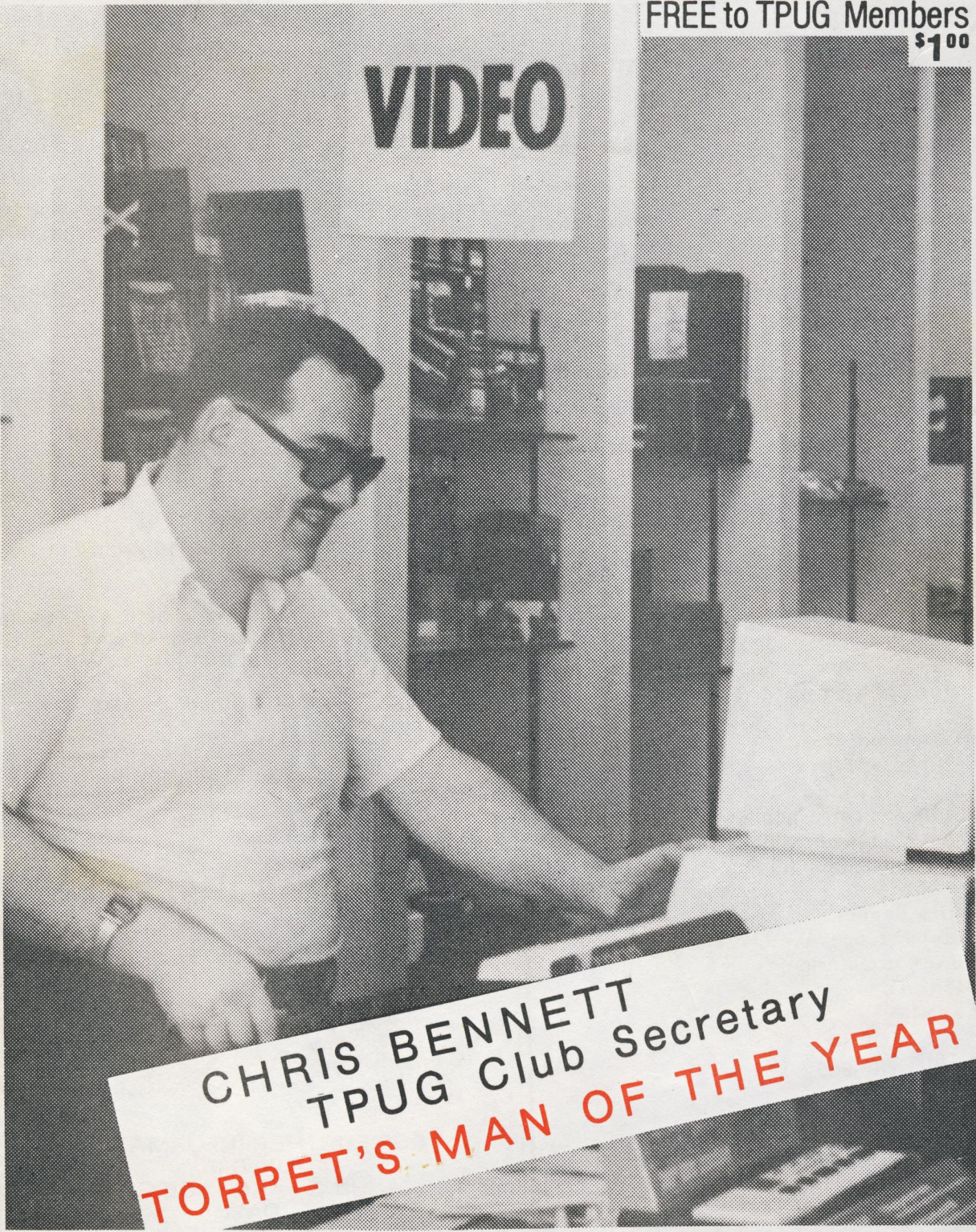


# THE TORPET

BULLETIN OF THE TORONTO PET USERS GROUP

ISSUE NO.8 JAN. 1982



FREE to TPUG Members  
\$1<sup>00</sup>

CHRIS BENNETT  
TPUG Club Secretary  
TORPET'S MAN OF THE YEAR

the TORPET  
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## CALENDAR

### WESTSIDE CHANGE

The following dates have been set up for the West End meetings:

Thursday Jan 28 1982  
Thursday Feb 25 1982  
Wednesday Mar 24 1982

Since Sheridan College is very heavily booked, we have had to take whatever times were available. Please note that two of these meetings take place on a thursday.

### REGULAR CENTRAL CHAPTER

The meeting dates for the Central Group are the second Wednesday of each month and are as follows:

Jan 13, Feb 10, March 10, April 14 and May 12 1982.

The Central Meeting is held at Leaside High School, 200 Hanna Road just east of the Bayview & Eglinton intersection. The West End Meeting is held at Sheridan College on Trafalgar Road, 2 miles north of the Q.E.W.

Both meetings start at 7:30 pm

### MACHINE LANGUAGE GROUP

The M L group meetings this year are taking place under the guidance of Jim Carswell. Jim Butterfield has agreed once again to attend.

Place - George Brown College  
Casa Loma Campas  
(Same as last year.)

FOR FURTHER INFORMATION  
ON THE  
MACHINE LANGUAGE GROUP  
CALL  
JIM CARSWELL  
(416) 531-9909

# Secretary's Report by Chris Bennett

## Membership Report

The membership in the club has now passed the 700 mark. I expect that this will reach 1000 by the end of May. Since we have grown very quickly, certain changes have been made.

We now pay a part time person to come in and update the mail list each week, print and laminate the membership cards, answer the mail and send out disks ordered through the mail. This now takes approximately 9 to 12 hours each week and was getting too large a job for me to handle on top of my other duties

One other change which I intend to implement soon is the flagging of each member with the date that he or she joined. This means that membership renewals will be spread over the entire year instead of trying to renew 1000 or more people at the same time. In the future, the mail labels will probably change to show this new coding scheme and I will publish the meaning of the codes. At the moment, the only thing showing on your mail label is your membership number.

## NEW FEES

Since the price of mailing the newsletter has gone up a great deal, we have set the following price structure for Associate members outside Canada.

U.S. Associate Member \$15.00 in U.S. Funds  
International \$20.00 in U.S. Funds  
Dealer Member (Canada) \$20.00 in Canadian Funds  
Dealer Member (all else) \$20.00 in U.S. Funds

The fees in Canada are still for the time being \$10 for Student and Associate members and \$20 for adult members who attend meetings.

## BULLETIN BOARD

The Toronto Pet Users Group has set up a bulletin board at Electronics 2001 in Toronto. We have also purchased a telephone answering machine. When the bulletin board is not in operation (Mon-Fri during office hours), there will be messages on the machine giving up-to-date information about meeting times, special events and anything else of interest. The phone number is as follows:

(416)223-2625

The BBS systems is the one written by Steve Punter and should be identical in operation to his.

Chris Bennett  
-----

## MORE ON FAT FORTY

By: Dieter Demmer

Since the last article on this subject there have been some new developments for the conversion. The firmware changes exhibited some minor bugs which only showed up (like all soft/firmware bugs) after extensive use. One was the unsolicited resetting to lower case after column 76 was reached and others too complex to describe here. Well there is a 'revision' to the firmware which is much easier to implement.

Instead of using a rom-switch for the two operating systems, a single 2532 type rom is used. The lower (0000-07FF hex) half is occupied by the 80 column system and the upper (0800-0FFF hex) houses the old Fat 40 system with a minor change. To swap systems only address 11 is changed from a permanent low (80 col) to a permanent high (40 col) via a 2k resistor to VCC.

The changes required to implement a real CBM 8032 with a graphix keyboard (an ideal combination - by the way) with window programming and all the good stuff are very simple. Take an original 8032 (-3) rom and change the keyboard coordinate table at E6D1 (4F words) to reflect the graphics keyboard. As to what to change it to, refer to the numbers in the original Fat 40 rom (-1) at location E73F and copy it to the 8032 table. One

additional change is the shift key processing at address E545. Here is the new code:

```
E543 BMI $E563 (last original line)
E545 LSR $98
E547 BCC $E563
E549 ORA #$80
E54B JMP $E563
E54E NOP
. . .
E563 LDX $9E (first original line)
```

Now as to the minor change in the Fat 40 rom. It was discovered by the author that the keyboard buffer length location in 03EB was the culprit that stopped most goody games of old from working on the Fat 40. Since there seemed to be no valid reason for this change other than an oversight of Commodore, the old number of ten buffered keys was re-instated. To implement this change simply change location E57C-E57E to E0,0A,EA (CPX #\$0A - NOP) and one less second cassette buffer location is used for 'special' purposes.

We have now an original CBM 8032 901499-03 rom (A11 low) and a Fat 40 901499-01 rom (A11 high) in one chip. The 80 column works exactly like a storebought CBM 8032 and the 40 column works a little better than a Fat 40. The combined product does everything until Basic Rev. 6.0 comes out.

Good luck all you amateurs !  
Dieter Demmer (Pet enthusiast)

## PET WHO?

by Chris Bennett

There is a certain class of people in North America that I feel very sorry for. They are those many people who went out and bought a PET computer.

They only made one mistake. They live either in the U.S.A. or rural areas of Canada.

Most of us in Toronto have been spoiled. We have an active PET club of over 700 members. Jim Butterfield lives here and can always be counted on to give a lively presentation. Many of our members are very knowledgeable about the PET and we have always been able to count on Commodore Canada for support (They lend us the video projector for our meetings).

I have received many letters and phone calls from people in the U.S. The one most common complaint is the complete lack of information about the PET. Even Compute, which used to be completely devoted to the Pet when it started, now contains very few articles about the Pet. It is almost impossible to find any decent articles related to the Pet in Byte, Personal Computing, Kilobaud or Popular Computing. This is one of the things we hope to correct with the TPUG organization and the TORPET. If enough people in the U.S.A. and Canada (outside of Toronto) joined this club, we could be the center of information about the Pet for all of North America. This could then overcome the negative attitude that many people seem to have about Commodore equipment most of which I think is caused by a general lack of information.

You may now be wondering what prompted me to write this article. Pick up a copy of Popular Computing January 1982 and turn to page 22. This is an article on "The Commodore Computers". This is supposed to help people learn about the machine so that they can then decide on which computer to buy. I wish the writer of this article knew a little more about the machine he was talking about. Some of the statements he makes are as follows:

"... the PET can't be upgraded to display the 80 character line ..."

Like heck it can't. See Dieter Demmer's article in the Oct/81 issue of the Torpet (plus one more in this issue). Also EXECOM CORP has been advertising since September in Compute an upgrade from 40 columns to 80.

"... there's no way to generate high-resolution graphics popular today ..."

Try telling this to all the people who own the MTU Hi-Res graphics board which, by the way, has been advertised in Compute for over a year now. In fact, We saw a Demo at Sheridan College over a year ago.

"... little software is available for it ..."

I think 2000 programs in the public domain is not a bad start. Also 4 different word processors, 3 data base packages, 3 completely different accounting packages, etc. What is the point in having 10,000 programs to chose from if 95% of them are crap. Who has the time to evaluate 10,000 programs. I am finding it hard enough to keep track of the 2000 programs we have in our library.

"CBM 8000 with one disk drive - \$2790

..."

Even I was fooled with this statement at first. I assumed this was the single drive that Commodore has just started selling. Not so. This should have read "two-disk system" just as was stated for the TRS-80 on the previous page. Imagine the confusion this would cause the beginner.

"... This capacity doesn't come cheap - the 4040 dual 5 1/4-inch drive lists for \$1295, while the 8050 (which stores twice as much information) cost \$1695 ..."

Sorry fella, bad guess. A 1,000K disk is THREE times the capacity of a 340K disk. Also, unless my math has failed me, for \$400 (in the U.S.) or about 30% more money you can TRIPLE your disk capacity. I always thought this was a good buy. In fact to get 1 Meg of disk on a TRS-80 you would need 6 disk drives. Calculating at the Canadian prices this would be \$4500 against our cost of \$2500 for the 8050. (One minor point - only 4 drives are normally allowed). OK, most people don't buy the 8050. Let's look at the 4040 drive. This costs us \$1655 (does anyone actually pay list price?). The Radio Shack drives are \$1200 for the first plus \$560 for the second. This Totals \$1760 which I think is \$105 MORE in price. Let's try Apple disks. The capacity of each are 170K so we need 2 drives (don't forget the controller and an extra 16K of memory for DOS). My total

comes to just over \$1700. I guess one of us can't add.

In a way, I am being a little hard on the person who wrote this article. But I am fed up with the computer magazines who write about Apple and Radio Shack and ignore the PET. Also when I see articles on the Pet, many of them are ill informed or out of date. For example, one article in a major computer magazine in June 1981, mentioned that Commodore would soon be coming out with a new BASIC that would fix 'garbage collection'. That Basic was version 4 which was released 10 months before the article appeared. Just saving old articles to use on a rainy day, I suppose!

I used to subscribe to 12 different magazines. Now I am just letting them all expire. They just are not worth the money any more. The only magazines worth getting for the PET are as follows:

The Transactor - Commodore Canada  
The PAPER - Ralph Bressler  
Midnight Gazette - Jim Strazma  
Micro the 6502/6806 Journal  
Compute (for the Ads only)  
TORPET (my prejudice showing)

## RADIO SHACK DAISY WHEEL

A review of the  
Radio Shack  
Daisy Wheel Printer II.

By Kim Lowndes

During development of a Legal Accounting program, using the Commodore system, various printers were reviewed. I wanted one that would print about 160 characters wide to accommodate a full width General Journal printout, complete with:

GENERAL           debit/credit/balance  
columns,  
and TRUST       debit/credit/balance  
columns,

as well as a readable client name, file number, description, and date, all on a single line.

At the same time, it was acknowledged that it would be nice if the printer was of letter quality, so that it could be employed at other times when not actually in use by the accountant.

About this time, the Radio Shack printer came to my attention. I made a trip to Radio Shack in Barrie, to observe a demonstration of the printer, and inspect the quality of output. I was impressed with the printer, and at \$2450, it looked like a good deal. As it turned out, it was a bargain, with a number of bonuses.

I knew that RS printers were Centronics compatible, and on that basis I purchased a Bycomm PET to CENTRONICS interface, with Floppy Disk connection. It worked perfectly. 'All' control codes are useable directly from the PET. For example, PRINT CHR\$(27)CHR\$(10) will print a full reverse line feed - even though Radio Shack's own computer can only send line feeds via Machine Language programs. PRINT CHR\$(15) turns on underlining. PRINT CHR\$(08) backspaces one character width.

I use Wordpro III (WP3(FEB 5)) on a 40 column screen and was very interested in Larry Isaacs' article in Compute 4 called Enhancing Commodore's Wordpro III. Though Machine Language programming

is Greek to me, I was able to follow the article and set up PET's number keys 0 to 9 so that a shifted/up arrow/number combination would print a special character from the courier printwheel, when used with Wordpro. This allowed printing single character fractions, French letters, Greek letters, trade mark symbols and etc., all of which are available on the Courier wheel supplied with the R.S. printer. I then went one step further and added 3 lines to the Wordpro program that will allow you to 'set' any number/decimal value for any character before running Wordpro. In this manner, you are able to designate and print any of the 124 characters that are on the printwheel. The only caution with this is that you must always use the same setup when printing as was used to write.

If anyone is interested in this, you may call me at (416 729-2480 after 6:00pm ) or write (Loretto, Ontario L0G 1L0 S.A.S.E. please) and I will be happy to discuss the method used....or it can be found in COMPUTE 4.

Mind you, there are some surprises which are usually generated by being somewhat unfamiliar with the machine. It is something of a shock to have the printer busily chattering away grinding out listings or letters and suddenly stop. The first time this happened, I thought I had bumped the connection at the back of the PET. Nope. Maybe I hit the 'On line/Off line' switch. Nope. Maybe the machine has crashed. Ackk! The only way to find out is to turn it off/on. Load everything up. Still nothing. I couldn't even get it to print a 'test'. Aha!.....the ribbon. Change it. Good as new.

I have subsequently discovered that when the printer stops because of the ribbon running out, you can lift the lid, change the ribbon, and when you close the lid, the printer carries on 'exactly' where it left off - no loss of characters - no line feeds in the middle of a word - and your off for another 270,000 or so characters of printing.

It is correct to assume that I am enthusiastic about this printer. It has proved to be much more versatile than the use for which it was originally purchased, and at a very reasonable cost. It also seems to be more compatible with a PET than it does with the Radio Shack computer. Noise level is about the same as a very busy electric typewriter.

If you have any thoughts of purchasing this printer, make sure first that a Bycomm type interface is available. ( at about \$200 - try Peter Smith). An AIDA 1600 did not work, even though Batteries Included gave

it a good try. Maybe they will be able to come up with a compatible interface before too long for this printer.

#### 'SPECIFICATIONS'

Printing speed	43cps
Line feed speed	4'' per sec.
Characters per line	163 at 12cpi, 136 at 10cpi
Impression control	H.M.L.
Printwheel life	40 million characters
Ribbon life	270,000 characters nominal
Size	8.05''x 24.6''x 15.55''

Here are some additional features of the Radio Shack Daisy Wheel Printer II.

- \* Attachable/detachable daisy wheels. Courier 10 font supplied, Prestige Elite and Madeline (proportional spacing) fonts available.

- \* Upper and lower case characters

- \* Switch and software selectable print densities ( 10 or 12 CPI )

- \* Up to 163 characters per line

- \* Automatic ribbon-out sensor stops printer with no loss of information. (see story)

- \* Accepts paper up to 15 wide

- \* Friction feed. ( tractor feed available at extra cost \$350 )

- \* Switch selectable print impression

- \* Handles up to 6 sheets

- \* Reverse tab/line feed possible

- \* Half line feed possible

The printer comes with an excellent manual including a trouble shooting page which will quickly get you through problems such as having the printer stop in mid sentence when it is out of ribbon. (Provided that you read it, of course.)

## TORPET'S MAN OF THE YEAR

Torpet's Man of the Year for 1981 was Chris Bennett. It is impossible to imagine what the TPUG would be today if it were not for Chris's magnificent efforts. May we hope that we will always have his marvelous efforts

# THE BASIC BOX

## Feelin' Good

### By Jim Butterfield

I don't want to sound too much 'gung-ho for our team' .. but if you have PET/CBM/VIC, you should feel good about it. Other computer systems have their good points, too; but your Commodore machine will stack up against any of them on many items.

Let me list some of the things I really like about the line.

1) PET is about the friendliest computer going. It talks about problems in a near-English (?SYNTAX ERROR rather than ?SN) language. It tells you to press PLAY on the cassette unit. It has easy and natural screen editing.

Everything in a program lists - there are no hidden characters. You can do screen activities easily with the 'programmed cursor' character; once you understand the codes, it's all quite readable.

INPUT activities carry through the human interface. You may repeatedly change your mind and correct your input before striking RETURN, and whatever ends up on the screen defines the input you have supplied. So the cursor controls - especially cursor right, left, insert, and delete - can be an active part of your interaction with the machine.

Carrying the INPUT a little further: Since what's on the screen is your input, you can sometimes run a program without having to type the input at all! Case 1: you are checking out a program; the first run you supply the input values for testing. For subsequent runs, if it's all on the screen, you can move the cursor back to the RUN line, press RETURN ... and the answers you previously typed are still there. You can walk through the same INPUT questionnaire with the same inputs just by striking RETURN repeatedly. It's all taken from the screen ... you don't have to type it. Case 2: the program arranges to put things on the screen and then backs up the cursor and asks for INPUT. A suggested answer is already on the screen; if you like

it, press RETURN and it will be accepted as input. If you don't like the 'default' answer typed by the program, just type over.

2) A lot of things are built into the PET/CBM that would cost you extra on other machines. Upper/Lower case is extra (or sometimes unavailable) elsewhere. A clock/timer can be an expensive piece of extra hardware, if you can get it at all .. it comes as standard on every PET/CBM/VIC. The IEEE-488 bus is part of the Commodore design; if you wanted to attach IEEE-interfaced instruments to other units, it's a costly extra.

Some features are specific to particular Commodore products. 80 columns, which is standard on some models of CBM, might be obtainable as a custom modification on other manufacturer's products.

3) The keyboard is quite special on Commodore products. It has '9-key roll-over', which means you can type ahead of the computer by up to 9 characters and still not lose anything. Can you type faster than a computer can take the data? We've all done it. That's why other machines are limited to INPUT statements (the computer must stop and watch the keyboard and do nothing else, where the CBM products allow much easier interface and the marvellous GET statement.

4) Input and Output are very nicely arranged, especially in terms of files. OPEN, CLOSE, INPUT#, GET#, and PRINT# are standard in 'big computer' Basic implementations. These are sustained very nicely in the CBM systems. They are often butchered horribly in other machines.

For those who still use cassette tape, it's nice to know that the CBM is rare in allowing both named program files and true data files to be written to tape. Tape is slow and not totally reliable for vital data - most 'serious' users would opt for disk - but it's nice to have the feature, especially in learning environments.

5) Smart peripherals (disks and printers) give the CBM machines surprising power and effectiveness. You get more disk storage, better information organization, and much less burden on the computer itself. The disk in particular has its own computer and its own memory space, and relieves the main computer of a considerable load.

6) The CBM range of equipment gives you the possibility of transportable programs. You have the same style and the language in all machines ranging from the tiny VIC to the giant SuperPET. While programs can't always be walked from one to the other without some adjustment, the style of the machines is the same. Many manufacturers have a one-size-fits-all philosophy.

7) The 6502 is a great processor chip. It's still one of the fastest around. You might not believe it from hearing the groans of machine language students, but it's also one of the easiest to learn.

8) The accuracy and range of computations on the PET is very good. Some small computers sacrifice accuracy (say, six or seven digits instead of PET's nine or ten) or features (no logarithms or trig functions; sometimes, not even a square root). Not on CBM equipment. Even the tiny VIC has the whole thing.

9) Did I remember to mention that the PET/CBM/VIC has one the greatest community of users in the world? Nobody communicates like we do. It's part of the compatibility thing. Programs get exchanged, users discuss techniques, people dig into hardware .. PET/CBM/VIC users are active and interactive. Perhaps I should also say that PET clubs are astonishing in size and vigour...

Well, that's my list. There could probably be several more items added, like those neat graphic characters.

The point is, don't be intimidated by others who claim to have spent more on their machines or have more bits or megacycles or whatever. Maybe they need whatever special features that has caused them to spend substantially more than you. But feel good about your own machine. It will stack up against the others.

Commodore deserve a twenty-one gun salute for the technical quality of the products they have produced. Now and then, when they spring unexpected design changes on us, we may have ideas about where we'd like to point the guns. All in all, though, it's a great machine. Commodore - and we - can feel proud.

## SPECIAL ON MOSER ASSEMBLER

### by Jim Carswell

Would you like to have a copy of the Moser Assembler? A couple of years ago Carl Moser gave a special opportunity to TPUG. He authorized Bruce Beach to sell copies of the assembler here in Canada. This is the tape oriented system that was later modified for disk by Bill Seiler. The copies were made available to TPUG members on a non-profit basis (but at considerable effort on some of the member's part).

Jim Carswell, co-ordinator of the machine language group, has agreed to co-ordinate the reproduction of copies once again for anyone who may be interested. The cost will be \$40.00 per assembler, of which \$30 will be sent to Carl and the rest will be used to cover the cost of the duplication of the software and manual.

Because of the effort involved, this will probably be the last time this opportunity

is offered. In fact, although there have been many requests in the interim since it was available two years ago, we did not think it would be offered this time. You can thank Jim for being willing to make the effort.

Realising that there are many new members in the club who didn't have a chance to get in on the opportunity last time, Jim is making the offer available to all TPUG members whether they are members of the machine language group or not. A firm deadline has not been set but you should contact Jim at least by March 1st. He will want all the orders in so that he can do the copying and collating at one time.

The programs will all be distributed at one time and then, as before, Bruce will send one check to Carl along with a list of the new authorized users. Jim's phone number is (416) 531-9909.



# COPY TREE

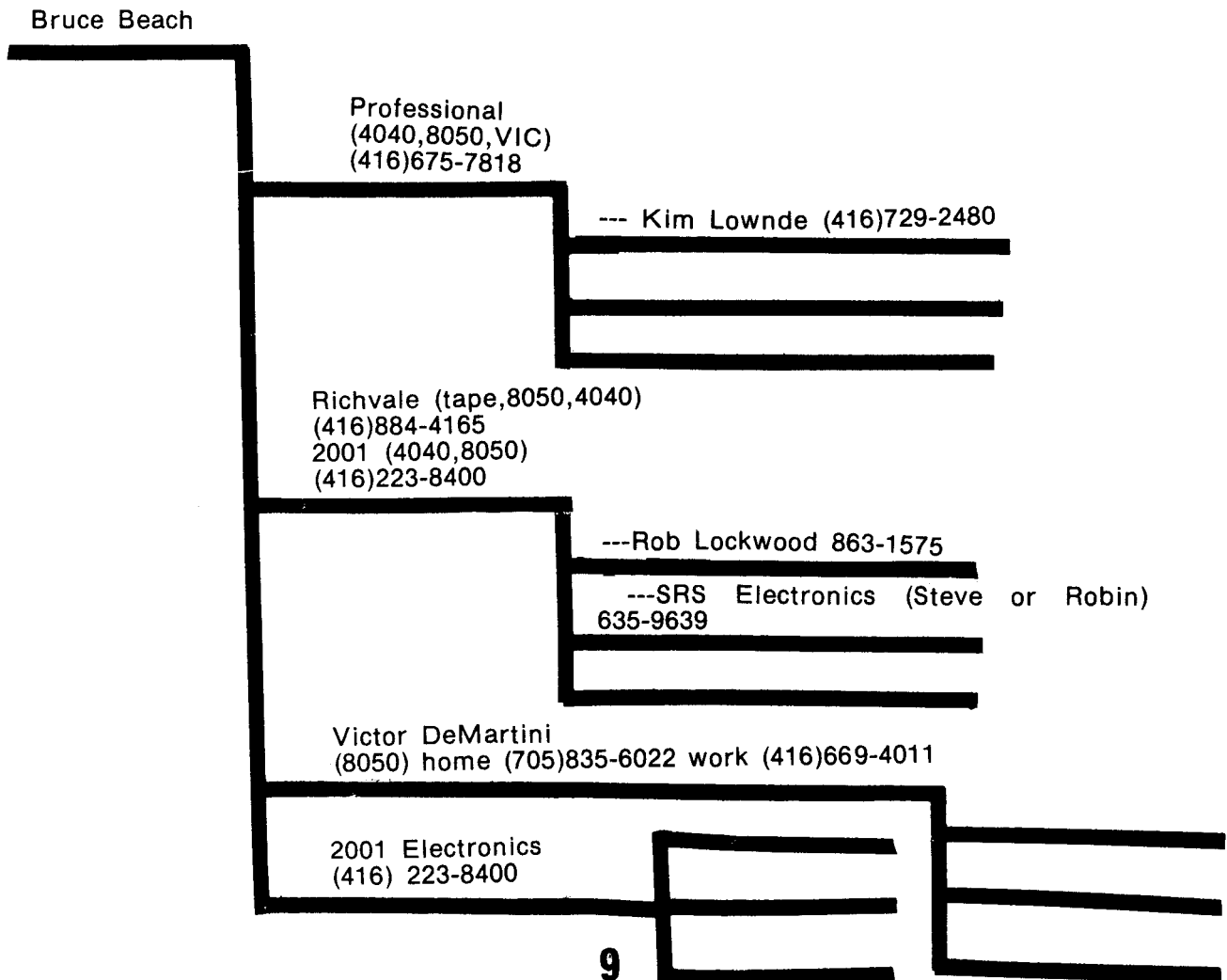
At the last central meeting Bruce Beach announced a copy tree. The response was underwhelming. But, anyway, any TPUG member wishing a complete copy of the released library can still join the tree. The rules are simple. You must copy the whole released library and make it available to up to three more TPUG members who might request it from you. The method of transfer is up to you. Copy it for them. Loan them your set to copy. Invite them over to your place to copy. Whatever.

Keep the names and phone numbers of the persons you give the library to and we will publish them in the TORPET. This could be a very good way of making the complete library widely available, however it does have some drawbacks. It takes about 30 diskettes to store the present released library and the number will increase in the future. You will be retaining

many programs that you may not really be interested in. For example many versions of BASIC AID that you do not personally use. It takes time (several hours) to transfer the program to the other three people.

Some additional advantages to the tree, however, are that you can get into a branch of the tree that has the library on 8050 diskettes, or is perhaps interested in organizing the library in some particular fashion. I would particularly like to see some subsets developed, but you still need the whole library as a resource in order to do so.

Anyway, it is not for everyone but some of the dealers listed are interested in making the full library, plus 8050, tape, and VIC subsets available. It is one more service through your club that is available if you want it.



# CRT CONTROLLER

by Dieter Demmer

Since CRTC's are a common occurrence nowadays, I thought our readers might be interested in knowing a little more about them. First, the word stands for: 'Cathode Ray Tube Controller' which is a bit misleading since the device can really only control the raster-scan type displays and in modern graphic systems several other methods like stroked line displays for B/W or beam penetration techniques for color are used.

Anyway, the device provides all signals (clocks, addresses etc.) necessary for a scanned display system. The device in the CBM computers is a MPS 6545 but there are several pin-compatible chips like the Hitachi HD 46505 or the Motorola MC 6845, to mention a few.

In a nutshell, the device contains 19 registers, AR, R0 thru R17 of which 14 are writeable and 4 are read/write. The AR (address register) is used only to access the device and may not be read. The following description should give you an idea of what these registers do:

- R0 Horizontal total character number.
- R1 Horizontal displayed character number.
- R2 Position of horizontal synch pulse.
- R3 Pulse width of horizontal synch pulse.
- R4 Vertical total character number.
- R5 Total raster adjust count.
- R6 Vertical displayed character number.
- R7 Position of vertical synch pulse.
- R8 Interlace mode.
- R9 Maximum raster per display line.
- R10 Cursor start raster.
- R11 Cursor end raster.
- R12 Memory start address (hi).
- R13 Ditto (lo).
- R14 Cursor memory address (hi).
- R15 Ditto (lo).
- R16 Light pen position address (hi).
- R17 Ditto (lo).

To access these registers in the PET, store or poke the register value into location 59520 and the contents into location 59521. I.e. to change R9 to a value of 7 use the following: 'Poke 59520, 9:Poke59521,7'. This would for instance remove the blank scan-lines on the 8032 and close up the graphics.

The following registers are set at power turnon by the system to the values in the table. Some registers should not be altered

by the programmer since the display may completely disappear. Some others can actually do damage to the horizontal output of the monitor by attempting to drive it at the wrong frequencies. So, if your display disappears, turn the PET off immediately or damage the the electricics may result. Here are the default register contents in the CBM systems.

Register CBM 8032 Fat 40

```
-----  
R0 31 31  
R1 28 28  
R2 29 29  
R3 0F 0F  
R4 20 * 28 (* 28 in graphics mode)  
R5 03 * 05 (* 05 in graphics mode)  
R6 19 19  
R7 1D * 21 (* 21 in graphics mode)  
R8 00 00  
R9 09 * 07 (* 07 in graphics mode)  
R10 00 00  
R11 00 00  
R12 10 10  
R13-17 00 00
```

The registers that should not be touched are: R0, R4, R5, R8 and R10-17. The remaining can be experimented with to a certain degree. For instance, setting R9 to zero is a no-no. Likewise R4 should be kept within + or - 10 around the nominal value, R2 should be kept + or - 10 and R9 maybe varied between 5 and 10.

If someone has enough hardware experience to interface a lightpen, some interrupt driven software as well as more connections to the CRTC are required. Commodore doesn't seem to use the beautiful cursor control either, since they make their own 'fat' full square cursor. Well, experiment all you like with your re-programming but remember to remove power when things go wrong. On turnon all will be back to normal.

One final note on the 8032, register 1 actually contains half the value of the number of characters per line. This is because two screen-memory words are accessed at one time and two characters are actually written in the same amount of time it takes for one Fat 40 character. The speed of clocking is the same for 40 and 80 character modes (1 Mhz) and the chip does not know about the second character. As the reader may have noticed the contents of register 9 is one less than the actual scan lines per character row, thus 9 produces 10 lines/row and 7 produces the normal 8 line PET graphics.

# BMB COMPUSCIENCE CANADA LTD.

## DESIGNERS OF 'THE SUPERPET'

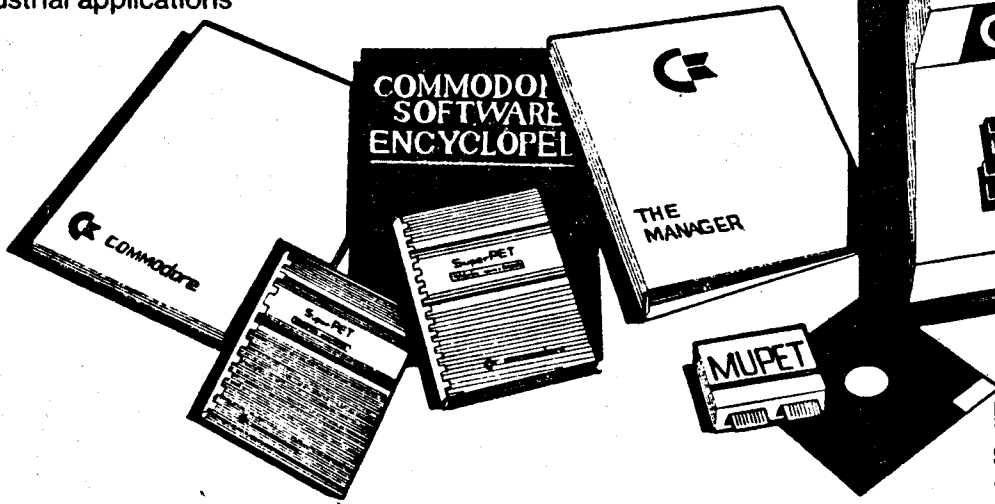
Commodore's new dual processor, 134k computer with Waterloo's micro-Assembler, APL, BASIC, FORTRAN and PASCAL language systems.

## CREATORS OF 'THE MUPET'

A software transparent multi-user system for word-processing, education and industry

## AND AUTHORS OF 'THE MANAGER'

Commodore's new data management system designed for business and industrial applications



**BMB WILL DEVELOP a computer system for YOUR applications TODAY**  
Using the tools that we export to five continents to solve your business problem better than anyone else using

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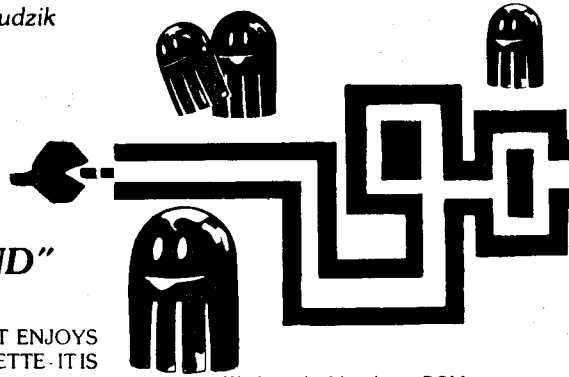
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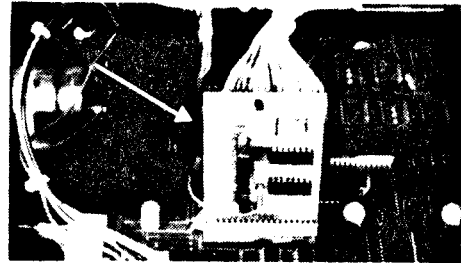
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yet is the format secondary addresses which may be put in at a later date. There are however a few additional advantages: compressed print (133 characters on a 8 inch line) plus the availability of a friction TRACTOR MODEL. The price for the MX-80 F/TP with the built in IEEE interface is \$1430 (\$170 more than the non-PET version).

### *HI-RES BOARD*

Canadian Micro Distributers were also showing at the Toronto show a hi-res board for the 8032. There are 128,000 accessible points arranged in 200 x 640 grid. 16K of static RAM supplies the memory mapping. Text and low-res graphics and hi-res graphics can be mixed on the screen. The screen image can also be printed using either an Epson MX-82 or Centronics 739 printer. The cost of this board should be around \$600.

### *64K MEMORY EXPANSION*

Commodore also announced their 64K memory expansion board which will work in either the CBM 4032 or 8032. This will

## **NEW EQUIPMENT REVIEWS**

by Chris Bennett

### *NEW EQUIPMENT*

In November of this year, a number of products were announced for the 'PET'. Some we saw at the Toronto Computer show, others were seen at the Las Vegas Coputer show. I will summarize some of the products I have seen or heard about. Prices are in Canadian Dollars unless otherwise stated

### *EPSON PET GRAPHICS PRINTERS*

ESSNA were showing versions of the MX-80 and MX-80 F/T in Toronto that have been made compatible with features found in the 2022 and 4022. These include: PET graphics, reverse printing, cursor characters printing, format command channels, variable spacing using channel 6 plus the programmable character. Most features have been implimented to make it compatible with the 4022. One thing not in

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plug into the main circuit board inside the machine. Cost is \$750 (\$500 U.S.). A set of added Basic commands can be loaded from disk to control the accessing of the extra memory. I hear from Steve Punter that a version of WordPro (Wordpro 5) will use this extra memory and allow 5 text areas of about 182 lines each. Other software expected is Visicalc with 69K of work space for the matrix!

#### NEW PRINTERS FROM COMMODORE

Commodore also announced two new printers. The CBM 8300P is a letter quality, daisy wheel printer at 40 CPS with a built in IEEE interface for \$3500. Even more interesting is the CBM 8023P which is a 136 column, Dot-Matrix printer which is rated at 150 CPS, bi-directional with graphics. This printer is listed at \$995.00 in the U.S.A. and \$1495 here in Canada.

I saw the 8300P in Las Vegas while I was down there. It is a Diablo printer with no tractor included for that price. Early version were being supplied with ADA 1450 interfaces. I assume that the later ones will contain a built in IEEE interface.

The 8023P printer I have been using now for about 2 weeks as of this writing. I have included a separate review of this product.

There is also a version of the 4022 printer called the 4022P which feature bi-directional printing. The price is now \$995 (Canadian). At that price and with the new feature, the 4022P is a much better buy and should be able to compete with the MX-80P.

#### SOFTBOX FOR CP/M

Small Systems (USA) Inc have announced the SOFTBOX which is a package to allow CP/M to run on the PET. This device plugs into the IEEE port and CP/M is loaded from disk. Some of the specs are:

- CP/M version 2.2
- Z80 running at 4Mhz (no wait states)
- 60K Ram
- Runs on 2000,4000 and 8000 series PETS
- Can run up to 8 CBM disk drives
- Optional RS232 (\$95 U.S.)
- Corvus Disk Interface (\$95 U.S.)

The total cost of the SOFTBOX is \$795 in U.S. funds.

#### HARD DISK CONTROLLER

Also announced by Small Systems Inc **15**

for \$650 in U.S. funds is an intelligent controller for up to four Corvus Winchester disk drives. Each drive can have either 5, 10 or 20 million bytes. The controller is DOS 1 2 compatible, 16 Megabyte files (relative or sequential) and over 2000 programs or files allowed on a five Meg drive. The Corvus Mirror option is supported and gives a fast, inexpensive means of backing up the data using a video cassette recorder.

#### MATOR SHARK

This is another hard disk systems for the PET and was developed in England. The basic system at 22 Megabytes sell for \$6500 in the U.S.A. (\$10,000 here?) and can run Commodore PET DOS 2.5 Emulation (ie 8050).

#### COMMODORE HARD DISKS

Commodore also announced two new hard disk units at the Las Vegas Computer show. They are the 9065D and the 9150D which are both based on 5 1/4 inch Winchester technology. They provide 5 and 7.5 Megabytes of formatted data respectively. Both drives contain a built-in IEEE-488 interface and are compatible with the disk commands found on the 4040 and 8050. The retail price is expected to be about \$4000 in Canada for the 5 Meg drive.

#### 8032 NEW PRICE

The 8032 has finally been reduced in price to match the price reduction in the U.S.A. done several months ago. The new list price is \$2195 instead of \$2495 effective January 1st 1982. What I would like to know is why it took Commodore Canada so long to do this. The 32K 'FAT' 40 and the 8032 are almost identical in the way they are built so why the \$400 price difference. Why not buy a 'FAT' 40 and for \$80 in parts convert it to an 80 Column machine.

## 8023p PRINTER

Chris Bennett

Just a couple of weeks ago, at the end of December, I aquired the new Commodore 8023P printer. Overall I have been very pleased with it and intend to sell my other printers since it can handle all of the work I need to do. Some of its feature include:

- 6 to 16 inch Tractor feed
- Friction feed for letterhead
- 150 Character/Second
- Bi-directional with logic seek
- Condensed print of up to 250 characters

All the Feature of the 2022/4022  
Uses printer ribbon cartridge  
Built in IEEE  
Top-of-form and Paper feed buttons  
Store and print bit image for graphics

Like the 2022 and 4022 printers, this one uses secondary addresses to impliment most of its features. Normal printing is done by OPEN 4,4 and then PRINT#4. This will print data exactly as sent. However up to 18 secondary addresses can be used to control other print functions. The format for the open is OPEN lfn,4,sa where lfn is the Logical File Number and sa is the Secondary Addresses. I usually have lfn equal to sa. for example: OPEN 13,4,13 to use secondary address 13. To describe all the features, I will first go over all the secondary address available and what they do. 1 to 5 are the same as the 2022 and 4022 printers and 7 is the same as the one in the 4022/4022P printers. 6 is similar to the 2022 and 4022.

- 1 - Print data according to a previously defined format
- 2 - Store the formatting data
- 3 - Set the number of lines per page (default is 66)
- 4 - Enable printer diagnostics
- 5 - Define a programmable character
- 6 - Set spacing between lines (default is 6 line/inch)
- 7 - Set to Upper and Lower case mode
- 8 - Set to Graphics mode (default)
- 9 - Suppress printer diagnostics (default)
- 10 - Reset printer
- 11 - Set to print Uni-directional
- 12 - Reset Uni-directional (default - Bi-directional)
- 13 - Set Condense mode (20 Character inch)
- 14 - Reset Condense mode (default - 10 Char/inch)
- 15 - Set Pseudo letter quality mode.
- 16 - Reset letter quality mode (default)
- 17 - Store bit image data
- 18 - Print bit data previously written in 17

There is not enough room in this review to go into all the details about the 8023P. However, I will try to comment on some of the ones that I have found to be useful.

Like the 2022/4022 printers, the spacing between lines can be set (SA = 6). There is one major difference. The other printers used 144 steps/inch and this one uses 72 steps/inch. The only problem here is compatibility with the other printers. When set at 8 lines per inch, this printer, just like the other two, can print continuous graphics. To get everything to line up properly, the printer should also be set in Uni-directional mode (SA = 11). One

problem with this printer is that at 8 lines INCH\* NORMAL TEXT DOES NOT LOOK AS GOOD AS THE Tally 8024 or the MX-80 at 8 lines/inch. This is because those printers are not designed to print graphics which must touch top and bottom to work properly. I use 8 lines/inch to save paper when I print my mail list summary. However, in compressed mode this does not happen so I'm OK.

This printer can be set in upper and lower case mode so that you can list a program that displays text instead of graphics. In the condensed mode which prints at 20 characters per inch (SA = 13), up to 250 characters can be printed on a line.

Enhanced print, CHR\$(1), causes the data to be printed at a larger size. This command causes different sizes to be printed depending upon the mode it is in. In normal print mode, CHR\$(1) prints 5 char/inch (twice the size). CHR\$(1);CHR\$(1) causes the print to be 3 1/2 char/inch not 2 1/2 as I would have expected. In compressed mode which is normally 20 char/inch, CHR\$(1) prints at 10 char/inch and is identical in quality of print to the pseudo letter quality mode. In letter quality mode, normal print is at 10 char/inch, CHR\$(1) causes 6 1/2 char/inch then 5 char/inch if done again. Again in this manner, the 8023P is not compatible with the 2022/4022.

In pseudo letter quality mode (SA = 15), the 8023P produces better quality print for letters or other documents. This is about the same quality as the MX-80 in the same mode. The MX-80 is just a little better quality because the characters are a little more compact from top to bottom. Also, the MX-80 uses up to a 5 by 9 dot matrix while the 8023P uses a 5 by 8 dot matrix. The reason the 8023P's characters are not as compact is for printing graphics at 8 lines/inch.

One of the very interesting features of the 8023P is the ability to print bit image graphics. The secondary address of 17 allows you to store bit image data into a buffer. This buffer allows 8\*816 binary bit data in normal mode and 8\*1020 in condence mode. The data is then printed by using secondary address 18.

In summary, I am very pleased with the features of this machine. With the price of the 4022P going down to \$995 with bi-directional printing and the 8023P at \$1495 now available, Commodore has a much better product line in dot matrix printers. At this pricing, they will a lot more competative with EPSON's MX-80 and MX-80 F/T.



# MIDNIGHT SOFTWARE GAZETTE



Rev. James and Ellen Strasma, and son

## THE MIDNITE SOFTWARE GAZETTE

The 'Midnite Software Gazette' is published quarterly by the Central Illinois Pet rs Group, and paid for by donations and ads from readers. If your envelope says '0 left' in the front lower-left corner, your 'subscription' has run out. To get future issues, send up to 4 double-stamped self-addressed envelopes, labeled with desired issue numbers, or U.S. funds for same, to CIPUG, 635 Maple, Mt. Zion IL 62549 (217/864-5320). Our only program exchange is through ATUG, the ASM/TED user group, c/o Brent Anderson, 200 S. Century, Rantoul IL 61866 (217/893-4577). The editors may be reached at P.O. Box 647, Pawnee IL 62558 (217/625-7494). CBM, PET and VIC are trademarks of Commodore Business Machines, Inc.

## HELLO!

A new year begins for 'Midnite', almost, but not quite on schedule. Of course we have an excuse - doesn't everybody? I hope you all like the third edition of the Osborne 'PET Guide', but right now, I hope even more that we can tie up stray ends soon! Consider this issue our study break from the book, which is still scheduled for publication by the end of 1981. Corrected errors have surged past 1,000. We've also added 3 chapters, divided the book into PET and CBM volumes, and added the most detailed memory map you may ever see for PET, covering at least 6 variations of BASIC.

Though we've spent some time at each other's throats, Ellen and I are a good pair for this work: I work on accuracy and she

works on clarity. According to 'Kilobaud' Magazine, 'Printout' recently reviewed the second edition of our book in these terms: "Initial elation that (Adam Osborne's) 'PET/CBM Personal Computer Guide' was being considered for the National Book Award wore off rapidly once it was learned that it had been nominated for the fiction category. A spokesman described the chapter on relative data files as a masterpiece of imagination." (Readers may wish to pray for me as I try to repair that chapter!)

This issue is a bit shorter than No.4, in hopes we can keep it under 1 oz., and mail it before the Nov. 1 postal rate increase. There is much more to be said, but it will have to wait for No. 6. Those helping this time included JO-Jim Oldfield, JOH-John O'hare, MN-Mark Niggeman (who is moving to the area fairly soon), ES-Ellen Strasma (our editor), and JS-Jim Strasma (yours truly). BA - Brent Anderson, who may or may not make the deadline with the ATUG NOTES. Len Lindsay is super busy this month, and has not submitted COMAL NOTES yet. Write him to hear the latest on COMAL. He is really developing it into a NICE package. I get a new improved version of a COMAL manual or help disk from him almost weekly!

Since most votes favored accepting ads, we're running 3 this time. Please thank our sponsors by: 1) copying the ads along with the rest of 'Midnite' and 2) buying from them. I notice that each of the 3 companies has been favorably reviewed by us previously; we can recommend them with a clear conscience. Thanks also for the donations. JO and I each gave \$25 to print no. 4, but this one should break even.

There's no official CBM news this time. The Commodore Hot Line people really do try to help. Their number is 800-523-5622. If they can't help, we can try, within the limits of time and our non-disclosure agreement. -JS

In case BA misses the deadline, contact him at ATUG about the hardware review he's doing. BA, J and ES, and 'many' others working independently around the world have invented a new model PET! It is a transformed Fat Forty, with an 80 column screen, and the graphic keyboard. You 'cannot' get it from Commodore, and you probably void your warranty to build it, but it certainly is becoming popular! Even some of Commodore's own employees are creating them. We will support it in the 'Midnite', and will be calling it 'Graphic 80', or 'G80' for short.

## NEW PRODUCTS and RUMORS

### IEEE PERIPHERALS.

In M no.3, we told you to avoid buying IEEE peripherals, since nothing but PET can use them. Well, that's changing with 2 new announced products, the Osborne I computer and the Kontron Computer/Instrument Controller. One person wrote a national magazine that since no one uses the IEEE protocol, the Osborne should have used a simple parallel port instead of the IEEE port. Time, if not several hundred thousand PET owners should prove him wrong. Commodore was far-sighted in choosing the very simple, but powerful IEEE-488 bus. Even Apple owners can now buy an IEEE interface. You can use the IEEE as a simple parallel port, but with lowering prices, why settle for anything less than the power of IEEE-488?

We disliked the Osborne's tiny screen and its inadequate number of columns per line. You may want to look into the Kontron Computer/Instrument Controller, a computer designed as an IEEE-488 controller, with 64K RAM, two 150K disk drives on board, a detachable keyboard, 512X256 dot graphics, arithmetic board optional, two RS232 ports, a Centronics parallel port, and CMOS buffered RAM with battery backup. Other than that, it's much like a CBM 8032. Significantly, the announcement neglects to mention price! -JS

### CP/M RUMORS

Lifeboat Associates is considering charging \$1000 retail for a unit to allow 8032's to use CPM software. At that price tag, the line to place orders shouldn't be very long. This unit expected to be externally to rear of CBM, and will include on board Z80, CPM 2.2., and 64K addressable RAM. Estimated release date 12/1/81. Good news! Lifeboat will likely provide a service to reformat existing CPM software disks to 8050 format.

'Another CPM option' In addition to Lifeboat, there are still rumors that Madison Computers will be producing a CPM board in association with another firm. The project is not firm yet, but unit will likely be internally mounted, and use the 8032's RAM. Expected to be less expensive (about \$700) than Lifeboat version. Release predicted early '82.

When either of these products are finally released, Commodore will finally join the ranks of nearly every other micro-computer manufacturer by offering CPM to provide access to the huge library of CPM business software. While neither of the above alternatives are cheap, many small business users may still want to broaden their options with this addition. -Joe Spatafora

## EXPANDED VISICALC?

Apparently, Commodore Norristown is attempting to develop a Visicalc version to take advantage of the 8096, (64K Memory Expansion Board for the 8032), but is forced to use the current 1.70 version, rather than the more sophisticated Visicalc packages (Apple 3.3, HP83, TRS80, etc.). They are hoping to release it about 1/82.  
-Joe Spatafora

## PET PROGRAMMING HINTS

1) POKE 14,1 before an INPUT statement will cause suppression of the '?' prompt. -JOH

2) Use wedge\$0:\* = S and the disk will return a directory of SEQ files or use P for PRG files, U forUSR files, or R for REL files. Do a wedgeU: and then a wedgel to software reset the disk. These items were found in PRINTOUT. -Arthur Cochrane

## DISK HANDLING HINTS FROM A BRITISH USER:

1) It's not feasible on the CBM system to use disks with any damaged blocks. Give them to APPLE users!

2) OVERWRITE in WordPro II and REPLACE in WordPro III actually do SAVE with REPLACE.

3) If you INITIALIZE every time you insert a disk, a duplicate ID will never bother the system; it will merely confuse you.

4) In a CBM floppy, the usual head-load solenoid has been omitted; this means the head is permanently loaded against the diskette. Consequently, if power is turned off for as little as a second while a disk is in the drive, a record can be destroyed.  
-Geoff Capell

## AND ON THE IEEE 488 BUS:

PET's internal firmware can talk with 12 distinct (4-15) external IEEE addresses. This does not necessarily mean 12 items can be connected to the IEEE bus simultaneously; that depends on the driving ability of the TALK circuits. More than 1 BASIC 4.0 PET can be connected to the same IEEE bus, with no special precautions, provided only 1 PET uses the bus at a time. -Geoff Capell

## MILLIKEN SCIENCE SERIES:

"I can offer a 'fix' for Milliken Math Sequences on cassette for the PET to run of 4.0 BASIC...with anyone that has the Milliken set and cannot get them to go on the 4.0 series. Milliken refuses to answer my letters asking for help and and refuses to answer my offer of a "fix." -Bob Bergevin

## CLASSIFIED ADS?

CLASSIFIEDS: How about it? Should 'Midnite' include any classifieds? No one seems to be doing the kind of simple "let's help each other" kinds of ads I remember reading in many computer magazines back in 1978. Here's a sample from a reliable source:

I-I cables (Amphenol) \$25.  
2708 chips, prime, \$4, or 3 for \$10.  
SYM 1.1 with power supply, \$125.  
Eprom burner plans, \$5.

All from Jerry Brinson, 10136 E. 96th.,  
Indianapolis IN 46256

## READERS COMMENTS AND QUESTIONS

Well, JS expected to strike a sore nerve with someone sooner or later...and we did...with the discussion in M no.4 of Dr. Daley's MAIL LIST. Here are friend Jerry Key's comments to us:

RE: CONTROVERSY AT MIDNITE(?):  
Should reviews be colored by telephone comments solicited by the Editor? I think not. MIDNITE should not involve itself in obtaining rebuttals. Reviews are in the eyes of the beholder. I am an avid supporter (maybe short c.. \$?) of the MIDNITE and would like to see it unchanged. There is nothing more useful to all of us than a well thought out review as D.D.'s of Daley's MAIL LIST. Frankly, I thought it was mild! He was more than fair considering the countless hours invested in thoroughly digesting the manual (much more than the 1 day indicated) and the only changes made were to keep his business running until Dr. Daley provided a permanent fix. -Jerry Key

RE: NAME A ROM CONTEST (M no.4):  
My vote must go to conventions established (don't tell Commodore US) by Commodore Canada in 'TRANSACTOR', v.3, issue 1, adopted by Loren Wright in 'Micro', April 1981 and well said by the PET Guru, Jim Butterfield. These are as follows:

'CEM Canada and Wright' 'Butterfield'  
Basic 1.0 Original ROMs  
Basic 2.0 Upgrade ROMs  
Basic 3.0 (never released)  
Basic 4.0 Basic 4.0 -Jerry Key

RE: DISK SAFETY (M no.4): PETs also dislike electronic flashguns. -Geoff Capell

RE: CHEAP MAILING TO EUROPE: Investigate sending disks as air freight instead of airmail. It should be a lot cheaper and only takes 1 day extra. Service is USA to UK only at the moment. -Geoff Capell

RE: UNCRASHER: I ordered a hardware product known as the "uncrasher" on May 12th, and since then I've re-ordered this product twice by phone. 3 weeks ago I called again and I was told it was mailed to me 3 days before. I'm still waiting ... I've inquired a few times with MasterCard, and each time was told they didn't bill me. I gave up on that company. Can you recommend a company that sells an uncrashing device? -Roy Merme, Box 3291, Bay Station, Brooklyn NY 11235

Reply: 'Kilobaud', September, 1980 carried an article by me on building one. The Kingston Repeat Key now being advertised in the U.S. is said to have one in its deluxe version. I consider Roy Busdiecker trustworthy and think he is associated with International Technical Systems, the seller of the 'Uncrasher'. Roy had an article in the last issue of 'The PET Paper', but I was unable to locate him for you. The 'uncrasher' is a very necessary device for users who need a warm-reset capability, but cannot build their own. ITS, are you still there? If not, anyone else want to build 'uncrashers'? -JS

### DEALERS

DISKS, ETC. Best buy I've found for printer paper and labels. Orders by mail or phone. Very helpful, good service. Club discounts covers shipping. -Jerry Key

HUMAN ENGINEERED SOFTWARE, Revisited. Received HESLISTER without needed changes to recognize Basic 4's commands. Brief letter resulted in a new copy that works very well on all BASICs, letter of apology and some very nice additional routines for the inconvenience! Human Engineered Software is not a name, but a fact in their business!

Programs received included Basic Aid, versions of Wedge, Tiny Music, Compactor and others... I have to hand it to them for their attitude, even if I already have what they sent. It's amazing that people with lower cost programs try so hard to please, when it would be so much easier not to. -Jerry Key

INSTANT SOFTWARE. Last year, I ordered a PET Demo cassette - had loading problems - returned it and they replaced it. IS claims PET has highest rejection rate of cassettes - I returned it again stating it will not load - and I have NEVER had a load error on a Cursor tape on any of (my 8) cassette decks... -Bob Bergevin

Bob recommends Tony Violante of UPSTATE COMPUTER SHOP of New Hartford NY, near Utica as a helpful dealer, instead. -ES

### USER GROUPS

We KNOW there are many more PET User Groups around, but only the following groups officially notified us IN WRITING of their existence, meeting times and contact persons since we've moved. For instance, Dick Juvet mentioned a new group in the Phoenix AZ area, and Jack Moss mentioned the Denver group, but neither listed meeting times and location, group name and/or contact. Keep us informed so that we can make accurate referrals! -ES

LIBRARIANS: Please try to keep your libraries somewhat weeded. For example, though SPACE INVADERS versions abound, one recent version works on both upgrade 2.0 and 4.0 ROMs, which should replace at least 2 others in our library. Otherwise, we must constantly erase the same old versions as they come in from groups around the world. That is manageable if everyone leaves program names alone. If you improve a program, just add a sequence number or date to the end of the existing title. It will also help if every changed line is marked with a 'rem special symbols' or other similar marker that a TOOLKIT can FIND. I now have 4 or more 'improved' versions of UNASSEMBLER from users all over, but no easy way to merge them into a best combination, except to run CURSOR's COMPARE program. Try not to renumber others' programs; after that, even COMPARE cannot show the changes! -JS

COPUG (Central Ohio PET Users Group): Contact Denny Ketter, 3270 Penfield Rd., Columbus OH 43227. Specialize in CBM Assembler applications. Other interests: data bases and hardware mods add-ons. Have details of home grown version of 2040/4040 error/on light w/o sound for you-do-its. Send self-addressed stamped envelope (SASE) for details, or letter if interested in exchanging programs/info. Group meets 3rd Thursday

each month at State Savings Bank, Hamilton and Havens Corners Rds, Gahanna, Ohio.

CHAO (Rochester NY). Phillip Chao is not, strictly speaking, a group. However, he provides a user group service. As mentioned in 'M no.3', he is accumulating an exchange library for PUG groups to access. He is up to 40 disks now, cataloged by subject and alphabetically. PUG groups are welcome to contact him about obtaining copies of library programs, and adding their own exchange libraries to the collection.

SCPI'G (Southern California PET Users Group), with approximately 100 members. Meets 1st Tuesday of each month at DES, 8315 Firestone Blvd., Downey CA 90241 (213-923-9361). Information provided by Roy Wagner.

SPHINX, one of the first, largest, and most expert of the early PET user groups is still alive and well at Box 151 in Berkeley CA 94701. Group meets second Tuesday each month at Lawrence Hall of Science at 7PM. Large exchange library on disk and cassette, including some offerings for the VIC. Bill MacCracken apparently handles tape exchanges, Bax Babin handles VIC exchanges, and Glen Fisher, (of CURSOR magazine?) handles disk exchanges. For meeting info, call 415/486-5101.

SILICON VALLEY PUG, is an apparently related group, meeting on the first Wednesday of each month, at Ford Aero Space. Contact Marvin Van Der Kool at 408/446-1936. In August of 1980, they had a dozen exchange disks available.

Here are two more groups in California:

Lawrence Livermore National Laboratory's LLNL PET CLUB. Meets inside the gates at noon on the first Wednesday of each month. Security clearance required to attend. Contact is Ron Gunn at 415/447-4260.

PALS, (PETs Around Livermore Society), is for less technical users than LLNL's. It meets the third Wednesday of the month at Fifth Street School, 2253 Fifth St. Livermore CA. Emphasis on utilities and education. Contact Jo Johnson 415/449-1084.

Anyone know of or want to form a VISICALC Users Group? Contact Bill Womelsdorff, P.O. Box 2339, Auburn AL 36830 (205-826-3691 or 5205-821-3678)

## RESOURCES

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### HARDWARE REVIEWS

CBM 2031, \$485 from A.B. Computers. Mine arrived today, only 2 years after announced. Literally half of a 4040 dual disk drive, just as smart, but has only 1K of buffer memory, which limits it to 1 relative file open at a time. Drive to drive BACKUP and COPY commands fail (no second drive to use!). Has only 1 single color LED light: is 'on' when drive is active, and 'flashes' after an error. If power-on diagnostic fails, flash code lists the trouble. My particular unit passed its performance test easily, but dislikes my 4040 diskettes. It loves to say, 'DISK ID MISMATCH', as though it were an old DOS 1 unit. The same cure works: INITIALIZE as often as necessary until the diskette is accepted. I revised Chris Bennet's MAIL LIST for this drive, but had to put INITIALIZE commands throughout to make it work reliably. Maybe the 2031's Tandon Magnetic drive cannot easily read my 4040's Shugart drive formatting.

An excellent product for those with a 4040 drive who need a second work station, or for those starting cheaply. However, plan on trading up, since most users really do need dual drives. If you want one, order right away; mine is numbered almost 5,000 after a couple of weeks in production. Could be hard to get, once schools find out they exist. Recommended. -JS

RANDOM FILES NOTE: The 2031 includes a demo program called RAN-  
DOMEXAMPLE. A working copy of  
RANDOM 1.00, which has been on 2040  
and 4040 demo disks for years. RAN-  
DOM 1.00 has NEVER WORKED with DOS 2,  
but continues to appear on 4040 demo  
disks. Use RAN-  
DOMEXAMPLE instead, if  
you must use RANDOM files. Better yet  
are true relative files; I have yet to see a  
CBM demo program for those. The best  
public domain example, as far as I know, is  
Chris Bennett's latest version of Mail List  
4040 and Mail List 8050, available from the  
Toronto PUG, our ATUG, and other user  
groups. -JS

CBM 4010, \$400 from Commodore.  
Speech synthesizer. Sits nicely, and looks  
good atop an 8032. Probably works with all  
models. Made by same company as  
TYPE-N-TALK below, sounds as good,  
'vastly' harder to use. Works from User

port, but has an IEEE connector at syn-  
thesizer end, so requires a \$50 P-I cable.  
Dead as a doornail until large BASIC pro-  
gram is loaded and run. Program needs  
lots of input to say much, and cannot save  
its input for reuse. NOT recommended!  
-JS

TYPE-N-TALK, \$275 from Votrax.  
Speech synthesizer. Requires RS232 input  
(RS232 printer interfaces from PET run  
about \$120), and standard hi fi speaker.  
This little box is amazing! Substitute it for  
an RS232 printer to say anything you  
would normally send to the printer! Like  
others of its breed, sounds very  
mechanical at times, although it says  
United States of America perfectly.  
Requires NO software; can even be oper-  
ated in immediate mode (i.e., open4,4:  
print no.4,'united states of america').  
Being RS232, it works equally well on most  
other brands of computer. Highly recom-  
mended if you need voice synthesis. -JS

EPSON MX-80 F/T, \$645 from A.B.  
Computers. Friction plus tractor feed ver-  
sion of the popular MX-80 printer. Takes  
tractor feed paper or remove the tractor to  
use rolls or single sheets. An 8161 IEEE  
(\$45) interface works with the PET, if PET  
programs in use send true ASCII for lower  
case. Wordpro, the new Pascal, Visicalc,  
and MAE (with patches supplied by EHS)  
can send true ASCII. BASIC can send  
upper case and numbers. Versions of  
Basic-aid (public domain) have been  
developed to screen dump to an ASCII  
printer in lower and upper case. An MX-80  
newsletter and user group has been  
formed (See under MAGAZINE  
REVIEWS). No PET graphics (it is  
rumored that someone is working on a  
ROM for them), but it is a cheaper and  
better printer than the CBM 4022. -Arthur  
Cochrane

TALLY 8024 PRINTER, \$1,700 from  
Mannesmann Tally. Super fast, heavy,  
quiet 7X9 dot matrix printer. Definitely top  
of the line for PET, unless you need letter  
quality. (In that case, use the new 'L'  
option, offering multi-pass correspondence  
quality printing.) A good 20 db. quieter  
than the CBM 4022, and at least 4 times as  
fast. Takes up to 15 inch paper. Keep  
input paper away from output, or it will  
tend to refeed and jam. Hard to change  
paper easily (threaded past the dual trac-  
tors and platen). Handles CBM formatting  
codes and displays cursor control charac-  
ters, but not other PET graphics. Can also  
act as a regular ASCII printer. On arrival  
from another user, an IC was laying out  
loose and a pin broken; Tally, known for  
their service, talked me through a  
wire-wrap fix over a toll free phone line  
immediately. Recommended. -JS

**INTEGREX CX80 COLOR MATRIX PRINTER**, \$2,000 from Integrex, Inc. We forgot to tell you about the color PET printer we saw at NCC in Issue no.4 so... It does exist and is essentially a CBM 2022 printer, (though the company would never describe it that way), with the addition of a 3 position ribbon lifter, with a special tri-color ribbon. Color prints are VERY slow, as each line is passed in all three colors. Color commands from PET are fairly detailed in order to get anything very fancy. If you REALLY need a color printer, no one in Microdom has one available except us Commodore owners! -JS

**SPACEMAKER II**, \$39 from Microtech. Improved version of the old Spacemaker. Has 4 sockets instead of 2, selected with a slide switch. Allows use of EPROMs (couldn't be used on older Spacemaker) and ROMs with jumpers to accept Intel 2732 EPROM. Plugs into PET same as old Spacemaker. Software selection of chips is an extra cost option. A good design at a good price for chips that want the same socket (Viscalc, Jinsam, Command-O, Calc). If you don't do ROM software development, it is cheaper than Soft ROM and eliminates need for loading. -Arthur Cochrane

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**PTX40 PET COLOR ADD-ON UNIT**, \$399 from Integrex, Inc. The company sent this to NCC, but it broke in shipment, so we didn't get to see it perform. -JS

**VISIBLE MUSIC MONITOR**, \$60 from DES. Hardware: digital-analog 4-voice converter, with CB2 sound enabled and extended User/2nd cassette ports. Software: excellent 8K machine-language program for music entry and playing. 11 octave range, displays treble and bass clefs, user definable note-keys for keyboard entry, and full range of scales, notes, sharps, flats, and tempos. Manual: well done with tutorial example. User comments: very impressive, good sound capability, relatively easy to use, is both disk and tape oriented. User criticism: lacks capability to play notes while in edit/entry mode, though partial sections can be played in play mode. Music saved is currently saved with a copy of monitor, and autoplay feature will only work with tape saved music. (Software and music tapes will work with old PETUNIA board; CB2 sound is not produced and no extended ports. I simply re-soldered my CB2 wires to PETUNIA board. Software only price unknown.) -Roy Wagner

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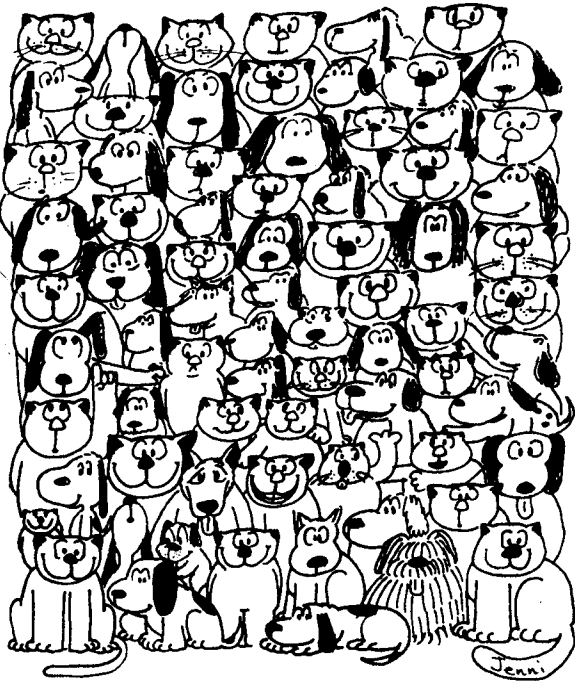
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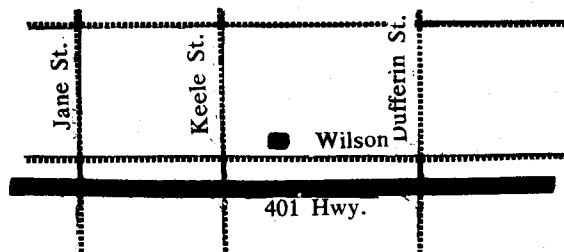
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3M CRT SCREEN, \$15. Glare reducer for terminals with 12" screens. A highly effective glare-blocking plastic screen, if glare comes from above or below the screen. Shinier than no screen at all if the glare is from in front of the terminal (i.e., off your white shirt). Protects against prying fingers when used with kids, as well as flying glass if you manage to break the CRT. Unfortunately, I sit tall enough that I cannot read the bottom screen line unless I slouch. When cut down to fit 9" screens, it blocks the whole screen from my view! Could be solved by inserting a washers in front of the screen to tilt it upward, but would also increase glare from above. Normally does not reduce clarity of text, but late at night, screen characters seem to shimmer and dance. A fine product, for short people.-JS

RADIO SHACK Glare reducer, \$10. Fine mesh netting to fasten over a 12" CRT screen. Can apparently be cut down for 9" screens, but that idea was not tested. Appears to work like silk finish photographs, by reducing visual acuity. I need sharp focus more than I need to avoid glare, so I wouldn't use it. -JS

NOTE on screen brightness: In M#3, we complained that the 8032 screen is not bright enough in a sunlit office. We were wrong: we received some badly adjusted CRTs. (Has anyone seen a PET delivered with a correctly adjusted CRT?) Inside the CRT hood, there is a second brightness control that needed a simple twist. Users, of course, are not to remove this hood, because of 'very' high voltage inside. Owners of Fat Forty's, who use Text Mode, may want to have a similar adjustment made to a little internal 'pot' called 'height', so that chr\$(14) won't pop the cursor out of sight. If your screen either seems tilted or fuzzy, see your dealer. I sent a PET back to Commodore California twice under warrantee 3 years ago, and asked to have a bad tilt fixed both times, but they never touched it. Repairing it myself took all of 45 seconds, once I saw a service manual!-JS

METAL DESK, \$295? from Interlink, Inc. Nice metal desk designed for CBM computers. Has (optional) cutout at left (or right) end of the Formica-type top, to hold an 8032 perfectly, IF THE TOP SCREWS ARE FASTENED DOWN! If you've unfastened the bonnet to install a ROM or whatever, the desk is unusable until the bonnet is refastened. Other options: shelf suitable for a CBM disk, with holes for fan and cables, and multiple outlet extension cord. Matching printer stand also available for \$100, but unlike most others, lacks a

rack to catch printouts. Knocks down easily for transport.-JS

FORMICA DESK, \$395 from ECX. A typical-looking 60" x 28" imitation walnut or oak desk, with several nice features. Has 22" well in middle suitable for any model PET, deep shelf on one side for most disk drives (but no back access to plug them in!) and 1 deep drawer on the other side. One side of desk top is ample for CBM 4022 printer, but not large enough for the TALLY 8024 or daisy wheel printers. Very close to what is really needed, but still not the one I will buy.-JS

UPDATE on 8050 disk: The 8050 now comes with Tandon Magnetic drives instead of Micropolis ones, but the beast is still temperamental! If you buy an 8050, be SURE to buy it from a dealer who will replace it AS OFTEN AS NECESSARY to get you one that works. The acid test is BACKUP (the hardest command for the disk to carry out). Of 20 or more 8050s I've seen, only 1 could back up a diskette reliably in both directions, and I no longer have it. Some of the problem is alignment, so ask your dealer to adjust that before demanding another drive. The 4040 disks I've seen all work reliably, but they don't try to do as much. If you already have a weak-kneed 8050, help is on the way in the form of another set of ROMs for your disk.-JS

(ED. NOTE: We planned to review the PEDisk 2 this issue. Both JO and JOH have bought them now, and are quite pleased with them--so pleased, that we haven't been able to tear them away long enough to write down their thoughts yet. Call JO at CIPUG's address for more info.)

## 'FIRMWARE' REVIEWS

CALC Revisited (see M no.4). I have been working with CALC about 3 months, which has proved to be quite powerful. Statistical programming has been much enhanced. Provides most advantages of assembly language, like allocating and freeing up space wherever I want it, w/o drudgery. I had very little trouble learning to use CALC, after a thorough study of the manual. I prefer BASIC for I/O to the I/O macros included in CALC. Trace Window is invaluable, especially for large programs. CALC code is portable between PET and Apple machines, and between different PET ROMs. -Doug Pierce

POWER, \$90 from Professional Software. Versions for Upgrade 2.0 and 4.0 BASIC, except for the Fat Forty (The 8032 version works on Graphic 80's). Progra-

mmer's Aid. This is one program I've wanted for a year. Both Jim Butterfield and Commodore Canada use it, which is the highest recommendation I can give. First slated to be sold by Skyles instead of the much less reliable Command-O. Some respected Canadian users have speculated that Skyles held Power off the market until Command-O could be finished, and that it took features from Power. I can personally affirm only that Power was completed long ago, and that Command-O's reportedly best features are also in Power.

Apart from the controversy, and its famous users, what is Power's power?

1) An EXCELLENT manual by Jim Butterfield, to suit any user (beginner or expert) with an excellent reference section by author Brad Templeton.

2) Detailed instructions on how to call its features from other programs, change the way it works, and even add more commands to it.

3) The dealer pack includes a demo disk with instructions, and stick-on labels for the instant keywords (Hit shift plus a key and see a keyword appear on the screen). Since most keywords can already be abbreviated without Power, I don't use the labels. However, instant phrases and subroutines are also available, and that IS powerful.

4) Execution files: you execute the contents of a sequential file as though they had been typed in at the keyboard. This is supposedly good for merging programs, but I use BASIC AID 4.0's MERGE command. A better use would be to get into programs with complex set-ups, like Wordpro or JINSAM.

5) Power's BEST feature is a very sophisticated CHANGE command. Most aids can find things, but only BASIC AID 4.0 and Power can do anything with the information. It finally approaches MAE's powerful editing features.

6) SCROLL, as in other programs.

7) Advanced RENUMBER, as claimed for Command-O, but works reliably in Power.

8) TRACE has bells and whistles to let you choose where the display appears, what is shown, and how rapidly.

9) A future use of Power for machine language programmers may be its interface with Templeton's matching 4K assembler. Last May, Jim Butterfield demonstrated PAL4 for me. At present, you cannot buy, beg, borrow or steal it, but some say it will be available very soon, at a good price. (Brad Templeton, if you're out there, 'please' release it.) Power and Pal work together very neatly.

If you write your own programs, Power is excellent, especially if you write for profit rather than fun. I only wish I could

have bought it a year ago when first completed. Recommended. -JS

Since Bob Mergy is not going to produce Adopt-A-Rom, I've bought INSTANT ROM from GREENWICH INSTRUMENTS. Excellent! Recommended. It's 2k or 4k of CMOS RAM with built-in Lithium battery, which should last 10 years. ROM size, except 0.9" thick. Operating System changes relatively simple. -Geoff Capell

'Midnite' requests user's reviews of MUPET and The Manager from BMB Compuscience -ES

## GAME REVIEWS

*THE DRAGON'S EYE*, \$25 From Auto. Sim. 32K. You must locate Dragon's Eye within 21 days. Problems are weather, health, and assortment of terrible monsters. GREAT graphics: full screen map of area you are exploring; when you encounter a monster, map switches to animated display of your efforts to defeat it. You fully control your character by using arrows, magic, and many sword maneuvers. One of the best uses of graphics I've seen on PET. HIGHLY RECOMMENDED. -JOH

NOTE: I consider this one of the best PET games. When I show off my PET to others, I let them play this one. Dragon's Eye goes a logical step beyond the other high quality EPYX adventure games. -JO

*ENCRYPT*, \$15 from FSS. Decode messages that you or the computer make up. I've only played this kind of game in 2 other programs and like this one best. Protected from accidental inputs and easy to learn, like other FSS games. -JO

*GALAXY*, \$15 from FSS. Object is to loot as many planets in a solar system as you can. You and/or 5 others create a galaxy (by specifying number of levels) and move around by number keys only 1 space at a time. With other players, becomes strategy game of planning moves and saving fuel to loot other planets. -JO

*NUCLEAR WAR*, \$15 from FSS. Battle up to 9 other opponents (human or computer) and the world, by building up your factories, ABM missiles, and CONs or troops, plus your R and D (to reduce equipment costs). Another nuclear war program uses some board displays, but this text version is better and tougher. Take notes when the computer plays, because this one's hard to beat. Recommended. -JO

**STOCK MARKET**, \$15 from FSS. My favorite market game! From 2 to 10 players (any combo of human vs computer) buy and sell stocks of 5 companies to become the first to be worth 1 million dollars. Well documented with REMarks and written instructions; uses routines to prevent program breakdowns. Drawback: when 2 of you play, goal should be higher. Recommended. -JO

**VIGIL**, \$35 from ABACUS Software. Game language interpreter for 80x50 graphics. For all 40 column Pets. Good for writing short, simple games and for experimenting, but harder to use than BASIC for long programs. Includes commands for plotting points, setting timers, and even using shape tables. Includes 9 sample games, of which some are better than average. It may be worth \$35, but could have included more features (such as plotting a LINE BETWEEN TWO POINTS). The idea is here, but programming has its weak points. BASIC is still better for writing most games, while machine language is best for serious programming. -JOH

#### BOOK REVIEWS

'PET GAMES and RECREATIONS,' by L. Lindsay, M. Oglesby, and D. Kunkin. \$13 from Reston Pub. Co. Primarily for graphic keyboard PET models. Includes over 20 well - structured games for PET. 5 types of games covered: Plan ahead, Deductive reasoning, Chance, Language and counting skills, and Recreations. Good book; most games are worth keying in and will provide enjoyment for all ages. -JOH  
...Listings are typeset, using COMPUTE! magazine conventions for cursor control characters, making programs easier to enter than CBM printer listings. Cassette of 10 longer programs available (price unknown). My only complaint: none have sound! Highly recommended if you love to play games. -MN

(Even non-gamers like myself will find this a good book for its excellent BASIC structure and program explanations. Also be sure to catch the humorous lectures at the end. They hide some useful programming hints that have been carefully made compatible with PETs of every vintage. -JS)

'PET BASIC: TRAINING YOUR PET COMPUTER' by R. Zamora, B. Albrecht and W. Scarvie. \$13 from Reston Pub. Co. First book to fully explain to the TRUE novice how to write and execute PET BASIC programs. Commodore approved. Highly illustrated, and very readable, even

if you've never used a computer. Another volume in the series may be coming. Recommended if you are just starting on the PET. -MN

...This is an excellent manual. However, it has 3 major faults:

1) The small calculator keyboard is used throughout, which has been unavailable for over a year;

2) Only at the book's end do you learn VERY briefly how to save a program or load it from cassette, without a word on reading or writing cassette data (too bad Albrecht didn't include his excellent piece from 'Interface Age' 2 years ago on how to turn on the PET and load a program);

3) Nowhere are disks or printers mentioned, though over half the PET owners I know have one or both. I suspect the bulk of the book was written before the large keyboard PET, disk or printer existed, but it still could have been revised before its 1981 publication. -JS

'MOSTLY BASIC: APPLICATIONS FOR YOUR PET,' by Howard Berenbon. \$11 from Sams. 24 generalized applications programs usable with virtually any microcomputer using BASIC. Editions exist for TRS-80, Apple and PET, which are all BASICally the same. Even ATARI, with its primitive BASIC, can run programs from the PET edition with few changes. Programs ARE useful, though nothing special. IRONY: the clock programs don't use the PET clock! Since 1 program's instructions recommend hitting CONTROL-C to quit, I presume the Apple edition came first (fortunately, PET does have a CONTROL-C key: stop!). On balance, this is more a manual on generalized program writing and good documentation than on PET programming or good applications. -JS

INSTRUCTION SET SUMMARIES, from Arthur Cochrane:

6502 MICRO CHART from Micro Logic Corp., is the BEST. A hard plastic notebook sheet with the most information in 1 place you will ever find on the 6502.

6502 INSTRUCTION HANDBOOK, \$2 from Scelbi Publns. A shirt pocket book on the 6502. Good for quick explanation. One error noted: for STORE instructions (STA, STX, STY), it states the flags are affected (untrue) the same as for loads.

SYNERTEK and MOS TECHNOLOGY, Inc., have 6502 instruction set summaries. Synertek also has a 6522 summary which is great for working with the User port. Write them and request one.

Pocket Reference Guide, free when you buy a product from LEADING EDGE COMPUTER PRODUCTS. Very handy PET reference (BASIC 4.0 not included on the ones I have). Make sure they are still in business, though, as the ones I have were bought over a year ago.

### MAGAZINE REVIEWS

'Cursor Magazine,' Revisited, \$18/4 issues. This cassette magazine still remains 1 of the best software buys for PET. Latest issue includes arcade game, 16K adventure and 4 others. Recommended. -JOH

'Dtack Grounded,' The Journal of Simple 68000 Systems, \$15/6 bimonthly issues. Bright new star on PUG horizon. EXCELLENT newsletter on how to use the 68000 superchip. Editor has CBM 8032, so newsletter is correct for PET users. Even if you aren't ready to spend \$600 for a new processor board, assembly-language programmers and hardware hobbyists will get far more than \$15 benefit from this newsletter. If you DO have \$600, some PET programs can already use the 68000 speed, with more PET commands being transferred to the 68000 over time. If, as I suspect, the 68000 will be the true replacement for the 6502, especially for large scale applications, reading about it now will prepare you for the future. -JS

'Epson Information Exchange,' \$12/12 monthly issues. Premier issue of newsletter included tips on using TRS-80 graphics on an Apple, info on GRAPHTRAX enhancement ROM, and using super-popular Epson MX-80 with TRS-80 and Apple text-editing programs (I'm biased; nothing in Microdom except for WORDPRO and WORDSTAR deserves the name Word Processor.) So far, no PET uses listed in forthcoming column. Still, since we prefer the MX-80 to the CBM 4022, you may as well hear what others are able to do with it if you buy one. -JS

'Genealogical Computing,' \$12/ 6 bimonthly issues, from Data Transfer Associates. Complimentary issue upon request by mail or call 703/978-7561 and leave message on Family Historians' Forum (a bulletin board). First issue very informative. Many articles dealing with use of personal computers in genealogy, short sample programs, reviews on known genealogy programs and genealogy tips. Has surname search and queries for reasonable fee. First issue TRS-80 oriented, but promises to cover other systems as info becomes available. Highly recommended for those interested in genealogy. -Jerry Key

'Microexchange,' \$15 for 10 issues/half year, from editor Maisie Irish Cohen (805/963-4187). I haven't quite figured 'Microexchange' out yet, though I have their newsletter. Maisie Irish Cohen is editor, and interested in PET, but the group itself, if it is a group, is heavily APPLE oriented. In a couple of pages, the newsletter covers most anything, and is a cross between a catalog, a reference, a newsletter and a magazine. One nifty idea: renting PETs, etc., for \$75/mo. -JS

'Printout,' Revisited, June 1981 Issue. Nice glossy appearance, but the few articles are in varying size prints. Some hard to read. 64 pages, 24 pages of articles/columns (generous count) and rest high priced advertising. Better to support 'Midnite,' 'Transactor,' 'The Paper,' and 'Compute.' -Jerry Key

'Commodore PET User's Club Newsletter(U.K.).' "I subscribe to the official PET UK newsletter in the belief it will always be correct about CBM products. Recently, 2 series of articles started, and I know their contents to be rubbish. Hence, (I wrote) the CPUCN letter, which wasn't acknowledged by the editor, or either author; my subscription will not be renewed." -Geoff Capell

### BUSINESS REVIEWS

ASERT, \$450 from CFI. Requires 80 column screen and 8050 disk. Query-type database manager. Holds 1900 large records, accessible from outside ASERT. Protected with a functional ROM. Includes my SUBSORT, and Higginbottom's INPUT EDITOR. (Sorry, I'm the only one in CIPUG temporarily with an 8050, so I must do the review.) Has 3 main sections in each record:

- 1) a typical mail list section with variable number of fields, any of which may be sorted or subsorted, up to 5 levels deep;
- 2) a REMark section that is total free-form and neither sorted nor searched;
- 3) a yes/no section for membership in up to 90 categories, for later searches. Searches may be very complex, with 'must-haves', 'must-not haves', and 'get brownie points for having' categories, which may be mixed in most ways. Printouts are simple and inflexible, but easy and useful. Originally developed to keep track of campers' records and talents. Typical application: to store resumes. ASERT could easily find names (if such exist) of 5 engineers with doctorates who speak Spanish, have worked with integrated circuits, and are willing to travel. User manual and demo disk are very well

done. Only lack: details on the file layout needed to access records from outside the program. Recommended -JS

DR. DALEY'S MAIL LIST, Revisited (see M nd.4). Have been deeply involved with D.D. since 1st received MAIL LIST. Infant problems were fixed in reasonable time, but more problems persisted. Exceptionally tightly coded (good) programming technique that defies user repair or modification. Problems included: lost records when crossing data diskettes on 2 or 3-up labels (may be fixed), re-sort problems, lost directories and format files (persistent), and collapsed non recoverable records. Only mod. made was to keep program (and business) running until fix made. Currently, only mod in program is routine to allow a specific Wordpro file to be generated from multiple data diskettes. Otherwise, the untouched version used. One early version came sans print routines, last version received was missing 1 program. May function well as a straight mail list but reliability questionable when used to full potential (and it is a powerful and unique program). Would like to hear directly from other users of program. -Jerry Key

#### EDUCATION REVIEWS

EDUCATOR II ALGEBRA QUIZ, \$10 from Cascade Computerware. Very well written, good documentation and easy to use. NOT a tutorial, but a concept drill of material already learned by students. Second version is PRINT ALGEBRA, which gives a hard copy of the quiz with or w/o answers adjacent to the problems. Offers many print format options. Excellent source of computer written tests for teachers. This education program does what it was designed to do and doesn't promise to make the user eligible for a Rhodes Scholarship! Worth the price. -D.C. Johnson

'Midnite' requests reviews of the Merlan Micro Series (Physics programs for PET), or other commercial education programs. What programs are you educators presently using? -ES

#### UTILITIES REVIEWS

FILEMASTER UPDATE. Len Sasso (of Software by Sasso and Cimmarron) has released a new version of his filemaster program with a much faster disk access routine and some more features. For ease in performing program copying, scrat-

ching, and recovery of programs files, this package is unsurpassed. -Joe Spatafora

PASCAL for 4032, \$295 from Commodore. Uses a dummy ROM at \$9000 or \$A000. Improved over Upgrade BASIC 2.0 version in that, on startup, a printer setup menu is executed. Rest of the functions are the same and BASIC 4.0 disk commands can be executed in direct mode. -Arthur Cochrane

#### VIC NOTES by John O'Hare

As of Mid October, 15,000 VIC's have been sold in Japan, 15,000 more in the U.S., and, though not yet available in Europe, orders are accumulating fast. -JS

If you really want a color PET, Commodore suggests you consider buying a VIC as a peripheral for your PET! Seriously, it uses Upgrade BASIC V2, is cassette compatible, and has excellent color compared to Apple, and Atari. -JS

Some VIC POKE locations are:

51 decrements when key hit. 204 cursor on flag.

56 pointer to top of memory. 211 cursor column.

67 holds 1 when key hit. 214 cursor row. 197 value of key depressed. 36865 border position (vertical).

145 flag for left shift key. 36864 border position (horizontal).

245 detects special keys. 36869 pointer to character generator.

240 = norm. 255 = 7168.

To read a joystick on a VIC (standard ATARI joystick works), use the following subroutine:

```
9000 POKE 37154,127
9010 JO = (NOT((PEEK(37152)AND128)
/8 + ( PEEK(37151)AND60)/4)) + 32
9020 POKE 37154,255
9030 RETURN
```

JO Values returned are: 1 = up, 17 = up and rt, 16 = right, 18 = down and r t,

2 = down, 6 = down and lft, 4 = left, 5 = up and lft,

#### VIC GAME REVIEWS

VIC GAMES PAC, \$25 from Creative Software. 3 VIC arcade games: VIC Trap, Seawolf, and Bounce Out. Seawolf and Bounce Out are machine language, with very fast action. Very good games, but could be better if they used Hi Res graphics. -JOH

## FAIR FEE VS. PIRACY RISES AGAIN

### CONFESSIONS OF A PROGRAM COPIER:

I have gladly copied many commercial programs, to avoid the hassle of testing a program in a store or buying and returning one by mail, hoping my money would be refunded. After being run a few times, 85% of the programs are either boring or show their real failings. For good programs still not worth buying, I usually send the distributor a letter of comments and a check for what the program is worth to me. For really good programs I use regularly, the documentation and support is usually so good that it is best to buy the programs anyway. No one has a moral right to copy, use and 'not' pay the distributor their full worth. I also do not believe in paying \$300 for a program I might use twice a year. This is where a Users Group is nice. You should be able to borrow another member's program to do your infrequent processing. Remember that if you send a letter to a distributor admitting you copied their program, you are sending them evidence against you. Tell them you have played/used their program and wish to contribute, due to your satisfaction. You might mention that you infrequently use it. Programmers are due the worth of their efforts based on your use. Be fair.

Some programs worth buying: MAE, WORD PRO, VISIBLE MUSIC MONITOR, any of the EPYX games (HELLFIRE WARRIOR, DATESTONES, MORLOC'S TOWER, TEMPLE OF APSHAI, RESCUE

AT RIGEL), SPACE INVADERS, VISICALC, MICRO CHESS, CURSOR subscription programs. -Roy Wagner

RE: PIRACY (M no.3):

I think it ridiculous that I should pay as much for a copy of WordPro III as an office using it continuously. I use it and Visicalc 2-3 times a year, but I pay list price for programs I use several times a week. Although I think an annual fixed royalty would be fair, I have to use the existing system, so I pay for software I use frequently, but provide free copies to people I can trust not to try to exploit it commercially. -Geoff Capell

Reply: Thanks for sharing your rationales... With so much EXCELLENT software now available in the PUBLIC DOMAIN, I see little need to give away worthwhile commercial programs, unless it's a matter of legitimate owners sharing improvements they have added to programs with other legitimate owners, as was the case with one program Geoff sent me. Will we ever solve the fair fee problem? -JS

### GUEST REVIEWERS:

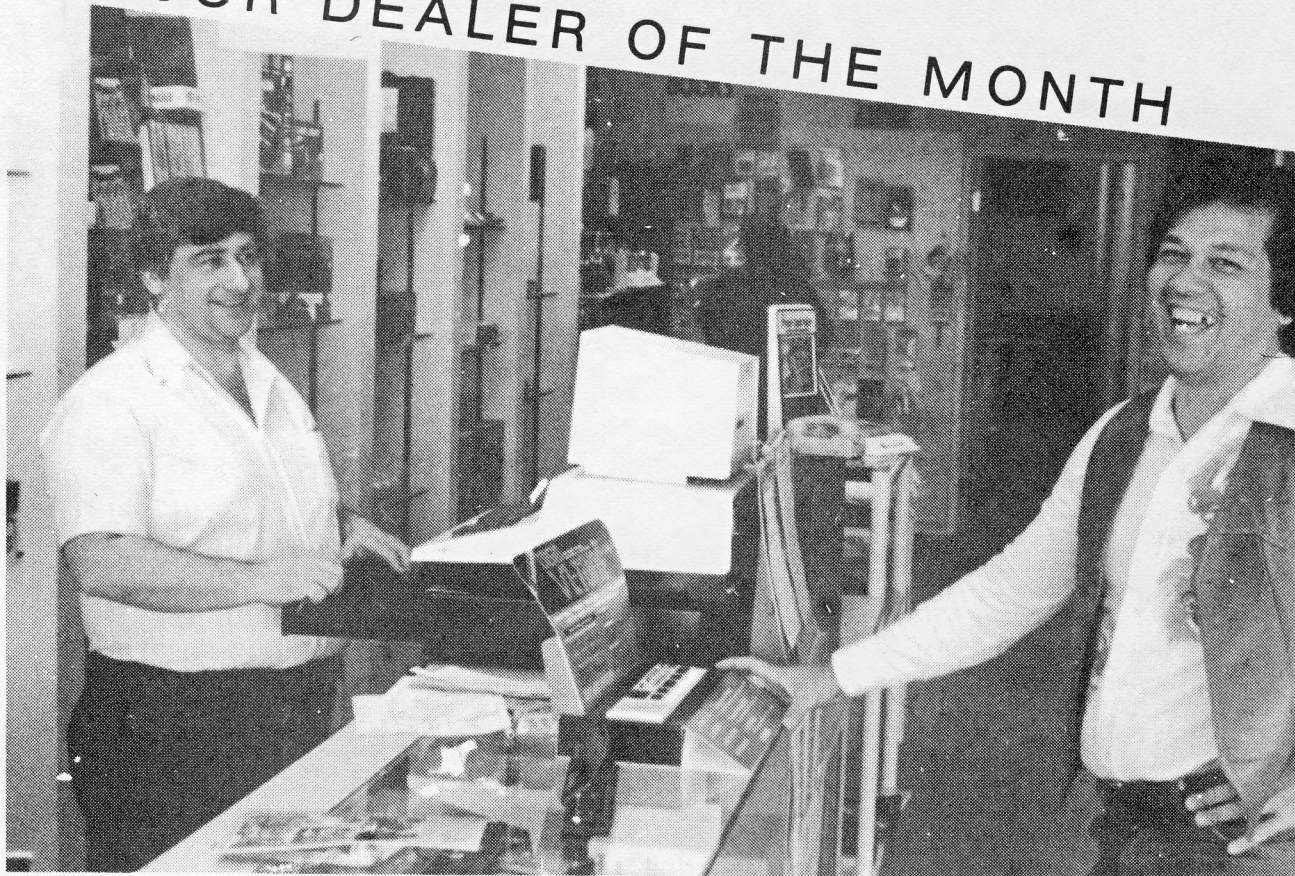
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The Torpet Editor's kids Bonnar and Bahi'a Beach visiting the Strasmas at their church in Pawnee, Illinois.



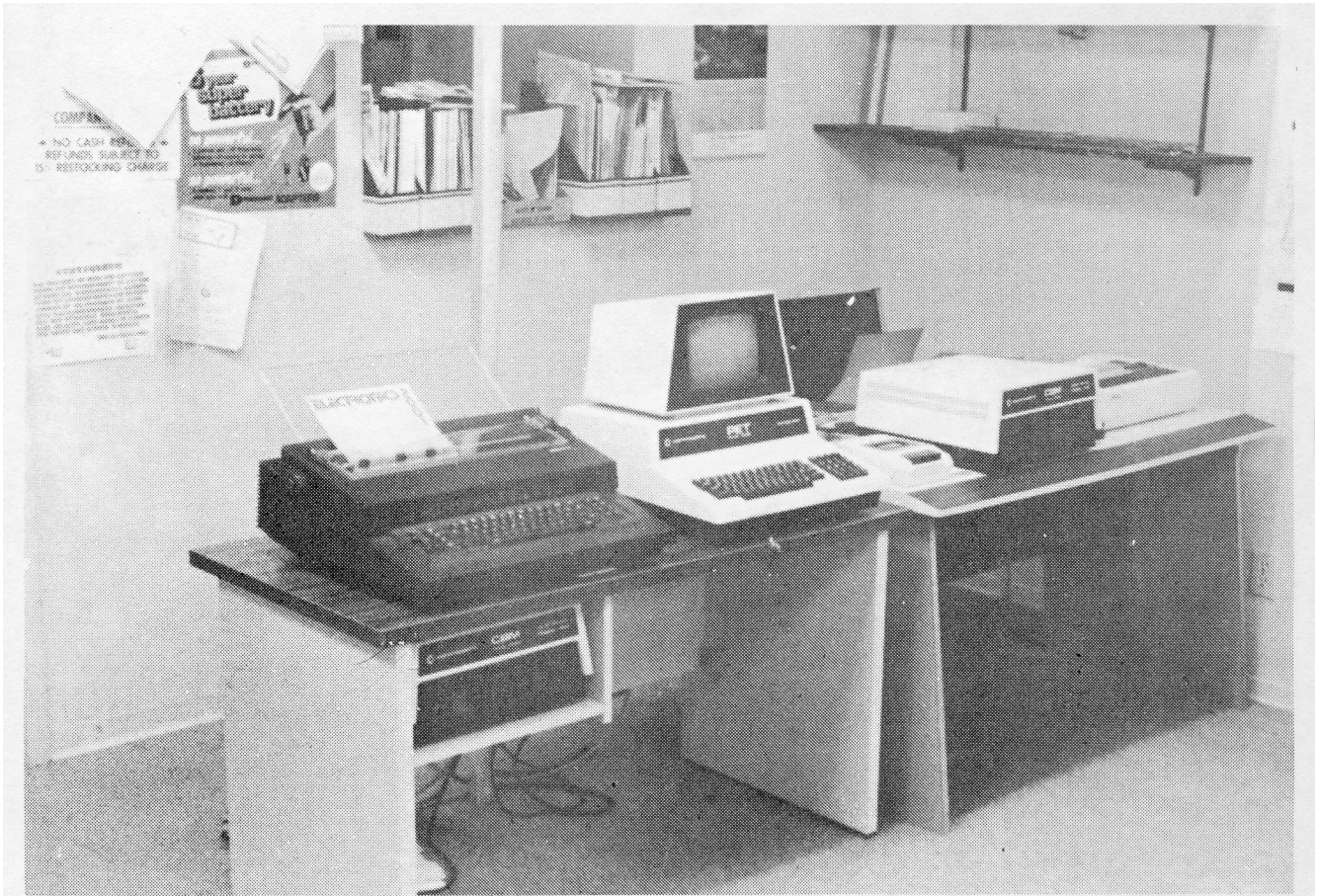
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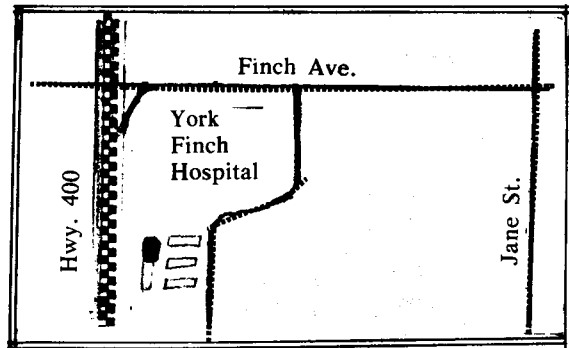


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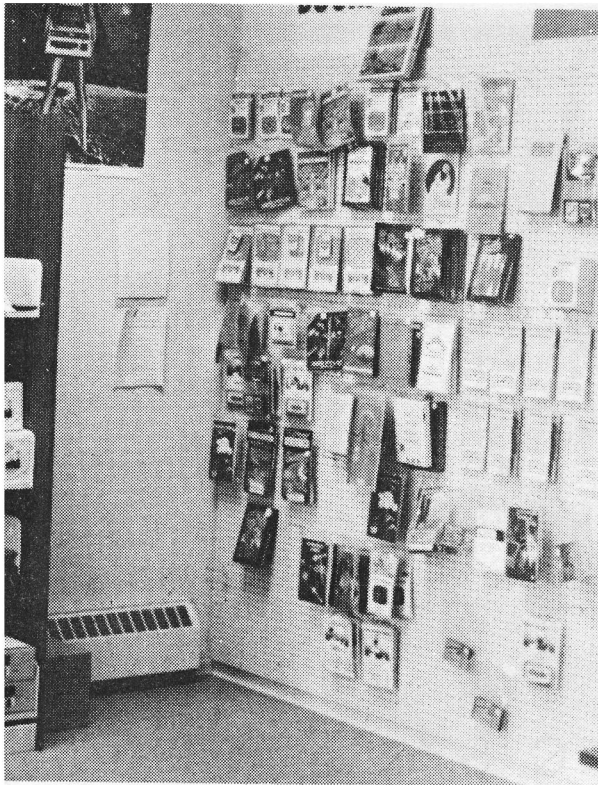
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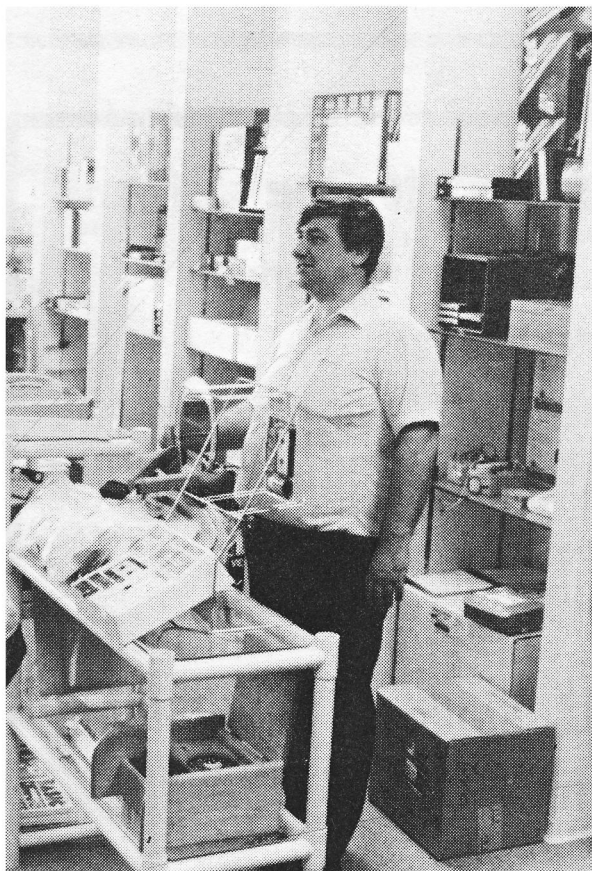
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# DTL -A GOOD COMPILER

by Chris Bennett

A BASIC COMPILER  
BY DRIVE TECHNOLOGY

For many months now, I have seen Ads, in the British PET newsletter PRINTOUT, for a BASIC compiler for the PET. However, at a cost of 300 pounds (\$700 Canadian), this seemed a bit expensive to even consider. Just recently, Canadian Micro Distributors of Milton, Ontario, acquired the North American rights to the package and have set a selling price of \$350. As soon as I discovered this, I drove up to BMB (30 Minutes from Toronto) and bought a copy. This review is based on my experience with the DTL-BASIC COMPILER over the past 4 weeks.

The DTL compiler is available for the 8032 and 40 column machines with either BASIC 2 or BASIC 4. All three versions are on the disk supplied with the manual. Let us first consider the difference between a compiler and an interpreter. An interpreter must perform 7 tasks on each statement. They are as follows:

1. Recognize the type of statement
2. Check the syntax
3. For each variable used, check in the list of variables to see if it exists. If not, create the new variable.
4. For a GOSUB or GOTO, search through statement by statement until that line number is found
5. Evaluate any expression using the priority rules defined by BASIC.
6. Skip any non executable parts of the program such as spaces and REM's.
7. Execute the statement.

A compiler must also do all of the above tasks, except that operations 1 through 6 are done only once in the Compile stage after which an Object Program is generated. When this Object Program is executed, only the seventh task is performed. This is the reason that, once compiled, a program will run a lot faster.

The big disadvantage of Compilers is that each time a program is changed it must be re-compiled before it can be tested. Also, if the program has a bug the Object program will terminate at a location in memory and a special program usually has to be run to find out where the error occurs. An Interpreter, on the other hand,

prints an error message together with the line number in error. That line can be corrected and the program rerun very quickly.

The main advantage of the DTL Compiler is that it is almost totally compatible with the BASIC Interpreter. This means that programs can be developed and tested using the Interpreter and without any changes, the program can be compiled for faster execution. Some of the incompatibilities are as follows:

1. Linked programs cannot share variables
2. CONT is replaced with SYS1069
3. Calls to a user function cannot be made from certain statements. A change to the source will fix this.
4. A compiled program can only be started at the first line with a RUN statement. RUN 200 is not allowed.
5. Self modifying programs or those with machine language imbedded in REM statements will not work.

Some of the advantages of the DTL Compiler are as follows:

1. Compiled programs run much faster. A three to four times speedup is quite normal
2. True Integer arithmetic has been implemented (on ariables). The Interpreter converts all integers to floating point for calculations and then converts them back to integer.
3. Most extensions to BASIC have been implemented. These includes KRAM, SUPERKRAM, DISK-O-PRO, COMMAND-O plus special versions of the SYS command (SYS IN,1,2,LN,L\$)
4. For large programs, the compiled version will be smaller. For small programs more space is taken since a RUN-TIME module of 4K is always added to the program.
5. Compiled programs can be protected by a key to reduce the amount of piracy of software.
6. Before testing a program, it can be compiled to check out all the syntax errors rather than coming across them one by one.
7. Compiled programs can disable the stop key without affecting the clock.

Most of the programs I compiled ran from 3 to 4 times faster without any changes to the BASIC program. However, to get greater speedups, there is an option

within the compiler to perform true integer arithmetic. If the variable name ends with then integer arithmetic is used. However, most of us use real variables with the interpreter since no additional space is needed (Except with arrays) and the computations with real variables are faster. The DTL Compiler allows the user to specify in a REM statement which real variables are to be used as integer variables. The program can still be run with the interpreter because these commands are buried in REM statements.

I will now describe two sample programs I compiled together with the timings. A cross reference program all in basic took 182 seconds to run. When compiled with no changes, it took 83 seconds to run. When optimized using the convert to integer option, it took 59 seconds to run. This was a speed-up by a factor of three. One of the CURSOR programs (COMPARE) which compares two basic programs and prints the differences was cut from 370 seconds down to 130 seconds

with no changes to the program. Integer optimization only speeded it up by 10 seconds

Before I finish, I should mention that this compiler uses a run-time key just like THE MANAGER. Extra keys which will only allow COMPILED programs to run (not the compiler itself) are \$50 each. This will be useful to people selling software packages and provides them with a convenient method of program protection.

Overall, I have found this to be a very useful software package and can recommend it to anyone wishing to buy a good BASIC Compiler. The product is being constantly improved and several bugs in the original version I received have already been fixed and an updated disk sent to Compiler purchasers.

Chris Bennett  
-----

## DTL -A PIECE OF JUNK

by Bruce Beach

The so called DTL Compiler is a piece of junk! This is definitely a different opinion than expressed in the previous article. As editor I usually make a point of not expressing my opinion as I do not wish the TORPET to have a bias. I would rather seek articles from persons holding diverse viewpoints.

I approached several people for a refutation article on the DTL compiler, and found several persons in agreement with the position expressed in this article, unfortunately I was not able to obtain an independent article from any of them within the required time frame. Therefore, with apologies, I have taken it upon myself to write this article.

An opinion so strongly opposed to that expressed in the previous article obviously requires justification and facts to back its position. I think the unbiased reader will find those facts in this article. Actually I was quite surprised to receive the previous article in the first place because I had made my views and reasoning (although not the accompanying facts) on the DTL compiler very well known to many people, including the previous article's author. However, the TORPET welcomes strong diversity of opinion and has always printed any and all articles that it receives related

to the PET. (This editorial policy may have to change in the future due to limitations of space, but for the time being if you have any diverse views on this or any other PET related matter please submit them with confidence that they will be printed.)

In this article I do not wish to delve into technical details regarding the nature of various types of compilers. Let me refer those wishing more details as to the needs for, and the desired specifications of, a PET or 6502 compiler to an article of mine entitled "Why a PET, APPLE, 6502 BASIC Compiler? A Simple Explanation", which can be found in *The Best of Micro*, Volume 3, pp 300-303.

The purpose of a compiler is to take high level source code and translate it into machine language. In the history of computing we have had compilers around for a long time. In fact we had compilers long before we had interpreters. When evaluating compilers several criteria are often proposed. For example David Garson in an article entitled "Integer Basic Compiler" printed in *Call-A.P.P.L.E.* in October 1981, states: "When dealing with compilers, two key points are always brought up. The first point is how long does it take to compile a program, and the second is how big is the compiled program."



While Garson is correct in that these criteria are often used I do not feel that the first of these (the compile time) is at all important in our micro environment, and the importance of the second is usually highly overated. Instead, the single most important criteria is execution speed and there are other new criteria that are more important than the size of the compiled program.

The reason compile time was at one time very important, but is no longer, is that when the only way we had to test and debug a program was to compile it, it meant that in the process of development a program often had to be compiled and recompiled many times. When in a given installation there were many programmers doing maintenance and development work on a single machine the production and throughput of that machine could be severely impacted by the time that had to be spent in compiling.

In some installations such as schools that were teaching programming the resulting turn around time for a programmer submitting a program, and the overall problem was so severe that special compilers such as the Waterloo FORTRAN compiler (WATFOR) were developed. While compilers similar to the WATFOR gave very fast compiles the resulting code was sometimes abominably slow in execution. This did not really matter because the student programs were usually very short and were also usually thrown away after one successful execution.

For compiles of tested programs that were going to have to run for a long time an optimizing compiler would be used that would take longer to compile but would put out efficient code. In our micro environment we should be able to do all of our testing and debugging using an interpreter. The programmer has instant turnaround and instant results. Compile time is therefore not relevant to program development. Since one needs to seldom compile the completed and tested program it therefore should make little difference if the program required even several minutes to compile.

The size of the the object code (the compiled code) became less important in the large machine environment as large megabyte machines with virtual storage paging became available. The size of the object code might still be important in the micro environment except that given the correct architectural approach I think it will not be. Most of the (sucessful?) micro compilers available today are taking what I consider to be the wrong architectural

approach.

When I first heard about the present popular architectural approach I said- "Hey, that's the way to go." But now, in retrospect, I see it is the wrong way. What the popular approach does is create a run time package that includes a standard run time module of some standard code along with the compiled code. This standard run time package is usually 3 or 4k in size which means that no matter how little the amount of code you compile, even one line, the resulting run time module will be at least a little longer than the standard 3 or 4k.

What is actually needed is a compiler that does a direct compile into machine language code, that is *easily linkable* to a BASIC program. Many lengthy programs have only a few routines that actually need compiled speeds rather than interpreted speeds. A properly compiled program that will give you output approaching machine language speeds will naturally be much longer (ie. require more memory for storage) than a BASIC program.

The claim of the distributors of the DTL compiler is that for longer programs the total run time package will be smaller using the DTL compiler than not using it. There is conflicting evidence on this matter. TPUG member Jeff Chris felt that he got some reduction in programs that started out being over 16 blocks in length. For example he cited one program that was 19 blocks long originally but reduced to 17 blocks, including the run time module, after having been compiled.

This experience was not shared by Gord Campbell, Jim White and others. They compiled a number of programs of 60 blocks in length and longer and found them increased in sized rather than reduced. Programs smaller than 16 blocks were of course much increased in size. All of this does not strike me as being very important - it just points out the questionable accuracy of the DTL advertising.

Actually, as stated before I feel that the run time module of a well compiled program will be much increased in size. The ability to do overlays, or easily link programs, can do much to offset this drawback of compilation over interpretation. These abilities along with questions regarding the ability to submit unmodified BASIC code to the compiler, the lack of restrictions in the way the BASIC code is written, and the portability of the resulting compiled code between various 6502 based

machines are some of the more important questions to be asked.

However, while I received many comments from individuals to whom I submitted the DTL compiler for evaluation regarding its many deficiencies I will not bother delving into them or listing them here. The reason being that the DTL compiler is an overwhelming piece of junk for one outstanding reason. The resulting object code from it is so slow as to make it worse than worthless.

Many months ago I could hardly believe my ears when I heard about a TRS-80 BASIC compiler that resulted in object code that was actually slower in execution than the interpreted code. "What possible use could such a compiler be?" I asked myself and others. Especially at the the \$450 price at which it sold. No one could tell me then - but now I know.

Dick Hubert, author of an article entitled "Applesoft Compilers", also published in the issue of *Call-A.P.P.L.E.* mentioned earlier, stated regarding compilers "... the greatest advantage is speed of execution. The second advantage (and this is primarily one from a software vendor standpoint) is program protection. It is very difficult to modify one line of code in a compiled program. It is also much easier to *hide* calls to a hardware protection device in a compiled program."

And so there we have it. A possible justification for a product like the DTL but can we fairly call it a compiler? I think not, unless we want to sucker in a large body of buyers that are really looking for a compiler. And how does the DTL fair as a program protection device. Very well, thank you. If that is what you wish.

After having laid out \$350 for the DTL package and finding it useless as a compiler I gave it to some other interested individuals who wished to test the program protection feature and see if they could circumvent it. They totally destroyed the package, which bothered me not because it was worthless anyway, but they completely failed to circumvent it.

I personally feel that even on this point the package would generally be prohibitively expensive to use. Each program must be combined with a specific dongle for execution at run time. A company may obtain custom dongles -but at a cost 20 to 30 dollars per dongle in quantities of 100 I am not sure how many will feel they can justify the cost. In any case it is not for the casual hobbyist.

Of the 6502 compilers that exist for which I have available common benchmark statistics against the DTL package there is no question regarding the deficiency and inferiority of the DTL package. While I have tested some other compilers and have found their performance much better than those listed here (in one case the performance of a compiled loop was 125 times faster than the PET BASIC interpreter) I cannot fairly include those results here because they were not run against the same benchmark. It would sort of being like comparing apples and lemons.

But what of comparing Apple compilers and PET compilers? Is this a fair comparison of what we should expect in performance? Yes, I feel it is. Both are based on the 6502 microprocessor, and both use Microsoft interpreters. Benchmarks performed for me by Jeff Chris and Gord Campbell on both the PET and the Super Pet indicated no significant difference between either of their performances and the Apple.

The first consideration in evaluating a compiler is the factor of increased execution speed over the interpreter. In my own opinion a factor of over 20 is acceptable, over 40 is good, over 60 is very good, and over 80 is excellent.

By that standard the integer and integer optimized compilers benchmarked here are almost (but still less than) satisfactory but most of the others are hopelessly worthless as a compiler. Particularly the DTL package.

There have been many compilers announced or made available for 6502 based machines. I have by no means had the opportunity to examine or test all of them. I greatly hope that there now exists or that there will soon be available a truly worthwhile compiler for the PET but as yet I have not been able to find it. If I do, I will have to admit it would be worth even more than \$350 to me.

But what of the compilers that do exist? Well, there is a mini compiler in the club library that you can try for yourself. There are also several PET compilers that have been announced (another from England, and one from California, and another from elsewhere in the U.S.) for which I have not been able to obtain evaluations. There are also some additional APPLE compilers which are supposed to be quite good for which I do not have benchmark data available.

COMPILER	BENCHMARK		TESTS	
	program	blocks	compile	speed
PET interpreter	5	-	47.0	0
Superpet interpreter	5	-	51.36	0
Apple interpreter	5	-	46.9	0
Apple Integer interpreter	5	-	28.0	0
Apple Hayden compiler	13	10.4	11.3	3.15
Apple Expeditor compiler	17	86.5	12.7	2.69
Apple Speed Star compiler	18	5.6	19.0	1.47
Apple Integer compiler	20	6.8	3.0	14.63
Apple Integer Opt. compiler	20	6.8	2.6	17.04
PET DTL compiler	19	69.5	29.4	0.60
PET DTL integer compiler	19	69.5	13.75	2.42

If you have access to another compiler and can review it *please* do so. The TORPET will gladly print the results. The benchmark program used for evaluating the compilers is appended to this article.

The Apple benchmarks were performed by Dick Hubert and David Garson as reported in their articles cited earlier. The PET benchmark was done by Jeff Chris.

```

700 REM set time
710 K = 0
715 DIM M(5)
720 K = K + 1
730 A = K/2 * 3 + 4 - 5
740 GOSUB 790
742 FOR L = 1 TO 5
744 M(L) = A: next L
750 IF K l.t. 1000 THEN 720
760 REM print time
770 STOP
790 RETURN

```

## RTC WORD PROCESSOR

*Gerald L. Gold*

Using a new word processor is something like getting into a new sport coat. It may not be all that comfortable on first acquaintance, but on 'wearing it in' you become accustomed to its quirks and use it in a way that makes everyday tasks more comfortable. The RTC word processor has emerged from several years of consultations by teachers, writers and businessmen with Peter Smith of Richvale Telecommunications. It is a fast-operating machine language program that is undergoing continuous development with the help of programmers like David Foster. A version is now ready for release which could ideally suit the needs and budget of many TPUG members.

**TAPE OR DISK:** The RTC will run on a 32K PET, with a 40 or 80 column screen. Both a disk and a tape version are available though their features are slightly different. There is also a difference between the 40 col and the 80 col versions in that the latter has a very useful video print option.

If you use tape rather than disk, then RTC is a significant extension of your PET's capabilities. It loads quickly, uses fast forward to reduce execution time, and taped programs can be down-loaded to disk using the RTC software! Someone who travels frequently could use the taped version as a portable resource, leaving their drive at home. The following description, however, applies to a preliminary disk version that I have been working with for several weeks.

**LOADING RTC:** On loading, a menu offers several options, some of which are quite powerful for a word processor in this price range. There is the RTC program; then follows a Reorganize program that

permits rapid reorganization of multiple files; a Transfer program enables the user to transfer taped files to disk; and a 'Modem' option facilitates the sending of RTC files over your line to the outside world; lastly there are the usual and essential backup and quit options.

On entering the RTC program, several printer alternatives are offered: Centronics, Spinwriter, Pet and Tally printers, the MX 80, and ASCII option (which I used for my Olivetti). Add a line feed or don't add a line feed, new the disk or don't, after which RTC loads 'Paragraph' #s loaded on screen.

**SCREENS AND PARAGRAPHS:** The RTC organizes data in 'paragraphs' which include a maximum of one screenful of data. Although 20 screens are loaded into memory at one time, filling every screen will permit eight screens which is an ample 160 80 col. lines of work space (6 manuscript pages). A buffer is used to memorize text that is being moved from one location to another, but the multi-paragraph format eliminates the need for 'extra text'.

Scrolling from screen to screen, linking screens, moving entire screens, or inserting screens, are rapid and simple procedures. A warning flashes when a screen is nearly full and a second warning appears when memory is virtually full. There are no control characters on the screen other than carriage returns and screen connector marks, leaving the user with an uncluttered workspace. Formatting is done on 3 separate memorized screens which can be quickly recalled during editing. All other control functions are available with a two key recall from a menu on the top line of each screen.

**FORMATTING THE RTC:** Margins, justification, page size, pagination, paragraph and line spacing, and several other commands are available on the easily accessed and memorized print control maps. There is a small control map (table) with essential format commands for quick resetting of spacing and line size, and a larger map with a more complete set of commands which can be bypassed by accepting default values. The third control map - which can be ignored on many routine printings, carries out titling and special print commands such as pitch, spacing of lines and printer dots for the Centronics. A special feature of this 3rd map permits the redefinition of the number pad for unshifted cursor control. The large map includes 10 user-defined

strings which can be recalled from the text by \*(n). True form letter capacity is not available unless the user purchases the Commodore 'Scratchpad' (developed in tandem with the RTC) which allows for virtually unlimited combinations of stored text in a program that is interfaced with a mailing list. I have not yet tried the the RTC-Scratchpad combination though the description is promising.

**TEXT EDITING:** The index listings are defined by the user. Calling an index does not cancel ongoing screen editing. Programs may also be loaded from the index. Given the number of programs that an 8050 drive could accomodate, future versions of the RTC will probably include a paged index. I find it particularly convenient to be able to rewrite the index for simplified file-handling.

There are two edit modes: unstructured' editing permits the user to make full use of the control maps with few possibilities for adding indentations within a document. It would be the format chosen for manuscripts and some letters. 'SStructured' editing, invoked by a CR at the beginning of a screen, allows the user to define the format as he or she types. This is the mode that would be used for a complex letter, table, or a bibliography. Both modes offer the option of multiple carriage returns on a single line, a feature that saves memory and increases the length of documents that can be stored in a given file.

Other 'edit' features include fast and simple routines for deleting, relocating or inserting words, lines and paragraphs. A global search and replace feature is also called from the screen menu and works quite well. In all these operations cursor movement is quite rapid when compared to other PET word processors, moreover the cursor can be both slowed down or further speeded up by using the number pad cursor option.

**PRINTING WITH THE RTC:** The print command asks only for the numbers of those paragraphs to be printed, and these may be anywhere in the data disk. At this time, only one data disk can be addressed from the program probably on account of the supplementary programs on the RTC program disk. I am told that future versions will allow for a second drive. As mentioned above, a video print feature is available for 8032 users and 'Scratchpad' will permit multiple paragraph interfacing with a mail list. Disk print is not available except in an educational and multiple user version that I have not been asked to evaluate.

**EVALUATION:** Working with the pre-release version, I occasionally encountered snags that have since been corrected by the people at RTC. Seeing such dramatic improvements is quite frankly a very satisfying experience! As an advocate and 'user' of Wordpro, I also manage to see some advantages with the RTC system, perhaps more in the flexibility of entry and reorganization than in screen formatting or disk management. With the caveat that the RTC Word Processor is still being improved, a few additional comments on strengths and deficiencies may be useful.

The RTC should incorporate more detailed error messages - the current version sends the simplified warning of Disk Error. I also miss the ability for user-defined characters, though for most of us the PET/CBM keyboard should provide enough variety (I also type in French and Spanish..). The release version will have a full column counter and instant access to page and line position of the cursor, but it would be nice if the user would have more exact information on the location of 'end of memory'. Some features, such as underlining, do not run on my Olivetti (Ascll), though they do work with other printers. The RTC is particularly well-suited to the MX-80. Another minor point is that there is no provision for an upper case lock, though the PET shift lock works quite well when numbers and brackets are not required.

The operating manual is currently being completely revised by Keith Leung who is experienced in the evaluation and implementation of word processing systems. From what I have seen of the preliminary manual and of the proposed changes, the release version should meet the needs of most users. I would hope that Peter Smith and his associates will provide more information on the MODEM software that is in the program. The demand will be there as I suspect that many of us will wish to acquire the program.

If you want the RTC, and if you are a TPUG member, you can get it at the introductory price of \$99 for the tape version, and \$185 for the disc ( which takes a protection key in the side cassette port). This is less than 50% of the release price! The TPUG offer is valid until November 30th. Speak to Peter Smith at a club meeting (where will set up a demonstration table), or contact him directly at Richvale Telecommunications, 10610 Bayview Ave, Richmond Hill, L4C 3N8 (telephone : 416-884-4165).

disk direct

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 textstat01  
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 merge 4.0  
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easy edit/mx-80  
 easy.edit.mx-82  
 disk.log.mod1  
 mx-82.char.defn  
 char.set.defn  
 mx82.pet.prnt  
 index.prgm  
 memocal 2.2

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TC - tpug disk dec/81

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 copy all  
 asteroids  
 set/reset.rel  
 word count 9.0  
 word count basic  
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 e-rom demo  
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