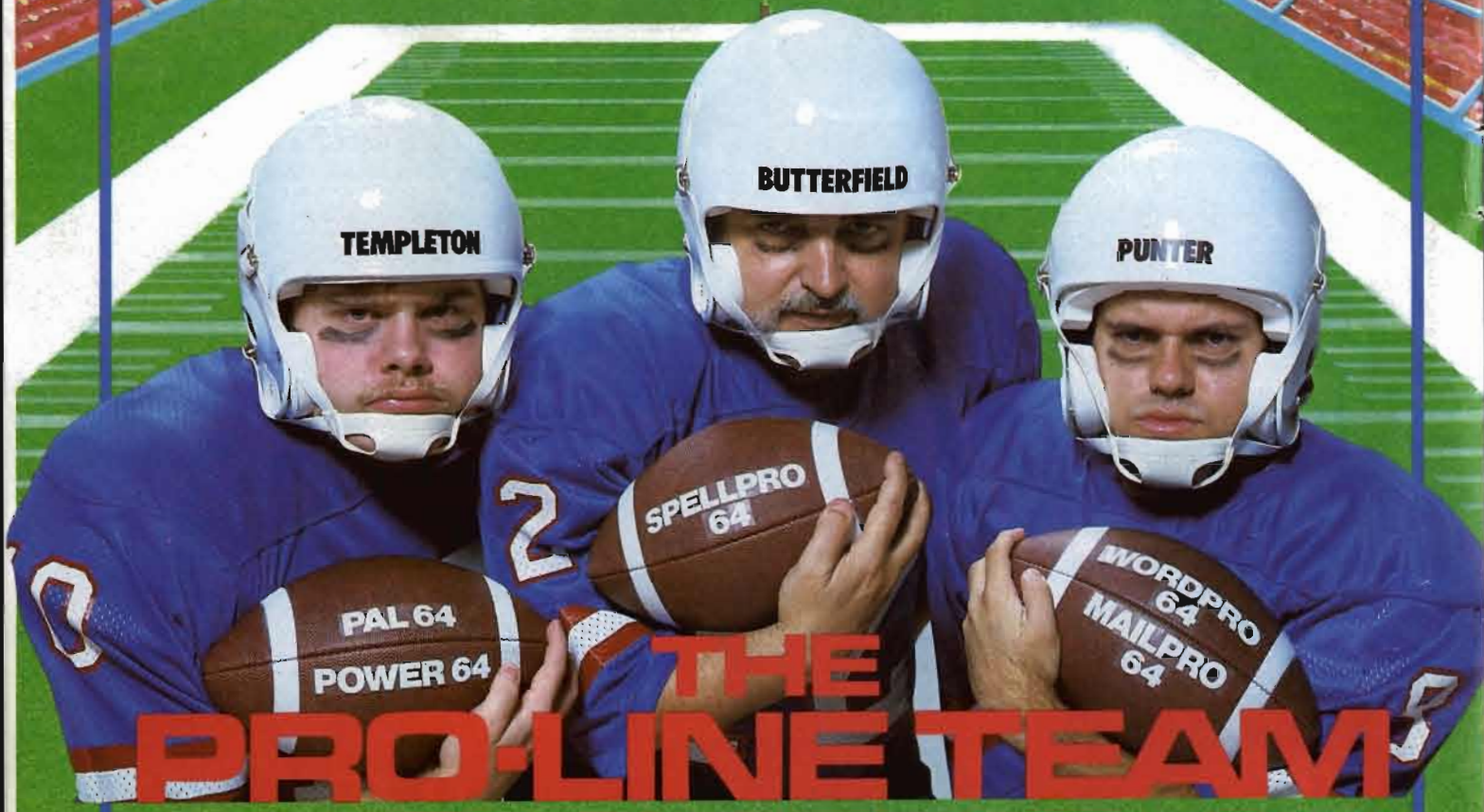
INTRODUCING



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(416) 273-6350
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ADVENTURES IN THE LAND OF THE COMMODORE 64.

Our brave companions Mighty VICTREE, Speedy ARROW, Professor MIKRO and his faithful dog ZOOM are off to help build a greater, more glorious Commodore Kingdom.

"There, up ahead—I see it!" exclaimed the impetuous young Speedy Arrow. "Yes, I do too," said wise Professor MIKRO, as his dog ZOOM yipped happily. VICTREE squinted at the light shining in the distance. Earlier in the year, the Land of the Commodore 64 had asked for aid from the Wizard of Skyles Electric Works. The great Marketplace Flood had temporarily hurt the Kingdom, and so the Wizard dispatched the four journeyers to help build a greater, more powerful monarchy.

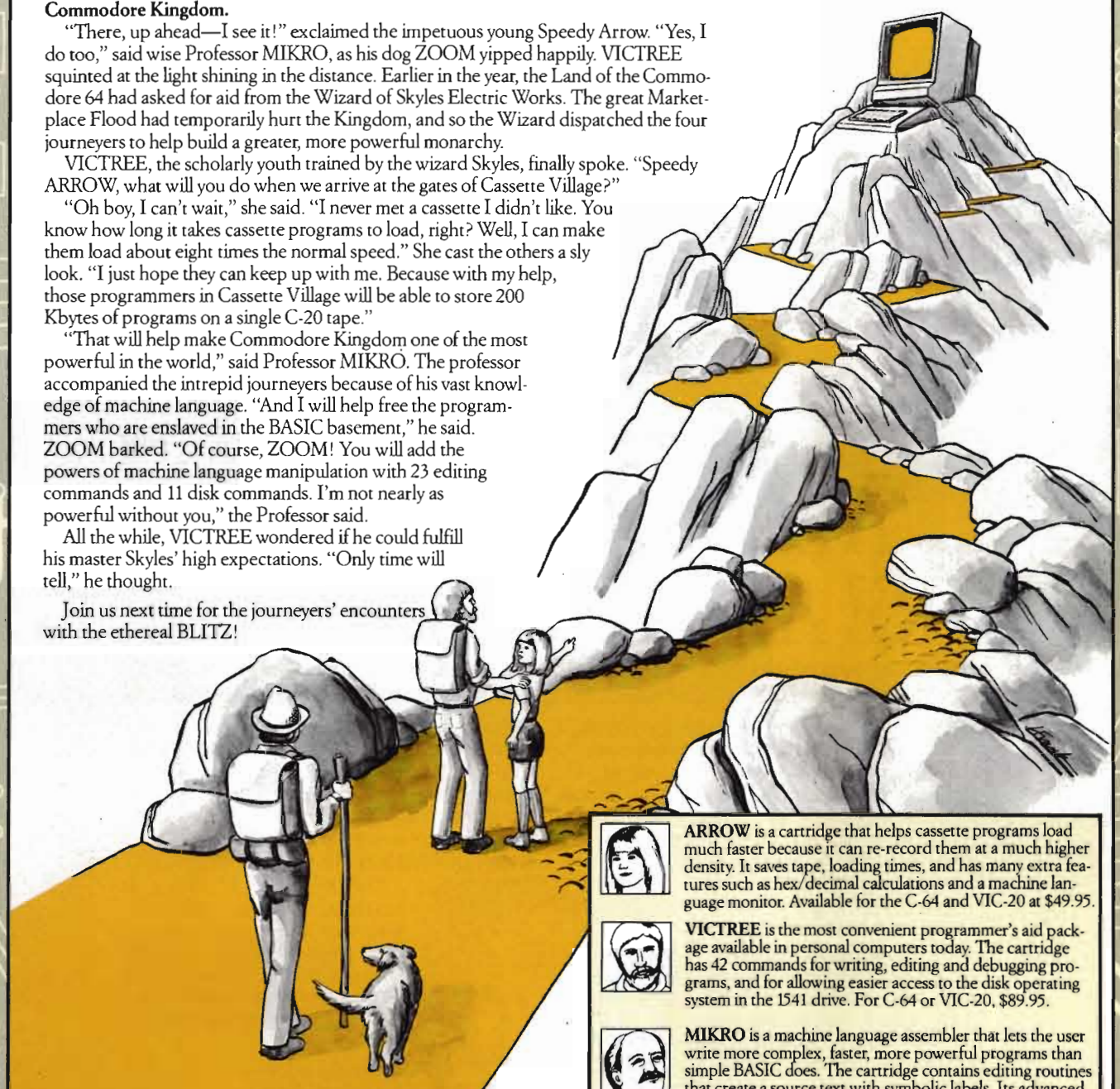
VICTREE, the scholarly youth trained by the wizard Skyles, finally spoke. "Speedy ARROW, what will you do when we arrive at the gates of Cassette Village?"

"Oh boy, I can't wait," she said. "I never met a cassette I didn't like. You know how long it takes cassette programs to load, right? Well, I can make them load about eight times the normal speed." She cast the others a sly look. "I just hope they can keep up with me. Because with my help, those programmers in Cassette Village will be able to store 200 Kbytes of programs on a single C-20 tape."

"That will help make Commodore Kingdom one of the most powerful in the world," said Professor MIKRO. The professor accompanied the intrepid journeyers because of his vast knowledge of machine language. "And I will help free the programmers who are enslaved in the BASIC basement," he said. ZOOM barked. "Of course, ZOOM! You will add the powers of machine language manipulation with 23 editing commands and 11 disk commands. I'm not nearly as powerful without you," the Professor said.

All the while, VICTREE wondered if he could fulfill his master Skyles' high expectations. "Only time will tell," he thought.

Join us next time for the journeyers' encounters with the ethereal BLITZ!



ARROW is a cartridge that helps cassette programs load much faster because it can re-record them at a much higher density. It saves tape, loading times, and has many extra features such as hex/decimal calculations and a machine language monitor. Available for the C-64 and VIC-20 at $49.95.

VICTREE is the most convenient programmer's aid package available in personal computers today. The cartridge has 42 commands for writing, editing and debugging programs, and for allowing easier access to the disk operating system in the 1541 drive. For C-64 or VIC-20, $89.95.

MIKRO is a machine language assembler that lets the user write more complex, faster, more powerful programs than simple BASIC does. The cartridge contains editing routines that create a source text with symbolic labels. Its advanced assembler then converts the source text into the final machine language instructions. MIKRO has both disk and editing commands. Just $79.95 for the C-64, $89.95 for the VIC-20.

ZOOM, a companion product to MIKRO, is an extremely advanced machine language manipulator (monitor) with such editing and command functions as COMPARE, TRANSFER, QUICK TRACE, VERIFY, and DISASSEMBLE. It also has 11 advanced disk commands. $24.95 in disk for the C-64 only.

If you want to know more about these characters and what they can do, call Skyles Electric Works at (415) 965-1735, or toll-free 1-800-227-9998. Or you can write to the Wizard for a complete catalogue.

Skyles Electric Works
231-E S. Whisman Road
Mountain View, California 94041

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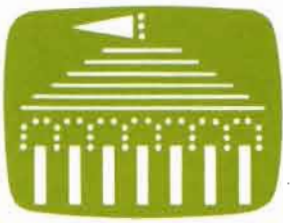

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Hundreds of exhibits featuring virtually every brand of micro hardware marketed in Canada today and some not yet available. See and try out the latest in Micro-Computer Technology. Software for every conceivable application - from investment programs to arcade games, music to machine language, teaching systems to accounting packages, word processors to graphic processors.

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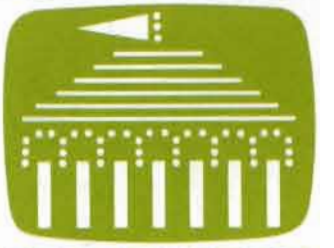

COMPUTER FAIR

No matter what you do (or want to do) with your computer the Computer Fair seminars will help you do it better and best of all, the cost of the seminars is included with your admission fee.

For more information contact: Hunter Nichols Inc., 721 Progress Ave., Scarborough, Ontario. Tel: (416) 439-4140.

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

EDITORIAL

A few weeks ago, I was involved in a discussion on a Bulletin Board System concerning C.P. Snow's concept of the "Two Cultures". My opponent in the argument took Snow's viewpoint and suggested that a statistical survey would show a NEGATIVE correlation between competence in the sciences and the humanities. I argued the opposite point of view. I believe that, on the whole, those people who are competent in the sciences also tend to be capable in the humanities, and vice versa. In other words, I think that most cultured people tend to be better in both artistic and technological fields of endeavour than are "hosers". Obviously there are exceptions, but we were arguing about correlations, not about individual cases.

The BBS discussion is still incomplete. I haven't heard from my opponent since I offered to lay a bet of $100 on the issue! However, I sometimes think about it as I read through many of the articles which are submitted to *TPUG Magazine*. I find myself looking at pieces which have apparently been written by people who are virtually illiterate to see whether their authors were equally incapable in the areas of computer technology which they have attempted to describe. Very often, it is impossible to tell.

Of course, we are not worried by occasional typographical errors or similar slips. But when it becomes practically impossible to decipher what an article is about, we really have no option but to reject it. Sometimes I get an uneasy feeling that we might be throwing away information which might be really invaluable to our readers, but the decision to reject things must be made.

We have recently had to send several articles back to their authors for another reason: they contained listings of programs which had been copied from other magazines. (In one extreme case, the entire article had been copied from an overseas periodical!) Maybe some of our readers are not aware that virtually all magazine articles, including the program listings they contain, are copyright. We cannot legally reprint them without going through the procedure of getting permission to do so, which often involves paying a substantial fee. In exceptional cases, we may be prepared to go though this procedure, but we cannot afford to do so often.

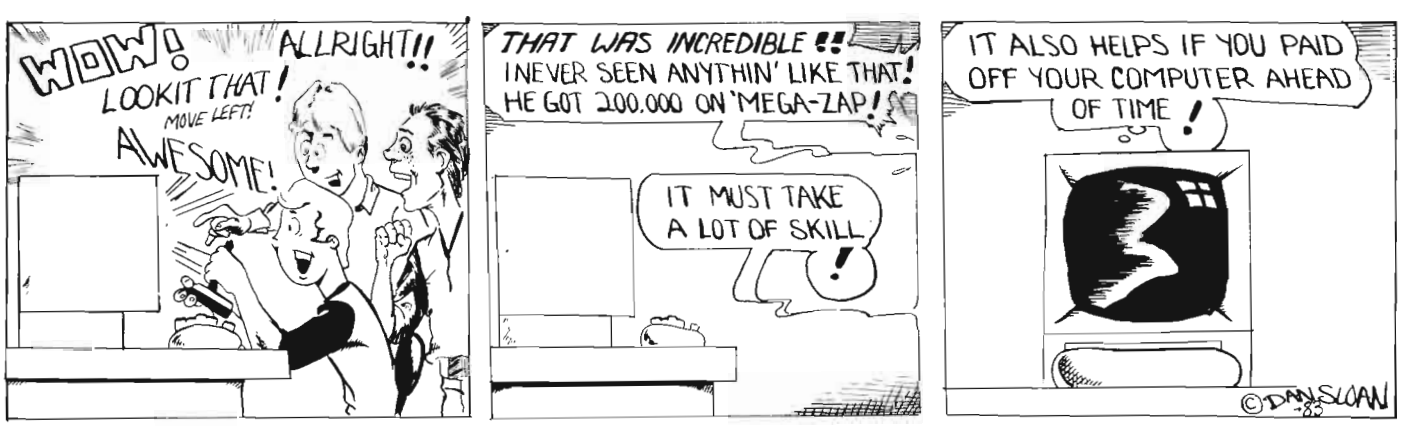
A few readers have commented about some instances of factual inaccuracies which have crept into our articles. While we do our best to avoid mistakes, and we do check articles to the best of our abilities, we cannot guarantee to catch all errors, especially in cases where the authors of articles should know a lot more about the topics they write about than we do! I would therefore ask everyone who gives us material or information for publication please to make very sure that it is factually accurate.

Many of the articles we receive are, of course, excellent. I sign far more acceptance letters than rejection notes. Please keep the good ones coming! But please, also, please make sure that the pieces you send us are accurate, reasonably literate and do not contain any copyright material.

The publication of program listings in this magazine is a topic which has concerned us. Since almost all of our readers have access to the TPUG program library, it is arguable that the most effective way in which we can get programs to you is simply to put them in the library. This might eliminate the need for readers to spend long periods of time typing programs into their machines, and might also relieve us of the need to print the listings. Reproducing listings accurately is one of the most difficult aspects of producing a magazine such as this, since many of the people concerned – printers etc. – are not familiar with BASIC or machine language, and therefore cannot decide what features of the listings are important. On the other hand, there are certainly some readers who actually enjoy typing in programs, and who would prefer to avoid the delay of ordering disks through the mail.

For the time being, at least, we have decided to go both ways. We will print listings, and do our best to get them right. In any case where a program is more than a few lines long, and if we own the copyright to it, we will also submit it to the club's librarians. The decision as to whether the program will appear on a club disk is the responsibility of the librarians, but we expect that they will normally decide to put programs which have appeared in *TPUG Magazine* into the library fairly quickly. They will then appear in the List-Me files, which we publish.

David Williams



HELP!

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

(1) Helpful Hints,

(2) Who's Got the Answer? and

(3) "PET" Pals Wanted.

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

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

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

Helpful Hints

I recently received a letter from Ira Friedman – he asked about "Easyscript" and the Gemini 10 printer in the January magazine. In his letter, he mentions that three people helped him with his problem. Thanks to these three, and to the many others who have offered help directly to those who have asked questions.

Jim Butterfield has informed me that if you are interested in a complete, commented disassembly of the Commodore 64, you could take a look at "The Anatomy of the C-64" from Abacus Software, P.O. Box 73211, Grand Rapids, Michigan 49510. The cost is $19.95.

Doris Bradley #10,000
Assistant Business Manager

(?) How do people feel about the C-64 Rabbit Cartridge from Eastern House – George Baker, New York.

I have had the VIC 20 Rabbit for three months or so and am almost entirely pleased with it. I can load a 8430 (decimal) byte program in 33.89 seconds. The append function alone is worth the price... Just type "*A" to add a subroutine (or anything else) to a program already in memory.

I'm not too swift when it comes to using programs with files, but the Rabbit will speed up reading and writing files by a factor of at least 10.

I could go on and on about the virtues of the Rabbit. At $39.95 it is over 80% less costly than disc and far less complicated. I personally feel that, for use in the home environment, the Rabbit is more than satisfactory. The only drawback that I could foresee would be the lack of commercially available taped programs for the C-64.

Michael M. Broumberg #2593
Baltimore, Maryland

(?) Comment on the lack of spare parts for the Commodore 1702 monitor – Robert Baker – New Jersey.

Asst.Bus.Man. note: We've broken a record on this question – 5 different answers came in – here they are.

I bought my Commodore brand 8-pin DIN cable (for 1701/1702 monitor) from AB Computers, 252 Bethlehem Pike, Colmar, Pennsylvania 18915 – phone 215/822-7727. They were very knowledgeable about the 5-pin and 8-pin cables and compatibility with the old and new C-64's.

Gary Stone #1577
P.O. Box 153
Annapolis Junction,
MD 20701

There are three ways to solve this problem. (1) On the supplied cable, carefully slip off the plastic/rubber cover of the 8-pin DIN plug. Purchase a 5-pin DIN plug. Locate the wires for Chroma, Audio, and Luma. Refer to diagram in the Commodore 64 Owners Manual (Page 142), and wire to the 5-pin DIN plug. Assemble the DIN plug and slide the plastic/rubber cover back over it.

(2) Purchase a 5-pin DIN plug and 3 RCA plugs. Also get required length of 75 ohm cable, preferably the type that is the size of pencil lead. Caution: Use only 75 ohm or close to this type impedance. Make up your own cable and use the diagram in the owners manual (page 142), with 3 RCA plugs and the 5-pin DIN plug.

(3) You can purchase an Interex-5 6 ft. computer to monitor interface cable. This is made by Data Share Inc. This has 4 RCA plugs and a 5-pin DIN plug and will work with monochrome or color monitors of many types. It comes with instructions. Approximate cost – $15 U.S.

All 3 of these methods will work with the C-64 and the 1701 or 1702 color monitors. There are computer owners in my area who have used all 3 methods with no problems.

The cables hook up in back just like the cable instructions for the 1702 and 8-pin DIN/RCA plug type on the older models and you will not have decreased resolution.

Anyone who wants more information can call or write me.

Marvin Lowman #4682
P.O. Box 111
Inwood, WV 25428
304/229-3322

I have a similar situation in that I purchased a 1702 monitor and cable which came with it connected to my Commodore 64 fine but I also desire to use it with my VIC 20.

After numerous calls to Commodore in December, during which I got a recording or a busy signal or was put on hold and never connected, I finally wrote a letter to them. I received the following reply:

"Dear Mr. Koeb: Thank you for your interest in Commodore products. In reference to your letter concerning the monitor cable you received with the 1702 monitor, you may send the cable along with a brief letter of explanation to the attention of our Service Department at the address above and the proper cable will be expedited. If you need more information, please write or call the customer support team at 215/436-4200."

The address was: Commodore, Computer Systems Division, 1200 Wilson Drive, West Chester, PA 19380 Attn: Service Department.

I have not sent in a request for a cable for my situation yet but I thought this may help others in the same situation.

Rod Koeb #11229
Montrose, Pennsylvania

Commodore shifted from the 5-pin DIN jack to the 8-pin when they realized that people were accidentally connecting the 5-pin power plug into the video output jack.

Simply replace the 8-pin DIN plug on the 1702 monitor cable with a 5-pin DIN plug. Your "Commodore 64 Programmers Reference Guide" shows the proper pins in the guide at page 396. Pin 1 is luma, pin 4 is chroma, and pin 3 is audio. The other pins are ground, and audio in, which is an intriguing concept, but not necessary here.

Geoff Worstell # 8307
Sacramento. California

continued overleaf

I have been marketing such a cable since Commodore switched from the 1701 to the 1702. If anyone would like to purchase one, send me a check or money order for $10.00 U.S., and I will ship it the day the order is received. These cables have a 5-pin DIN connector on one end and three RCA-type plugs on the other.

Mike Yoder #6692
3501 E. Locust
Ft. Collins, CO 805249

(?)I need a good multiple regression program for my CBM – Len Green, Timmins

I just answered my first HELP question. I have a linear multiple regression written for my old PET 2001 in 1978. It's adapted from the great UCLA biomedical statistics collection which was made public domain in 1968.

It's great to stand on the shoulders of the giants who made computing practical and TPUG is one of the great giants of the 80's.

Frank Alexander #5005
Swarthmore, Pennsylvania

Note: Another question for such a program, but this time for the Commodore 64, has come in. Can anybody help member #10,599, G. S. Larouche, 1060 D'Ailleboust, Laval, PQ H7G 4L3?

(?) The 8032 and the Signalman modem – Jim Borst, Wisconsin

I also have an 8032 with a Signalman Mark IV modem and the Mcterm software package, but I have never had the problems you mentioned. I had no problem running the software that came with the modem either. I also have the vidtex software from Compuserve and that works well with this set up. I would tend to believe your problem lies in your telephones somewhere rather than in the modem or software. As an additional note, one of the phones (not the one in the computer room) is a cordless type phone but it has never caused any problems in interference either. I assume you know that it is necessary to leave the phone your modem is connected to off the hook on order for communications to take place, but having to leave 2 phones off the hook for things to work is definitely not right.

Dennis Irvine #3346
Grass Valley, California

(?) A simple "how-to" explanation for the Z-RAM – E. Grafe, Pennsylvania

I have the Z-Ram board and have been using it for several months now. I have to agree that the manual is not very helpful in making it easy to use. Some software you can get, – such as Visicalc 96 and Wordpro 5 – run well on the Z-RAM and require no special knowledge to run. To do your own programming to take advantage of the additional memory by bank-switching is quite complicated and I have not got it figured out yet. It appears to me that the only expedient way to use the additional memory is through PEEKs, POKEs and Machine Language. I spoke to Paul Matzke at Madison Computers several times about this and, at one point, they were working on a ROM addition that would handle all this for you; but they have dropped that now since they don't feel there is enough demand for it. I like the Z-RAM board because it gives me 7 times the space on Visicalc, which I use a lot, and it works with CP/M programs also; but the additional memory is not very useful in your own programming or in converting existing programs. It is too bad because the potential is there to use the extra memory not only as a RAM disk but also as a printer buffer and as a Security ROM emulator. I would be very interested in communicating with anyone else who has the Z-RAM board to share ideas and experience.

Dennis Irvine #3346
Grass Valley, California

HELP-Questions

Does anyone know of a fast way of dumping a Commodore LOGO picture to a Gemini 10X printer with a Cardco interface. If so, please write to:

Donald Sturgeon, Principal #79
Old Town High School
Old Town, Maine 04468

How do I use my C-64 to transmit and receive HAM-SSTV? Apple does it, so I should be able to too.

Bill T. Munsil #9635
P.O. Box 906
Yarnell, AZ 85362

Does anyone know why the Commodore Editor/Assembler system will not allow macro's as advertised? I have talked with a number of people with the same problem. Any help would be appreciated.

Ward H. Zimmerman #13,349
Newport, North Carolina

A question regarding "Easy Dungeon" on (C)G3. What are you supposed to do once you find the Holy Grail?

Ari Weintraub #12,928
Philadephia, Pennsylvania

There used to be an authorized Commodore dealer on Prince Edward Island, but he went out of business a while ago and although the products are available through several large retail outlets, there is no source of information or service. The people only shrug and say, "I don't know." If something doesn't work it can usually be returned for replacement but if older equipment needs work we have no place to go. Is there any way to deal with this situation?

H. J. Thompson #12,042
Crapaud, Prince Edward Island

I am looking for someone who has an amateur radio MSO in operation utilizing either a PET 4032 & Dual Drive or a Commodore C-64 with 1541 drive. It is my intention to operate such a system on VHF radio in the London area.

Jim De Zorzi #2728
P.O. Box 88
Hyde Park, ON N0M 1Z0

Can anyone point me in the right direction to access the extra memory available on the 64K expansion board for the 8032? I recently replaced my office 8032 with an 8096, and it arrived in perfect working condition, but without a single word of advice on how to access the extra memory for our in-house software. I am strongly inclined to buy the 64K expansion board to upgrade my 8032 at home for use with WordPro 5+, but part of the justification will be the usefulness of the added memory for other programs. Advice? Literature? Help!

Peter A. Pattee #2479
2614 Northwood Drive
Ames, Iowa 50010

In using my VIC 20 with the 1525 printer, I find the absence of accents to be a handicap, since I often work in French. Can anybody help by suggesting a way of obtaining these characters.

Robert Guyot #9732
414-2767 Innes Rd.
Gloucester, ON K1B 4L4

I am looking for programs that can be used as a help in growing tomatoes, paprika, cucumbers and salat in a thermal environment (greenhouse). I also would like to get in touch with others from the U.S.A., Canada or Scandinavia in order to trade public domain programs.

Bjorgvin Bjarnason #7675
Kveldufsgotu 10
310 Borgarnesi
Iceland

continued on next page

I have 2000 or more records on M'File that I would now ,ike to write to Flexfile. Does anyone have a program that would write the records to a sequential file that Flexfile could read? I have two 1541's set to devices 8 and 9, and a Commodore 64.

Thomas Bailey #4626
2801 Rolido, Apt. 22
Houston, TX 77063

I'm looking for a Stamp Inventory program for my C-64. Does anyone have one or know where I can obtain one?

Richard R. Poitras #8078
21 Nedwied Rd.
W. Willington, CT 06279
Phone 203/872-8694

I am using a Quick Brown Fox cartridge word processor with my Commodore 64 and a VIC 1525 printer and a Commodore cassette recorder. I'm generally very pleased with the whole package but would like to use some 'custom characters' to replace the lower case 'y', 'g', 'q', and 'p' which currently come out on the printer. Is there something that can be done? I know how to make custom characters and save them but I can't figure out how to do this with the QBF. If anybody knows, please help.

Alan Ogborne #10284
445 Palmtree Ave.
London, ON N6H 3P4

Who can help me locate a typing program for the 4032 PET that 13 and 14 year-old students in our library may use? It may be diskette or cassette.

Judy Rockefeller #12404
Rondout Valley Middle School
P.O. Box 9
Accord, NY 12404

I like to use my own character set (2K memory size) in BLK#3 ($C000-$FFFF) in the RAM section ($C000-$CFFF). I do know how to put it to BLK#2 but failed in BLK#3. Can anyone help?

I recently purchased the MPS-801 printer. I would like to replace the printer's built-in character set with my own defined set (in hardware). I checked the printer and found in it a 4K EPROM, type 2732. This EPROM contains the printer's character set. However, I couldn't find the character array and code as understandable. I need help.

Ilan Ogen#10022
Floor Six
850 3rd Ave.
New York, NY 10022

I own a Commodore 64 computer and desire to use it to plot the performance of stocks with charts; i.e. plot the high, low, and close on a daily basis as well as plotting a variable average of the daily closing price. I have searched the advertisements of numerous magazines and have been unsuccessful in finding a program that would provide me with the desired capability. I would greatly appreciate receiving any leads.

L. D. Couch
Oxnard, California

I'm looking for a book or manual of easy to understand programming and file handling on the Commodore 64.

Roy H. Williams,
Management Dept.
Memphis State University
Memphis, TN 38152

I am getting frustrated with the 1541 disk drive. Would combining the 4040 drive with the C-64 create any problems? Does Commodore still make the 4040? What would you recommend as a good interface between the 4040 drive and the C-64?

Brendan Westhoven #7899
140 Mescal Loop
Lake Havasu, AZ 86403

Can anyone help a stranded star traveller? We love the adventure game "Planet Fall" from Infocom as far as we have gone. How does one get anything except Floyd working? (We went down the elevator but couldn't get the shuttle going.)

Correna Carter #9017
2380 French Rd., R.R. #3,
Sooke, BC V0S 1N0

HELP-Pals

Is there someone in the club who would care to correspond about adventure games?

Lois Alvarez #13906
Clearwater, Florida

I would like to find a French-speaking VIC 20 user with whom I can correspond and exchange programs, particularly in French.

Lonnie Smathers #13711
Greenwood, South Carolina

I would like to get in touch with anybody interested in medical software.

F. A. Malagon #11347
San Diego, California

I'm putting together a directory of clubs, which will have a section on computer clubs. If there is anyone interested in being listed, please send the following: computer club name, complete address, president's name, what the club does, a copy of a recent newsletter. Anyone interested in getting a copy of the book should send 50 cents for postage and handling.

Gina Cianfarani
90 Gulliver Rd.
Toronto, ON M6M 2M6

If you want to practice your French in corresponding regarding the C-64, I want the same thing, but in English. So write to me in French and I will answer you in English.

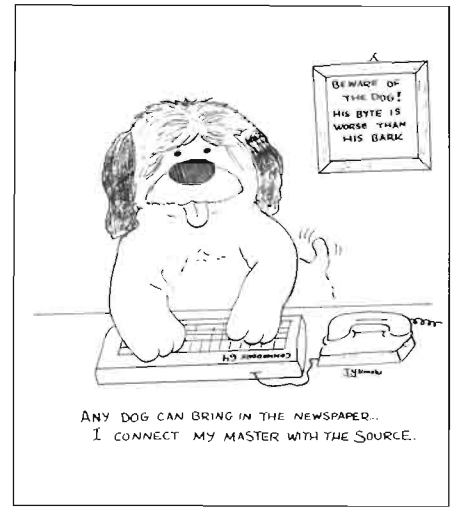
Jean Parent #96
313-45 rue O
Charlesbourg.
PQ G1H 5K1

I would be interested in corresponding with other members with VICs and 64's.

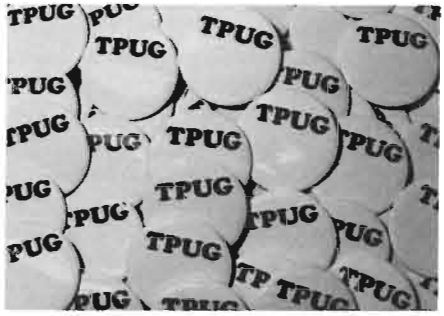
Brendan Westhoven #7899
140 Mescal Loop
Lake Havasu, AZ 86403

I would be interested in communicating with anyone who uses the Z-RAM board. If possible you can send E-MAIL on Compuserve to Dennis 73115,24.

Dennis Irvine #3346
616 Pelton Way
Grass Valley, CA 95945



THIS & THAT



Doris Bradley
Asst. Bus. Man.

TPUG now has over 14,000 active members! Member number 14,000 is Grant Smith of Cobourg, Ontario. He has a Commodore 64.

Commodore 64 Library

The Commodore 64 library is growing by leaps and bounds. There are times when I wonder whether the librarians are going to be buried by the library, or whether they will be able to keep on top of it. There is currently the problem of having too many programs each month to fit on one disk. The solution to the problem – the creation of another category in the C-64 library. Shortly there will appear (C)M1 which will be the first of a series of extra monthly disks. We define the "M" as More Monthlies, or Many More Monthlies. We ask that those of you who have signed up for the Disk/ Tape of the Month indicate to us whether or not you wish the "M" series as well as the "T" series.

Programming Contest

By the time you receive this magazine, the 10-line contest will be over, since the deadline was April 1st. But do not despair, the co-ordinating committee of the VIC 20 chapter has decided to run a contest for programs for the VIC 20 library. There are two sections to the contest: one for programs written in BASIC, and the other for programs written in Machine Language (or another language). The prizes are expected to be expanders for the VIC 20, and the co-ordinating committee for the VIC 20 chapter will be the judges. I'll publish the final deadline in the next magazine, but there's no time like NOW to get started!

Commodore Educational Software

Things are pretty much under control on this front. The disks are all working well in 4040 and 8050 versions (thanks to Commodore Canada) and the tapes are coming in, though we are still not in the position of having a stock on hand from which to fill orders. There have been staff changes and illness at Richvale Telecommunications, our supplier of the tapes, but things are looking up.

Interested in Programming Logic Games for the VIC 20 or the C-64?

The newly-formed computer games group intends not only to adapt popular board and other existing games, but also to develop games and really utilize the computer's potential. (Logic games require building 'reason' into the programs so that the computer can function as your opponent.) Interested in joining in? (Programming will be primarily in BASIC) Call 1-416-486-7835 before noon for further information.

Calling the TPUG Office

It's always a good idea when phoning the office to identify yourself by name, to inform us if you are calling long distance, particularly if you are paying for the call yourself, and to have your membership number close at hand.

If you are inquiring about an order, it's wise to have the names of the disks/tapes written down, and to know exactly when you mailed the order. You may save yourself a call by first checking to see if your cheque has yet cleared the bank. Please allow four to six weeks from the time you mail the order for delivery of your order. We'll try to get them to you sooner, but can make no promises.

Disks versus Tapes

After being in this office for over a year, and having seen literally thousands of disks and tapes shipped out, I have come to the conclusion that the reliability of disks far outweighs the reliability of tapes for a variety of reasons. As a result, I would suggest that you purchase disks, and if necessary, transfer them to tape, rather than purchase tapes. As a matter of fact, there is a program by Jim Butterfield on (C)T8 which will do just that (transfer from disk to tape). This program will appear on a PET disk shortly.

Strictly Commodore

Some months ago, a gentleman from the Maritimes wrote to Dept. Help asking for someone in Calgary to intervene on his behalf with Strictly Commodore in Calgary. Our contact person in the Calgary Commodore Users Group has informed me that the Calgary City Police would be interested in having any person who has sent a cheque to Strictly Commodore and not got any satisfaction, send a photocopy of the cancelled cheque and a note giving the details to the Calgary City Police, Fraud Division, Calgary, Alberta.

New Club Chapters

Since I last reported on the computer clubs which have taken advantage of the offer to have 15 or more of their members join TPUG, the list has mushroomed. There are now over 1400 who have joined or renewed in this way! Additional groups which have joined us are: Riverdale Collegiate Computer Club – Toronto, Bruce C-64 Users' Group – Ontario, COMVIC – Bracebridge Ontario, Commodore Users' Society of Greenville – South Carolina, Commodore Users' Group of Rochester – New York, Baden Computer Club – West Germany, Winnipeg PET Users' Group – Manitoba, Commodore Users' Group of Masset – British Columbia, Southern Minnesota Commodore Users' Group, Saskatoon Commodore Users' Group – Saskatchewan, Tri-Cities Commodore Computer Club – Washington, Commo-Hawk Commodore Users' Group – Cedar Rapids Iowa, Commodore Houston Users' Group – Texas, Lehigh Valley Commodore Users' Group – Pennsylvania, and last but not least, Hawkes Bay Commodore Users' Group – New Zealand.

continued on next page

(C)T6

The Commodore 64 librarians were not aware that the program SPEEDSCRIPT.C had appeared in Compute!'s Gazette until the Commodore 64 meeting at the end of February. This program has now been removed from (C)T6 since Compute!'s Gazette claims copyright to the programs printed in their magazine. One is supposed to have a Compute!'s Gazette program only if you own the appropriate copy of the magazine. Please don't submit any programs from Compute! or Compute!'s Gazette to the library.

Conference 1984

Well, the registration forms are rolling in. As of March 9th, we had more than 250 registered. Please check the detailed information elsewhere in this magazine. By the time you read this, no doubt some sessions will be filled to capacity. Remember to pre-register, you must have your form in by May 11th at the latest. After that it's registration at the door.

HAMs

Even though we have published two lists of HAM operators who belong to TPUG, there are still more call signals coming in. Perhaps next issue will see yet another list!

Video Projector

If you're interested in renting our monochrome video projector, and are within 50 miles of the TPUG office, give us a call at 782-9252 or 782-8900.

Hamilton/Burlington Chapter?

If you live in the Hamilton/Burlington area and are interested in a TPUG chapter there, please call Mike Donegan 639-0329 after 6 p.m.

Mailing List

In order to raise money and thereby defer a possible increase in membership fees, it has been suggested that TPUG rent the mailing list for the mailing primarily of computer-related material. If this arrangement is made, the office will provide the labels and either the mailing will be done directly from this office, or the labels will be delivered to a reputable mailing house who assembles the packages and mails them directly. This would mean that the list will not be sold, i.e. the list will not be provided to any commercial organization which might then sell the list etc.

If you do not wish to have your name included on such a list, please let the office know and we will flag your entry in the computer.

Here is an example... Members in Metro Toronto recently received information about computer courses at Harbourfront which was mailed out directly from this office. The club does not intend to seek out renters for the list, but will only react to requests.

New Chapters

Three new chapters in the Greater Toronto area will have their first meetings in June. The **Eastside** chapter will meet in Pickering, probably at Dunbarton High School. The **South Lake** chapter, encompassing the area south of Lake Simcoe and north of Metro, will probably meet at Uxbridge High School. The third chapter, the **Brampton** chapter does not have a tentative meeting place yet.

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

TPUG CONTACTS

★★★★★★★★★★★★★★★★★★★

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*SuperPET Chapter	Gerry Gold	416/225-8760
VIC 20 Chapter	(Doris Bradley)	416-782-8900
*Westside Chapter	John Easton	416/251-1511
Westside Chapter	Al Farquharson	519/442-7000
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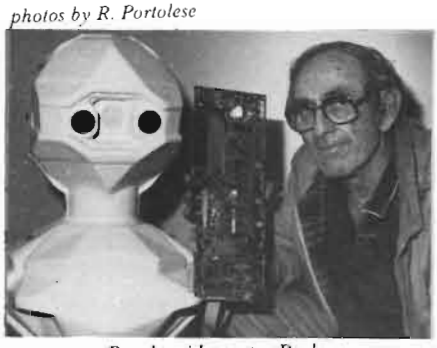
* TPUG Board of Directors

BECKER'S BABY

– The Million Dollar Superchild Has A VIC Heart

photos by R. Portolese



Randy with creator Becker.

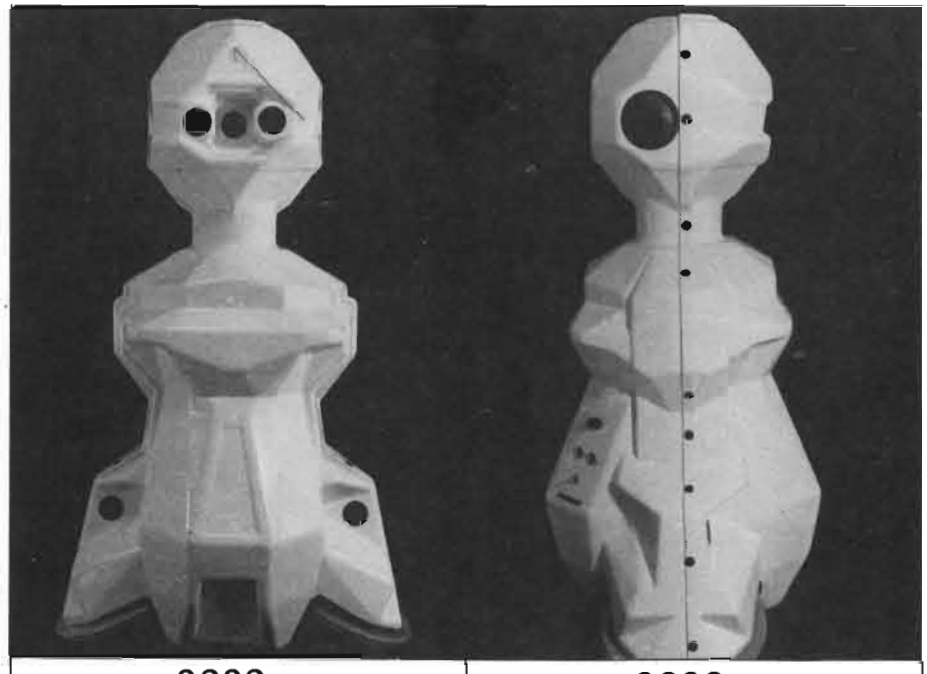
Bryan J. Lunt
Toronto, Ontario

Flash Gordon outwitted them, Superman scattered their components throughout the Universe. Everybody knows our Super-heroes won the battle but now we're discovering they lost the war. According to a recent Industry, Trade and Commerce prediction the Robot population of America will, by 1988, number between five and eight million. However, using a recent industrial show as a yardstick, it would be easy to scoff at the forecast. Several "user friendly", robots were on view at the show but with only three arms and a handful of plug in voice boxes between them, the "invasion" took on all the aspects of a social visit from Fred Karno's army. Obviously the robots need a champion and it seems they have found one in a bright little chap called Randy. Equipped with a VIC 20 "heart", drastically modified by a number of Eproms and some additional memory (32k in ROM plus 32k of RAM), he has so many "smarts" available that Superman will need a lot more than Krypton in the next encounter.

The telephone at Jack Becker's house competes with the door bell and, whilst nobody has yet asked "Is Randy home?", it's Becker's creation most of the callers are interested in. The Chicago-born, Toronto-based inventor, who has an incredible background in radio, a Masters degree in electronics, a degree in Psychology and considerable exposure to frontier science whilst holding a high level technical post with the U.S Government, is a TPUG member with an avid interest in Robotics and a considerable amount of practical experience complementing his technical know-how. A long time radio control enthusiast, he was commissioned by Walt Disney to produce 29 robots for Disneyland in 1967. Three years later he made 31 more when Disney World opened, and Heathkit's "Hero" was a computerized version of a Becker prototype. But, as he insists I mention, he has known rejection. In 1978, when he offered an early version of Randy to Atari, he was rejected because his robot was " ahead of its time ".

Becker takes that remark very seriously. "Robotics is more than just technology",he says. "Consumers have a resentment associated with the childhood educational concept of avoiding strangers, and most of us have a natural instinct to compete. It is essential that design follows an ugly, toy-like format to gain acceptance; it can be introduced only in small doses". " A robot with humanoid form, superior intellect and greater physical ability is at this stage unacceptable by our society".

As far as Randy's appearance is concerned, the builder has adhered rigidly to his concept. The white ABS plastic shell is simple and almost featureless, a red bow tie adds a child-like quality but it's all a facade. Hidden behind the shell its VIC 20 central processing unit controls so much innovation that Becker would be modest in claiming that he had "re-invented the wheel". Instead he quotes names that include Ari Burman and Gord Goebel who spent hours designing an arm with three sensors and the ability to lift 30 pounds, Paul Shields, who burned a considerable amount of midnight oil to come up with some machine language routines that, combined with Jim Butterfield know-how, helped create a unique form of artificial intelligence. "It took countless hours of unpaid dedication from these and others." Becker emphasises, "Each time we modified something it created bugs and each time we fixed bugs we created more bugs. It also took money. I estimate "Randy" has cost me about



3232 **3232**

continued overleaf

50% of what the Million Dollar man was appraised at !"

There has been some income. An innovative sonar module design sent out for manufacture brought in a six figure cheque plus royalties to follow from the company who had been asked to produce the item. Randy's sonar now works at the bottom of an oil well drill shaft scanning rock formations half a mile below the earth's surface. It not only sees the rock formation in darkness but is able to photograph it with sound.

One of the most challenging problems in robotics is the reproduction of human speech. An extremely simplified introduction to this would explain that plurals are illogical. The plural of "dog" is "dogs" but the plural of "man" is "men". Some 87% of words are spelled phonetically but 13% are not. Words change completely. "A boy" is correct but "a olive" is not. If one considers that English has 40 primary phonemes (the smallest elements of spoken sound), sixteen vowel sounds 24 consonants and that all sounds can be changed by accents or regional dialects, then everything seems as rational as Lewis Carroll's "Jabberwocky".

Becker feels that in this field his team has made its most significant improvement. "We used the number one voice recognition board and found ourselves totally unsatisfied. We had only 80 words in the vocabulary that could be recognized and translated into subsequent action. It accepted only one programmer's voice at a time. We became impatient with having to run through the 80 words four times and finally getting an 80% response average in use. The solution was a 16 bit Nippon microprocessor upgraded to 32k of ROM and 64k of RAM plus a different method of tackling the problem. Our own unit accepts instructions from eight different voices, can handle vocal ranges of soprano to bass, it accepts dialects, accents and volume changes and has the additional phonemes that allow programming in any language. The unit gives us 80% response rate when it takes commands from 8 different voices, and 100% from a single voice. We achieve these results from a single instruction set and we have no restrictions on the number of commands other than the storage space available for them".

The voice synthesizer shows a similar concern for perfection. "It's smaller, a Z 80 with 32K of ROM and 8K in RAM, but nothing on the market comes remotely close to it," Becker explained. "We've placed 1290 words in the vocabulary but another 60,000 can be added. The additional entries can be made in

the owner's voice and, by using phonemes and a word memory bank simultaneously, the synthesizer can handle the abrupt cut-offs encountered in Spanish, the lilt of an Irish voice and the different sounds one perceives between an Oriental conversation and a Texan one".

Randy has a built in motion detector that is multidirectionally effective within a hundred feet. It can classify human, animal and inanimate objects at a similar range. Randy can also hear a finger snap at that distance and be programmed to investigate anything unusual. "Tell Randy to go look at something, and that's exactly what he will do", said Becker. "He has 180 degree vision and a photographic memory bank plus a sonic memory bank that separates you from an inanimate object. If you pass his scrutiny he can greet you by name. Alternatively he will request a password. Ignore him and you will be followed and photographed at 30 frames per second whilst his alternate processor will be telephoning the local police station to complain about you".

The "alternate processor", another piece of wizardry from Becker's fertile imagination, includes a radio telephone link on a small circuit board which is interfaced with the command, logic and voice modules and, with over 200 channels available, there's a lot of scope for the robot controlling external devices. A few channels would be precommitted to the police and fire station and an "incoming" line permits the robot to monitor and handle telephone messages received.

Enthused by the response he has encountered, Becker has recently opened a plant with an anticipated first year's run set at 10,000 units. Five hundred are committed to an Arizona businessman who has already handed a sizeable chunk of money over to secure the deal and, with a string of promotional appearances, Randy is likely to be around for a long time.

The future of Robotics? Becker smiled and, asking me to hold out my hand, placed a few items on the palm of it. . .I had a double sided disc drive holding a million bytes and measuring 4 inches by 4 inches and about an inch in thickness. . .I had a 1.2mm television camera that could see 180 degrees and had 8 built in ROM chips which produced digital pictures one could store directly on the drive (it was a 1 inch cylinder that was about 2 inches long). . .I had a 6 inch by 3 inch TV monitor that was about a quarter inch thick. . .finally, like a mischievous schoolboy, Jack Becker answered my question by quoting the lines from the Million Dollar man Television show. . ."We have the technology. . .", he said. Indeed you have, Jack Becker. *TPUG*

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* Requires 3K exp (K) Cartridge

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* All Joysticks will fit VIC 20 or Commodore 64 computers

MISCELLANEOUS

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

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$175.00

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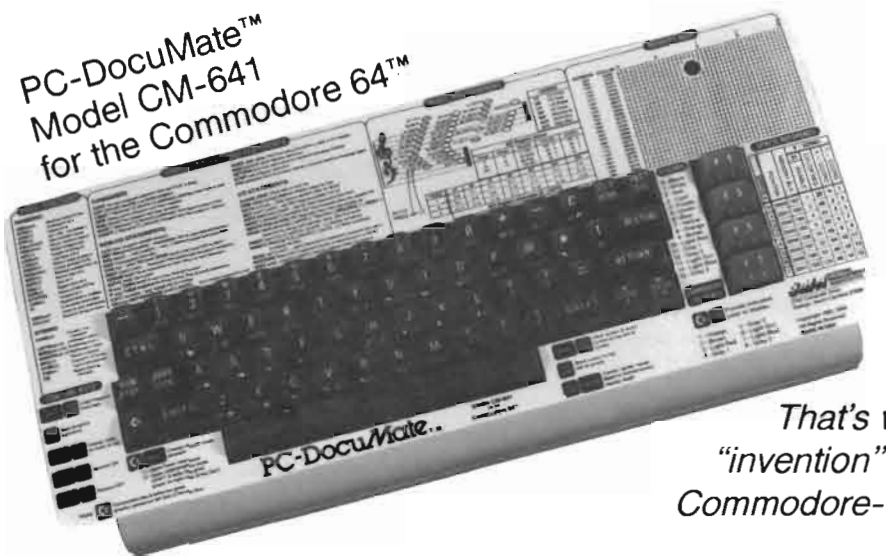

EUREKA!

That's what we said when our new "invention" solved all our VIC-20™ and Commodore-64™ programming problems

We had a problem. So we invented PC-DocuMate™ to solve it. The problem was how to quickly master the VIC-20 and CBM-64 keyboards and easily start programming in BASIC on our new personal computers. First we went through the manuals.

INCONVENIENT MANUALS

The user's guide was a nuisance and the programmer's reference manual was just plain inconvenient to use. We found the control key combinations confusing and the introduction to BASIC to be too "basic" for our needs. We needed a simple solution to our documentation problems.

So we decided to surround the keyboard of each PC with the information we wanted. We decided to print whatever we needed on sturdy **plastic templates** which would fit the keyboard of either the VIC-20 or Commodore 64.

SIMPLE SOLUTION

This was the simple solution to our problem. Now we could have the essential information right at our fingertips.

On the left side and top of the templates we put **BASIC** functions, commands, and statements. On the lower left we used **key symbols** to remind us of how to use SHIFT, RUN/STOP, CTRL and the "Commodore" key. Over on the bottom right side we put some additional keys to help remember about CLR/HOME and RESTORE. But we were still a little confused.

STILL CONFUSED

We found we were confused about music programming, color graphics, and sprites. On both the VIC-20 and the CBM-64 templates we carefully organized and summarized the essential reference data for **music** programming and put it across the top—showing notes and the scale. All those values you must POKE and where to POKE them are listed.

Then to clarify **color graphics** we laid out screen memory maps showing character and color addresses in a screen matrix. (We got this idea from the manuals.)

For the VIC-20 we added a complete memory address map for documenting where everything is in an expanded or unexpanded VIC.

For the Commodore 64 we came up with a really clever summary table for showing almost everything you ever need to know for **sprite** graphics.

GETTING EASIER

Now we had organized the most essential information for our VIC and 64 in the most logical way. BASIC, music, color graphics, and sprites all seemed a lot easier. Our initial problem was solved by PC-DocuMate™.

But we have a confession to make.

WE CHEATED

We had solved this kind of problem before. In fact, many times before. You see, we at SMA developed the original PC-DocuMate for the IBM PC. We've made templates for IBM BASIC and DOS, for WORDSTAR™, VISICALC™ and other best-selling software packages for the IBM PC.

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SOME SPECIFICS

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ROBOTS

Jim Butterfield
Toronto, Ont.

I must identify myself as a doubter. I know that small robots are within economic reach of the home, and they can talk, dance and beep appealingly. But I can't view them as a real happening until they can bring me breakfast in bed and wash the dishes afterwards.

Yes, industrial robots are making new things possible, and changing manufacturing economics. In some ways, this is happening in the home: for example, washing machines are becoming even greater marvels of technology. But we have this concept of a home robot: it will walk around, sweep the floors, feed the cat, sing a lullaby to the children, and deal a mean hand of poker. I don't believe it . . . yet.

Industrial robots are rather dull things. They are bolted to the floor, and have little more to them than a very flexible arm. It may be interesting to see the arm being flexed in unusual ways (looking rather like a flamingo craning its neck) and the speed at which it can move; it may be mentally challenging to speculate on the effects that such machines have on the workplace. But they don't meet the image that has been built by the media.

We've been bombarded with stories about robots that take over the world (for example, "R.U.R.", a play by Karel Capek which first used the word 'robot'). We remember robots that brew a fine bourbon (Robbie), robots that wag their tail (K9), and even robots that do a fair imitation of Stan Laurel and Oliver Hardy (R2D2 and C3PO).

We know that they aren't "real" robots. Some are animated, some use radio control, and some have men inside. But they all plant the idea of what we expect a robot to be: something vaguely humanoid (or at least, life form) that has intelligence, self-awareness, and can save us lots of work. Isaac Asimov's robots even had a form of ethics: the three laws of robotics.

It's fantasy, of course, and we should know better. But not having had experience with real robots, we take much of our concepts from fiction.

There are office robots. These are different from industrial robots. Instead of being bolted to the floor, they can move around on wheels. They usually take their guidance from a wire in the floor or invisible paint. They can detect objects, and will stop if an obstacle is hit. Generally, they are used for taking documents from office to office . . . an electronic "mail clerk". When this moving table stops in your area, run for it and get your messages; it won't wait there long.

Similar machines are used to deliver sheets, blankets and similar materials between a laundry centre and hospital rooms. They are capable of boarding specially fitted elevators and selecting their destination floor. I haven't heard of comparable uses in hotels . . . yet.

The most sophisticated "transport" robot is often not a robot at all. It's used in warehousing to store or fetch goods from a given storage slot. Such units are centrally directed; I find it hard to call them robots since they are not fitted with their own "intelligence".

What about the home? Yes, we can have robots that can walk (or roll) around based on stored instructions. There's been a toy ("Big Trak") available for years that will do that. Yes, we can have robots that will talk; there are educational toys ("Speak and Spell") that will do that. But we find ourselves up against four limits: Limited intelligence; limited sensing; limited mobility; and limited strength. Until we can do something about these four, robots in the home may be more of an entertainment than a fact.

Limited intelligence should be the easiest problem to fix. We know how to write programs; we know how computers work. Perhaps, however, we need a better language with which to instruct the computer; Basic is inflexible and slow, and machine language is inflexible and difficult for beginners

Limited sensing will improve with time, at least in part. We know how to add temperature sensors or such things as sonar. It's somewhat harder to get a computer to recognize your voice, let alone detect what you're saying. And recognizing visual images is very hard — simple things like doors and windows are tough, and faces are almost impossible. I think we will need to set our goals carefully.

Limited mobility depends on the environment. Most robots can roll across a smooth floor without too much trouble. But difficult surfaces — ramps, or a lawn — are much tougher. And any robot that brings me breakfast in bed will need to be able to climb stairs, a far from trivial accomplishment. I sometimes wonder if a successful robot implementation will bring back the "dumb waiter" — a simple lifting device for transporting things between floors. Automated, of course.

Limited strength is an engineering question. Greater strength requires larger motors, possibly hydraulics, and leads almost certainly to a heavier robot. Higher capacity batteries will be called for, and I have visions of such a robot turning into a tank. I'd hestitate to shake hands with a high power robot. . .

Some of you may have watched "The Academy on Microcomputers", broadcast weekly in Ontario. Jack Livesley and I shared the central set, and in episode 10 we decided to demonstrate robots. A Hero-I (Zenith/Heath) was selected, and trained to go through its paces.

Here's how we had it planned: The robot would march in and announce itself at the appropriate point. I'd walk around it and point out some of the more interesting features, and then set it in motion again. It would rotate its head, wave its arm, open its "claw", and roll over to Jack. He, in turn, would put his script into the claw, which would promptly close. The robot would turn away, approach the camera, and sign off the show.

For those of you who haven't seen the show, I should descibe the set. Jack

continued on next page

and I sat in two small white swivel chairs. The Hero-I isn't very tall; it's about knee height. And it turns out that the Hero isn't very accurate about distance when rolling on carpet.

Before the cameras started, we did a "walk through" to make sure that everything was OK. Hero performed perfectly over the first part. When I set it in motion at the end, however, we had a small problem. The robot correctly swung its head, waved its arm, opened its claw, and then headed off in Jack's direction. The problem was that it misjudged the distance; instead of stopping about a foot away from Jack, it kept going.

Jack became alarmed. It's rather disconcerting to be approached by a robot, complete with open claw, that doesn't want to stop. It doesn't help to know that the next thing that the robot is programmed to do, once it finally stops, is to close its claw. No harm was done, in fact; and I explained to Jack later that the limited strength of the Hero-I would have ensured that it could only have given him a friendly nudge. Even so, he watched the robot very closely indeed when the cameras started rolling.

I suspect that Jack Livesley is one of those people who will never have a robot in his home. *TPUG*

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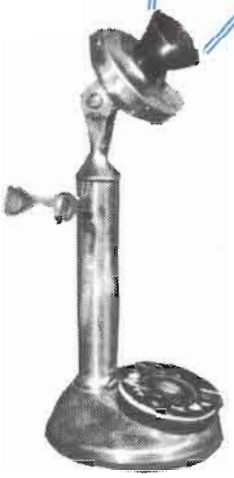

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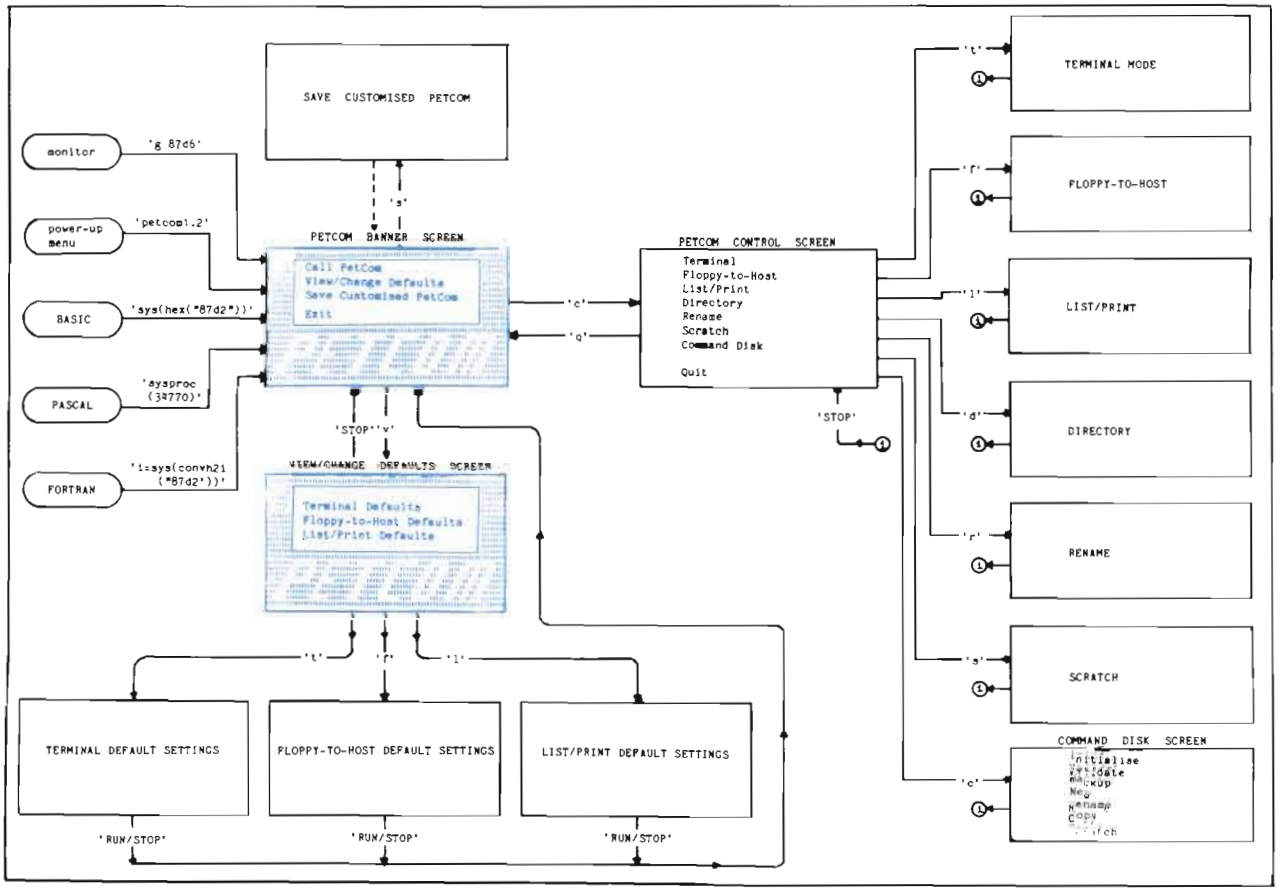

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SHARING PERIPHERALS

Ron Byers
Truro, Nova Scotia

For those who would 'rather switch than fight' the following article will show how one may share a cassette drive or serial disk drive between two or more Commodore computers. If you have become a two computer family, or are working in a school situation where limited funds inspire you to try to get the maximum 'bytes per buck', the following circuits can provide a simple alternative to buying a separate memory storage device for each C-64, VIC 20 or PET.

C2N Sharing (See Fig.1)

After a few weeks of manually connecting and disconnecting my one cassette drive first to my PET and then to my new C-64 whenever I wished to load from or save to tape, I decided that a switch would be a much better solution. As the circuit drawing shows, the wires from the cassette unit are simply switched to the cassette port of the desired computer by the use of a mechanical switch. This six-pole two position switch is not a commonly available type however, so I will mention that I was able to obtain one from Circuit Specialists Inc., P.O.Box 3047, Scottsdale, AZ, 85267 (part number 10YX062). A cassette port connector which should be available from your Commodore dealer, (the number on mine is A-MP 530654-1 7831), some wire, a knob, and a small plastic box in which to mount the switch, are the other parts needed. Be sure to LABEL the top side of the cassette port connector since it may not have a key on it to ensure that it will only go in the right way! The original wire and connector may be used to go on one of the computers if the wires are cut a few inches from the C2N unit and the switch is installed at that point.

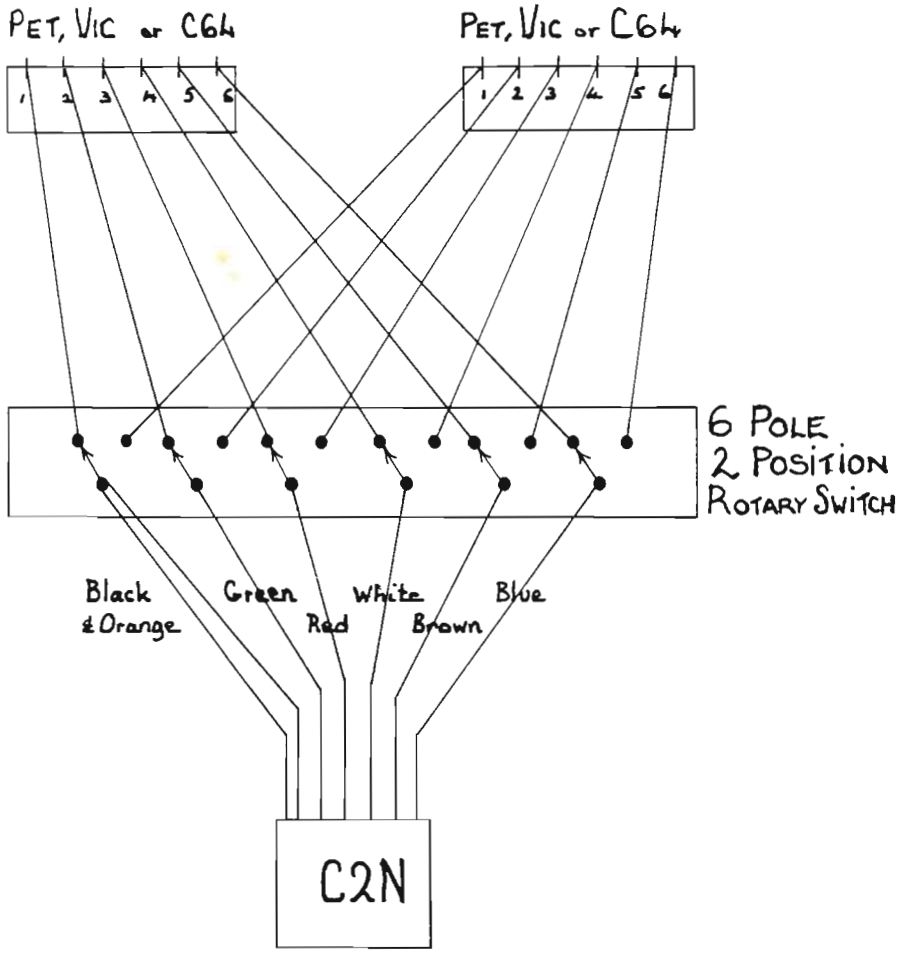
1541 Disk Drive Sharing (See Fig.2)

As the diagram shows, a very simple disk-share system to run three C-64 or VIC 20 computers from a single 1541 disk drive can be quite easily built. Here again I have made use of a mechanical switch. The technicians in the group could no doubt quickly come up with a solid state switching arrangement to accomplish the task with a bit more finesse but, being a History major, I opted for the pragmatic solution. About eight of these are in use in our school system and they do the job quite nicely.

The four-pole three position switch (#10YX043) may be obtained from the company mentioned in the previous section. If the 6 pin DIN connectors are unavailable locally, Addison Electronics (8018, 20e Ave., Montreal, H1Z3S7) is a good source and has ribbon cable, knobs and mini-boxes which are also needed to complete the project. If only two computers are to be used on one disk drive a four-pole two position switch may be substituted. A chassis-mount 6 pin connector on the switch box may be used instead of the arrangement shown in the diagram if the standard disk drive cable is used to connect the switch to the drive.

While this system is a bit slow to use, because of the speed of the 1541, it does save the cost of two disk drives and lets you give more hands-on computer time to students for the money.
TPUG

fig. 1



continued on next page

fig. 2

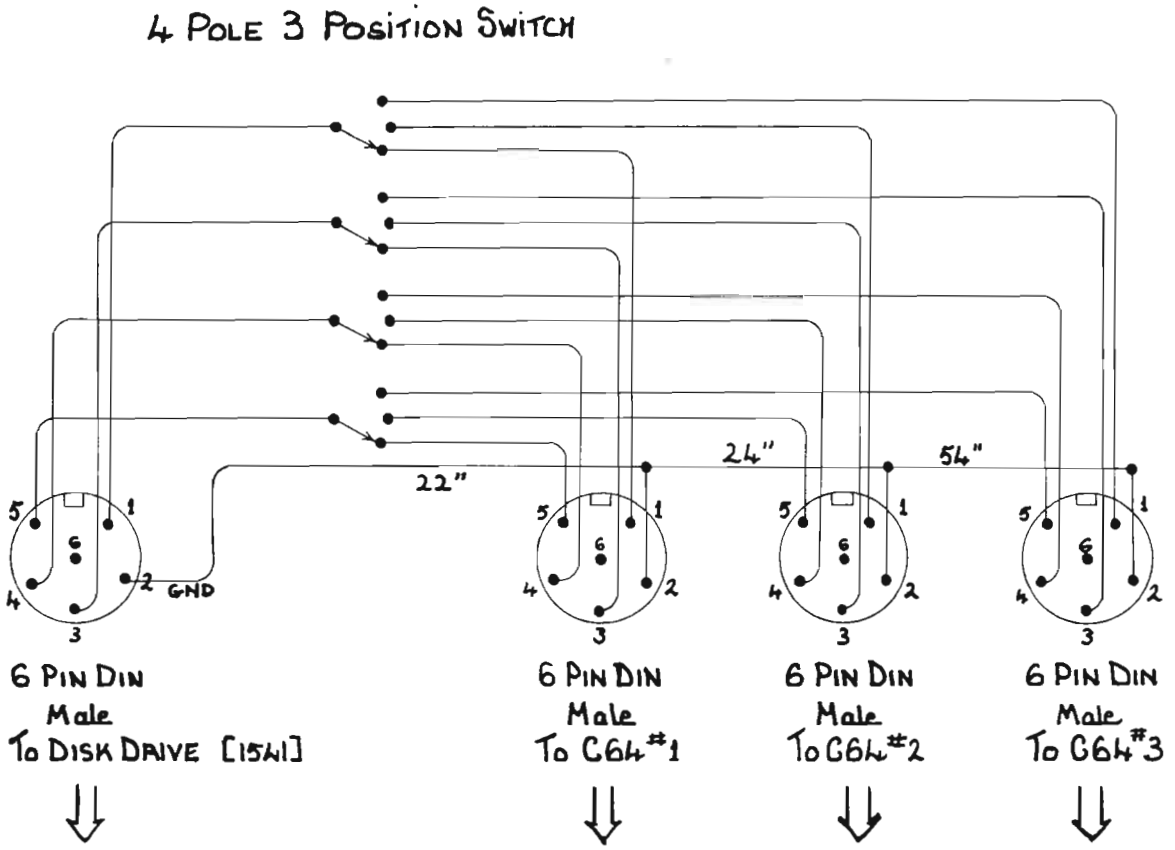
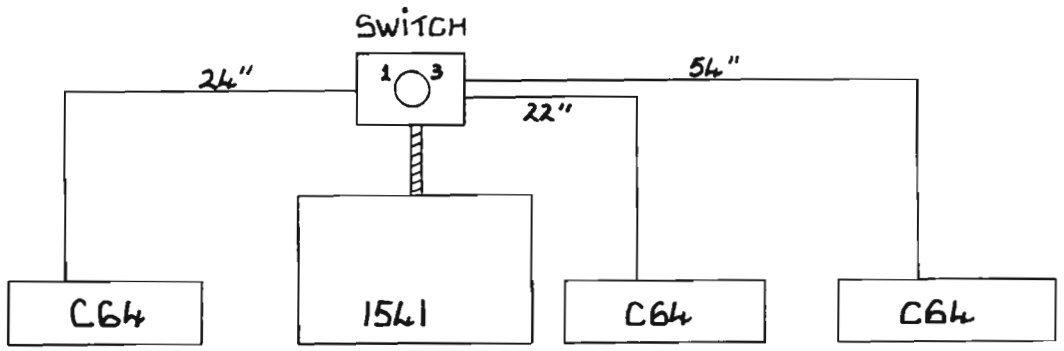

4 POLE 3 POSITION SWITCH
22"
24"
54"
GND
6 PIN DIN
Male
To DISK DRIVE [1541]
6 PIN DIN
Male
To C64 #1
6 PIN DIN
Male
To C64 #2
6 PIN DIN
Male
To C64 #3

fig. 3


SWITCH
24"
54"
22"
C64
1541
C64
C64

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CENTRAL CHAPTER – Leaside High School, Bayview & Eglinton Aves. at 7:30 p.m. in the auditorium for **PET/CBM**
Wed. May 9 Wed. June 13

VIC 20 CHAPTER – York Public library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the auditorium
Tue. May 1 Tue. June 5

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

Mon. May 28 Mon. June 11

WESTSIDE CHAPTER – Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd. (south of the QEW) at 7:30 p.m. in the Little Theatre for **PET/CBM/VIC 20/Commodore 64**
Thu. May 17 Thu. June 21

SuperPET CHAPTER – York University, Petrie Science Building, enter campus from Steeles Ave. – park in Lot D. Meet at 7:30 p.m. in front of Room 340.
Wed. May 16 Wed. June 20

COMMUNICATIONS GROUP – York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the Story Book Room (adjacent to the auditorium).
Wed. May 2 Wed. June 6

COMAL GROUP – York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the auditorium
Thu. May 31 Thu. June 28

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TPUG Associate Club Chapter Meetings

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Edmonton Commodore Users Group
– meets at Archbishop Jordan High School, Sherwood Park on the last Friday of each month at 7:00 p.m.
Contact Bob Kadylo 403-465-3523

Guelph Computer Club
– meets at Co-operators Insurance Assoc. on the 2nd Wednesday of each month at 7:30 p.m.
Contact Brian Grime 519-822-4992

London Commodore Users Club
– meets at the University of Western Ontario, in Room 40 of the School of Business Administration on the last Monday of each month at 7:00 p.m.
Contact Dennis Trankner 519-681-5059

Sarnia C-64 Users Group
– meets at Lambton College on the first Sunday of each month at 7:30 p.m.
Contact J. C. Hollemans 519-542-4710

Commodore Users Club of Sudbury
– meets at Lasalle High School in the cafeteria on the last Thursday of each month at 7:00 p.m.
Contact Tim Miner 705-566-9632

PET Educators Group (Windsor)
– meets at Windsor Separate School Board Media Centre, 1485 Janette Ave. on the 3rd Wednesday of each month (not July & August) at 7:00 p.m.
Contact John Moore 519-253-8658

UNITED STATES

Genesee County Area Pet Users Group (Michigan)
– meets at Bentley High School on Belsay Rd. on the 3rd Thursday of each month at 7:00 p.m.
Contact Gordon Hale 313-239-1366

Michigan's Commodore 64 Users Group
– meets at Warren Woods High School in Warren on the 3rd Tuesday of each month at 7:00 p.m.
Contact Chuck Ciesliga 313-773-6302

Sacramento Commodore Computer Club (California)
– meets at SMUD Building Auditorium 6201 S St. on the 4th Monday of each month at 7:00 p.m.
Contact Geoff Worstell 916-961-8699

Southern Minnesota Commodore Users Group
– meets at Mankato State University on the first Thursday of each month at 7:30 p.m.
Contact Dean Otto 507-625-6942

INTERNATIONAL

Baden Computer Club
– meets at CFB Baden-Soellingen on the 2nd Sunday of each month at 7:00 p.m.
Contact Kevin Rowe

WRITE NOW! A Review

Michael Quigley
Vancouver, BC

Note: This review is based on a system consisting of a VIC 20 expanded with two 16K memory cartridges, a 1541 disk drive, C2N cassette, a Gemini-10 printer, and a Cardco printer interface.

Write Now! for the VIC (there is also a version for the 64) comes as a ROM cartridge which occupies Block 5 (memory locations A000-BFFF). Unlike most cartridges in this locations, it is not auto-start, but initiated with a SYS command. This allows the possibility of returning to BASIC to perform various disk drive functions such as deleting or renaming files and validating the disk, which cannot be done from within the program itself.

The cartridge comes with an impressive manual over 100 pages long, and an audio tape which is useful mainly for the beginning programmer as an introduction to word processing. Side one of my copy of this tape didn't seem to be recorded very well. It is possible to change the background color of Write Now!, usually the same color as the normal VIC. However, since the program uses printing in all the colors except white and yellow, the number of backgrounds available without conflicting with screen messages is pretty limited.

Though Write Now! is primarily a disk-drive based program it can be used with tape, even though this produces a few problems. When using an unexpanded VIC, or when attempting to load the next program by inputting only a return, there was no PRESS PLAY ON TAPE message. Under other circumstances, like when using the tape in conjunction with the disk drive, these messages not only appeared, but printed in multi-colors! Despite these problems, loads and saves were made, the latter one item after another, which requires considerable organizational skills.

Among Write Now's features is the advertised claim that it "allows up to 38k of text storage." This figure is at odds with its manual, which says "any combination of memory cartridges providing up to 27k of additional memory may be used . . . for a total of 28159 characters in memory." (It should be noted that none of the Cardco expansion boards recognize the 3K expander.) Still – this is indeed more than any other VIC-20 word processor.

One of the most positive features of Write Now! is that, unlike Quick Brown Fox, it allows full screen editing, though not in the same sense as RTC's VIC-Script. With Write Now!, the twelfth line from the top of the screen is the "cursor line" and text can be scrolled up or down to this point with the up/down cursor keys. Left and right cursor moves on this line are also possible, as is use of the INSERT/DELETE key. There are a couple of unusual features. One is the optional use of a joystick to control the cursor which I thought stupid – is a joystick easier to manipulate than the cursor keys? The other is the fact that whenever a key is pressed, a clicking noise like a typewriter is made (assuming you have the sound on), and various buzzes signal that something has been done incorrectly. This bit of feedback is a nice touch.

There are so many features available with Write Now! that it's hard to know where to begin describing them. Most of its special commands are accessed either with the VIC's function keys f1 to f8 or through use of numbers combined with either the CONTROL or COMMODORE keys. The RUN/STOP key is used as a literal "escape" key. Pushing this allows you to return to your text from virtually any situation.

The function keys are used to PRINT, SAVE, and LOAD. The first of these has an option menu with a wide variety of choices, allowing control over all four margins on the printed page, as well as the page number, number of spaces between lines and whether or not line feeds are generated by the printer or the word processor. You can also start and stop printing at any page, which is handy if some minor correction has to be made, or if there is some problem like paper jamming.

I was not too excited about the idea of having SAVE as function key f3 and LOAD as f4. It is quite possible to load in a large document, decide you don't want it, clear the text from memory, and then instead of LOADing (f4) a new file, accidentally push SAVE (f3), thus saving and replacing nothing under the old file name. Cardco could have endeavoured to make the program a bit more "idiot-proof" at this point. It is also possible to save new material under a file name which already exists, which will wipe out the old copy. The advice in the manual to back up everything extensively, not only on one, but more than one disk, should be well heeded. One positive feature of the SAVE and LOAD commands is you are allowed to merge files.

Other function keys allow you to determine how much memory space remains, and to instantaneously jump to the bottom of text. (The latter is used in conjunction with the HOME key, which jumps to the top.) Two keys are used for Dump Buffer and Clear Buffer, which the manual claims is useful for inserting text – up to 256 characters – at the beginning of long files. I found it handy for inserting short blocks of repeated text.

Of the various functions accessed with the CONTROL and COMMODORE keys, the more important ones include Block Manipulation, Search, Replace, Tabs and Setting of Place Markers.

Block Manipulation, which uses seven different keys to Mark Block Start, Mark Block End, Go to Block Start, Go to Block End, Copy Block, Delete Block, and Write Block, allows you to move around amounts of text of varying size. These commands are also handy for creating and inserting large sections of text in the absence of an Insert mode such as is found on Quick Brown Fox. With QBF, you can insert any amount of text up to the total memory remaining at any point in the text with a couple of keystrokes. The only way this could be done with Write Now!

continued overleaf

other than with Block Manipulation is through creating large blank spaces with the INSERT key and then typing in the new text. Write Block allows you to copy a block onto the disk under another file name.

Write Now! has a global search and replace function, which is called merely "Replace." This allows either automatic replacement of one sequence of characters for another, or a Yes/No choice of replacing or not and moving to the next sequence (if any) manually. The Replace function is very literal, replacing all upper and lower combinations of a particular sequence. For example, "AB" would replace "aB", "Ab", "ab" and "AB." Thus it is not very useful for replacing individual letters. It is also unable to replace the reverse E, produced by pushing the COMMODORE-E, and used as a printer "Escape Code" (more about this later) or the reverse left arrow, which appears whenever a paragraph is terminated. This I found quite annoying. The only way to overcome this problem was to create a dummy combination like "QZ" to represent the unreplaceable character, find it with the Search key (which requires you to push CONTROL-3/RETURN after each time a particular character sequence is found) and replace each one manually.

There are three keys devoted to tabulation which allow you to Set, Clear and Display tabs. Unfortunately, there is a problem created here since tabs can be established only on the cursor line, which is 22 characters long. Making a chart with tabs at character positions 15, 30, 45, 60, 75 and 90 across the page, for example, would be possible only with a great deal of hassle. A better solution here with the Gemini printer is to establish the tabs with the sequence CHR$(68)+CHR$(TAB1)+CHR$(TAB2)... etc., terminating this with CHR$(0). These tabs are then called by CHR$(9). Since it isn't possible to put these ASCII codes directly into the text, they have to be converted to "redefinable characters", which are 17 seldom-used keys like the up arrow, shifted plus sign, and so forth. Thus CHR$(9) could become the British pound sign, which when inserted in the text, would not be reproduced by the printer. This method works fine.

The tab positions, which are moved to with the SHIFT/left arrow combination, also cause a problem with paragraph indentations. These are created by the first tab position, usually four or five units from the left margin. When copy is justified so the left and right margins are aligned (Cardco calls this "fill justify"), Write Now! can put extra space between some words to fill out the line. It can also put extra spaces at the beginning of the line in the indent, with the result that the paragraph indentations do not line up on the page. Examples of this can be seen in the Write Now! manual. A solution to this problem is to redefine the space — CHR$(32) — as a character Such as an up arrow, and put four or five of these at the beginning of each paragraph. This assures that the indent space will be "fixed" and all indents line up.

Some of the more esoteric CONTROL and COMMODORE commands are a non-destructive disk directory, a menu of options allowing you to change device numbers, a delete word key (unfortunately no delete sentence or paragraph), "up and down page" keys which move the text up and down a screen at a time, and a "Display File Position" key, which tells how many characters have been used up to that point.

In order to take advantage of many advanced features of today's printers, Write Now! has adopted a system called "dot commands" to trigger functions in the printer like expanded or condensed print, different pitches (numbers of characters per inch), and so forth. Dot commands consist of a period followed by a two-letter code and possibly other information, preceded and followed by a return. This information is not printed, nor does it cause an extra line feed. (It also makes it difficult to print machine language instructions which fall at the beginning of a line — i.e. .M,008D,008F.) There are 24 dot commands in total.

Some of these commands control various parameters established by the Print Menu, and even override those values, to the extent that the page can be up to 250 characters wide and 254 lines long! Copy can be either "fill justified", left justifed (with a ragged right margin) or centered. You are also allowed the choice of an Arabic or Roman numeral page number and locating it in any column on the page.

There are commands to advance the printer to the next page, to stop at the end of a page to insert a new sheet of paper and to stop the printer and change a daisy wheel or adjust switches. The last I found had a problem in that it did not reproduce the last line of a paragraph before stopping unless the secondary command was changed to 8 in the Option Menu from its usual 7 and the Print Menu line feeds option was turned on.

This business of stopping the printer with a dot command is similar to another feature, the COMMODORE K, which stops the printer and allows you to type up to 18 characters, which are then inserted into the text, and the printer resumes following this insert. This is used in form letters where only things like the name, address, amount of money owed, etc., are different. However, there is no way the printer can stop in the middle of a line, so it stops at the end of a line above. Also, if you have two or more COMMODORE Ks in a line, you will have to remember what they are. You cannot see the screen when they stop the printer.

One of the more interesting dot commands is the Building Block. Using this allows you to call up a chunk of text stored on disk under a separate file name. This is then inserted and printed, and the original text resumes from the point following the Building Block command. In this way Cardco claims even the unexpanded VIC-20 could construct a very long file, though I doubt many VIC users with a disk drive are using an unexpanded computer. The Building Blocks could not presumably be used with tape, since there is no way of returning to the original text.

One dot command I didn't like was the Conditional Page. The idea with this is similar to Quick Brown Fox's "AP Style." This means that if there are 15 lines left on the page, and your next paragraph to be inserted there is 18 lines long, it will be placed, unbroken, on the next page. With Write

continued on next page

Now! I couldn't see how the number of lines per paragraph could be determined ahead of time, since there is no way you can see where pages begin and end without printing them out.

Another matter which is not handled very well is Headers, lines of text which can be placed on any line of the page, but are usually used as titles. Write Now! allows the use of up to 8 headers, but they are all flush left, with no options for putting them in the center or flush right. Thus, if I wanted to make a centered head like "WRITE NOW! REVIEW" over a text width of 65 characters, I would have to define this header as 24 spaces followed by the title, or else re-establish the left margin.

Using double-strike, emphasized and italic printing on the Gemini-10 posed no problem, and neither did super- and sub-scripts, though it should be noted that the commands in the manual to get out of super- and sub-script commands are incorrect. Not only do these modes have to be turned off, but double-strike print must be turned off as well.

Most special printer features are accessed with the COMMODORE E, which takes the value of CHR$(27), referred to as an "Escape Key". Use of the COMMODORE E insures that the "redefined" ASCII characters following it won't be printed. For example, to do underlining on the Gemini, you could convert the 1 to the British pound sign and the 0 to the up arrow. The sequence to underline is then COMMODORE E followed by dash (equivalent to ASCII CHR$(45)) plus pound sign, and to stop underlining, COMMODORE E, dash, and up arrow. (This example in the manual — Figure 21 on page A27 — of how to underline is incorrect.)

It was with underlining that I found some problems with print-out when doing justified copy. Sometimes the right margin would not be lined up correctly. This anomaly can be seen on the first pages of the Write Now! manual, which was created with the cartridge and Cardco's own letter quality printer. There were also peculiarities with the margin when redefined non-printing characters such as CHR$(145), used to switch to Upper Case, were inserted in a line. In short, if you want to get really fancy with Write Now!, be prepared to do a bit of experimentation with your printer.

After all this, the question is: Is Write Now! the ultimate VIC-20 word processor? It lacks certain things like Quick Brown Fox's Send and Receive, to be used with modems, and one of my favorites, dotted tabs, which allow you to make the following easily:

Item . . . . . Price

Still, despite these deficiencies and the few bugs I found, Write Now! contains many features, some of them NOT found with QBF (especially the "full-screen" editor), which will please even the most creative programmers. One of these, which I've saved for last, is the ability to print files from other word processors, among them Vic Typewriter (Commodore), VIC-Script (RTC) and Word Pro, after a bit of editing to remove unusual commands.

As far as I am concerned, this alone makes Write Now! worth obtaining. *TPUG*

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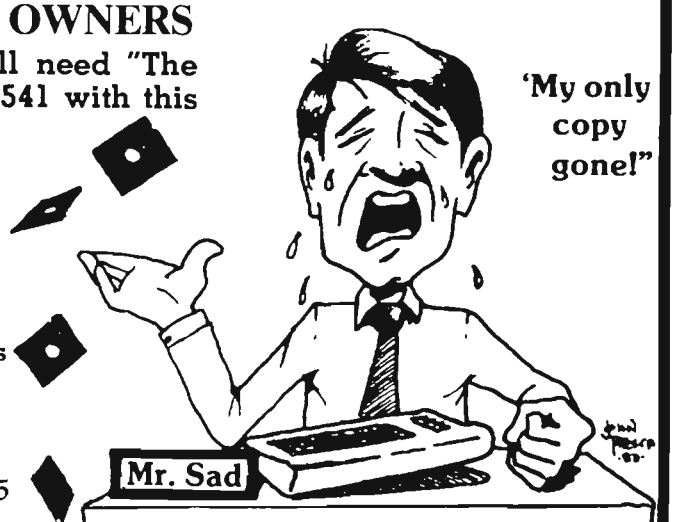

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HESWRITER

Michael Quigley
Vancouver, BC

Although HesWriter was one of the first "serious" word processors for the VIC 20, it suffers by comparison with more recent software in the same field, notably Quick Brown Fox and Write Now! Still, HesWriter has occupied a high position on some "top ten" lists of VIC software, and as such deserves comment.

Two important features to look for with a word processor are the ability to access text and the ability to manipulate this text easily. In both these areas, HesWriter is disappointing.

The maximum length of a HesWriter line is 18 characters. There is word wrap, which moves words which won't fit at the end of one line, unbroken, to the beginning of the next line. Copy is entered a line at a time, and it is not possible to edit lines above the one you are currently working on. In order to make changes to text above the "cursor line", you have to enter the Edit Mode, where alterations can be made only with some difficulty.

For example, if you want to insert a lot of material in the middle of a previously typed line, you have to first determine the number of this line by entering the Number Mode, somehow retaining the number (how? with a pencil?), then create the new text elsewhere, insert it *before* the line in which you want to insert it, and then delete any extraneous words. If this sounds confusing, believe me, it is. Furthermore, when inserts and edits are made in this way, extra spaces are sometimes created which are printed out along with the text. It's also possible to find yourself in editing situations where copy is frozen and nothing further can be inserted without going through variants on the above procedure. Deleting lines or copying lines from one location to another are both handled in a similar manner, and returning to the main Entry Mode sometimes leaves you with no copy on screen to refer to.

HesWriter *does* work quite well with fairly simple projects which don't require any fancy formatting. It is also well suited to slow, careful typists. I found that when typing fast, the cursor had trouble keeping up to me. This proved annoying when the cursor dropped to the line below, revealing "hidden" errors at the end of the one above (which, of course, couldn't be corrected except by going through the odious business above).

HesWriter is also best suited to use with low-cost printers like the VIC-1525, since it has no provision to use features like italics, condensed print, superscript, and so forth. In fact, it won't even access the expanded print on the VIC printer, created with CHR$(14)! I found printing with HesWriter proceeded at a slow but acceptable pace highly reminiscent of some BASIC word processors, a similarity which was enforced by BASIC error messages in other parts of the program.

There are various format commands in HesWriter designed to determine the four margins of the printed page, spaces between lines, position of headers (titles), and the use of centred or justified copy (the latter with aligned margins). Not all of these worked with my Gemini-10 printer and Cardco interface combination and I couldn't determine if this was because of the printer or because I wasn't using acceptable values in these commands. There are usually no minimum values established in the manual. A value of "0" for the left margin produced erratic results in printout, for example.

HesWriter saves to tape or disk and allows you to change screen and lettering colors. You can also preview text before it is sent to the printer and chain files together to make long documents. There is a "search" mode, which does not work very well – some instances of a given sequence were bypassed. Among the things you can *not* do is access the disk directory or other functions like Scratch and Validate.

The shifted space in HesWriter (CHR$(160), which is used as a "fixed space", causes problems with non-Commodore printers where this is a printing graphic character. With my Gemini 10, I had to adjust one of the dip switches on the back to clear this up. As well, HesWriter places a double space after each sentence when printing out. This is the procedure we were all taught to do in high school typing class, but it may not always be desirable, and it is not possible to disable this feature.

HesWriter is a world unto itself as far as compatibility with other word processors is concerned. It saves programs on disk as sequential files, which means it's not possible to load in material from most major word processors, which save to disk with program files. Even loading from Totl.Text, which also saves sequentially, proved fruitless, since its files are created by a different method. Tape files were also incompatible.

In short, at a price roughly equivalent to that of Cardco's Write Now!, which offers many more features and considerable versatility in manipulating copy, HesWriter does not have a great deal to offer. One would hope, in fact, that HesWare would issue a revised version of HesWriter for the VIC 20 incorporating features such as found in more recent word processors and which was the equal of their high-quality games and other products. *TPUG*

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Forecasting With the 8032 - part 1

John Shepherd
Islington, Ontario

A forecast is a prediction of future events. Its purpose is to reduce uncertainty and risk in decision making. We can expect that all forecasts will usually have some error, but that the forecasting method used can determine the amount of error to be expected. The most sophisticated and expensive techniques cannot reduce average forecast error below a certain level, and therefore cannot eliminate uncertainty.

Because of the large fluctuations that we have seen recently in the economy, accurate forecasts are becoming even more important in all phases of business planning. Governments, corporations and institutions try to make forecasts with varying degrees of success. Despite considerable talk about technique, forecasting is more of an art than a science in most organizations. Judgemental approaches are most often used, even though time series methods have been shown to give more accurate forecasts.

The TPUG February 1984 PET disk, (P)T6, contains four programs which can be used to project historical data into the future. These articles supplement the documentation on the disk and explain how to use the programs in practical forecasting applications in the most effective way.

The programs permit the entry and sequential storage of historical data for up to 100 prior time periods. This data can then be put into various mathematical forecasting models, to generate forecasts for any number of time periods ahead. If there is sufficient data, forecasts are simulated for prior periods and compared to the actual data for those periods. We can estimate how accurate our future forecasts will be from the forecast error of this prior simulation.

A time series is a sequence of observations of demand at equally spaced discrete time points. Time series analysis uses only the time series history of demand in order to develop a model for predicting future values. The logic is clearly stated and the operations are mathematical. Such a statistical forecast is often evaluated subsequently by an informed user, who may modify it subjectively in view of other information and his perceptions of the future.

All time series forecasts are based on two critical assumptions:
(1) data in the past exhibited some sort of pattern, and
(2) data in the future will behave, at least to some extent, as it has in the past.

It is most important to examine each forecasting situation to determine whether these two assumptions hold true. For example, stock market prices may possibly exhibit some sort of historical pattern. Numerous studies, however, have shown that their movement is random. Therefore, time series methods cannot be used reliably to forecast stock prices. On the other hand, experience shows that time series forecasting techniques can provide useful forecasts of the demand for goods and services.

Before we use the programs, we will have to define some of the terminology used.

Demand is the word used to describe the data being forecasted. Demand could be sales, price levels, usage, withdrawals, dollars, units, etc., depending upon the particular application.

The **forecasting period** is the basic unit of time for which data is available and for which forecasts are prepared. For example if we are forecasting monthly sales, the forecasting period is one month.

Forecast error is defined as the actual data for the period, less the forecast that was made for that period. For example, if June sales were forecasted to be 600 units but actually were 520 units, the forecast error for June was −80 units. A forecaster should continually monitor forecast error so that if it becomes larger than expected, this may be a signal to adjust the forecast model used. A graph of forecast error against time will often indicate whether another model might be more appropriate.

Three measures of average forecast error are used in the programs. **M.A.D.** is the mean absolute deviation, and is the arithmetic average of the absolute values of the errors. **M.S.E.** is the mean squared error, which is used to calculate the **Standard Deviation of Forecast Error.** The most probable estimate of actual demand is the forecast, however only rarely does demand exactly equal forecast. It can be anticipated that 67% of the time actual demand will fall within plus or minus one standard deviation of forecast error, and 95% of the time it will fall within plus or minus two standard deviations.

The forecast **lead time** is the number of forecasting periods between the most recently available data and the period for which we wish to develop a forecast. For example, if we receive March sales figures in mid April, they can be included with the earlier historical data to forecast sales for April, May, or even say, September. In such a case, the lead times would be one, two and six months. Obviously, the longer the lead time, the greater the expected forecast error. As will be shown in subsequent articles, the lead time influences the choice of forecast model. "Immediate" forecasts have a lead time of less than one month, "short term" forecasts 1 to 3 months, "medium term" 3 months to 2 years, and "long term" over 2 years.

Seasonality is a cyclical pattern in the data that seems to repeat itself every "n" periods. For example, monthly data often has a seasonality of 12, or quarterly data a seasonality of 4. Some of the programs calculate seasonality factors. These factors are divided into the data to produce seasonally adjusted data. The model then forecasts this seasonally adjusted data, and then multiplies the results by the factors to produce the forecast. It will be shown in a later article how these factors are calculated to total "n".

The programs are entirely in BASIC

continued overleaf

and should run on any PET, however the graph routines are specific for the 8032. Some of the linear models are solved by the inversion of rather large matrices, and unfortunately can take 10 or 15 minutes to run. The algebraic theory and equations involved are covered in most elementary forecasting texts.

In the next article we will look at the first of these programs, "forcst data.8". This program accepts and files the historical data that we wish to project into the future. It permits additions, replacements and corrections and allows us to print and display the data in graphical form. Other programs then take this data and use it to make the forecasts. *TPUG*

Curing the Single-Floppy Bug

David Williams
Toronto, Ont.

In the March/April, 1984, issue of *TPUG Magazine*, I wrote about some errors which occur when Commodore single disk drives, such as the 2031 and 1541, are used to handle relative files. At that time, I could say little more than that the problem is a difficult one, and I asked if any readers could give us advice on how to use relative files reliably on single drives. Now, as a result of further experiments, I think I have found an empirical "fix" which always seems to work. However it has the disadvantage of being extremely slow, so there is still plenty of room for advice on how it might be improved.

If you are interested in seeing these bugs in action, try the following experiment. (I will assume that you know how to handle relative files from BASIC. If you don't, this article is probably not for you.) Write a program which sets up a file which will occupy several disk blocks. Fifty records, twenty characters in length, is a good choice. Create the entire file by doing a dummy PRINT# into its last record, then start filling the records, one character at a time. Print into the first byte of the first record, then to its second byte, and so on until the record is full. Do the same to the second record, and continue this way until the file is full. Then go back to the beginning and read everything back, counting the errors. Try not to lose count!

There are several theories as to what is going wrong. In fact, there may well be at least two different bugs, one of which can be fixed by using Jim Butterfield's suggestion of always sending the positioning command to the disk drive twice, whenever it is needed. This helps greatly, but does not solve all of the problems. At present, Jim's favourite theory about the second bug is that something is amiss with the "queueing" system by which the disk drive stores requests from the computer. When the computer sends a series of disk commands faster than the drive can deal with them, they are supposed to be kept in the drive's memory and serviced in the correct order. Maybe, somehow, the requests get into the wrong order, or maybe the queue memory can sometimes overflow, or maybe the drive sometimes fails to signal to the computer that it should pause for a while, to allow the drive time to catch up. There are many possibilities.

In my experiments, I have been in the habit of always duplicating the positioning commands, so I have not seen any problems which would be cured by doing this. I have never found any problem when reading files. The difficulties always arise while files are being written, and usually when the record being written is one which crosses a block boundary on the disk. This finding supports the idea that the bug has something to do with the request queueing system, since writing to records, especially to those on block boundaries, is a much slower process than reading them.

The "fix" I have found consists simply of being very patient. Put long delays into the program, so that it sends disk commands so infrequently that there is never a chance for a queue to form. The delays have to be especially long after PRINT# commands, before the next positioning commands are sent. I have found situations in which delays as long as two seconds are required.

Unfortunately, I have not yet been able to find a universally applicable way in which the computer can reliably tell whether the drive is writing on a block boundary, and thus whether the long delays are needed. I have therefore had to put the delays in anyway, whether they are needed or not. I have also found that delays are sometimes needed following positioning commands, before the next PRINT# statements, but that these delays can be much shorter – a few tenths of a second at the most.

These delays have the unwanted effect of making relative-file-handling programs very slow, but they do make them reliable. The situation seems to be one in which a certain amount of trial and error is required to discover how long the delays must be in a given program. Many programs seem to work quite reliably without any delays at all. Obviously some experimentation (with frequent use of backup disks!) must be part of the life of anyone who would use relative files on single disk drives.

The rest of this article will be of interest only to people who use programs written in BASIC 4.0 on PET/CBM computers. I have developed a little machine language routine which causes the PET automatically to insert pauses when writing to relative files and to duplicate RECORD commands, so that it handles these files reliably on the 2031 disk drive. A similar routine could probably be written for Commodore

continued on next page

64's which use BASIC 4.0 disk commands as parts of various add-on packages, but different versions would have to be used for the Buscard, the Link, etc.

Incidentally, I should mention that there seems to be no difference, in this respect, between the recent "skinny" 2031's and the older "fat" model. There is a myth that the "fat" 2031 is just like half a 4040. I wish this myth were true. I own one of them. Unfortunately, as far as its internal logic is concerned, this drive seems to be essentially the same as the more recent single drives, and definitely not like the 4040.

Since this article is intended for BASIC users, rather than for machine language fiends, the version of the routine shown in the listing requires no knowledge of machine language or of the PET's inbuilt monitor. It is a simple BASIC program which writes a disk file containing the machine language routine. Just type in this program, making especially sure that you get the punctuation right in the OPEN statement in line 210 and that the numbers in the DATA statements are correct. Put a disk into the drive and run the program. It will write the file to the disk. Run the BASIC program repeatedly on all the disks you have which carry programs which handle relative files.

Two lines must be added to each file-handling program:

```
10 IF F=0 THEN F=1:LOAD "2031
   RELFIX ML.D",8
20 CLR:SYS 634
```

The line numbers are unimportant, but these must be the first two lines executed by the program.

That's all there is to it! The BASIC 4.0 file-handling program will now duplicate all RECORD commands and insert delays where appropriate. As the routine stands, the "long" delays (between PRINT# statements and subsequent RECORD commands) will be of about two seconds and the shorter ones about a third of a second. However, it is possible to adjust the "long" delays by POKEing address 819, after the machine language is loaded, with any number from one to twelve. (As the routine stands, this address contains a six – the last number in the DATA statements.) A one will reduce the delays to about a third of a second. Twelve will increase them to about four seconds. I suggest that you use the smallest number which you find works reliably with the program you are using.

Two cautions are in order. The machine language occupies almost all of the first cassette buffer. This precludes its use with any other program which uses this buffer. The routine may also prove not to work with other programs which patch into the BASIC interpreter, such as utilities which add words to the language. In practice, these restrictions are slight. The routine will almost always work properly.

```
100 rem 2031 rel-file fix writer
110 rem david williams, 1984
120 :
130 rem sys 634 to enable resulting
140 rem m/l program, when loaded.
150 :
160 for i=1 to 188
170 read a:x$=x$+chr$(a):c=c+a:
    d=d+c
180 next
190 if c=18605 and d=1866576 then
    210
200 print "error in data statements":stop
210 dclose:open 1,8,5,"0:2031 relfix
    ml.d,p,w"
220 if ds then print ds$:dclose:stop
230 print#1,x$;
240 close 1
250 end
260 :
1000 data 122,2,169,76,133,112,169,135
1001 data 133,113,169,2,133,114,96,230
1002 data 119,208,2,230,120,138,72,152
1003 data 72,162,0,161,119,201,207,240
1004 data 4,201,152,208,58,168,165,120
1005 data 201,4,176,5,202,228,55,208
1006 data 46,192,152,240,49,72,165,119
1007 data 72,173,47,3,240,16,32,33
1008 data 3,144,6,173,51,3,32,1
1009 data 3,169,0,141,47,3,32,135
1010 data 2,32,156,255,169,20,32,17
1011 data 3,104,133,119,104,133,120,
         104
1012 data 168,104,170,76,118,0,173,47
1013 data 3,208,15,32,33,3,144,5
1014 data 169,1,32,1,3,169,1,141
1015 data 47,3,173,51,3,10,10,109
1016 data 51,3,10,10,32,17,3,48
1017 data 214,56,160,0,162,0,202,208
1018 data 253,136,208,250,233,1,208,
         246
1019 data 96,24,162,2,120,117,141,157
1020 data 48,3,169,0,202,16,246,88
1021 data 96,56,162,2,120,189,48,3
1022 data 245,141,202,16,248,88,96,0
1023 data 0,0,0,6
```

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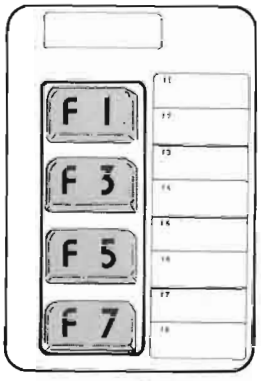

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SECTORE'S

Machine Language For Beginners – A Review

Ian Wright
Toronto, Ont.

Richard Mansfield: MACHINE LANGUAGE FOR BEGINNERS, from COMPUTE! Books, a division of Small Systems Services Ltd., Greensboro, North Carolina. 350 pages, spiral bound, designed as an introduction to 6502 programming in machine language for the Atari, VIC 20, PET CBM, Commodore 64 and Apple personal computers. $19.95 Cdn.

At the recent Computer Fair held at the Toronto International Centre, I purchased a copy of this new book on machine language. I have long been a subscriber to COMPUTE! magazine, and admire the writing of Richard Mansfield, the senior editor. I was not impressed, however, with this book.

Let me begin by stating that I am indeed a beginner in machine language and I would appreciate a good introduction to machine language programming. Any prior knowledge I have has come from reading various magazines. The text says. . .

"This book only assumes a working knowledge of BASIC. It was designed to speak directly to the amateur programmer, the part-time computerist. It should help you make the transition to machine language with relative ease."

Unfortunately, the book puts a number of major obstacles in the beginner's way. The first, and most annoying, is that the text is written for "all" 6502 processors. Although there are some similarities between the Apple and Commodore machines, the Atari requires constant changes to the text. It is distracting to read about an instruction, and then find that it applies only to the Atari.

The book contains 147 pages of text, and then 190 pages of appendices! I have the impression that the publishers wanted to fill space by providing Micromon, Supermon4, Micromon Plus, VIC Micromon, Supermon64, and The Wedge. All of these programs are documented and a full listing is provided for each. This is in addition to listings of a simple assembler and disassembler in BASIC. Surely the reference to the appropriate issue of COMPUTE! such as that given on page 31 would suffice. I also have the impression that the book has been collated from previous printings because some of the appendices that provide memory maps are vertical, while others are printed horizontally (i.e turn the page sideways to read them).

According to the author, the first step in using the book is to type in the 'Simple Assembler' that is provided in appendix C. This program uses an arbitrary selection of decimal or hex format, no commas, and some simple opcodes. The provision of an easy assembler is a useful idea, but the author does not use this assembler in his coding! Pages 20-22 demonstrate the difference between simple and deluxe assemblies. The remainder of the text uses "full" or deluxe assemblies. This would be very confusing to any beginner with no understanding of the use of labels. More confusion results because you could not use these examples with the simple assembler anyway.

To provide examples that can be applied to the PET, VIC, C-64, Apple, and Atari, Mr. Mansfield uses imaginary addresses e.g. 1000 STA $8000. The location $8000 is not a 'real' address and in order to type this in to my PET I have to find a "safe" memory location, and provide the correct addresses. Part of being a novice is that I do not know these things and the instructions are hidden at the bottom of page one as part of the instructions to the "Simple Assembler". To quote Mansfield:

"...it makes no difference whether a machine language program starts at address 1000 or 0340 as long as you are putting it in a safe memory zone."

This may be true, but it adds to the confusion when you have to give branch addresses. Similarly, we are told not to store machine language programs in zero page. Zero page addressing is talked about later in the book, but without explaining where we can save material in zero page. I think some specific examples should be provided on each machine for various instructions.

I had my hopes raised by an "Examples and Practice" drill for hex-decimal conversion. At last, someone is going to provide examples and DRILLS on machine coding. No way! That is the only drill in the book.

Mr. Mansfield should hire another editor to proofread his work. There are a number of significant typos . . . e.g. the entire table in appendix E has the most significant and least significant byte sub-titles reversed. As a beginner, I found these kinds of errors to be real stumbling blocks to understanding.

This book is a step in the right direction. There is a need for a well-written tutorial on 6502 machine language that can take a beginner through simple coding that can replace slow basic routines. This book could be considered as the best of a very poor bunch. I like the explanations of why some instructions are more useful than others, but there is not enough explanation of some of the opcodes. I particularly like the "dictionary" of machine language equivalents to BASIC commands. Using this feature I can look up ON GOSUB and find out one way to code it in machine language.

I feel that Mr. Mansfield should produce a revised version of this book leaving out the extraneous appendices, and adding more examples and drill exercises. A flow chart with a structure leading from the simple to the more complex instructions should be part of the planning before this new version is written. There is a need for a more structured approach to teaching this subject. *TPUG*

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ED D'IGNAZIO

STOP PRESS . . .
Unfortunately, Fred D'Ignazio cannot attend

...oute!

Sat. & Sun – ...ced

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continued on next page

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Do you want to attend the Conference free? – Then volunteer to work for a day. You can volunteer to work half a day on Saturday and half a day on Sunday, or all of either day. Specifically, we are looking for **Room Monitors.** These people will be in charge of seeing that the people coming to a specific session are registered for that session, seeing that the appropriate equipment is available for the session, probably be asked to fill in a report sheet on the session etc. In short, he/she will be in charge of the room and seeing that all runs smoothly. Volunteer to the club office, by mail, telephone or BBS. You will need to pay for your registration. A refund will be provided after the Conference.

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LIST LOCK REVISITED

Adapted to VIC 20 & C-64 by Nancy Lecompte

Lewiston, Maine

A recent programming project prompted me to dig out an old TORPET issue in which I remembered seeing a protection routine to prevent curious people from listing a program. This seemed to be exactly what I needed, except it was written for BASIC 4.0 and I needed it for a C-64. Since I recently started learning machine language and the article was well documented, I decided to make the conversion. While I was at it, why not do it for the VIC 20 too! The original article was published in the November-December 1982 TORPET by Steven Darnold and provides a good explanation of what this routine does. I will not attempt to explain it again.

I decided that the routine should be in the form of a BASIC loader, as many do not have monitors for their VIC 20 or C-64. You can add the routine to any program you already have or build it into new programs. I have also provided the "key", so that you may unlock, in order to make changes to the program, and relock the listing at your will. Of course, in order for this routine to prevent unwanted spectators from listing the program, you must guard the instructions with your life. If you are a teacher, don't have the instructions in school, students have a way of finding things they should not find.

Any novice machine language programmer should be able to create custom "keys". First study the original article. The important things to note are the number of asterisks in the REM statement, the location of the system call, and the new location of the BASIC program. By adding more asterisks, using this new space to move things around (moving the SYS location and/or start of BASIC), and making the proper changes to the SYS and POKE43 commands, you should be able to create an endless number of SYS and POKE combinations as "keys". Using different "keys", your method of protection will appear inconsistent and discourage most from even trying to break into your programs.

I decided that I did not know enough about interrupt programming, so I reverted to a simple BASIC POKE to disable the RUN/STOP RESTORE keys. An added benefit of this is that if the program breaks due to an error the program can be listed, however, it is garbage! This solved both problems that the original interrupt portion was designed to solve. It is important to remember that this disable POKE should be the first line of your program, after the REM and GOSUB lines. This is the only line that will actually remain in your program after the first run. If you place it further along, the program will not be completely protected until after the line you placed it on has been executed.

Now, on to the good part! But first, make sure the program you want to protect does not have lines numbered 0,1,2,3, or greater then 63900. If it does, simply renumber the lines out of these ranges.

Protecting A Program For The First Time:

1. Turn the computer off, then back on (assure a clean start).
2. Load the program to be protected.
3. Add the appropriate lines of code (exactly) to your program.

FOR THE C-64:

```
    1 REM**************************************
    2 GOSUB 63900:STOP
    3 POKE 808,225
63900 FOR X = 2048 TO 2090:READ C:POKE X,C:
      NEXT:RETURN
63910 DATA 00,11,08,100,00,158,50,48
63920 DATA 54,49,00,00,00,169,147,141
63930 DATA 119,02,169,82,141,120,02,169
63940 DATA 213,141,121,02,169,13,141,122
63950 DATA 02,169,04,133,198,169,43,133
63960 DATA 43,96,00
```

FOR THE UNEXPANDED VIC 20 CHANGE THE FOLLOWING LINES:

```
    3 POKE 808,100
63900 FOR X = 4096 to 4138:READ C:POKE X,C:NEXT:
      RETURN
63910 DATA 00,11,16,100,00,158,52,49
63920 DATA 48,57,00,00,00,169,147,141
```

FOR THE EXPANDED VIC 20 (8K or more) CHANGE THE FOLLOWING LINES:

```
    3 POKE 808,100
63900 FOR X = 4608 to 4650:READ C:POKE X,C:NEXT:
      RETURN
63910 DATA 00,11,18,100,00,158,52,54
63920 DATA 50,49,00,00,00,169,147,141
```

NOTE: line 1 contains 36 asterisks and is very important!!!

4. It may be wise to save your program at this time. If you made a typing error, it will save you from retyping. If you are a good typist or are using a tape system, this may not be important.
5. Type RUN, there will be a short pause, then the computer will respond with BREAK IN 2.
6. Type POKE 43,43 (all machines).
7. You should list your program. Notice that line 1 has disappeared.
8. Delete line 2 and lines 63900 to 63960 from your program now.
9. Line 3 should be the only new line left in your program at this point.
10. Type POKE 43,1 (all machines).
11. Type LIST. You should only see one line:

```
100 SYS2061      (C-64 version);
100 SYS4109      (VIC 20 version);
100 SYS4621      (VIC 20+ version);
```

12. Now you can save the protected program using the

continued on next page

normal procedure for saving BASIC programs with your system.

13. Verify that your protected program is working properly
    Reset the computer
    Load the protected program
    LIST should show the above line 100 (nothing more)
    RUN should blank the screen
    Print 2 characters in the Home position
    Start running your program normally

You should not be able to break out of the program
If the program breaks, due to error, the listing should be garbage

14. If things don't work, go back to the beginning and start over. Be careful to follow the directions exactly and double check your typing.

Locking And Unlocking Protected Programs:

1. Reset your computer.
2. Load your protected program.
3. Type POKE 43,43
4. Delete line 3 (temporary) or add a REM in front (3 REM POKE 808,255). If line 3 is not removed, you will not be able to debug your program.
5. Now make your corrections, etc.
6. When done, add line 3 back or remove the REM (don't forget this).
7. Type POKE 43,1
8. Save the new version.
9. Verify that the protected program still works.

And that's all there is to it folks. *TPUG*

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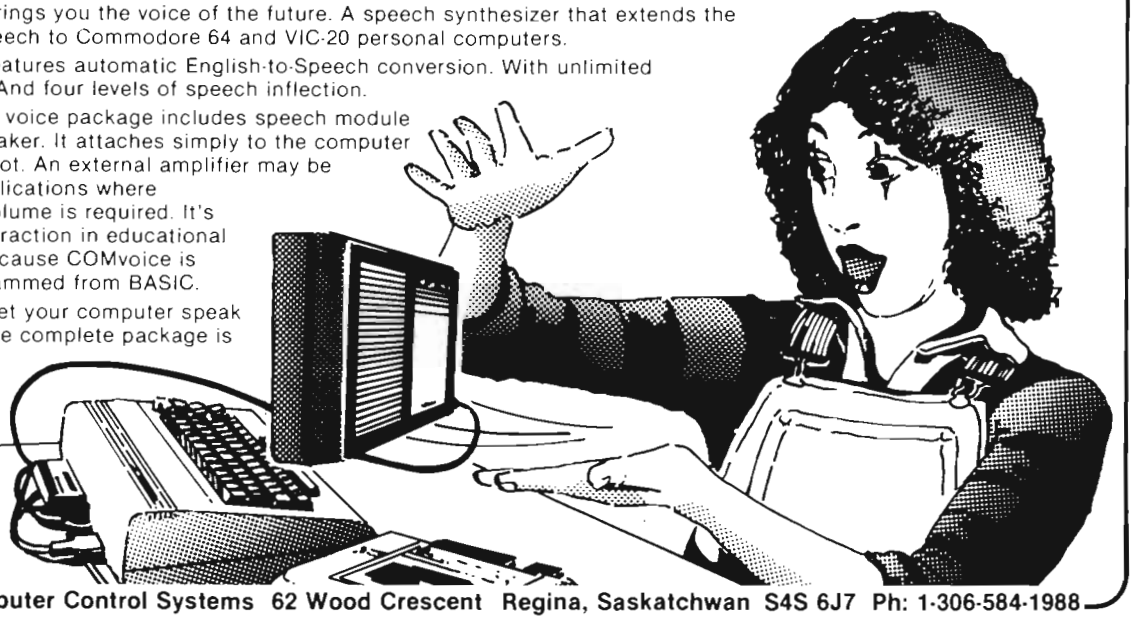

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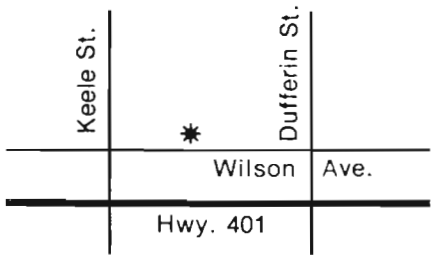

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COMPUSERVE VIDTEX

William Wilbur
Kittery, Maine

The VIDTEX program from CompuServe is advertised as an Intelligent Terminal Emulator for Commodore PET 4032 and 8032, 32K, Disk Systems, and RS-232 Modems (IEEE-488 is also available). The selling price is $39.95 U.S. and may be ordered while on-line with CompuServe.

The version of VIDTEX that I'll be reviewing will be for the CBM 4032, 4040 Dual Disk, and the RS-232 modem. My equipment is an updated PET 2001-32N (BASIC 4.0), 4040 Dual Disk, CBM 8023P printer, and the Anchor Automation Signalman Mk.IV modem.

I'm not what you'd call a networking nut! I spend an average of 3 hours per month on line with CompuServe and, so far, have resisted the urge to log in on any of the PBBS systems available! I don't enjoy the potential long distance telephone charges involved. If you get the urge to contact me through CompuServe, my User ID is 74135,1070.

VIDTEX is a very well documented terminal emulator program, written by Duane Harris for CompuServe. In the beginning of the users' manual it is suggested that the user first read the entire manual before running VIDTEX, a suggestion I highly recommend due to the many, many options built into VIDTEX.

Let's take a look at some of the VIDTEX features. First of all, VIDTEX contains its own keyboard decoder which allows the program to simulate many of the ASCII characters that are not on the PET/CBM keyboard. This decoder also provides an additional level of characters called "Meta-characters". More on these later.

The control key (on my machine) is the OFF/RVS which is used by holding down the OFF/RVS while pressing the desired character. For example; to transmit a control-C you would press and hold the OFF/RVS while pressing the "C" key. Some of the control keys supported are; A, S, Q, C, B, P, H, U, V, and O.

The "Meta" key is used much the same way. This time you press and hold the CLR/HOME key while pressing the Meta-key of your choice. One example is the "Help Page" which displays a list of the redefined keys. Press Meta-H and the following table is displayed:

KEY DEFINITIONS

OFF/RVS	Control key
CLR/HOME	Meta key
REPEAT	Display Menu (Business)
Escape (Graphic)	
RUN/STOP	Control-C
CRSR down	Line Feed
CRSR right	Tab
INST/DEL	Backspace

Typing a control-RUN/STOP will transmit a break sequence of 250 milliseconds which is used on some systems as an attention signal.

To take a look at the available remote operations, press Meta-M. You'll get the following table:

META KEY FUNCTIONS

Ram Buffer	G Get Screen
O Open	C Close
Z Zero	L Load
D Display	P Print
S Save	U Unedited Save
V Transmit	Y Transmit w/prompt
Used: 0000	Free: 0000

LOCAL CONTROL

E Enable Clean	B Break Words
R Printer On	T Printer Off
: Print Screen	K Clear Screen

MISCELLANEOUS

X Exit

A Abort	F Function Keys
H Help	M Menu
I New Logon	J Old Logon

N Scratch File
Q Query/Set Status
W Create Window
Press your choice
or <RETURN> for terminal mode

See what I mean about reading the manual first! The old adage of "when all else fails, read the instructions" applies quite well with VIDTEX.

Let's take a quick look at the various functions available; Word Cleaning (or word wrapping) ensures that no words are started on one line and completed on the next. This feature may be disabled but I find the screen much easier to read if it is enabled. You may have your printer connected and operating while on line, a control-S is automatically sent to the host each time a line is printed, and a control-Q is sent to tell the host to continue. This is quite handy at times, but tends to increase your hook-up time somewhat.

You may obtain a printed copy of the entire screen by typing a Meta-: (Meta Colon). You can abort this, and most other functions, by entering a Meta-A.

Ten user-defined function keys (Meta-0 through Meta-9) are supported. The only restriction is that the total amount of characters for all the function key definitions cannot exceed 255 characters. The definitions may be saved on disk for further use. By using several file names, you could have an unlimited number of function keys defined.

The Ram Buffer allows you to save all characters received in an otherwise unused portion of memory, only 9822 characters in my machine. However, if the buffer becomes almost full, a message is displayed on the screen and a control-S is sent to the host. This allows you to save the buffer contents.

continued overleaf

zero the buffer, and continue after you sent a control-Q. If the host does not stop transmitting or you send a control-Q without zeroing the buffer, it will automatically be closed. This buffer is also used to send text or messages, with or without a prompt, to the host computer. This allows you to compose a message while off line, load it into the buffer, then send it while on line again.

The Ram Buffer, while being quite handy, is not quite the feature I would like it to be. I prefer a "streaming" capture buffer which places the incoming data direct to disk. VIDTEX does support direct to (and from) disk during file or program transfers, but otherwise you have to open the buffer, save the buffer, zero the buffer, and so forth. The lack of a "streaming" capture buffer is, to me, a very serious short coming. Perhaps Mr. Punter's BBS program has spoiled me?

One very nice feature of VIDTEX is Autolog. This handy feature allows you to set up automatic log on procedures for just about any system you wish to access. The set up for an Autolog file is quite simple. Enter a Meta-I, and you will be prompted for a file name. If you press <RETURN>, then the file name "vidtex auto" will be used. As with most other VIDTEX features, this can be aborted by entering a Meta-A. VIDTEX will ask you what prompt to wait for and the response to send when that prompt is received. The maximum length for each response is 64 characters. You can repeat this prompt/response sequence as many times as you desire. To finish or end creating an Autolog sequence file, enter an ESCAPE at a prompt and another ESCAPE at the response. After you have completed an Autolog file sequence, you will be returned to the terminal mode. During an Autolog sequence, the keyboard remains active, allowing data to be sent during Autolog without affecting the sequence. One feature of Autolog which I am unable to test is the automatic dialing function. I have yet to acquire an auto-dial modem.

File transfer is fairly simple. Three types of file transfer are supported; text, binary, and machine specific. A text transfer is used to transfer ASCII text files such as those produced by PaperMate. The binary transfer is for tokenized BASIC and machine language programs. A machine specific transfer is used to transfer machine dependent files. VIDTEX inserts all the information require to recreate the file as it originally existed.

You can alter the communication characteristics of VIDTEX by entering a Meta-Q. Options include; Parity which can be disabled, zero, one, even, or odd, Flow Control can be enabled or disabled, Baud Rate may be set from 110 to 600 baud, and you can select Full or Half Duplex.

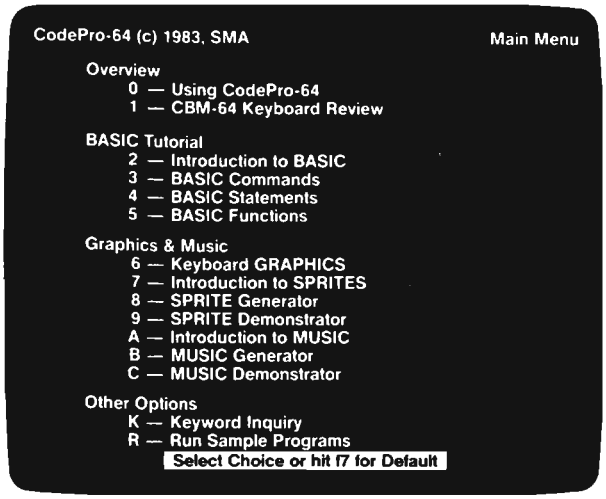
Some of the common communications requirements are; CompuServe, zero parity, full duplex, flow control enabled, 110 to 600 baud. The Source and Dow Jones, even parity, full duplex, flow control disabled, 110 to 300 baud. Check the appropriate users' manual for the requirements for other systems.

VIDTEX also supports remote cursor positioning which allows the host computer to place text (or graphics!) anywhere on the screen. This function is very important for you game lovers out there. If you want to play Mega Wars II, Word Scramble, Concentration, or Seawar, VIDTEX is required! Not being a "real" gamer, I've yet to try any of the CompuServe games. Maybe some day!

In the event that you do not have a McTerm or IntelCom cable, the VIDTEX manual provides a diagram showing the necessary wiring connections to make your own RS-232 cable.

My overall impression of VIDTEX is very favorable. After spending some time studying the users' manual, I find the program fairly easy to operate,taking into consideration the numerous options and functions available. My biggest gripe is the lack of a "streaming" data capture, direct to disk feature. This lack is rather akin to being served a gigantic hot fudge sundae without the cherry on top!

I've spent quite a bit of time trying to find the "ideal" communications program. So far, all the programs I've found come close but not quite close enough. Since I'm far from being a "whiz-bang" programmer, I hereby toss the gauntlet! How about a communications program that combines the best features of VIDTEX and Steve Punter's PBBS package, allows for various printer options, provides a "streaming" direct to disk data capture with files compatable with either WordPro, PaperMate, or PaperClip, supports both IEEE-488 and RS-232 modems, and could be configured for auto-answer operation. If this "dream" program happened to be in the public domain and in the TPUG library, so much the better, if not, quote a price! *TPUG*



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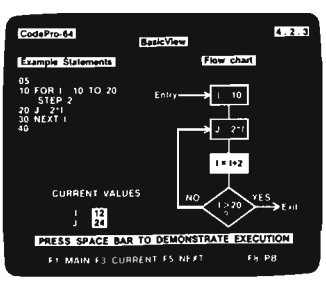
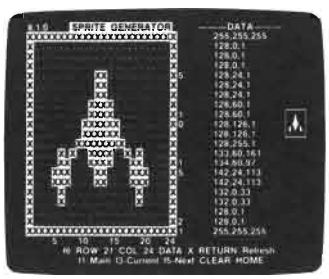
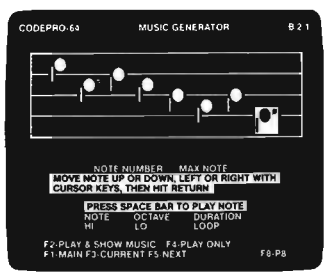
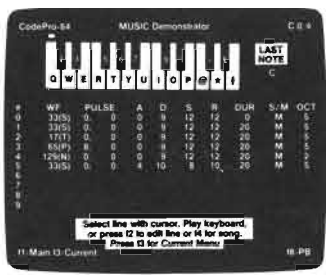








SYSTEMS MANAGEMENT ASSOCIATES

VIC 20 AND THE $28 MODEM

C. Gray
Nepean, Ont.

I first encountered the '$28 Modem' about 6 months ago; and believing it was a fantastic bargain, promptly put my money down. When it arrived I peeked into the box, pulled out a huge plastic case (the modem?) and eagerly read the documentation.

. . . Sons of VIC!!! How do you hook this thing up?. . . We're not quite sure? . . . Feeling like the Eskimo who bought a fridge, I repacked the box and put it in cold storage. Occasionally, I would re-open it to show friends, and explain "But, of course, I still have to hook it up."

Now the freeze is over!!

If you already have the modem, or were considering it, then read on..**It works on the VIC 20!!! and will also work on the C-64!!**

To begin, the '$28 Modem' is an originate-acoustic modem manufactured by Novation; which originally lived in a DECwriter terminal. It was (still is?) available from surplus stores in the Toronto area. Data is sent at baud rates from 110 to 300, in full duplex mode. Its interface is at 'TTL' voltage levels, which is just what the VIC 20 user port wants to see. To run it on the VIC 20 there are 4 items to deal with.

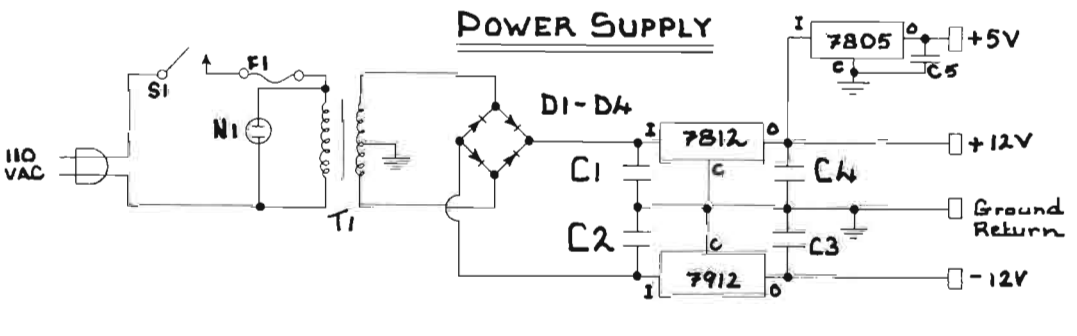
1. Power supply for the modem
2. Two changes to the modem circuit
3. Connection of power supply and interface to the VIC 20
4. Software – terminal program (TPUG library)

1. Power Supply

The modem requires 3 voltage levels (+12,-12, and +5). Since the VIC 20 supply is only +5, a separate supply must be built. Fig.1 shows the configuration. I assume the reader has some experience in building circuits, hence I will only discuss a few tips. If you lack experience, I advise that you seek assistance on board layout etc.

The supply is the standard fixed regulator design and the parts are readily available. The transformer should have a secondary of 25v, centre tap; and a current rating of 300 ma. A Hammond transformer, part #166F25, is available from most major part stores. During construction, just be sure of diode polarity in the bridge, and capacitor polarity, for the +/– voltage rails. Be aware, the pin out of the –12v regulator is not the same as the +12/5 regulators. (This pin out difference is shown in Fig.1). Since the modem circuitry is mainly CMOS, the current drain is quite low; hence heatsinking is not required for the 3 voltage regulators.

NOTE: The 100ma input fuse is a safe precaution; and MUST be included. Once the supply is built, verify the output voltages without any load con-



PARTS LIST

TRANSFORMER	T1	SECONDARY 25 VCT, at 300 ma HAMMOND # 166 F25
DIODES	D1 - D4	IN4002 [4 req'd]
F1	FUSE	100 ma
CAPACITORS	C1. C2	200 MF, 35V
	C3. C4. C5	0.01 MF, 50V

VOLTAGE REGULATORS

+5V	7805
+12V	7812
-12V	7912

SWITCH S1 SPST TOGGLE SWITCH

N1 OPTIONAL NEON PILOT LAMP

continued on next page

nected. If you've got this far, the rest is a piece of cake.

2. Modem Changes

The modem has a number of cut strap options. For connection to the VIC 20, there are only 2 changes (receive and transmit) that are required.

The modem receive mod, makes the signal received from the VIC 20 non-inverting.

The modem transmit mod, inverts the signal transmitted to the VIC 20, using a simple transistor circuit.

All changes can be made on the pcb. Fig.2 shows the locations of existing pcb holes that must be de-soldered and use for mods. Details of the two mods are discussed below.

Removal of the pcb from that huge case is easy; but be careful when removing the carrier detect LED.

Now you are ready to start the mods.

2.1 Modem Receive Change

The change is shown in Fig.2a; one cut and one strap.

For the cut, identify the location of the strap 'W6' marked on the foil side. If you are not sure, verify by tracing the connection from pin 10 of Z9 to pin 1 of Z7. Once you are sure of this track location ('W6') cut out a short section of the copper track.

For the strap, connect a wire from pin 1 of Z7 to pin 11 of Z9. This strap is shown in Fig.2 as 'W5'.

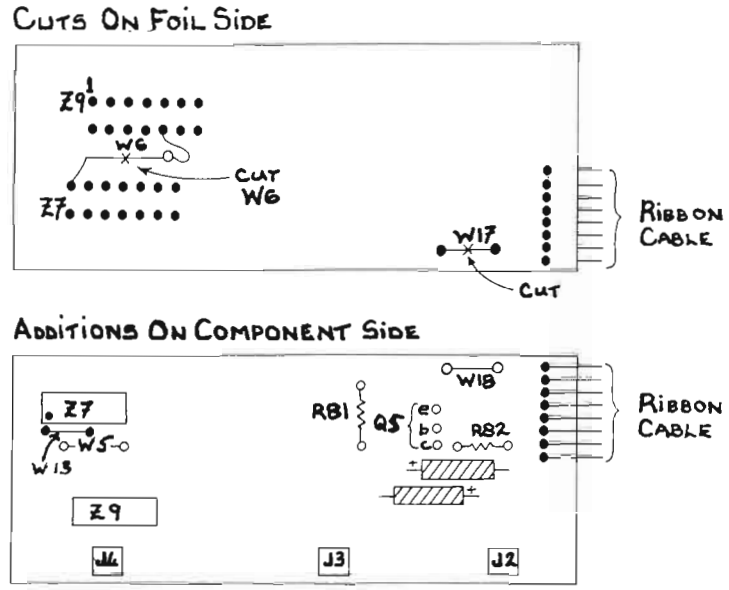


fig. 2

2.2 Modem Transmit Change

This change is shown in Fig.2b, and is a simple transistor inverter. The mod consists of; one cut, one strap, and the addition of two resistors and one transistor.

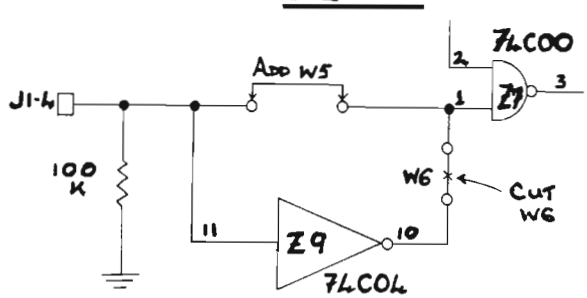
For the cut, identify strap 'W17' on the foil side, and cut the track. De-solder the holes for mounting the transistor, resistors and strap 'W18'. The location of these holes is shown in Fig.2, and are as follows:

Transistor (2N2222A) E=emitter; B=base; C=collector

Resistors – holes are marked for R81= 33K, and R82=4K7

The wire strap is identified as 'W18'. Insert the components as shown in Fig.2; double check and then solder. If you are still not sure of these connec-

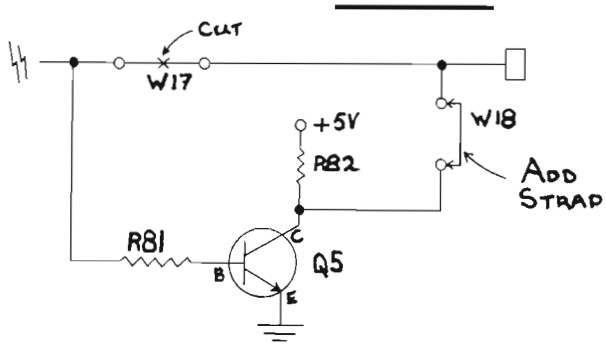
RECEIVE MOD fig. 2a



CUT W6

ADD STRAP W5 [holes closest to strap W13]

TRANSMIT MOD fig. 2b



R81 33K
R82 4K7 [adjacent to R79]
Q5 2N2222A
STRAP W18
CUT W17

continued overleaf

tions, then trace the connections, as shown in Fig.2b.

3. Connection and Interface

All interface connections are via the multi-coloured ribbon cable (J1 of the Modem) as follows: (Refer to Fig.3)

3.1 Connection to Power Supply

- Connect green to +5
- Connect blue to +12
- Connect purple to -12
- Connect brown to ground return of the power supply

3.2 Connection to VIC 20 User Port

Access to the VIC 20 User port is via a 12 position edge connector, (24pins) on 0.156 spacing.

- Connect yellow wire to 'M' of user port
- Connect orange wire to 'B' and 'C' of user port
- Connect red wire to 'N' of user port.

Remember, the drawing (Fig.3), is a view looking into the user port with the connector plugged in.

Avoid any shorts of adjacent pins of the connector. The 65ZZ VIA (user port) is not buffered, and could be damaged. You should 'key' the connector so that it cannot be inserted 'upside down'.

That completes the hardware instructions. You may find, the simplest way to 'package' this hardware, is to cut the existing plastic case, mount all hardware inside, and finish it off with a wooden base and sides. Be sure to re-mount the carrier detect LED.

4. Software — Terminal Program

I have used VICterm (TPUG library (V)17N), with the following mod, and have not had any problems. This is a BASIC program that lacks some features, but it will get you started.

The mod corrected the printing of reverse cursor characters, if a double quote (") was received. The change is in line 100.

```
100 OPEN 5,2,3, CHR$(38)+
  CHR$(160):DIMF(255), T(255)
```

If you wish to change the colour, you can add to the end of line 100 ":POKE 36879,XXX"; where XXX=your desired colour. For XXX=42, you get a blue background with white characters

5. Putting It To Work!

Now for the fun part. For first time users, the procedure is very easy.

1. Load and run VICterm or other terminal program.

2. Now, dial the modem phone #, when you hear a high pitched tone; place the handset into the coupler. (There is a label on the coupler marked 'cord' that indicates the cord end of the handset.)

3. When you see the carrier detect LED turn on; press the VIC 20's Return key a couple of times. The host will respond and you are now communicating!!!

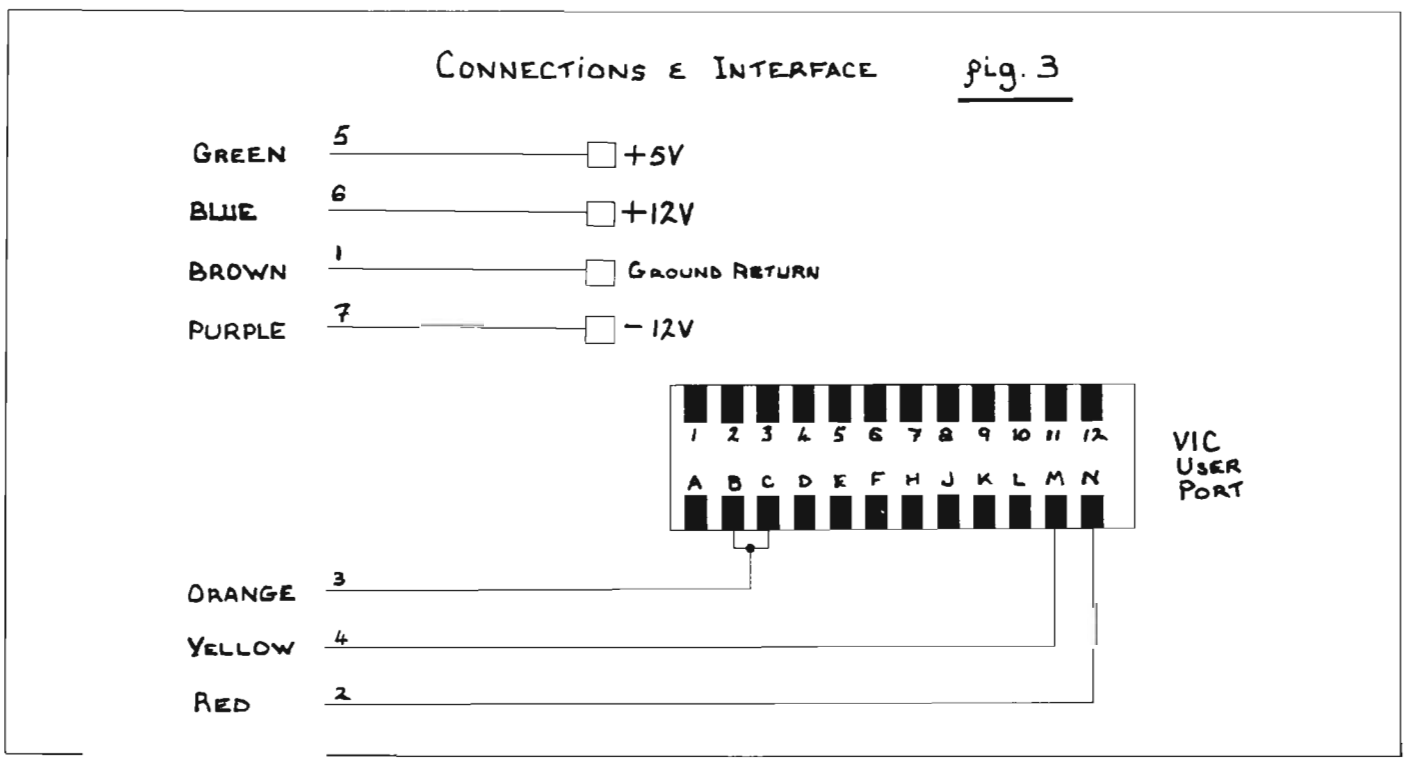
A couple of things about operation.

1. Since this is an acoustic modem, no approval by Ma Bell is required.

2. Those neat one-piece telephones with re-dial facility will NOT fit the coupler. That's a real shame, but that's the way it is! The coupler will only fit the standard Ma Bell 500/2500 telephone set. These telephones use a carbon transmitter, which have a habit, over time, of packing the carbon granules. This reduces the output level, and could cause transmission errors. A sharp knock to the handset will, in most cases, correct this. If you still have problems, you might consider an electret replacement for the carbon transmitter.

I have been using the '$28 Modem' for the last 3 months and all has been well. If you follow these instructions, it should work the first time.

I welcome any comments or questions. Best regards and good luck to all. *TPUG*



G-PASCAL For The 64

Steven Darnold
Alexandra, New Zealand

The Commodore 64 is very popular in New Zealand and Australia, and the demand for software is high. Most programs are imported directly from Britain or America, or are copied locally under license. However, recently, several high quality programs have been produced down under. G-PASCAL is one such program.

G-PASCAL is a Pascal editor/compiler with an extensive set of special commands for the Commodore 64's graphics, sound, clock and joystick. It is produced by Gambit Games in Australia.

One of the big advantages of the Commodore 64 is its ability to turn off the resident BASIC and replace it with another language. This is exactly what G-PASCAL does. Load the program from disk or tape and your 8K BASIC interpreter is replaced by a 16K Pascal compiler.

G-PASCAL has several advantages over BASIC. It is faster, it makes the use of graphics and sound much easier, and it is highly structured. G-PASCAL will be of particular interest to people writing games programs and to teachers and students of structured programming.

My first attempt to write a Pascal program resulted in a flurry of syntax errors. Pascal expects things to be done in a certain way, and experienced BASIC programmers in particular will find it a bit uncomfortable. For example, you can't just drop an X into your program when you need it. First, up at the top of the program, you have to declare X as a variable. Such idiosyncrasies gave rise to many errors in my programs and I had to do a lot of corrections. Unfortunately, the G-PASCAL editor is not quite as good as the usual Commodore editor. You have to go into a special edit mode before you can alter a line. This is a nuisance at first, but it is still relatively easy to edit programs.

Once a G-PASCAL program is completed, it needs to be compiled into P-code. For short programs this is practically instantaneous — you can press C (for compile) and R (for run) in one motion. For longer programs the compiler takes about one second for every 100 lines. Normally G-PASCAL has enough room to keep both the source program and its P-code in memory at the same time. Thus, if there is a run-time error, you can quickly call up the source program, correct the mistake and recompile. For extra long programs, G-PASCAL can save the source program to tape or disk and use all of its memory for the P-code.

The commands make it relatively easy to create spectacular graphics. Special commands are used to select various modes and colours, and particular attention is given to designing and moving sprites. For example, the MOVESPRITE command makes a sprite move at a specified speed for a specified distance. Once the command is given the sprite moves automatically from then on. The sprite can also be animated by instructing it to sequence through a series of sprite definitions. Up to 16 different definitions can be used and the sequencing is automatic.

G-PASCAL's sprite capabilities are by far the best I have encountered. The other types of graphics, however, are not so well catered for. The bit-map has only a simple PLOT command, and no special support is given for programmable characters. Nevertheless, the use of logical commands instead of obscure PEEKs and POKEs facilitates the use of all types of graphics.

G-PASCAL also takes the PEEKs and POKEs out of music making. There are sound commands for all SID registers and there is a delay function calibrated in 1/100ths of a second.

The special features go on and on. Clearly, G-PASCAL is much more than just an ordinary Pascal compiler. However, in some respects it is also much less. G-PASCAL does not implement all the specifications of standard Pascal.

It faithfully uses the structure of standard Pascal, but it is limited in the types of data it can handle. Standard Pascal uses five data types: integer, character, Boolean, real, and user-defined. G-PASCAL uses only the first two.

The Boolean type is no problem. G-PASCAL includes all the Boolean operators, and a Boolean datum will work as normal if it is converted to a character datum.

The real data type is more of a problem. G-PASCAL uses (3-byte) integer arithmetic only. This limits values to the whole numbers between -8388608 and +8388607. Numbers outside this range and fractions will require special procedures. Moreover, none of the standard functions for reals are available in G-PASCAL. This includes such things as sine and square root.

The user-defined data type is also a problem. This is a popular feature of standard Pascal, and many programs use it. Anyone trying to type in standard Pascal programs under G-PASCAL will have some converting to do. The G-PASCAL manual gives instructions for such conversions.

In total, G-PASCAL is an attractive product. It combines most of the features of Pascal with a powerful graphics/sound package. G-PASCAL will be of interest to three types of people: those who want something faster than BASIC without the heartache of machine language, those who want a language that fully supports the graphics and sound capabilities of the C-64, and those who want to write structured programs that are well organized and easy to read.

G-PASCAL has only recently arrived in New Zealand from Australia, and I don't know whether it is being distributed in America. If your local dealer hasn't heard of it, write direct to Gambit Games, P.O. Box 124, Ivanhoe, Victoria 3079, Australia. *TPUG*

SUPERPET'S SUPER SOFTWARE

Brad Bjorndahl
Bramalea, Ontario

There is general agreement among computer users, even hardware hackers, that a machine's usefulness depends on its software. However, the great number of operating systems, word processors, languages (and their dialects), databases and so on indicates that everyone has his/her own opinion of what is useful and what is not. The people who have provided the interpreters and operating system for the SuperPET have implemented their own opinions, policies and philosophies in their 'microSystems' series. The results are interesting from a historical point of view and give the owner of a SuperPET a sound and thorough range of software utilities and languages.

The University of Waterloo (Waterloo, Ontario) is the origin of the concepts that have been used. Waterloo has specialized in the computing area for many years. Many students in the 1960's and 70's endured their first (and usually last) data processing course with Waterloo's famous WATFOR (for Waterloo Fortran) and WATFIV (for Waterloo Fortran IV). Bad puns go way back.

Waterloo products have tended toward educational software, such as WATBOL (Waterloo COBOL), Waterloo Pascal and BASIC, and many other student-oriented utilities for editing, job submission, etc. WATNEWS is a publication of the Computer Systems Group (CSG) at the university which describes its products. Judging by it, the single most important product of CSG has been the Waterloo Systems Language, a general purpose programming language. WSL was used to write the high-level language interpreters for the SuperPET, and equivalent interpreters for the IBM PC, the DEC VAX and the IBM 370. According to the literature, a high-level program written on any of the four machines will run on any of the others, allowing for the obvious hardware limitations. This portability, as it is called, is a good example of one of the inherent biases of Waterloo software. This is not a criticism. Program design is an exercise in compromises and for educational purposes portability is desired. I wonder though, what, if anything, was sacrificed for portability. Anyway, portability is certainly good and is something which was always intended but never quite achieved in most high-level languages. The portability is complemented by the communications features which are included such as the RS232 interface. Thus one can write a program on a SuperPET, transmit it (and data) to an IBM 370 and then execute it there.

Before continuing, any further references to high-level languages must exclude APL since it is unique and so different.

Since the interpreters were designed by the same group and produced with the same utility (WSL), they all have incorporated in them certain similar characteristics. Due to the educational slant of the software, the languages have almost identical structures control statements. That is, they all have the equivalent of FOR-NEXT loops, WHILE-UNTIL loops, LOOP-UNTIL loops, IF-THEN-ELSE control, QUIT and QUITIF statements, and GUESS-ADMIT control. Those who are not familiar with these will, I am sure, find them to be very interesting and useful. Those who are familiar with them will be interested and perhaps surprised to learn that these structures are also available in the Waterloo 6809 Assembler. Specifically, the assembler has IF-ELSE-ENDIF, GUESS-QUIF-ADMIT-ENDGUESS and LOOP-QUIF-UNTIL statements. The conditions used for IF, QUIF, and UNTIL are combinations of flags in the condition control register of the 6809 processor, such as carry clear, zero, flag set, higher, higher or same, etc.

Another manifestation of the educational character of languages is the run-time error detection. Generally, errors are clearly indicated and explained. Being interpreters, variables may be displayed after an error breaks execution. One could always ask for better run-time error messages but those provided are more than adequate.

Actually, the very fact that all the supplied high-level languages are interpretive and, in fact, are not available as compilers, is indicative that they are intended for educational purposes. It is only in an interpreter that a programmer can issue debugging commands in real-time. For example, in microFortran a run-time error or a PAUSE statement or pressing the RUN/STOP key will cause entry to the debugger. The available commands are "c" for continue execution, "q" for quit execution, "e" to execute a valid Fortran statement (usually a print), "w" for where (e.g. which subroutine), and "s" to start single stepping. These are highly desirable tools for an educational environment.

To my mind the operating system (O.S.) also reflects Waterloo's tendencies. As already mentioned, structured concepts have been built into the 6809 assembler. The assembler will also accept conditional assembly directives in order to allow the programmer to include code for alternate run-time conditions. The example provided in the manual shows code for 40 and 80 column screens so that load modules for different machines can be assembled after changing a single character in the source assembly code. Another powerful feature of the assembler is an INCLUDE directive to pull source code in from a separate file. Macros are also supported.

continued on next page

With these features, highly structured and modular assembly code may be produced.

Also available to the assembler programmer is a set of over 60 machine code subroutines. They are particularly useful as they remove much of the overhead required to write an assembly program. Therefore a student learning assembly code can jump into a significant project with a minimum of discouraging mundane work. For example, ISALPHA is a routine to check if the parameter passed to it is alphabetic and, is so, return TRUE, otherwise FALSE. A more powerful example is PRINTF which will format a character string and output it to the screen. The formatting involves scanning the output string for special substrings and replacing these substrings with others. Decimal and hexadecimal numbers or other characters and strings and be easily inserted into the output string. Many other I/O routines are available for opening and closing files and so on. One especially interesting routine is TABLELOO which looks up a sequence of characters in a table and returns the position in the table. The sequence is compared to table entries with a clever masking feature using upper and lower case characters. The masking allows the programmer to specify how many leading characters are necessary to find a match. Thus, for example, if the word "enTRY" is in the table, at least the two characters "en" are needed to cause a match. The word "entRY" would require three characters "ent" and so on.

The discussion so far has been an effort to support the idea that SuperPET software has been influenced, unwittingly or not, to a great extent by Waterloo's inclination toward education. In the process I believe I have said many good things about their product which implies that I agree with their approach. In fact I cannot decide whether or not their approach was the best possible. An outsider who had watched the design and development would be the fairest critic and could say if something should have been included that was not. For example, perhaps the languages would run faster without structured code features but Waterloo was not interested in execution speed. In any case, these are only observations; judgment is left to the reader. *TPUG*

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C-64 MEETING
- February 1984

Ian Wright
Toronto, Ont.

The February C-64 meeting was held at its new location in the "Cafetorium" of York Mills Collegiate. Somehow I expected organ music and flowers – not masses of TPUG members.

At 7:43, Louise Redgers brought the overflowing crowd under control and introduced Chris Bennett who gave a slide show and talk on the Consumer Electronics Show. Chris also fielded a number of questions from the floor, during which we found out that over 50% of the audience were new owners of C-64s. Doris Bradley made a series of announcements about upcoming club events and other information of general interest.

Jim Butterfield presented the latest version of the Ontario Tax Program but explained that the taxation department had decided to change the home heating credit since the program was designed. A programming update should be available before you read this. If you have any complaints, there is a money-back guarantee for the cost of the tax program.

According to Jim the <RETURN> key on Commodore machines is a "do it" key because if you press <RETURN> the computer reads the screen and tries to execute what is there. If this screen message is not correct, the result is the famous ". . . SYNTAX ERROR" or the C-64's way of asking ". . . say what?". Jim suggests that there is also a "don't do it" key available on the keyboard. This is accessed by pressing the <SHIFT> & <RETURN> keys. This can help you in many ways – to escape the ubiquitous "quotes mode trap", to make corrections without replacing the program in memory – anytime that you don't want the screen material to be acted upon. Jim gave an example by writing a welcoming message of three lines and pressing <SHIFT><RETURN> between each line.

The Bradley brothers (not Bob and Doug!) gave a short look at some of the programs on the February disk (C)T6. By the end of their presentation snow was starting to fall quite heavily and many people decided to head for home early.

After break, Jim Butterfield returned to show a much smaller audience how to use string manipulation for graphics.

To clear the screen and print down 5 rows and over 8 columns the word "hello":

```
PRINT"■■■■■■■■■■■■■■■■HELLO"
```

– This is a "string" and can be represented by H$.

If a string can include cursor commands, we can use it to draw any graphic as a string. Jim drew a car:

```
C$=".■/──\■■■■■■■■■■■■■■■■
```

The topic was changed to this year's TPUG Conference. If you are planning to take advantage of the reduced registration fee, do it now. They are also looking for people to help out at the conference, or loan them any equipment for the weekend. If you would like to help out please call the TPUG office at (416) 782-8900 or 782-9252.

We were all introduced to our new Sysop, Tom Shevlin. Since Tom has taken over the TPUG BBS a few things have changed. First of all, the phone number has been changed to (416) 429-6044, and the BBS is now in operation 24 hours a day, 7 days a week. The TPUG executive has decided to disable the download section of the BBS. This was done to allow better access to the BBS by the out-of-town users. The upload section of the BBS is still in operation, so once you get on the BBS you can upload your submissions to the magazine or the TPUG library. Also, you can now do any business with the TPUG office through the BBS.

Mike Donegan showed us a few programs from this month's PET disk. On his list was DISKSPEEDTESTB.Z. This is an updated version from last month to run on all drives including 1540/1541 disk drives. When using this program you should header or format a new disk on the drive that you are testing for the best results.

Jim Butterfield came up to the front to show us his latest copy program, UNICOPY4.P This is the one copy program that does it all. It will copy program and sequential files with a single drive from disk to disk, or disk to tape. It is written in machine language and has a buffer size of about 115 blocks. A few of the features are pattern matching, multiple copy output and interrogation of the disk directory. However, this program will not copy RELative or USR files. There is also a version of this same program for the Commodore 64. This is just the program many of us have been looking for. A job well done, Jim.

Jim has updated the program COPYALL64 to copy relative records correctly. The new program will be in the C-64 library soon, and will be called COPYALL.64.

Mike Donegan showed us his disk catalogue control system. It should be in the library soon. It will run on a dual disk drive system, and keep track of your disk library. It looks like a very good system, and we will be looking forward to its release into the club library.

Chris Bennett wrote a screen and input handling program a few years ago. It's had a few changes made to it and is now called UTILITY4.1.P. Look for this new release to be in the PET library next month. It is a good program to edit the keys that the user can use in your program. It is written in machine language and would make a good subroutine in any program when the user has to input data into your program or see formatted data on the screen.

The meeting was jam-packed full of information. You should have been there. See you at the Central meeting next month.

COMMUNICATIONS MEETING
- March 1984

Ian A. Wright
Toronto, Ontario

Over thirty people showed up for the third communications meeting at the York Central Library on the evening of March 7th. The meeting was billed as a beginners introduction to telecommunications, but some of the questions were well advanced – talking of PETSCII to ASCII, parity, and baud rates. Once underway, however, the newcomers had a grand tour of what telecommunicating is all about.

A short pause while Craig fetched the necessary phone connector was filled with some questions and an advertisement. The York Central Library has available some computer software and some VIC 20 computers. The varied software is available for seven different computer systems and can be borrowed just like A/V material. The VIC 20s come with Datasette and joystick and these packages are available for $7.50/week (there is a waiting list). The spokesman for the library suggested that if you have unused programs at home, the library would appreciate any donations and they are tax-deductible.

The "meat" of this session, however, involved the Bradley brothers signing on to various BBS systems as new users, while explaining each step of the process in detail. We logged on to PSI-Wordpro, which is the grand-daddy of the "Punter-system" boards, RTC, and the BBBBS. We tried to reach the TPUG-BBS, but it was moving to a new location (429-6044 – 24 hrs). However, through the assistance of Ms. Delong, one of our members, we logged onto the VAX at the Ontario Institute for Studies in Education to show how telecommunications can even help you do your homework!

The meeting was over before the start-up time of some of the non-Punter boards, but by careful reading of those Boards' instructions, new users should be OK. I emphasize here that all new users should hand-dial onto a new BBS, and should follow any instructions (like reading the opening bulletins) religiously. Most beginners' problems come from not responding correctly to a prompt – the solution is to read the instructions carefully. *TPUG*

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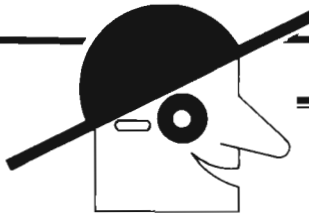

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STAR TREK V1

Dave Neale
Toronto, Ont.

Welcome to Star Fleet Academy. For those of you who have attempted to play the version of Star Trek V1 on the February (C)T6 disk and have been left somewhat baffled by it, then hopefully this will help you graduate to true Captain status.

The original game of Star Trek is almost as old as the series it's based on. Who first created and developed it has been lost in the annals of time. This version for the C-64 is based on that original copy.

Before we begin, please read the Star Trek Instructions found on the disk.

The objective of the game is to prevent the Klingon Empire from staging a successful invasion of the United Federation Territory. You are given a certain Stardate time limit to complete this task. As the game begins the Enterprise will be put into any one of 81 quadrants. It's your job to scan each of these quadrants by guiding the Enterprise through the galaxy, locating and destroying the hidden Klingons.

The Enterprise is equipped with several devices or functions to aid in completing its task. A list of these can be displayed by inputting an invalid command; e.g. hitting the space bar. To activate a particular device, type the number associated with it. Some devices will require further inputs for proper operation. In order, they are:

(1) **Set Course:** This will ask for the direction to move the Enterprise. If for example you wish to move up and to the right then the course is 2.0 or just a 2. Note that decimal values may or may not be used; any integer or real numbers between 1.0 and 8.99 is correct.

After the course is in, the next data is the Warp Factor (WF). This is really a distance question. A quadrant is 1 WF long and 1 WF high. To position the Enterprise in the next quadrant in exactly its location in the present quadrant, a WF of 1.0 would be used. The maximum WF is 8.0, which will move the Enterprise across the Galactic Sector.

(4) **Phasers:** The amount of power to be fired by the phasers has to be input. Remember that the phasers are like a beam of light that fades out the farther it has to travel. So not all of the power used will get to the Klingon. Also, if there are more than one Klingons, then the power is divided equally to each Klingon. This device cannot be actuated without a Klingon present in the quadrant. The amount of power available is the total power not applied to the shields at that time.

(5) **Photon Torpedo:** This will ask for a course for the torpedo to be fired. Its setup is exactly like Set Course described above. Just experimenting with this can help you to understand how it works.

(6) **Shield Control:** This device raises or lowers shield power depending on the value input by you. Without shields the Enterprise will be destroyed on the first hit by a Klingon or Spacemine. When you call on this device, you will be told the total energy the Enterprise has and you must decide how much to apply to the shields. More on this later.

(8) **Library Computer:** With the Enterprise comes a bank of very technical computers (C-64's), all tied into the library computer. The Targeting and Docking Computers are two examples. There is a separate menu of the operations of this device which can be seen by first calling on the computer and then hitting any invalid command.

The other devices not mentioned require no inputting and are straightforward. These include (2) Short Range Scan (SRS), (3) Long Range Scan (LRS), (7) Damage Control and (9) Tractor Beam.

The best way to learn how all these devices act and interact with each other is to start a game and watch what happens as you play. Lets run through a game together and hopefully you'll pick up several tips.

Assuming the game is going and the Enterprise is showing on the SRS, a few operations are required to get under way. First we'll raise the Shields to a value that will protect us. I recommend about 2000 units or 66% of your total power. Once that is done, we can survive several hits by Klingons. Every game is different, but we'll assume we've started in a quadrant with no Klingons in it.

To find the Klingons, we will have to use the LRS. But first let's look at the Library Computer (type 8, then 1). As you can see, only one quadrant is uncovered, this is our present position (Note: for the definition of what each number means, see the Star Trek Instructions). To open up more of the galaxy we would call on the LRS (type 3). The box in the top left corner shows what is in the nearest quadrants on every side of us. Hopefully they will reveal a Klingon or two. Now we'll go back and call up the Library Computer again. This time a change will be made: more of the galaxy has been uncovered and we're in a good position to start our maneuvering.

Because this is new to you, we'll pick out a quadrant that has a single Klingon in it. It's time to move the Enterprise. Before we do, we'll check to see if anything is in our path (stars, starbase, or spacemines – especially spacemines). For simplicity, we call up the SRS, type 1 for Set Course and input the appropriate direction. Next we input the WF, usually 1.0. (actually it's best to try for the centre of the quadrant because the farther the Klingon is away from you the harder he is to destroy). When that's inputted correctly a warning horn will sound the alarm. If our shields are less than 200 units, then we'll get 4 blasts of the horn; otherwise, 2 blasts will sound.

When the SRS is printed, we can decide which weapon to use. I recommend using photon torpedos whenever possible because they take very little power to launch. Power is our only protection againt a short and dismal career. If

continued on next page

need be, the correct direction can be obtained by asking the library computer (type 8, then 2). We input the direction and fire away.

If everything is going our way we have just destroyed our first Klingon. However, it's not always that easy. If he survived, he will have fired at us and we may have suffered some damage. The amount of damage depends on our present shield strength: low damage if shields are high, and vice versa.

There really isn't much else that you need to know about how to destroy the Klingons, except if one happens to be in a Nebula. The instructions on the disk explain what a Nebula is and how to deal with it. Just remember that you can't see the Klingon until you're parked next to him, and that takes a bit of moving around. Because of this, it's best to leave the Nebula till you know that the last Klingons must be hiding there.

Let's backtrack a little and say we didn't get the Klingon and he did cause some damage to the Enterprise. We can see a graphical display of how badly we were hit by calling up Damage Control (type 7).

Each Device can have a positive (green), negative (red), or zero (yellow) status, negative being unserviceable. The game always starts out with a zero status on all devices and depending on what happens, it will go positive or negative. The more we move around the smaller the negative status bars get. Also when you move, you may encounter random damage to any device.

When we start getting low on power or torpedoes then it's time to find a Starbase to refuel and resupply. If one is showing on the library computer then we'll go to that quadrant and maneuver the Enterprise alongside the Starbase (next to it in any direction will do). If the library computer is unserviceable, the screen will clear and we'll have to grab a joystick for a manual docking. Use control port 2.

The Enterprise must be flown into the small docking bay on the base. Be careful not to touch the base for any longer then 2 seconds or we'll be destroyed. The fire button stops the movement. When the "DOCKED" flag appears we'll return to a normal SRS (if SRS is operational). You can practice this again by calling the SRS once more.

While we're docked, the Starbase Technicians can fix all of the unserviceable devices if we select Damage Control. This however will cost us some stardates so the Captain must use his/her judgement.

Another feature that makes this version stand out is the ability of the Klingons to move from quadrant to quadrant as the Enterprise does the same. Klingons guarding a Starbase, in a Nebula, or one quadrant in any direction from the Enterprise cannot move. Of course the Klingons still hidden won't move out in the open either. This can cause a disastrous situation if the Enterprise had low power and moved on two Klingons while a third jumped into the same quadrant. This is where experience pays off.

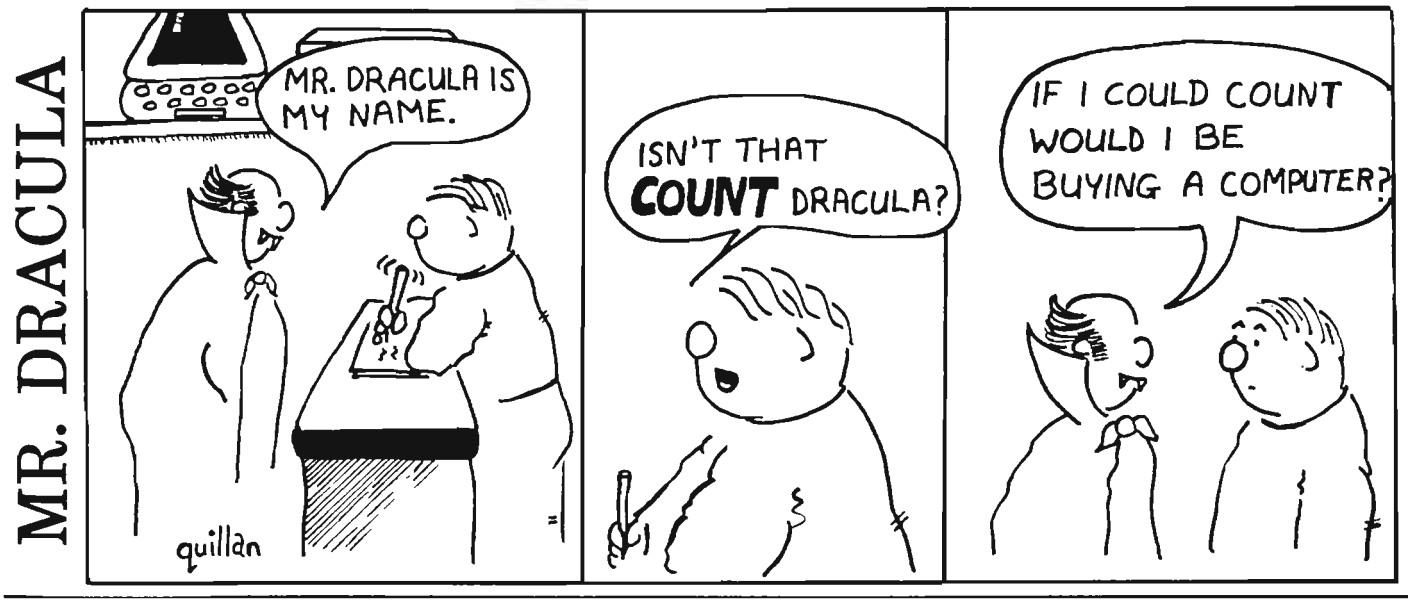
The Enterprise is equipped with a Tractor Beam for pulling near-dead Klingon battle cruisers alongside. This can be activated by typing "9", however the beam can only lock onto one Klingon at a time and only pull him in if his power levels are low. Of course the Klingon Captain may not want to be tractored so he might enable the self destruct sequence. Also be careful not to tractor him into a spacemine. This feature will later be used to take prisoners for interrogation.

There is a series of new functions and ideas in the working stage, some of which will be active by the time this is printed. These will include amongst others:

(1) Skill Levels
(2) Diplomatic ships, Spy ships etc.
(3) Klingons can fire first if you are slow
(4) Smooth screen scrolling
(5) Tactical sensors
(6) Transport (for beaming on other ships)

The rest of the information can be picked up as you go along and I'm sure you will learn from your mistakes as does everyone who plays. However if this still doesn't answer all your questions, feel free to send me your comments or ideas to the address at the start of the game.

Good luck, Captain! *TPUG*



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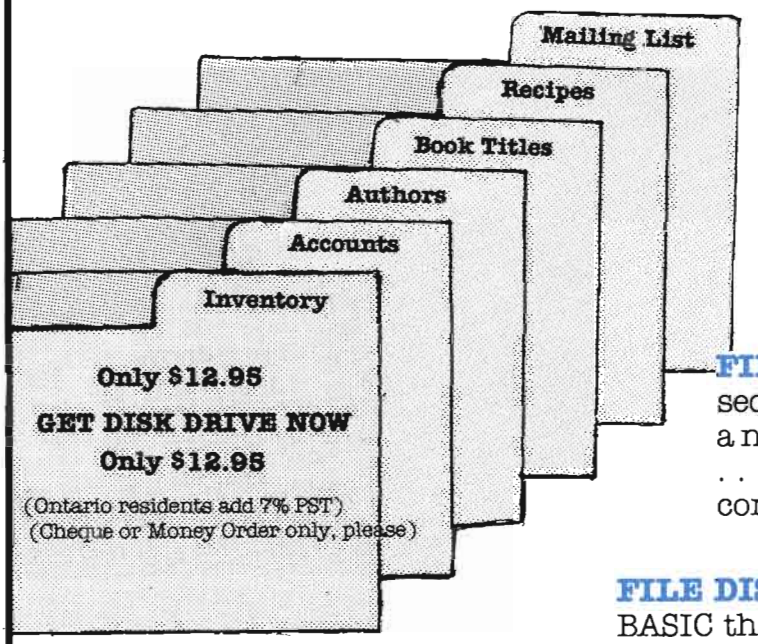

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New Additions to the TPUG Library

(Access to library available to TPUG members only)

NOTE: Each List-Me File includes the following notation:
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The **LIBRARY** to which a disk/tape belongs is indicated by the library code in brackets. This code appears as the first character in the three-character identification code:

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

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

(V)F1 — FRANCAIS 1
(1 disk/tape)

LIST-MOI(V)F1.L	Description brève du logiciel (V)F1.
FR.VICAB1,8K.V	Programme éducatif pour les enfants.
FR.VICAB2 8K.V	Programme éducatif pour les enfants.
FR.VICAB3 8K.V	Programme éducatif pour les enfants.
FR.VICAB4 8K.V	Programme éducatif pour les enfants.
FR.VICAB5 8K.V	Programme éducatif pour les enfants.
FR.RHINO.V	Evitez les Rhinoceros et rentrez à la maison.
FR.DEFLECTION.V	Envoyez la balle vers le triangle le plus rapidement possible.
FR.FRACTIONS	Vic vous pose des problèmes de fractions.
FR.EXMULT.V	Problèmes de multiplications.
FR.TACH.V	Programme de lecture rapide.
FR.DEV.LE #.V	Devinez le nombre de 1 à 501.
FR.SIMPL.V	Il s'agit de reduire chaque fraction à sa plus simple expression.
FR. ORTHOGRAPHE.V	Problèmes d'orthographe.
FR.BAL.FAR.V	Pouvez-vous amener le ballon à destination?
FR.GRAND PRIX.V	Course automobile contre des obstacles.
FR.DIVISION.V	Problèmes de divisions.
FR.LE SERPENT.V	Vous avez un temps limité pour accumuler des points.
FR.MATH-MIN.V	C'est la course mathématique contre la montre.
FR.EXDIV.V	Problèmes de divisions.
FR.USS ENTER.V	Voyage de l'espace.
FR.SQUIGGLE.V	Demonstration couleurs-formes.
FR.NOTONE.V	Jeu de dés contre le VIC, (très difficile!)
FR.VOYAGEUR.V	Voyagez dans l'espace sans frapper roches et debris.
FR.AU VOLEUR.V	Le but du jeu est d'accumuler le plus d'argent sans mourir.

(V)T7 — MARCH 84
(1 disk/tape)

LIST-ME(V)T7.L	LIST this file for description of programs on (V)T7.
83 TAX ONT 8K.V	Takes you step by step through your 1983 Tax Form.
TURTLE BOOT DISK	LOAD and RUN this program for Turtle Graphics on disk.
TURTLE BOOT TAPE	LOAD and RUN this program for Turtle Graphics on tape.
TURTLE PROTO.V	This is the main part of the Turtle Graphics. The full documentation for these programs can be found on the TPUG B.B.S. To load demos below type LOAD, you will be asked for a file name, then a device number. (Device number is 1 for tape, 8 for disk.)
TL]TT.V	Demo for Turtle Graphics program above.
TL]STAR.V	Demo for Turtle Graphics program above.
LIGHT CYCLES.V	A two player keyboard game with machine language and hi-res graphics. Avoid the other player and the wall.
WORD MATCH.V	One or two players. Use your memory to remember where the words are.
16K-3K.V	This program converts the 16K VIC to 3K memory.
LOST BOOT.V	LOAD and RUN this to load the "LOST CRAFT".
THE LOST CRAFT	Hi-res joystick and keyboard sound game.
DEMONS.V	Attack oncoming demons using the keyboard. Use the SHIFT, T and U keys.
COLORBOT.V	LOAD and RUN this; then LOAD and RUN "COLORBOT MAIN.V".
COLORBOT MAIN.V	A robot zapum type game.
GOTCHA.V	Grab the money and run before you get eaten.
CIRCUS.V	LOAD and RUN this; then LOAD and RUN "CIRCUS MAIN.V".
CIRCUS MAIN.V	A game with sound and graphics. Pop the balloons. Similar to the arcade version.
VIC PIANO.V	Use your VIC as a piano. Has graphics and sound.
SHUFFLE.V	Dutch translation. Move pieces to get right pattern.
SPEED MATH2.V	Test your math skills; but be quick. Primary level.
SUBHUNT8K.V	Kill subs with depth charges before they kill you.
ET MATH1-5.V	These are a series of math drills testing different math skills at a primary school level.
SLITHER TAPE.BT.	LOAD and RUN this program to load "SLITHER 4" on tape.
SLITHER 4	Use the joystick to move your snake and eat hearts.
SLITHER DSK BT.V	LOAD and RUN this, then LOAD and RUN "SLITHER 4" on disk.
NIGHTMARE PK8K.V	Get through the park with your life. This game uses all your skills, (memory, math etc.).

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

Please send me the following:

3 Letter/No. Code	Description	4040 or 8050 Format	Price
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TAPES

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

To order **PET/CBM** or **Commodore Educational Softwware** tapes, check first in the library listing. Each entry indicates the number of tapes required directly below the title of the listing. Send $6.00 per tape required (i.e. either **$6.00** for 1 tape, or **$12.00** for 2 tapes).

These tapes are for use with a _____ computer and a datasette.

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

3 Letter/No. Code	Description	1 or 2 tapes	Price
		Total	.00

Tom Shevlin, Sysop
Toronto, Ont.

As the new Sysop, let me welcome you to the somewhat new TPUG BBS. The TPUG Board of Directors recently decided to make the BBS a much more integral part of the club operations. Since this coincided with the decision of Tony Prijately from Electronics 2001, your faithful Sysop for several years, to let someone else have some of the fun, I was asked to take over the duties, and gladly accepted.

First, the good news. The club has acquired a dedicated telephone line for the BBS, so it is now a 24-hour service. It is intended that the main purpose of the BBS will be to address the needs of TPUG members, so a variety of new services will be available. Business with the club office, including comments, membership fees, and disc/tape orders can be done by addressing private messages to 'TPUG OFFICE', and including a Visa number where appropriate (and membership number, of course).

Letters to the editor of *TPUG Magazine*, and article submissions can be made by sending messages to 'TPUG MAGAZINE' and uploading WordPro files. Submissions to the TPUG Library are especially encouraged, via the upload section. In the past, contributors sent in a disk with their program, which was returned with a library disk of their choice copied on it. Now programs submitted via the BBS, if accepted into the library, will earn the contributor the disk of his choice without having to send his own disk in. Programs should be original, especially not typed in from Compute! or Compute Gazette, who get touchy about that, and accompanied by a message to Sysop explaining that they are library submissions, and giving your choice of TPUG disk if accepted.

I have noticed that the number of messages requesting help with Commodore BASIC and machine language has gone down greatly, and I think this might reflect natural inhibitions against appearing 'dumb' amongst experts. I am therefore encouraging all 'dumb' questions to be directed to 'QUESTION BOX', and I will forward them anonymously to ALL, in hopes that the world-reknowned Toronto Commodore community will have a prompt answer for you. It will help me greatly if you do not sign such messages at the end.

There is another bit of news that might not be so pleasant. As this BBS will continue to be able to serve only one user at a time, the club Executive has decided to end the user download feature, as the time required to use it greatly cuts down on the number of possible users. When this BBS first went up, there were almost no others, but similar download features can now be found locally on the PSI, CFTR, RTC, NORTEC and other BBSs. One especially fine service is offered for a small fee of $10 per year by the Bradley Brothers BBS (BBBBS, at 416-487-5833), who have a major portion of the TPUG library, including virtually all the C-64 disks, available for download on their 7.5 megabyte hard disc storage. As a partial compensation, I will attempt to give listings of all the latest TPUG discs, including some before their release at meetings.

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COMMODORE 64 FUN & GAMES
by Jeffries, Fisher and Sawyer $15.95
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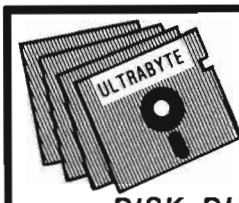

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DEALER INQUIRIES INVITED

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

ABBREVIATIONS USED IN THIS LIST-ME
BL – Block Length
PL – Program Length
FT – File Type
CL – Classification

(C)T7

LIST-ME (C)T7.L

Load as follows: LOAD "LIST-ME (C)T7.L",8
FT: PRG, CL: LIST-ME

This file contains one-line documentation of the programs on (C)T7.

C-64 BOOK SORT.C

Load as follows: LOAD "C-64 BOOK SORT.C",8
BL: 37, FT: PRG, CL: BUSINESS

Keep track of all your books. Detailed instructions are included in the program.

REL-SEQ CONV.Z

Load as follows: LOAD "REL-SEQ CONV.Z",8
BL: 10, FT: PRG, CL: UTILITY

This utility program will convert RELative files to SEQuential files or SEQuential files to RELative files.

BETTER FILE.Z

Load as follows: LOAD "BETTER FILE.Z",8
BL: 44, FT: PRG, CL: BUSINESS

BETTER FILE will allow you to enter data and then manipulate it in various ways. For example, you can save and retrieve information from disk, sort your information on any of the eight fields, print out your information and more...

SPIKE BOOT.C

Load as follows: LOAD "SPIKE BOOT.C",8
BL: 1, FT: PRG, CL: GAME

This program LOADs "SPIKE.D" into your Commdore 64 and RUNs it.

SPIKE.D

Do **NOT** *attempt to LOAD this program.*

BL: 18, FT: PRG, CL: DATA

Guide your man around the grid in search of a prize. As your sonar gets shorter, you are getting closer to the prize. Once you think you have found the prize, surround the square that you think it is in and you will move on and get a bonus for the squares you have left untouched. Beware of the spikes! They travel around the grid at random and will kill you if you run into them.

Use joystick port #2 to control your man. Good luck...

THIRSTY NELLAN.C

Load as follows: LOAD "THIRSTY NELLAN.C",8
BL: 56, FT: PRG, CL: GAME

This is an adventure game in which you must find Nellan the cat some cool milk to drink. This game, as with most adventure games, requires you to input 2 words when you want to move or pick something up.

For example, if you wanted to TAKE a MAP, you enter 'TAKE MAP'. As long as there is a map there, and nothing obstructs you from getting it (such as an angry cat) you will be allowed to TAKE the MAP. Once you have the MAP, it is possible to *CONSULT* the *MAP*.

If you want to see what you are carrying, type 'INVENTORY'. If you want to move, type 'GO' followed by the direction ('N'orth, 'S'outh, 'E'ast, or 'W'est) that you want to go. If you get into trouble, ask for 'HELP'. Good luck...

PETMAN.C

Load as follows: LOAD "PETMAN.C",8
BL: 22, FT: PRG, CL:(GAME

In this game you must eat the little dots in the maze as fast as you can. There are four guards on duty and their job is to stop you from eating the little dots. If one catches you, you die a slow, painful death.

You can turn the tables on the guards by eating an energizer (*). Then, for ten seconds the guards are weakened and you can eat them. You get a big bonus for every guard you eat.

Use joystick port #2 to control your man.

SWERVE.C

Load as follows: LOAD "SWERVE.C",8
BL: 18, FT: PRG, CL: GAME

The object of this game is to maneuver your car around the track without colliding with the computer-controlled car. You get ten points for running over an addition sign and twenty-two points for running over a diamond. When you clear the track, you start over, but it gets harder.
Use either joystick port or-if you don't have a joystick- f5 moves you up, f7 moves you down, cursor down moves you left, and cursor right moves you right. Good luck...

ATLANTIS ADVN.C

Load as follows: LOAD "ATLANTIS ADVN.C",8
BL: 53, FT: PRG, CL: GAME

This is an adventure game in which you have just found the lost City of Atlantis at the bottom of the Tasman Sea. Your mission is to explore the ruins and bring back any valubles you find.

This game is like most other adventure games. If you want to give commands you must use 2 words. For example if you wanted to GET a COMB, you enter 'GET COMB'. As long as there is a COMB there, and nothing obstructs you from getting it (such as an angry octopus) you will be allowed to GET the COMB.

If you want to see what you are carrying, type INVENTORY. If you want to move, type GO followed by the direction ('N'orth, 'S'outh, 'E'ast, or 'W'est) that you want to go. If you want to see your rating, type 'SCORE'. If you get into trouble, ask for 'HELP'. Good luck...

WESTWARD HO!.C

Load as follows: LOAD "WESTWARD HO!.C",8
BL: 28, FT: PRG, CL: GAME

Gold has been discovered in the west! You have decided to go to find your fortune. After selling off what you could, you have raised $700. You must spend between $200 and $300 for a team of oxen. Naturally the more you pay, the better oxen you get.

Now it is time to buy other supplies such as food, ammunition, clothing, and other supplies. You should keep a bit of money to buy things along the way. Anything can, and usually does, go wrong.

Periodically you will be asked if you want to hunt. If you say YES, you will be given three shots at a buffalo. What you have to do is estimate which screen line the beast is on and enter that number. Your shot will be fired. If you miss, the buffalo moves and you get to try again.

I would tell you more but I always seemed to get killed very early on in the game. Good luck...

OTHELLO.C

Load as follows: LOAD "OTHELLO.C",8
BL: 23, FT: PRG, CL: GAME

Othello is played on an 8 * 8 grid with rows 1 to 8 and columns A to H. The object of the game is to capture as many of your opponent's pieces as possible. To capture pieces, place your piece so that a horizontal, vertical, or diagonal line of your opponents pieces is contained by yours.

continued overleaf

You can play against another person or your Commodore 64. Have fun...

SCRAMBLE.C

Load as follows: LOAD "SCRAMBLE.C",8
BL: 8, FT: PRG, CL: GAME

In this game you must avoid and shoot all of the scrambling obstacles. If you hit any of the scramblers or the ground you will die.

To move up use f1. SHIFT fires. Good luck...

HANG MATH.C

Load as follows: LOAD "HANG MATH.C",8
BL: 12, FT: PRG, CL: EDUCATIONAL GAME

Solve the multiplication problems by guessing the digits that go where the asterisks are. You get eleven chances before you get your neck stretched. Good luck...

CASTLE ADVN.C

Load as follows: LOAD "CASTLE ADVN.C",8
BL: 52, FT: PRG, CL: GAME

This is an adventure game in which your mission is to explore your surroundings and collect any valuables you find.

This game is like most other adventure games. If you want to give commands you must use 2 words. For example if you wanted to GET a LANCE, you enter 'GET LANCE'. As long as there is a LANCE there, and nothing obstructs you from getting it (such as a black knight) you will be allowed to GET the LANCE.

If you want to see what you are carrying, type 'INVENTORY'. If you want to move, type 'GO' followed by the direction ('N'orth, 'S'outh, 'E'ast, or 'W'est) that you want to go. If you want to see your rating, type 'SCORE'. If you get into trouble, ask for 'HELP'. Good luck...

SNOOPY.C

Load as follows: LOAD "SNOOPY.C",8
BL: 19, FT: PRG, CL: EDUCATIONAL GAME

You are a World War I flying ace out to get the Red Baron. To hit him, enter the positive or negative distance between you and the Red Baron. If you enter it correctly your shot will hit him. If not, he will hit you.

If you hit the Red Baron five times, he will crash and you will win. However, if he hits your Sopwith Camel five times, you will crash and your mission will be a failure. Good luck, sir...

LEMONADE STAND.C

Load as follows: LOAD "LEMONADE STAND.C",8
BL: 21, FT: PRG, CL: EDUCATIONAL GAME

You've decided to run a lemonade stand for ten Saturdays this summer in order to make some money. But you soon find that running a stand costs money. Your job is to make as much profit as you can.

Your loving family agrees to lend you $10 in order to get you started. But remember that at the end of the summer you will have to repay the loan.

Factors to keep in mind: A lower price will sell more, but you will make less per cup. On hot days, you will sell more and be able to charge more. Good luck...

MUSIC LESSON.C

Load as follows: LOAD "MUSIC LESSON.C",8
BL: 43, FT: PRG, CL: EDUCATION

Andy the Android will teach you the lines and spaces in music. I would say more but Andy is very good at his job so I won't want to get the union upset. Have fun...

MUSIC LESSON.C

Load as follows: LOAD "MUSIC LESSON.C",8
BL: 43, FT: PRG, CL: EDUCATION

Andy the Android will teach you the lines and spaces in music. I would say more but Andy is very good at his job so I won't want to get the union upset. Have fun...

TICTACARITH.C

Load as follows: LOAD "TICTACARITH.C",8
BL: 26, FT: PRG, CL: EDUCATIONAL GAME

The object of the game is to get three boxes in a row (horizontally, vertically, or diagonally). You win a box by solving the problem in the box. If you solve it incorrectly, then your opponent gets a chance to win that box.

The math in this game should be suited to grade 2 or 3 students. Good luck...

FUNCT MACHINE.C

Load as follows: LOAD "FUNCT MACHINE.C",8
BL: 26, FT: PRG, CL: EDUCATION

You have just discovered a strange machine. It takes numbers, chews them up, and spits them out. The numbers that come out are very different from the numbers that go in. But the machine is not random. Your mission is to figure out the rule so that you can predict what the machine will do.

You win when you make 3 correct predictions in a row. Then the machine will start again with a different rule. Good luck...

SPEED READ.C

Load as follows: LOAD "SPEED READ.C",8
BL: 9, FT: PRG, CL: EDUCATION

This program tests your reading speed and comprehension. Although some of the sentences are a bit strange, the object is to recognise them in the shortest possible time. Good luck...

LIFE EXPECTAN.C

Load as follows: LOAD "LIFE EXPECTAN.C",8
BL: 18, FT: PRG, CL: MISC

After you answer some questions about yourself, your Commodore 64 will predict how many years you will live. Some of the questions are personal so be sure you alone with your computer when you do this test.

THE VALLEY.C

Load as follows: LOAD "THE VALLEY.C",8
BL: 57, FT: PRG, CL: GAME

Find treasure and battle monsters in the valley. As your character gains experience, he becomes stronger and more capable.

Similiar to Dungeons and Dragons. Use joystick port #2 to move. Beware...

(C)T8

AUTO BOOT.C

LOAD as follows: LOAD "AUTO BOOT.C",8
BL: 8, FT: PRG, CL: UTILITY

This program will show you the directory of a disk and then LOAD and RUN any program from that disk by entering the letter that corresponds to the program name.

DISK TIMER.Z

LOAD as follows: LOAD "DISK TIMER.Z",8
BL: 4, FT: PRG, CL: UTILITY

This program will check to see if your disk drive is operating at the right speed.

SQUEEZER.Z

LOAD as follows: LOAD "SQUEEZER.Z",8
BL: 23, FT: PRG, CL: UTILITY

This program takes BASIC programs and 'squeezes' them by removing all REMarks and spaces. Then it packs the lines together and writes the new program back to disk. A handy program to have.

ATOM HANDBALL.C

LOAD as follows: LOAD "ATOM HANDBALL.C",8
BL: 15, FT: PRG, CL: GAME

A very good game similiar in theme to BREAKOUT. Control your paddle with a joystick plugged into control port #2. Press the FIRE button to serve. Good luck...

continued on next page

PENT INST.C

LOAD as follows: LOAD "PENT INST.C",8
BL: 6, FT: PRG, CL: INSTRUCTIONS

This program will give you instructions on how to play PENTOMINOS.C.

PENTOMINOS.C

LOAD as follows: LOAD "PENTOMINOS.C",8
BL: 6, FT: PRG, CL: GAME

This program will help you when you are playing PENTOMINOS.

SPIRAL.C

LOAD as follows: LOAD "SPIRAL.C",8
BL: 4, FT: PRG, CL: DEMO

This little demo will create a spiral pattern. You can change it by playing with the keyboard. Give the function keys a try. Enjoy...

LINCOLNSHIRE.C

LOAD as follows: LOAD "LINCOLNSHIRE.C",8
BL: 9, FT: PRG, CL: MUSIC SOUND

More music from Jim Butterfield.

RANDOM MUSIC.C

LOAD as follows: LOAD "RANDOM MUSIC.C",8
BL: 9, FT: PRG, CL: MUSIC SOUND

This program will output rather pleasant random music and print the notes and their duration on your monitor.

KALEIDOSCOPE.C

LOAD as follows: LOAD "KALEIDOSCOPE.C",8
BL: 4, FT: PRG, CL: DEMO

Generates a symmetrical pattern in colour on your monitor.

64 MEM CHART.C

LOAD as follows: LOAD "64 MEM CHART.C",8
BL: 10, FT: PRG, CL: MISC

This little program will graphically show you what is where inside your Commodore 64.

LIFE 2.C

LOAD as follows: LOAD "LIFE 2.C",8
BL: 13, FT: PRG, CL: MISC

This program will simulate life in a community of cells. Be sure and read the instructions within the program or you will get lost.

ETCH A SKETCH.C

LOAD as follows: LOAD "ETCH A SKETCH.C",8
BL: 5, FT: PRG, CL: MISC

Draw pictures in high resolution on your Commodore 64. W moves you UP and to the LEFT, E moves you UP, R moves you UP and to the RIGHT, S moves you LEFT, D moves you RIGHT, Z moves you DOWN and to the LEFT, X moves you DOWN, and C moves you DOWN and to the RIGHT. Have fun...

TRON.C

LOAD as follows: LOAD "TRON.C",8
BL: 5, FT: PRG, CL: GAME

This is a two player game in which you try to colour more dots than your opponent. Player 1 should use a joystick plugged into control port #1 and player 2 should use a joystick plugged into control port #2. Good luck...

DEFLECTION 2.C

LOAD as follows: LOAD "DEFLECTION 2.C",8
BL: 9, FT: PRG, CL: GAME

Your objective is to deflect the ball into the trap. Use the M and N to deflect the ball. Be swift, you only have 30 seconds! Good luck...

3 OF A KIND.C

LOAD as follows: LOAD "3 OF A KIND.C",8
BL: 12, FT: PRG, CL: GAME

In this program your Commodore 64 will give you a list of 9 words, from which you and your 64 pick alternately.

The object is to get three words which contain the same letter. For example, if you get mast, skip, and slow you would win since each word has an 's' in it. Good luck...

BIG TIME.C

LOAD as follows: LOAD "BIG TIME.C",8
BL: 9, FT: PRG, CL: MISC

After you input what time it is, your 64 will display the time in big characters.

HIRES PATTERN.C

LOAD as follows: LOAD "HIRES PATTERN.C",8
BL: 2, FT: PRG, CL: DEMO

This program will plot a pattern on the hires screen of your Commodore 64.

SMOOTH SCROLL.C

LOAD as follows: LOAD "SMOOTH SCROLL C",8
BL: 2, FT: PRG, CL: DEMO

This program will show you an example of smooth scrolling.

SMOOTH SCROLL2.C

LOAD as follows: LOAD "SMOOTH SCROLL 2.C",8
BL: 2, FT: PRG, CL: DEMO

This program will show you an example of smooth scrolling.

M/L MUSIC.C

LOAD as follows: LOAD "M L MUSIC.C",8
BL: 2, FT: PRG, CL: MUSIC SOUND

This program will play either The Entertainer or Bach's Invention #8.

PLAY.D

Do **NOT** *attempt to LOAD this file.*
BL: 5, FT: PRG, CL: DATA FILE

This file contains DATA that is LOADed and used by M/L MUSIC.C.

ENTER.D

Do **NOT** *attempt to LOAD this file.*
BL: 12, FT: PRG, CL: DATA FILE

This file contains DATA that can be LOADed and used by M/L MUSIC.C.

INVEN8.D

Do **NOT** *attempt to LOAD this file.*
BL: 8, FT: PRG, CL: DATA FILE

This file contains DATA that can be LOADed and used by M/L MUSIC.C.

SHEET MUSIC.C

LOAD as follows: LOAD "SHEET MUSIC.C",8
BL: 2, FT: PRG, CL: MUSIC SOUND

This program plays 2 songs and displays the notes on your monitor along with the music.

SHEET DATA.D

Do **NOT** *attempt to LOAD this file.*
BL: 15, FT: PRG, CL: DATA FILE

This program contains data LOADed and used by SHEET MUSIC.C.

LOTTERY NUMS.C

LOAD as follows: LOAD "LOTTERY NUMS.C",8
BL: 5, FT: PRG, CL: MISC

This program generates a series of random numbers which may be used to get a random number for a lottery ticket. It is presently set up to pick numbers for Lotto 6/49 but it can be easily customized by editing lines 100 – 120.

TYPE SETTER.C

LOAD as follows: LOAD "TYPE SETTER.C",8
BL: 11, FT: PRG, CL: UTILITY

If you have a Gemini or an Epson printer you can change the style of type it prints from a menu. If you want to modify this program to work on other printers edit the CHR$ codes according to your printer manual.

continued overleaf

DISKETTE MOD.C

LOAD as follows: LOAD "DISKETTE MOD. C",8
BL: 11, FT: PRG, CL: UTILITY

This program is to be used to patch up smashed sectors on diskettes by reconstructing each byte manually. If you do not know what you are doing or if you are not careful you can ruin your diskette.

BARRICADE.C

LOAD as follows: LOAD "BARRICADE.C",8
BL: 7, FT: PRG, CL: GAME

You have five balls. You must stop them from moving by blocking them. Use any key to create a block right behind the ball and try and trap it. Good luck...

MASTERMIND.C

LOAD as follows: LOAD "MASTERMIND.C",8
BL: 13, FT: PRG, CL: GAME

The object of this game is to guess the colours the 64 has chosen and the six positions in which they go. There are 6 colours to choose from. Red, cyan, purple, green, blue, and yellow. You have ten guesses. Good luck...

MASTERWORD.C

LOAD as follows: LOAD "MASTERWORD. C",8
BL: 12, FT: PRG, CL: EDUCATIONAL GAME

In this program you must try to guess the mystery 5 letter word. You must guess ONLY real 5 letter words. You will be told the number of letters in your guess that are in the secret word. HINT: The trick is to vary slightly from one guess to the next. Have fun...

SHUFFLE.C

LOAD as follows: LOAD "SHUFFLE.C",8
BL: 9, FT: PRG, CL: GAME

In this game you must try and re-arrange the numbers on the grid so they are in 'proper' order. You can move a number from its position to another only if the next space is empty. Good luck...

SLITHER.C

LOAD as follows: LOAD "SLITHER.C",8
BL: 15, FT: PRG, CL: GAME

In this game you must guide your snake around and get the hearts. If you hit the walls, the blocks, or yourself you die. Control your snake with a joystick plugged into control port #2.

SLITHER 4.C

LOAD as follows: LOAD "SLITHER 4.C",8
BL: 15, FT: PRG, CL: GAME

Use your joystick to guide your snakes through the garden looking for treats. But don't touch the poison mushrooms, the garden walls, or your snake's body or you will die. Be sure and plug your joystick into control port #1.

SLITHER DUEL.C

LOAD as follows: LOAD "SLITHER DUEL. C",8
BL: 15, FT: PRG, CL: GAME

The object of this game is not run into any occupied space or wall. The player that does so first loses. You can play alone, play with a friend, or you can let the computer play itself. Good luck...

NAMES UTILITY.C

LOAD as follows: LOAD "NAMES UTILITY. C",8
BL: 8, FT: PRG, CL: EDUCATION

This program allows initial creation of a names file that is to be used later with GRADEBOOK.C.

HOMEWORK.C

LOAD as follows: LOAD "HOMEWORK.C",8
BL: 17, FT: PRG, CL: EDUCATION

A yes/no entry routine used with GRADEBOOK.C. Was a paper submitted?

ATTENDANCE.C

LOAD as follows: LOAD "ATTENDANCE.C",8
BL: 17, FT: PRG, CL: EDUCATION

A yes/no entry routine used with GRADEBOOK.C. Was the student present?

REPORTER.C

LOAD as follows: LOAD "REPORTER.C",8
BL: 11, FT: PRG, CL: EDUCATION

This program reads the data files of the HOMEWORK and ATTENDANCE programs and prepares a summary.

GRADEBOOK.C

LOAD as follows: LOAD "GRADEBOOK.C",8
BL: 28, FT: PRG, CL: EDUCATION

This program will allow you to enter, inspect, list, and calculate the grades and more.

INFO.PM.D

Do **NOT** *attempt to LOAD this file.*
FL: 4912 BYTES, BL: 20, FT: SEQ, CL: PAPERMATE FILE

This is a file that contains information on GRADEBOOK and all of the files and/or programs that go with it. It was created using the word processor 'PAPERMATE'. To access this file you must own 'PAPERMATE.'

NAM.BACKUP.D

Do **NOT** *attempt to LOAD this file.*
FL: 745 BYTES, BL: 3, FT: SEQ, CL: DATA FILE

This is a backup of the NAMES file used by NAMES UTILITY.C.

HWK.BACKUP.D

Do **NOT** *attempt to LOAD this file.*
FL: 511 BYTES, BL: 3, FT: SEQ, CL: DATA FILE

This is a backup of the HOMEWORK file used by HOMEWORK.C.

ATT.BACKUP.D

Do **NOT** *attempt to LOAD this file.*
FL: 628 BYTES, BL: 3, FT: SEQ, CL: DATA FILE

This is a backup of the ATTENDANCE file used by ATTENDANCE.C.

GRD.BACKUP.D

Do **NOT** *attempt to LOAD this file.*
FL: 372 BYTES, BL: 2, FT: SEQ, CL: DATA FILE

This is a backup of the GRADEBOOK file used by GRADEBOOK.C.

NCOURSE.D

Do **NOT** *attempt to LOAD this file.*
FL: 745 BYTES, BL: 3, FT: SEQ, CL: DATA FILE

A typical names file.

HCOURSE.D

Do **NOT** *attempt to LOAD this file.*
FL: 511 BYTES, BL: 3, FT: SEQ, CL: DATA FILE

A typical homework file.

ACOURSE.D

Do **NOT** *attempt to LOAD this file.*
FL: 628 BYTES, BL: 3, FT: SEQ, CL: DATA FILE

A typical attendance file.

GCOURSE.D

Do **NOT** *attempt to LOAD this file.*
FL: 372 BYTES, BL: 2, FT: SEQ, CL: DATA FILE

A typical gradebook file.

64-PET INST.C

LOAD as follows: LOAD "64-PET INST.C",8
BL: 2, FT: PRG, CL: UTILITY

This program will tell you how you can LOAD programs SAVEd on your Commodore 64 into a PET with BASIC 4.0.

1525 COMMANDS.C

LOAD as follows: LOAD "1525 COMMANDS. C",8
BL: 6, FT: PRG, CL: UTILITY

continued on next page

This program will PRINT a list of CHR$ codes that you can use to take full advantage of your 1525 printer.

LIST-ME LOTT.L

LOAD as follows: LOAD "LIST-ME LOTT.L",8
BL: 3, FT: PRG, CL: LIST-ME

This file contains an explanation of what LOTTERY.L is supposed to do.

LOTTERY.C

LOAD as follows: LOAD "LOTTERY.C",8
BL: 8, FT: PRG, CL: MISC

See how good your chances of winning the big prize really are.

LIST-ME 6/49.L
LOAD as follows: LOAD "LIST-ME 6 49.L",8
BL: 2, FT: PRG, CL: LIST-ME

This file contains instructions for LOTTO 6/49.C.

LOTTO 6/49.C

LOAD as follows: LOAD "LOTTO 6 49.C",8
BL: 2, FT: PRG, CL: MISC

This program will pick Lotto 6/49 numbers for you. Good luck...

MUL MASTER.C

LOAD as follows: LOAD "MUL MASTER.C",8
BL: 10, FT: PRG, CL: EDUCATION

This program will test your skill in the multiplication tables up to 12 * 12. It is a multiple choice quiz. Select your choice by pressing the appropriate function key.

You will have 30 seconds to get as many correct answers as you can. Your score for each correct answer will depend on the degree of difficulty. Good luck...

PROGRAM INFO.C

LOAD as follows: LOAD "PROGRAM INFO. C",8
BL: 6, FT: PRG, CL: UTILITY

This program will display the start and finish address of a program and how many bytes long it is.

CHANGE TITLE.C

LOAD as follows: LOAD "CHANGE TITLE. C",8
BL: 6, FT: PRG, CL: UTILITY

This program will change the name of your disk without re-formatting the disk.

TITLE PAGE.C

LOAD as follows: LOAD "TITLE PAGE.C",8
BL: 9, FT: PRG, CL: BUSINESS HOME APPLICATIONS

Print a title page for a report or an assignment.

HEX DEC BIN.C

LOAD as follows: LOAD "HEX DEC BIN.C",8
BL: 11, FT: PRG, CL: UTILITY

This program will convert Hexadecimal to Decimal, Decimal to Hexadecimal, Hexadecimal to Binary, Binary to Hexadecimal, Decimal to Binary or Binary to Decimal.

DISK PRINTER.C

LOAD as follows: LOAD "DISK PRINTER.C",8
BL: 7, FT: PRG, CL: UTILITY

This program will PRINT the directories of your disks.

SPELL.C

LOAD as follows: LOAD "SPELL.C",8
BL: 16, FT: PRG, CL: EDUCATION

This program can be used to test a student's ability to decipher clues to find the correct word and his/her ability to spell the word.

An example clue might be: You're sitting in front of one now. Rhymes with 'looter'. The answer would be 'COMPUTER'.

A sample file is provided so you'll have a better idea of how to make your own. Good luck...

SPELL1.1/15.D
LOAD this file from within **SPELL.C** *by answering* 1 *when asked for the* **MONTH** *and* 15 *when asked for the* **DAY**.
FL: 181, BL: 1, FT: SEQ, CL: DATA FILE

This file contains sample information that you can use as a guide in making your own DATA files to go with SPELL.C.

TYPE TUTOR.C

LOAD as follows: LOAD "TYPE TUTOR.C",8
BL: 18, FT: PRG, CL: EDUCATION

Practice your keyboard manipulation skills. There are 16 levels. Level 1 covers only a few keys while level 16 tests you on the entire keyboard.

BREAK OUT 1.C

LOAD as follows: LOAD "BREAK OUT 1.C",8
BL: 14, FT: PRG, CL: GAME

A game similiar in theme to BREAKOUT. Control your paddle with a joystick plugged into control port #2. Good luck...

BREAK OUT 2.C

LOAD as follows: LOAD "BREAK OUT 2.C",8
BL: 14, FT: PRG, CL: GAME

A game similiar in theme to BREAKOUT. To move your paddle left press '1', to move it right press '3', and to stop it press '2'. Good luck...

COIL DESIGN.Z
LOAD as follows: LOAD "COIL DESIGN.Z",8
BL: 22, FT: PRG, CL: UTILITY

This program is to be used to design single layer solenoids on standard resistor forms or on a form having a diameter of your choosing.

You decide the size of the coil form, the inductive reactance, and the wire size. The computer will do the rest!

LARACTERS DEMO.C

LOAD as follows: LOAD "LARACTERS DEMO.C",8
BL: 14, FT: PRG, CL: MISC

See all of the characters in your Commodore 64 displayed expanded on your monitor.

UNICOPY INST.Z

LOAD as follows: LOAD "UNICOPY INST.Z",8
BL: 9, FT: PRG, CL: UTILITY

This program will tell you how to use UNICOPY.C. Be sure and read the information in this file before you attempt to use it. Good luck...

UNICOPY.C

LOAD as follows: LOAD "UNICOPY.C",8
BL: 8, FT: PRG, CL: UTILITY

This program will copy any selection of PROGRAM or SEQUENTIAL files from one diskette to either another diskette or to a tape. *TPUG*

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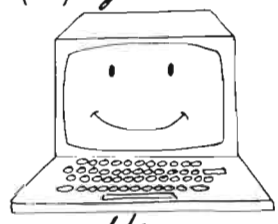

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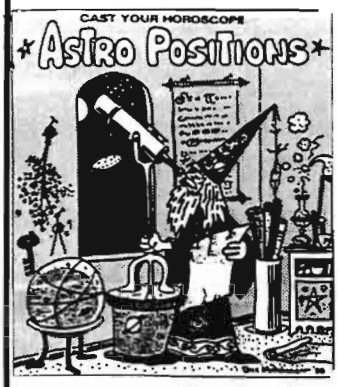

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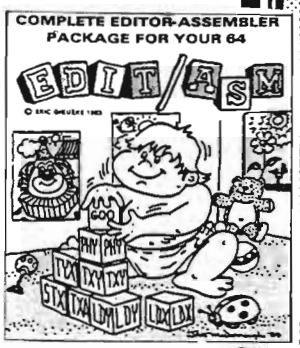

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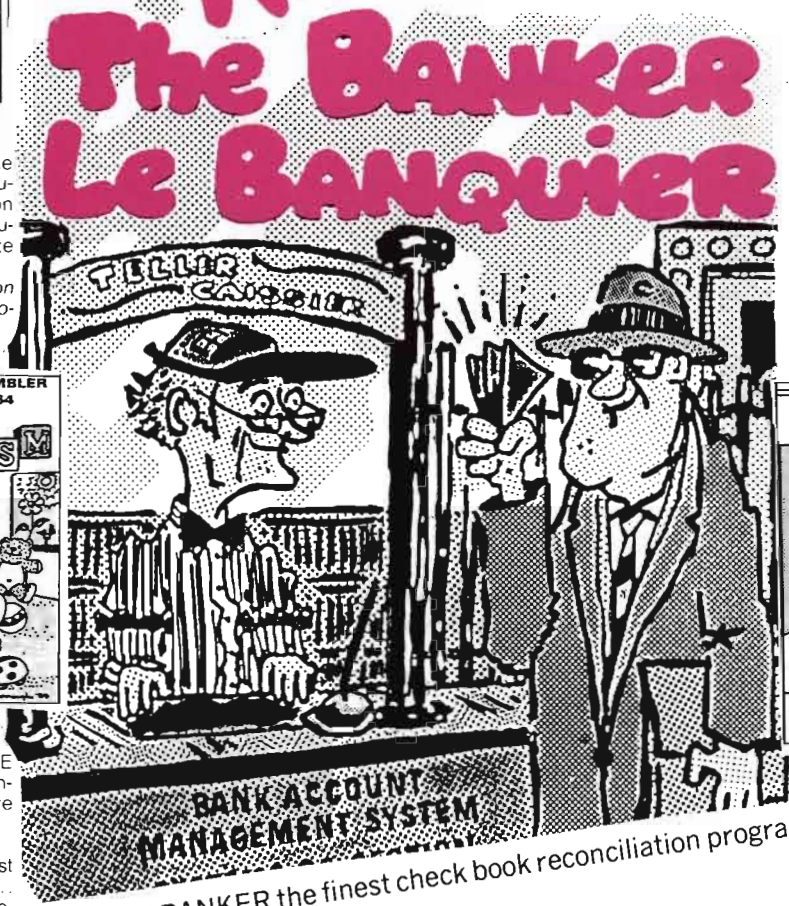

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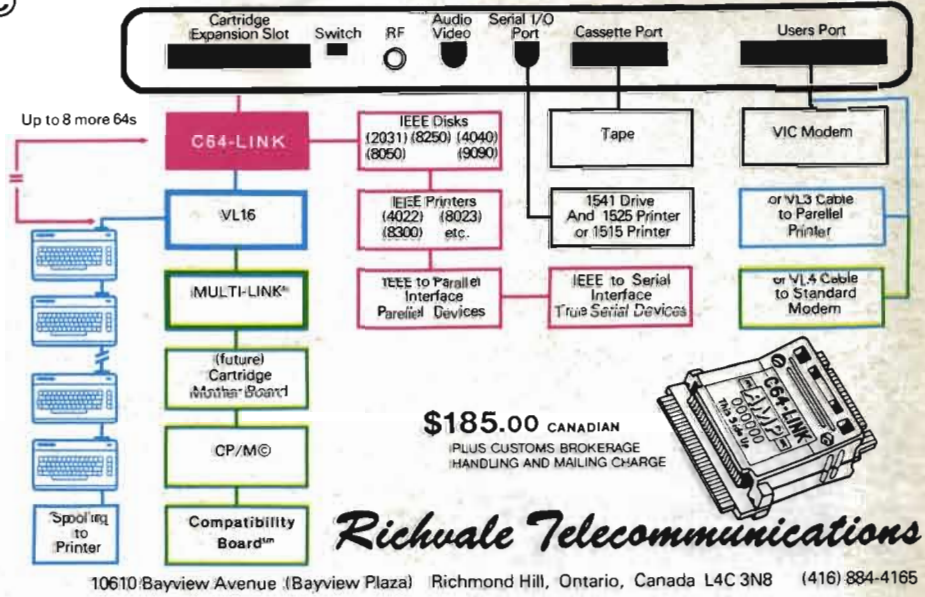

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