THE TORPET

BULLETIN OF THE TORONTO PET USERS GROUP No.9 Spring Special– April 1982

$1.50 — FREE to TPUG Members

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our Dealer of the Month

the TORPET

published by the

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MACHINE LANGUAGE GROUP

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THE MACHINE LANGUAGE GROUP
CALL JIM CARSWELL
(416) 531-9909

CALENDAR

The last two Westside Chapter meetings scheduled for this year will be on Wednesday the 19th of May, and Wednesday the 23rd of June. The West End Meetings are held at Sheridan College on Trafalgar Road, 2 miles north of the Q.E.W. The meetings start at 7:30 p.m.

The meeting date for the Central Group is the second Wednesday of each month. The next scheduled meeting is on May 12th. The Central Meeting is held at Leaside Highschool, 200 Hanna Road just east of the Bayview & Eglington intersection. The meeting starts at 7:30 p.m.

ALL DAY COPY SESSION / SEMINAR

Plans are being made for an all-day copy session and seminar in June. The date is not fixed yet, but we are trying for Saturday, June 12. Availability of space may determine the actual date, and limit the format.

The format we are after is a program with three components. The first is a copy session. This would begin in mid-morning, and go till dinner. The procedure will be to fill out a slip, attach it to the cover, and leave it at a copy station. Later in the day, the disk could be claimed by showing your membership card, or membership receipt (memberships would be available at the door, of course).

The second component will be demonstrations. We hope to have both commercial displays and individual members showing what they have developed. If you have something to show, please give one of the organizers listed below a call RIGHT NOW.

The final component is presentations. Our objective is to present topics which are of real interest to a few members, and overall have something for each member. The subjects will hopefully range from how to make sound with a PET, to features of business packages, to tips on using software such as Wordpro and Moser's Assembler. The number of concurrent presentations will only be limited by space and the number of people with something to present. If you wish to make

such a presentation, please let us know as soon as possible. We want to publish a schedule in the May bulletin, so members will know when to show up for the sessions they are interested in.

The organizing committee at this point is made up of (with home phone numbers):

Gord Campbell 492-9518
Rob Lockwood 483-2013
Jim Carswell 532-3815

We hope to at least double the number by the time you are reading this, but that still won't be enough. If you can help us in organizing for the event, or even for the actual day, please let us know.

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.

Nominations for 1982-3

The nominating committee has put forward the following names for election to the board of directors for the 1982-3 season:

Michael Bonnycastle (R)
Chris Bennett (R)
Dave Hook (R)
Gord Campbell (R)
Sandy Cavan (R)
Bruce Beach (R)
Al Farquharson (R)
Steve Punter (R)
John Easton
Paul Higgenbottom
Gerry Gold
Gary Croft
Eric Brandon

A number of people have offered to help with some of the committee work, for which we are extremly grateful.

Michael Bonnycastle

Executive Meetings

From time to time, but usually once a month, the directors get together to chart the future of TPUG and try to deal with the problems of a growing club. These are not easy, particularly when the demands approach those of a full time job. Imagine correspondence coming in at the rate of 10 to 20 letters a day! These range from requests for club disks, membership applications, bills and a host of other odds and ends. Imagine producing a forty-eight page magazine! Imagine coping with a library of over 1,500 programs!

Well, we have hired a part-time secretary, and we pay for typesetting the TORPET, and membership keeps growing - there are about 1,000 names on the mailing list, and we are taking an ad in Compute to let people know that we are here. And whenever you do something, especially if it's done in a grand manner, it is never done to everyone's satisfaction, so there are complaints, and there are problems. So far we have been able to cope, but we have got to keep trying harder. For instance, some pretty strong views were expressed in the last TORPET. We heard about them! And we discussed them. Now not everyone agrees with what was written, but it is the Editor's job to edit the paper, and he has the final say as to what goes in, and what doesn't. His comments were simply that he intends to present contrasting views and he is fully prepared to present both sides of the picture, so if there are any comments about the content of the TORPET - send him a letter, he will print it.

Our job, as directors, are to see that the Pet community has full access to all the information on Pets and related products, and we are trying to do just that. Every member has a right to as much information as we can present - opinions, facts, programs and products. We try to see they get them all. Want to give us a hand? There's lots of work and the pay is lousy, but we have lots of fun.

Michael Bonnycastle

MEETING REPORT
February 10th

Michael Bonnycastle demonstrated an inventory control project which he has been working on over the last year, and showed how Paul Higgenbottom's input routine was being used, how relative files were used and how programs could be

linked together and called from a menu within the programs.

Jim Butterfield's absence was noted but Gord Campbell remarked on Jim's Tax Program, noting it was on the monthly disk, and also showed some 'sound' generators.

Kim Lowndes demonstrated an extensive disk catalogue series of programs and Chris Siebermann talked about a program which converts directories to permit very easy loading.

While there was not a Basic Basic session, Paul Higgenbottom ran a separate Vic group which was well attended.

MEETING REPORT
March 10th

Jim Butterfield started the meeting off in his usual style, and brought the group up to date on Tax '80, as well as a number of other goodies involving tne Vic - Pet compatibilities and incompatibilities.

Gord Campbell showed how to make the phone ring with a pet. Don Whitewood demonstrated a p ograme, Jaybird which used the tape deck to play a recorded story which keyed into the program with cues. John Easton gave a demonstration of a Critical Path programe used for planning and control of a project.

There were also a number of book reviews by Jim Butterfield and Eric Brandon.

MEETING REPORT
April 14th

The April meeting was started off by Mike Roach who demonstrated how, with his program, you could determine how much income you could generate from a fixed amount of money, invested today. His program takes into account interest rates, income tax, inflation, and allows you to see the effect of what happens when these change. Then Bill O'Conner showed off a game of Stock Ticker, given to him by a friend. John Easton talked about Mpack, and Eric Brandon gave us a program which will rewrite your directories in alphabetic sequence.

Michael Bonnycastle concluded the meeting with a few words on the organization, some of the problems and opportunities facing the group, and a call for volunteers to help run the club. Nominations were called for and will be listed for the membership before the next meeting. (see elsewhere.) There was considerable discussion about the copy session, and some useful suggestions were put forward.

NEW EQUIPMENT

by Chris Bennett

Commodore has announced two new products that should be available later this year (May/June?). They are the Ultimax and the Commodore-64. Both these products have the new 6510 Microprocessor, 6526 I/O chip with 24 hour clock, 6581 Sound synthesiser chip (SID), 6566 Video/Graphics processor plus ports for 2 joysticks or 4 paddles. They will also support a light pen and have a small port for games and such on cartidge.

The Ultimax is mainly a games machine with 2K of RAM and a membrane keyboard. The keyboard can be overlayed with plastic sheets redefining the keys for other uses (Music etc.). There is also the capability to plug in a 'Tiny BASIC' cartridge as an introduction to basic. This is possible since the Ultimax has a full keyboard whereas the other games machines do not. The price set so far is $150 in the U.S.A. ($225 in Canada?). The disadvantage at first will be the lack of games cartidges. However once they start coming, the Ultimax should be very popular. Rumour has it that Commodore plans to sell about 100,000 of these each month once production gets into full swing. The Commodore 64 game cartridges will work in the Ultimax. An extra 2K of RAM can be added if needed as can the standard cassette unit.

The Commodore 64 seems to be a replacement for the 40 column Pet. Only time will tell when this will be true. It certainly has a lot of feature for the price. For $600 in the U.S.A. ($900 in Canada?) you get a machine the same size as a VIC with an identical keyboard, 64K of RAM and Basic version 2.0 as found in the VIC. There seem to be two memory configurations. The first has the 8K ROM operating system and 8K BASIC together with 40K of RAM giving users about 38900 bytes of workspace for Basic. This will be the standard setup for the machine. The second will provide 64K of continuous RAM. This will then allow the machine to run with a Z-80 microprocessor card or to soft load other languages such as Basic 4.0 and UCSD Pascal. The Commodore 64 will also have the user port and cassette port just like the VIC and will have an optional 170K single disk drive, RS-232 cartridge, IEEE

cartridge plus other expansion cartridges.

Both the above machines share a set of new chips as follows:

6566 - Graphics processor. 16 colours. 320 by 200 Pixel resolution (2 colour), 160 by 200 Hi-res mode (4 Colour) and 40 by 25 character mode just like the 40 column Pet. Definition of SPRITES of 21 by 24 pixels in size. These are displayed independently of any other information on the screen, and are thus placed on top of (or behind) displayed information. The processor indicates sprite collisions in special registers for games programming. Up to 8 independently moveable sprites can be defined on a line. Any sprite can be scrolled horizontally or vertically a pixel at a time. This should produce graphics capability similar to the Atari 400/800 and provide a 40 column line that is missing in the VIC-20.

6581 - Music synthesiser processor. 3 independant voices with a fundamental frequency range from .059 Hz to 3.9K Hz in steps of .059 Hz intervals. This should give very accurate sound frequencies. The processor can also select 4 waveforms for each voice: saw tooth, triangular, variable width pulse and noise. There is also control of the attack, decay, sustain, release and amplitude of each voice plus programmable sound filters with a low-pass, high-pass, band-pass and notch (narrow band) filtering capability. Also other special effects such as reverberation can be implimented.

6510 - Central Processor. This is similar to the 6502 in the Pet or VIC. It is completely compatible with the 6502 processor.

(Please note that the above are Preliminary Specifications released by Commodore and may be subject to change).

Chris Bennett

READER'S CORNER

Readers:

Yes you who just decided that you have no desire to read this section of your Torpet.

This is your magazine printed by your club and we want you to tell us what you want, ask your questions and air your complaints. If you are afraid to make general comments or specific complaints, the club will not be able to service your needs and those of others like you.

As of this issue, we invite you to send your comments and questions to us,

The Reader's Corner
c/o Wycor Business Systems
170 The Donway West, #401,
Don Mills, Ontario
M3C 2G3

or give them to Michael Bonnycastle or Louise Redgers, scribbled, (legibly please), on your coffee break napkin if necessary.

We will endeavour to publish them here or at least pass the contructive remarks on to the club executive. Questions will be answered either through the column or we may attempt to get someone to make a presentation of the issue if it is of general interest, at the next meeting.

We look forward to hearing from you.

Our special thanks to Dr. Derek Lane-Smith for his contribution of the following letter which christens this column.

Dear Mike:

It has occurred to me that the earlier TPUG meetings were mor fun than those of late. One reason may be that the present size makes it much more difficult to get to know people. Another thought, though, is that the presentations seem to have degenerated into mere demonstrations of software without explanations that we can get our teeth into. While the 'nursery class' on the one hand and the machine language group on the other are getting to grips with the operation of the machine, the remainder are left with the occasional offering from Jim Butterfield and little else.

May I suggest that an advanced **basic/elementary machine language group** be formed to meet on the same evening as the main meeting (as does the nursery class) to look at the content of programs and the circuits of hardware to gain a better understanding of the system?

Kindest regards,
Dr. Derek Lane-Smith

Secretary's Report
by Chris Bennett

THANKS COMMODORE

I recently sent Ian Kennedy of Commodore Canada a letter requesting a 4040 disk drive to be loaned to the Toronto Pet Users Group. This disk drive would be used for maintaining the club library and for copying disks that we send out in the mail.

I now have that disk drive and would like to thank Ian Kennedy and Commodore Canada for the co-operation we have always received from them. Not only have they loaned the 4040 for an indefinate period but we have the use of the video projector for our central meetings. Also a number of Commodore employees are active in the club; attending meetings, keeping us up to date on new equipment and giving presentations. For example, Paul Higginbottom is giving most of the presentations at the VIC club that just started at the Central Meeting.

I hope that this co-operation between TPUG and Commodore Canada will continue in the future. We all benefit from it.

DISK OF THE MONTH

Since the last issue of the TORPET, we have released four more disks. These are: TD (Jan/82), TE (Feb/82), TF (Mar/82) and TG (APR/82).

To order these disks via the mail, just send $10 for each 4040 disk and $12 for each 8050 disk. This includes the price of the diskette, the labour involved to copy them and all postage and packaging charges. Do not send us any diskettes.

Some members have a mistaken idea about our monthly release disk. It is not a disk of the month club. We do not send the disks on approval each month to all members and then collect the money if you want to keep the disk. A number of dealer members have this idea. I stated clearly in the letter I sent out that the monthly release disk would be sent UPON REQUEST to all members who wished it.

One more point. The 8050 disks at the present time contain the same information as the 4040 disks. In other words, we have not combined 3 4040 disks into one 8050 disk. This MAY be done some time in the future if we get time.

Chris Bennett

YOU WANT INFORMATION?

This is just a gentle reminder for those of you who write in requesting information from myself or other TPUG members. Please enclose a self-address, STAMPED envelope for the reply. Also, if you have specific questions, write them dowm with room for the answers following. This way whoever is answering can write the answers directly onto the letter you sent, put it into the envelope you provided and mail it back to you. People who send questions this way get answers very quickly because most of the work has already been done. When you get 5 or 10 letters a day asking for information, a lot of time is taken to address the envelope, put a stamp on it and write up a letter with the answers. Sometimes it doesn't get done for days or even weeks if I'm busy at the time and I have to do all that extra work.

Chris Bennett

CLUB TAPES

The club now has the entire disk library transfered to tape. Each tape costs $6.00, payable in advance, and includes the cost of the tape, mailing and handling. The contents of the tape will be almost identical to the contents shown on the disk listings in this TORPET.

We are in the process of editing the 6 disks full of VIC programs we have in our posession. As soon as the disks are ready we will transfer these to tape and print the directory in a future issue of the TORPET. Since the majority of VIC owners do not own disk drives, This will be the best way of getting the VIC programs out to you.

Do not try to order any disk or tape whose directory listing has not yet appeared in any issue of the TORPET.

To order tapes, send $6.00 for each tape needed to:

Toronto Pet Users Group
c/o Chris Bennett
381 Lawrence Ave. West
Toronto, Ontario, Canada
M5M 1B9

Soft ROM Switch

BY Dr. George Piasecki

SUMMARY:

The use and capability of the SOFT ROM device is given.

The construction and installation of a simple switch for THE SOFT ROM is described.

This allows the user with ONE SOFT ROM to have full control of the 2 expansion read-only addresses at $9000 and $A000.

CURRENT FIRMWARE FOR THE PET:

A good review on this subject was given by F. Arthur Cochrane in **COMPUTE.** His paper was titled **ROM EXPANSION FOR THE COMMODORE PET** and can be found in Issue 11, April 1981 on page 130.

THE SOFT ROM:

This device was developed by Bill McClean and his group at BMB Compuscience, Milton Ontario, Canada.

The SOFT ROM when installed (simple to do) at either address ($9000 or $A000) allows you to WRITE as well as READ to the memory at the installation address. This can be done by using the Machine Language Monitor, or by LOADING from disk or tape. You can also change the memory from BASIC with a POKE statement (ex. 'POKE(9*4096),A' where A can be any number 0 to 255.

You can set the SOFT ROM for WRITING only, READING only or in a READ/WRITE mode by the SOFT ROM SWITCH (not to be confused by an additional switch which is the subject of this article.)

The major use of the SOFT ROM is to simplify the problems of the competing ROMS for the expansion addresses.

Visicalc, Waterloo BASIC, Jinsam, etc. protections ROMS occupy locatio $9000

WordPro 3, Kram, SuperKram, etc. protections ROMS occupy loaction $A000.

One can now dispense with the ROMS by: (1) READ each Protection ROM by SAVING to the disk with the Machine Language Monitor. (2) Install permanently the SOFT ROM (not soldered in however, -ed.) Then LOAD back into the SOFT ROM the appropriate, previously saved Protection ROM. (Ex. WordPro 3 ROM information when using WordPro 3 etc.).

This facility clearly creates problems for those using ROMS at the expansion memory addresses as a means of protecting their programs. On the other hand it solves problems for the users who have to resort to devices that allow for multiple ROM switching. It also allows them to have a REAL BACKUP for the total program. If you have placed and removed ROMS repeatedly you will know that it is not too difficult to damage one of the ROM pins in the process. The other use of the SOFT ROM is in the development of a Program to be located at the expansion memory address. Once you have established that the program is bug free you can 'burn in' an EPROM.

SWITCH FOR THE SOFT ROM:

The purpose of this switching method is to allow you to mechanically switch ONE SOFT ROM device to function at address $9000 or $A000 without removing it from the socket.

This is accomplished by having a complete pathway from either SEL 9 or SEL A on the circuit board to pin position 20 on the SOFT ROM. Ex. (If SELECT 9 path is complete to the pin on the SOFT ROM, corresponding to PIN 20 at address $9000, then the SOFT ROM will function as described for address $9000). The same thinking applies to address $A000.

The method described allows you to accomplish the above simply and **requires no alteration** (such as interrupting the SELECT LINES and hooking them to a switch) **of your PET circuit board.**

The interruption of the SELECT LINES is done instead on a 24 pin ROM socket holder that can be purchased cheaply at Radio Shack.

PREPARATION:

1. Prepare the cable wire as shown in FIG.4. Connect the center wire to the Minitest clip.

2. Prepare and TEST the DIP ROM SOCKET before removing pin 20.

Possible Problems: The ROM sockets until I touched up the pin tips of the Radio Shack ROM socket holder with very little solder. You can check out its performance before removig PIN 20 by placing it in the PET socket and then installing the SOFT ROM into the newly installed ROM socket. The SOFT ROM should work as well as it did when it was installed without the intervening ROM socket.

Having established proper connection of the ROM socket holder remove pin 20.

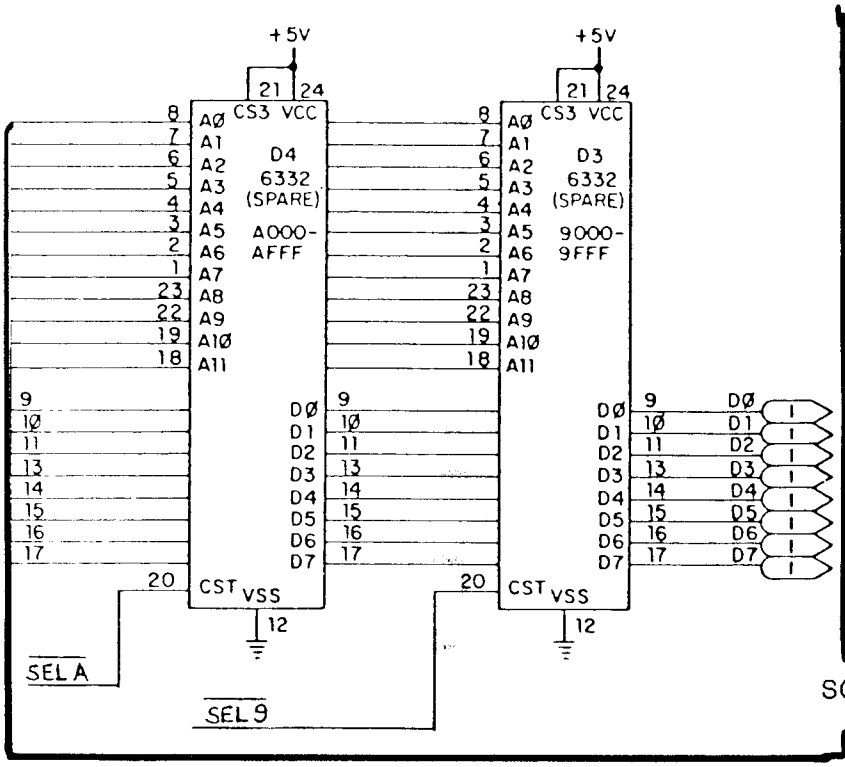

FIG. 1
SCHEMATIC OF PET ROM
at $9000 - $A000

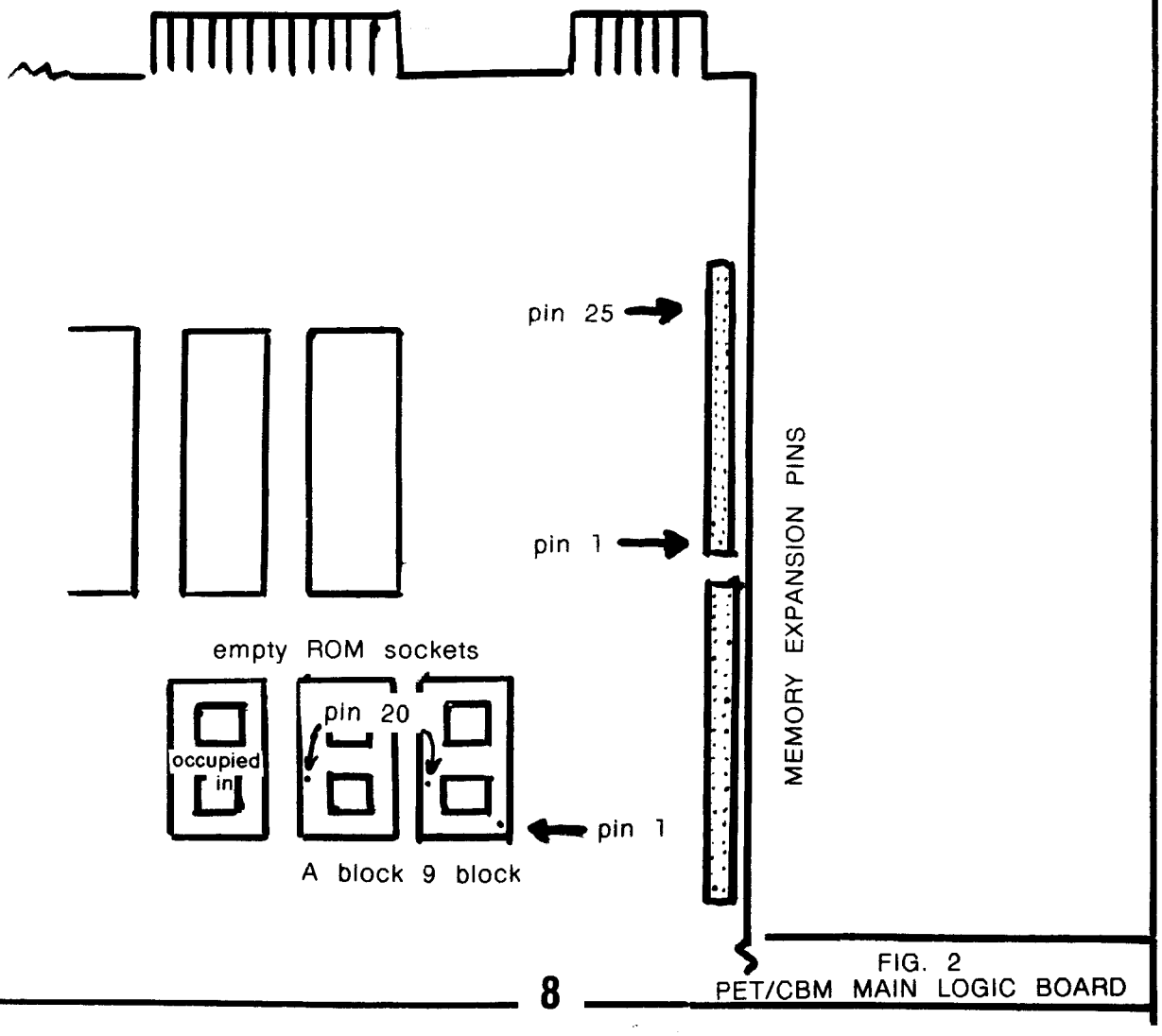

FIG. 2
PET/CBM MAIN LOGIC BOARD

LOW-PROFILE DIP SOCKET
Type 24-Pin Cat. No. 276-1989

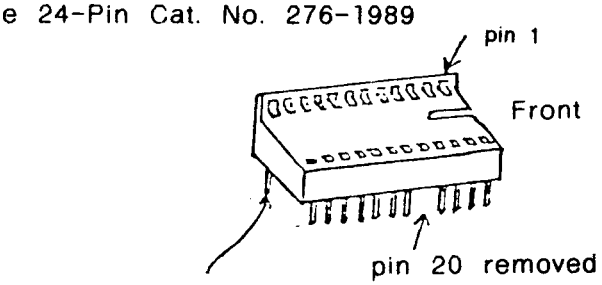

FIG. 3
PREPARATION OF DIP SOCKET

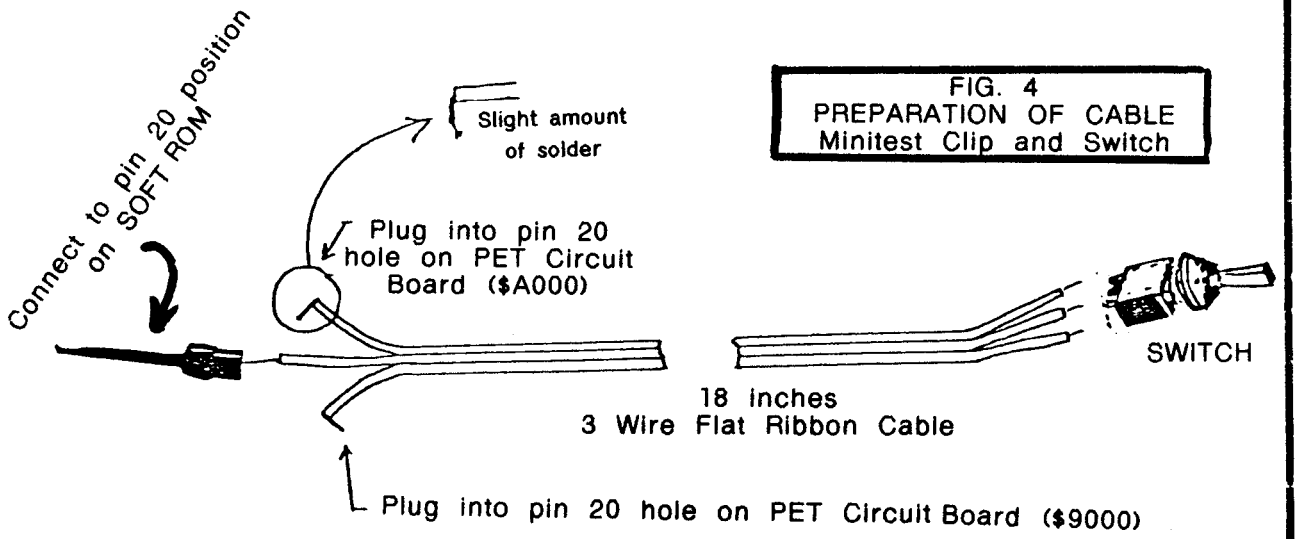

FIG. 4
PREPARATION OF CABLE
Minitest Clip and Switch

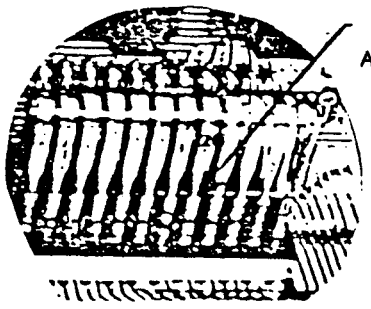

FIG. 5
PREPARATION FOR TEST CLIP CONNECTION

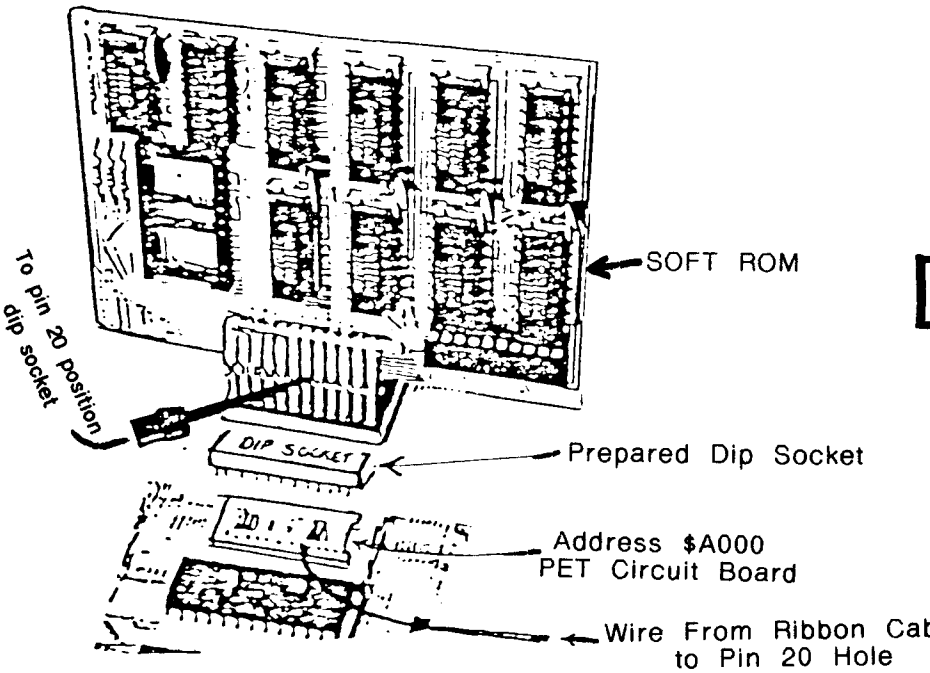

FIG. 6
FINAL INSTALLATION

3. Mount the SPDT switch onto some holder that can be stuck to the side of the PET as was done for the switch which comes with the SOFT ROM. I used a plastic self-stick hook holder that is made for putting on doors. The plastic holder was drilled and cut so that the SPDT switch could be mounted onto it? Solder one wire to one of the outer lugs and the remaining wire to the remaining switch lug. The switch should function so as to have a complete path from the center lug to one outer lug at a time, depending upon the position of the switch lever.

OPERATION:

The SOFT ROM will operate properly at address $9000 or $A000 depending upon the position of the toggle switch lever. You can put a label on the switch to let you know which lever position corresponds to which address.

I made 2 such ROM socket holders. This should allow me to use a combination of the SPACEMAKER II and the SOFT ROM. One will remain at one of the memory addresses on the PET board. The other will be mounted in a similar fashion in one of the 4 selectable sockets of the SPACEMAKER II.

INSTALLATION:

1.Install one outside wire to pin 20 hole on the PET circuit board at address $9000 and the other outside wire at $A000. The Minitest clip will be connected later. FIG. 2. FIG.6.

3. Install the SOFT ROM into the above mounted DIP SOCKET at address $A000. Fig. 6.

4. Connect the Minitest clip to the wire going to pin 20 of the SOFT ROM (Just above the solder joint. You may have to scrape away a little of the wire insulation to allow for a proper connection). FIGS. 5 & 6.

This completes the installation.

PARTS PURCHASE INFORMATION:

A. SOFT ROM: BMB COMPUSCIENCE or Canadian Micro Distributors Ltd. 365 Main Street, Milton, Ontario, L9T 1P7, Canada.

B. FROM RADIO SHACK:

1.SPDT FLATTED LEVER SIGNAL SWITCH (275-635).
2. ONE or TWO LOW PROFILE IC SOCKETS, 24 PIN DUAL INLIN (276-1989).
3. 3 WIRE RIBBON CABLE approximately 18 inches in length.
4. Minitest Clips (270-372).

3. Some plastic or other holder on which you can mount your toggle switch, which in turn can be stuck to the side of the PET.

CBM

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COPY TREE

The DISK Copy Tree has continued to grow. It is one more way to obtain the complete library. The other ways are to purchase it at $10 per disk from the club secretary, or attend each of the club meetings and obtain the disk on the night that it is released, or attend one of the major copy sessions and with some friends co-operatively copy all the disks, and then trade them among yourselves. The DISK COPY TREE is not for everyone because of the time involved (sometimes ten or twelve hours) in copying the entire library, and the cost of the number of diskettes involved. It is possible to reduce this latter cost by using both sides of the diskette.

If you have an 8050 drive you must still maintain the library in the limited number of programs that will fit on the smaller size diskettes for convenience in copying by those who do not have an 8050 drive. In order to actually copy between 8050 and 4040 disk drives it is necessary to have both drives connected to the PET at the same time and to use the CHANGE 8050 and COPY ALL programs.

The rules are quite simple. In order to become a member you may either go directly to one of the dealer members listed below or inquire from any one of them the name of one of their branches.

If you wish to do the copying right at one of the dealers their only requirement is that you purchase the diskettes from them.

If you wish to copy from one of the branches the rule is that you must also let two other branches copy from you. Some branches will do the copying for you, others will loan you their library to copy, and others will require you to come to their location to do the copying.

A VIC copytree or tape copy tree is not yet available. If anyone starts one please let me know and I will publish the details in the TORPET.

Bruce Beach
Horning's Mills, Ontario
L0N 1J0 Canada
(519) 925-6035

Professional Computers
117 Skyway Ave.
Toronto, Ontario M9W 4Z4
(416)675-7818

Richvale Telecomunications
10610 Bayview Plaza Unit #18
Richvale, Ontario
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71 McCaul St. Toronto 596-1405

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$460.00

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+HIGH SPEED **+IBM COMPATIBLE**
+HIGH CAPACITY **+EXPANDABILITY**

Several models are available with either 5¼ inch or 8 inch drives. IBM 3740 data can be exchanged using 8 inch models. The system is expandable! Buy a single drive now and add more drives later!

5¼" MINI FLOPPY DISK SYSTEMS:

Model 540-1 Single Drive, Double Density (143K)	**$460**
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Model 580-2 Dual Drive, Quad Density (572K)	**$995**

8" MINI FLOPPY DISK SYSTEMS:

Model 877-1 Single Drive, IBM standard (295K)	**$895**
Model 877-2 Dual Drive, IBM standard (590K)	**$1240**

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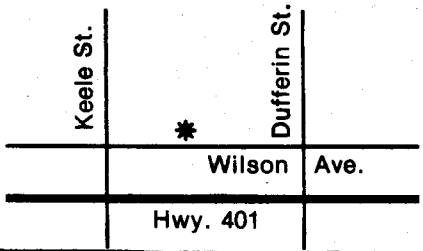

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BUTTERFIELD BOX

by Jim Butterfield

COMPILER COMMENTS

I don't want to become involved in the Great Debate about compilers. On the other hand, it's almost irresistable to dive in and add a few footnotes. You'll find no product reviews here. Just a little talk about what's involved.

For Basic?

Some languages were designed for compilers. In fact, the compiler was designed first, and whatever it turned out you had to type in ended up as the language. FORTRAN started more or less this way. To put compilers in perspective, we have to do a little historical work.

Once, long ago, there were no interactive computers. You punched up a deck of cards and if you were lucky an operator would run them sometime that week. Most of the results came back saying something like SYNTAX/ERROR (does that sound familiar?). There was no point in having an interpreter language; you wouldn't be there to watch it happen. We had FORTRAN and COBOL and others...

The first FORTRANs, for example, were tricky. If you used a variable called DIGIT, it would turn out to be a floating-point number; on the other hand a variable called NUMBER would be fixed-point. Heaven help you if you typed TOTALTOTAL+1; you'd get a ?MIXED/MODE error notice and have to recode TOTALTOTAL+1.0 to fix it. To input or output you needed to give more than the command: an extra line called FORMAT was needed, written in advanced gibberish. Honest.

Many of these problems have been fixed up over the years - you did know that there was more than one FORTRAN, didn't you? - but the style remains. The programmers have to adapt to the machine, and interactive is still an alien concept.

And now, Basic...

Along came Basic. It's a loose language: you don't have to dimension some arrays; strings wander all over; sometimes you can have FOR and NEXT items that don't match (bad practice, but it can be done) ... and interactive users love it.

What's the problem? Things that are not clearly defined by Basic. Let's look at a few of them.

Strings may be the worst thing that a compiler has to deal with. Basic doesn't tell the compiler how big any string is likely to be - ever. INPUT/X$ gives no hint as to the size of string X$. The poor compiler has a grim choice: allow maximum space for all strings and waste a lot of memory; or bounce the strings around as they change. The first alternative costs you program size; you write this little program that says DIM/A$(1000) and the compiler immediatey reports OUT/OF/MEMORY since it tries to allocate 255000 bytes for the array. The second alternative costs you time; no matter what you call it, some sort of garbage collection will have to take place. And then people complain because they expect compilers to produce fast fast code.

At first glance we think that the whole object of compiling is to get speed. But we don't give the compiler enough information to work up a really fast program. It's obvious that FOR/J1/TO/10 can run faster if we treat J as an integer. Unfortunately, we're not allowed to code FOR/J%... so the compiler will have to figure it out for itself. And what will it do with FOR/JA/TO/B? Until A is computed, we cannot know if it's integer or not.

It's obvious to us. We wrote the program. But the dumb compiler can't read our minds; and Basic doesn't give enough explicit information to do the job.

One last example. It's one of the annoying things about Basic that we sometimes have to code things like GET#1,X$/:/IF/X$""/THEN/XCHR(0) mostly to cover failings in Basic itself. If I were hand-coding into machine language, I could replace the whole thing with one instruction, because I know that Machine Language doesn't have the "fault" that's in Basic. But a poor compiler can't know that. It sees the GET instruction and codes it... and it must add to the coding to

continuted next page-

generate the Basic "fault" if it wants to be compatible. Then it must proceed to the IF statement and work through the coding to fix that same fault.

The Choices.

The compiler designer has a choice. He can code for 99% compatibility, tracking everything that Basic does quite exactly (including the faults). In doing so, he'll create a package in whioh almost anything will compile sucessfully. But - the compiled machine language will be doing most of the things that Basic does, and won't be much faster than Basic.

On the other hand, the designer can ask the user to make changes to his program before compilation that will help the process. He may also have things that compile from Basic in a non-standard manner. He may make arbitrary decisions on Basic structures - all FOR loop variables will be fixed-point, for example. And the compiler may question the user during compilation: How large is string M$ likely to be? Can J be fixed-point? The user has to work harder, but the end product runs faster.

Either way, the compiled program is not likely to be smaller in size than its Basic source. It's difficult to code 100 IFJ>5THENPRINT"J/IS";J in less than the 19 bytes that Basic uses. And good compilers add extra arithmetic - fixed-point addition, for example - that takes up overhead space.

Why Compile?

It's your choice. If you have a program that runs for five hours, you will probably be delighted with a paltry four-to-one against listing, a compiler will do a good job of instant obfuscation.

Don't lose perspective. A program that spends most of its time waiting for an operator or for a printer won't speed up much under compilation.

Machine Lanuage Programmers will be happy to know that they are not yet obsolete. Compilers can do a useful job. But until they get the brains equivalent to a human's judgment, they won't replace hand coding.

Jim Butterfield, Toronto

MIDNIGHT SOFTWARE GAZETTE

Issue #6

The **Midnite Software Gazette** is published quarterly by the Central Illinois Pet Users Group, c/o Jim Oldfield, 635 Maple, Mt. Zion IL 62549, 217/864-5320, & paid for by donations & ads from readers. It is republished regularly in the TORPET by permission. Their program exchange is through ATUG, the ASM/TED user group, c/o Brent Anderson, 200 S. Century, Rantoul IL 61866 (217/893-4577). The **Midnight's** editors, Jim & Ellen Strasma may be reached at P.O. Box 647, Pawnee IL 62558 (217/625-7494). CBM, PET & VIC are trademarks of Commodore Business Machines, Inc.

MIDNITE MEANDERINGS

UG contributors for this issue are Brent Anderson (BA), Mark Niggeman (MN), John O'Hare (JOH), Jim Oldfield (JO), Jeff Porter (JP), Jim (JS) & Ellen (ES) Strasma, & (indirectly) Monty Throneberg (MT). We also thank all whose names appear beside their comments & reviews for their help in making this 6th issue.

For those of you who subscribe to The Source, good news! **Midnite** has been placed on The Source by The Source PET User's Group. Please address Source mail for CIPUG to JOH at TCY 946 (PETMAN). Thank you, Source PET User's Group! Users, do you like what you see? -ES

Reader Roy Merme, in the midst of praising the **Midnite**, suggested it should be expanded to appear more often. He got me to thinking...

There is terrific commercial potential in what we're doing. A sister Apple review magazine started the same month as **Midnite**, is up to 200 pages/month, chock full of ads, & was, until this month, absolutely free. That kind of growth takes money & paid staff; until someone provides that, we'll continue as a quarterly independent. But Roy has raised a good point. Companies realize no one handles Commodore reviews as well or quickly as we do (I'm humble, right?), though some may be upset because we've burned their tails. But we **could** hire someone to make **Midnite** into what Roy requests.

I've talked to Commodore staffers about this. The new **Commodore magazine** is getting quite good, but there is still a need for independent support of Commodore products. Unless you help **The PET Paper** survive, & unless another PET source changes its plans, **Midnite** could soon become the only independent national PET newsletter.

Why is this so bad? We were recently asked by a seller of PET products for a list of U.S. Pet User Groups. To date, we know of 28. To get even that much information, we were the only source. The list in the current (12/81) **Commodore**

magazine is 3 years out of date --we are listed under the former address of our founder, who moved out of Illinois that long ago; at least 1 person on the list is dead. If you have ideas about how the **Midnite** can grow to serve PET users better, we'd like to hear from you. As you ponder, bear in mind: none of the bigger magazines want to absorb us (we checked), none of us want to work any harder unless we start getting paid, & some of us (namely me) wouldn't work harder even if we **were** paid. -JS

ATTENTION COMPANIES: You may now kill 2+ birds with 1 stone. JS is now a product reviewer for **Micro** magazine. On request, your product may now be reviewed for both **Micro** & **Midnite**. **Micro** focuses on advanced products, such as machine-language programs & add-on hardware; they will **not** accept games for review. **Midnight** will review most anything. Recently, we have noticed that the companies with VERY expensive programs (BPI, LTA, MAS, MARI, Silicon Office, The Manager, CMS's GAS, Info-Designs 2001, Request,etc.) rarely send them out for review. Anyone who pays more than a day's pay for a program, without seeing it reviewed, deserves what they get! For the record, sending us a demo disk & info packet doesn't count. We only review actual products, which will be returned upon request. -JS

LATEST COMMODORE HOTLINE (oops!)... LATEST COMMODORE NEWS

According to the latest issue of **Commodore** magazine, the Commodore Hotline recently handled 2000 calls a month. Since that was apparently more customer support than King of Prussia had in mind, the call is now on you. Address your no longer toll-free calls to: 215/337-7100 or 215/337-1603. (Apple cancelled their toll-free hotline, too.)

About the "Late Great Commodore" editorial in the last **PET Paper** ...Commodore isn't half as late as the latest issue of **The PET Paper!** The fact that nearly everything Commodore promised to bring out this year is in fact working & being delivered by year's end, with manuals, says a lot. For instance, the new 8023P printer, is a real competitor to the Epson MX-100 in features (fewer character sets & 1 less dot in the matrix, but twice as fast, & easier to adapt to friction-feed.) & wonder of wonders, it was in stock at my local dealer's WITH a manual precisely when Commodore told me it would be. The same was true of the new 8300P printer, the SuperPET, & most other products announced at NCC last May. Only the 8033 Color Computer (a publicity stunt?) & the new super disks have yet to appear. Dealers seem thrilled with the VIC, & our new dealer in Springfield is having trouble keeping CBM equipment in stock. Any 22 year old electronics company has to be doing something right!

Working on the Osborne **PET Personal/CBM Professional Computer Guides** has made us realize that Commodore's computer equipment can do more than anything from competitors not even close to its price range. And finally, there is now a wide range of top-quality software available directly through Commodore. Some of this, notably the 8096 version of VISICALC, & the DTL BASIC compiler is better than anything comparable available for Apple, Atari, etc. IBM may win big in the end, but it will be a while before your local dealer has any to sell, & longer before you can get the dollar value out of IBM that you do now out of Commodore. In short, I'd rather have Commodore stock right now than Apple stock...

NEW VIC LINE: Now that the products from NCC '81 are here, what's next? Last week, Commodore stunned everyone with an expanded VIC line. Most exciting to some within Commodore is the $150 membrane keyboard VIC 10. It is the same price as the Sinclair ZX-81 & is to the VIC 20 what the ATARI 400 is to the 800. Next is the 40 column display VIC-40. (Expect upgrades of existing 20's to 40 columns.) Let's hope the screen format will be software selectable. Then there is the Cadillac of the VIC line, the VIC-64, said to have 64K RAM standard & equal Apple II in features for $595 (1/3 Apple's price).

STILL-TO-COME DISK DRIVES: Shown again were 1) the 8250 2-megabyte DUAL DISK DRIVE (its SuperDOS is now called 3.0, not 2.7; first deliveries are expected in April), & 2) the MINNIE WINNIE WINCHESTER TECHNOLOGY HARD DISK DRIVES (no longer boxed with an 8250 drive, but in their own cabinets: the $3000 version has 5 megabytes useful capacity, while the $3500 version has 7.5 megs). Unfortunately, like most Minnie Winnies now being announced, they offer no realistic backup for data. Consider the speed of Commodore's UNIT TO UNIT program. At 1 hour per megabyte, who will ever back up a 7.5 meg disk? That, in turn, guarantees loss of data. Fortunately, since the IEEE handshake in DOS 3.0 will be optional, vastly faster data transfers are possible if someone writes suitable software. One great feature of the MINNIE WINNIES & 8250, compared to other new hard disks, is that the ENTIRE drive can be treated as a single file. Imagine having 30,000 252-byte relative records on line at once in a single file! I've heard from several dealers who need

a database manager that can handle LARGE records and LOTs of them. Looks like relief is just around the corner.

NEW SOFTWARE PACKAGES: SuperPET COBAL is expected this Spring, with (extra cost) BASIC & FORTRAN compilers this summer. For the 8096 expansion memory board, WORDPRO 5+ is coming, VISICALC 8096 is already unofficially available, a new OZZ called Silicon Office is coming, UCSD Pascal is rumoured, & various other packages are likely. Which model to get? For educational uses, Commodore recommends the SuperPET. For business, they plan to support the 8096.

APPLE EMULATOR: But I've saved the best for last... at the same show that saw the new VICs unveiled, a mysterious EMULATOR was also discussed. For at least a year, Commodore has had a machine to emulate the Apple II, & now they're going to sell it. Pity that Apple went to so much trouble to extend the addressing on the Apple III--the new Commodore machine is said to have 128 or 256K standard, using a new 6509 processor. It will have a back slot that accepts one of several processor chips, including the Z-80 & the 8088. The resulting combinations will supposedly run stock CP/M, IBM Personal Computer, Apple & TRS-80 disk programs. According to **Wall Street Journal**, everyone expected the Japanese to develop this kind of machine--next year. Apple stock fell $2 a share the day of the show. Commodore doesn't claim the VIC-64 will load Apple programs or Z-80 programs, but it will also have a slot for exchanging processors & will run Applesoft when typed in at the keyboard. The EMULATOR, on the other hand, is disk- & program-compatible with all competitors.

COMMODORE PHILOSOPHY: The new equipment says a great deal about Commodore's corporate philosophy. They are not pioneers, but optimizers, developing existing products to a peak of sophistication. Like the Japanese, they are willing to copy, & hence will be with us a long time. Commodore's chief executive, Jack Tramiel, summed it up: "We're the American Japanese...We don't want to invent anything; we just want to make sure we have the best." (WSJ, week of 1/3/82).

SOFTBOX SB-80: Does anyone know whatever happened to the SOFTBOX in the U.S.? The developers, Lifeboat Associates, ignore my letters & don't return my calls, but the product now seems to be on sale in Europe. It simply turned the PET into an intelligent terminal from a separate, included computer, but it is surprising that it would disappear without a trace here & still be for sale overseas. In any case, if you want CP/M, the EMULATOR looks like it will take care of your needs, supposedly by 9/82.

COMPETITOR'S NOTES

I had an interesting phone call Thursday from Hal Hardenbergh, of **DTACK Grounded**, who filled me in on Radio Shack news. They have just announced a $1500 add-on 68000 processor to their TRS-80 Model II ($5000 complete). The big news: it will keep its Z-80, for keyboard scanning, input, output, etc, which keeps speed down (Hal predicts a 4 megahertz clock), but allows software compatibility with existing products. PET & Apple II owners can have their own 68000 models too. His Digital Acoustics is shipping both models, for way under $1500. His address made the resource list this issue!

Hal had some thoughts worth sharing: 1) The Apple III is dead. It was already dead before the TRS-80 announcement, but the 68000 board for Tandy will tamp the earth over its grave. 2) The Z8000 processor chip is also dead, for lack of a second source, among other problems. 3) The new Xerox microcomputer is also dead in the wake of Tandy's announcement. (I didn't quite catch why on this one, but it does seem to be an also-ran to IBM in the same high end market.)

I received independent confirmation on the "death" of the Apple III today from a nationally-known Apple expert. Apple's future hopes appear to rest on 2-3 as-yet widely rumoured but unannounced models. With products like Commodore's emulator & VIC-64 nipping at one leg, & IBM nipping at the other, they'd better be good, & they'd better appear this year.

Hal's QUOTEABLE QUOTE from : "The Apple III is not selling well enough to justify the book value as a computer. It is also too stiff for a hula hoop & too light for a boat anchor."

A classic battle is shaping up now, between machines stressing compatibility with existing software, & those stressing peak performance. Compatibility is stressed by IBM's new PC, with CP/M & 8088 processor. The performance team is headed by Tandy, with a 68000 processor version of the TRS-80 Model II. Apple is also said to be working on a 68000-based computer. The 68000 will run BIG circles around the 8088, but 68000 users will have to wait a while for programs like WORDPRO or VISICALC.

MT reports the resale value of an 8050 disk is about zilch, & wonders if anyone would like six? (Contact him at 201 N. Poplar, Assumption IL 62410)

Just in: MTU's new microcomputer. MT got one last week; we'll try to have a review of this "Cadillac of 6502 systems"

next issue. So far he's pleased.

VICTOR/SIRIUS I: Today's mail also brought the official announcement of Chuck Peddle's new brain child. Peddle was the father of both the 6502 processor & the PET computer. His able assistant, Bill Seiler, designed the 8032 & authored several of the best PET utility programs. Therefore, their new product is of more than passing interest to PET owners... In the U.S., it will be known as Victor, in honor of the company paying Peddle to develop it. In Europe, it is known by its corporate name, Sirius, after Sirius Systems Technology, Peddle's new company. The new computer kindly includes an IEEE-488 port (perhaps to run the flocks of PET computers adorning the Sirius factory?), 2 fully programmable RS232 ports, 400x800 dot graphics, fully programmable character sets on a 9x12 dot screen matrix, & keeps all software on its 1.2 megabyte built-in disks. This makes swapping languages & disk operating systems or fixing bugs quite simple compared to ROM software. Standard software includes CP/M-86, Microsoft's IBM DOS, & nearly everything that will run on either. It appears to "carbon copy" the IBM, with better keyboard layout. Both run the same software & cost about the same, but Peddle's machine looks about a year ahead in features. IBM will still succeed with their machine, if only on the strength of their name & software backing, but Peddle's new effort also looks like a winner.

Does anybody remember the Quasar pocket computer that was supposed to wipe everyone else out of the water a year ago? Supposedly, it's finally making it to market. But if you want it to do much, it won't fit in your pocket. A useful version looks more the size of the Osborne 1, which is also out, & selling well . If only the Osborne machine had an 80 column display! -JS

COPYRIGHT NOTES

ETHICAL QUESTION: When it becomes impossible to purchase from the copyright holder, due to the coming & going of companies, is it kosher to make copies of that software or buy them? ...Seems a shame that good software should die with the passing of its author's company, but since copying probably had some part in its demise, it seems to be rubbing salt in the wound to do so after the fact.-Candy Jens, 2166 Allenwood Rd., Wall NY 07719

REPLY: According to lawyer friend, Jim Sutton, a copyright does not mean users can't copy your program. It merely means they must pay you for the privilege. Therefore, the question is not whether you can copy software, but rather, at what cost? When a company sells an author's program, the copyright is often kept by the author. If the marketter folds, the author may make other arrangements. If it is the copyright holder who dies, program rights go to the heirs.

1) **A recent example** was the death of Programma International, who sold the favorably reviewed TALKING CALCULATOR. Although I don't have the author's address, I do have some money for him, from a user who got a copy after Programma folded. I assume the correct fee is what Programma used to charge, but this may not always be true.

Hint for authors: Include your name & address in your program listing & instructions. Then if your seller folds, you may still receive copy fees from honest users.

2) **A final example:** Gorden Hoch, one of our avid readers, recently died. He was the author of an excellent program called BEAMS, used in calculating various parameters of steel beams for structural engineers (NOT the same as the one of the same name from FLC, Inc.). His widow has graciously agreed to place Gordon's BEAMS program in the Public Domain. Any **user group** may obtain a copy by sending either a 4040 formatted diskette with a reusable mailer & return postage, or $10 to me.

MORE COPYRIGHT ISSUES:

1) Recent court cases seem to have decided that a program which does not **claim** to be copyrighted is **not** copyrighted. Thus, PROCEP EDITOR, which came to me from 3 different sources, appears to be Public Domain, since none of the copies I received, nor its instructions & demo, bear any copyright notice. On the other hand, if copyright notices were present but removed by others...

2) Publication of a program in a magazine does **not** make it Public Domain. Rather, it is one way of proving copyright. Copying of magazine programs is widespread, but only legal among those who have purchased the magazine issue containing the copied program. I've never heard of anyone suing individuals for trading programs from magazine articles. But software houses who use magazine software in commercial programs without permission are taking a foolish risk.

3) Authors who don't want their magazine programs bound by copyright may release the program to a user group or a non-copyrighted publication before publishing it in a copyrighted form. Some PET authors do this regularly.

4) Companies which want copyrighted products respected by users had best

offer them for sale. For instance, Personal Software has long slighted PET in their software offerings. But if they don't put an 8096 version of VISICALC on the market soon, everyone will already have it! **The programs making the rounds of the user groups the fastest are those which cannot be obtained any other way.**

5) CMD struck sore nerves in the U.S. PET community, by trying to copy-protect & license user programs compiled with their compiler. The gist of the objection as I heard it, is that it amounts to taking credit for thousands of programs CMD didn't write. As a result, some users feel justified in trying to disable the run-time dongle. This is probably a case where CMD was legally right, but tactically wrong. Oxford computer systems is trumpeting in British ads the fact that their competing compiler, "PETSpeed", uses no run-time dongle. Meanwhile users, before giving away a DTL-compiled program to all your friends, reread the license agreement CMD says you accepted by not returning their product for a refund.

6) Now gaze into our crystal ball to look at copyright issues yet to come: we should soon see the first "foreign DOS" for PET, meaning that the OZZ people have figured out a way to reprogram the CBM disk inner processor to alter the way data is stored on the disk surface. When that happens, other software houses will try to do likewise. If they succeed, shortly thereafter, a bit copier program will also appear, making all their efforts for naught. How do I know these things? I watched it happen on the Apple II. The whole thing bears a remarkable resemblance to the nuclear arms race.

What is the meaning of it all? Nothing new really; it's the old issue of free traders vs. protectionists. They've fought for several hundred years now, & won't stop anytime soon. But if I learned anything from a semester studying the European Economic Community in Brussels, Belgium, it was this: the advantages of protectionism are short-run, while those of free trade are long term.-JS

MONOPOLY: (This is NOT a GAME): I'm sure you've seen ATARI's (tm & Warner Communications Co.) announcement by now in recent computer magazines. What have been the reactions so far? It's deleting some programs from the market that belong to us. And it worries me, not because I've written programs similiar to theirs (I've never been accused of being a programmer), but because I can foresee buying my software from only one source. For a personal computer consumer, this is not good. I am not against ATARI(tm) making money. I own one of their Video Systems myself. I know it costs them money to keep their programmers writing games for their arcades & computers. They need a profit from game development or they wouldn't be in business. And they're very much in business. With their resources, what would keep them from owning every version on every computer of every game they've designed, whether legal or not? Who wrote the first WUMPUS, the first STAR TREK, the first ADVENTURE, the first GAME? Are they also entitled to register with the Library of Congress each idea for each game written to date? I'm not a lawyer, but I do know that it' s illegal to copy a program except for back-up purposes for your own system. And school systems have problems with the number of copies of a single program that they can have. So why do I write this when I don't know whether ATARI's (tm) actions are legitiment or not? Because I fear for what could be down the road. -JO

BUTTERFIELD ON PIRACY (Is this the last word? Father knows best...): "It's well to see users speak out, whether or not you agree with them. Should software prices be based on usage? How would you administer it? How does the poor user/victim find out about mediocre stuff other than getting bitten? Wouldn't it be nice if more software houses allowed "trading up" to more recent packages? I think my own measure of worthiness is: if it's mediocre, I'd rather write it myself & know what I've got. If I can't write it myself, or don't want to take the trouble, then I should pay for it. But it should be accessible code--I will likely want to modify, upgrade or whatever. Why cheat? If you can't afford it, you should't have it, or you should do it yourself...the rationale that it's OK to steal if the item is overpriced doesn't work on fur coats or Cadillacs. But people view morality differently with software. If you steal a car, the owner is out one car. If you steal a program, the owner still has it. It seems more acceptable to channel your theft that way.

Maybe we are using terminology wrongly. Is it theft when you sneak into a movie without paying? Probably not: but it's still cheating. I think we may be better off when we start viewing software as a service rather than a product. You buy the service, not the tape, disk or chip; & if software houses were more visible in terms of service, support, documentation, upgrades & warranty, we might understand better what we're paying for.

Most users pay; few cheat. Some users pay & than discover that what they

have bought is worthless. Let's not forget: ripoffs can work both ways, & it's not just users who are rippers and vendors who are rippees. We need MSG to warn of problems in products. Two wrongs don't make a right & it's no excuse to violate a vendor because you once had a bad experience with software.

Take a look at industry prices & you'll quickly see what a bargain micro programs really are. We need those package programmers out there; let's try to treat them right.-Jim Butterfield

PET PROGRAMMING NOTES

WORD-PRO EXTENSIONS: Jim Halsey of EXECOM Corp., makers of the new 80 column board for 9" screen PETs, sent a good article on adding a QUIT feature, & sequential output/display feature to WORD PRO 3. Since **Midnite**, doesn't publish articles, we're sending it to **The PET Paper**. Meanwhile, anyone can get the changes by sending EXECOM your copy of WORD PRO 3 & $5 for handling. -JS

3 HINTS FOR those with 12" SCREENS (Places to put utilities like MICROMON or POWER-AID):

1) If you ground pin 20 on the J4 memory expansion connector, the standard ROM set is disabled, allowing you to have other ROM or RAM chips at the same addresses in spite of the originals' being soldered in.

2) You may replace the 2K ROM in socket UD7 with a 4K 2532 EPROM. 256 bytes of added memory are taken by PET's I/O routines, regardless of ROM contents, but nearly 2K of memory is yours. I keep POWER-AID in such a ROM, starting at $E900, making it easily usable with sys59648.

3) 48 unused locations are found in screen memory at the end of your screen, but don't appear on the screen. Use 34768+ to hide a small routine.

9" SCREEN PETs: If you want to keep BASIC 4.0 machines with 9" screens from flashing the EOI line (as in BASIC 2.0), change:

e3e5 a9 32 to a9 3c
e37d likewise

To kill the AUTO-INITIALIZATION feature on a 4040 disk drive, use:

"m-w"chr$(243)chr$(16)chr$(1)chr$(1)

WANT ADS & ANSWERS

WANTED: Reviews or review copies of BUSINESS or EDUCATION packages & programs. Will return review copies if requested. Users, how about music or scientific programs, & kindergarten level (reading readiness) programs? -ES

WANTED: Information on which DATA BASE PROGRAMS:

1) can completely fill an 8050 disk with data, & accepts records longer than 255 bytes in length. -Computer Country of Springfield

(OZZ can now, & JINSAM may when the new SuperDOS 3.0 is finally released. -E&JS)

2) can provide QUICK, CHEAP way to fill out specialized MEDICAID insurance form for medical office. Will MARI or MAS do it, or something simpler? -ES

WANTED: directions for Graphic '80 CONVERSIONS, 40- to 80- column screen conversions & vice - versa, etc. -many users

Two Answers:

1) TPUG's TORPET newsletter (10/81 issue) published details on turning a 4016 into a Graphics 80. It isn't a task for beginners.

2) Jim Russo of SEMPUG can provide a variety of 2K ROM images for UD7 on models with 12" keyboards. They include:

1) Graphics 80
2) 8032 masquerading as a 2001/B upgraded to 4.0
3) Graphics 80 masquerading as a 2001/N upgraded to 4.0
4) Fat Forty masquerading as a 2001/N upgraded to 4.0
5) Graphics 80 masquerading as a Fat Forty

His address is 1421 Pine Valley, Ann Arbor MI 48104. Write him to be sure, but recent cost was $10 per EPROM. (If you want a reply, include a stamped self - addressed envelope.) -JS

AVAILABLE: The 10/81 TORPET issue announced new ROM for the EPSON MX-80 printer, to give it a full PET GRAPHICS character set.

AVAILABLE: LVAPUG's GILA NEWSLETTER, 12/81, reports that MATOR, INC (Santa Monica CA) is selling a 10 to 45 megabyte HARD DISK UNIT for PET, using an extended DOS 2.5 & the IEEE-488 bus.

ATTENTION COMPUTE! READERS (& LAZY PROGRAMMERS): One item in each of the last two issues needs a quick comment:

1) In the Dec. issue, Hal Hardenbergh described an error in early versions BASIC AID. Anyone wanting the latest error-free BASIC AID 4.0 can get the program & source code from ATUG, TPUG in Toronto, COPUG in Columbus OH, plus others. The last few bytes of current versions are its assembly date- 10/22/81. 6 versions are available: BASIC 2.0 or 4.0, CBM & ASCII printers, & 40 or 80 column screens. Other versions (Fat Forty & G80) are also accommodated in source form. ATUG also offers a shortened version by Arthur Cochrane, called POWER-AID. It contains all BASIC AID features missing in POWER, making POWER the absolute best programmer's aid available for CBM computers. -JS

2) If you don't want to type in MICROMON, from the 1/82 issue, get it & its source code from the above user groups. Arthur Cochrane & I developed the published version for ATUG from Bill Seiler's original. Again the last few bytes should give the date of assembly. -JS

MORE ANSWERS (to last issue's questions):

AB Computers carries some Nick Hampshire books, can probably special order others. -Candy Jens

On FARM SOFTWARE: Have written to Canadian university for programs offered for PET -will report when/if received. **Farm Computer News** vastly overpriced, on basis of sample copy received. -Candy Jens

RESET BUTTON:

1) Maybe Eclectic Software (Dallas TX, 214-358-1307), who made one for the old PET & I believe also did one for newer ones. -Candy Jens

2) If someone wants OTHER OPTIONS BESIDES the RESET button, the KRK-2 includes it, repeat keys, clicking keys, & an amplifier with music capabilities, for $120 from Microtek, Inc. (San Diego CA) Don't have this but reviewed in 8/81 **Kilobaud Microcomputing**, p.15. -Candy Jens

3) New 3rd edition of Osborne's CBM/PET Guides will include complete instructions for installing your own. -ES

VIDEO MONITOR for Jim Oldfield: HUH Electronics (San Mateo CA) makes Sup'R'Mod & Video Buffer for use with monitor or TV. Also, Computer Depot (Minneapolis MN) makes Auxilliary Video to connect additional monitor(s). Addresses (see Resources) are over a year old so hope they're still valid. -Candy Jens

READERS' COMMENTS

JO pointed out the other day that he has yet to receive a letter with anything but praise for the **Midnite**. "It's downright embarrassing", he says. I reminded him that we probably have a few detractors who probably just haven't written us, such as companies whose products received unfavorable or inadequate reviews, the magazine that views us as a competitor, & poor readers who waited two months for me to send them requests while Ellen & I were working on the Osborne CBM & PET Guides! But having restored our humility, here's a sample of a typical letter JO was very glad to receive:

"I'm very happy that I've found a newsletter with **independent** reviewers. As I own nearly all programs available for PET, I very often can agree with your software review. I also just bought a program because of your review in issue 5 - DRAGON'S EYE. I must agree, it's one of the best PET programs. Because here in Europe the PET is leader on the market (over 50%!), there's a lot of excellent software available here (especially in England) that is not available in USA, I think. I've a lot of superb programs like SARGON 2, PAC-MAN, ASTEROIDS, SCRAMBLE, GALAXIANS & lots of other 'arcade-games'. If you are interested in reviews of them or an address where you can buy them, please tell me. I would like to write some reviews in WORDPRO 3+ or 4+ format for your gazette. I also could write you a little book about the behaviour of U.S. software companies. As I very often buy programs in the U.S.A., I've a lot of experience. Some companies ship very fast (AUTOMATED SIMULATIONS for example), some never answer, although I've sent money and several letters (HAYDEN & FSS software!!!)" -Fritz Schafer, Schnackebusch 4, D-5106 Mulartshutte WEST GERMANY (ph:02408/8319)

(Anyone heard from Hayden or FSS lately? As for reviews, & software sources, YES, DO TELL US, wherever you are in the world, & WORDPRO files are ideal for our needs. Where can SARGON 2 for PET be obtained legally in the U.S or Europe? --See comparison of MICROCHESS & SARGON under Games Reviews -JS)

SOME QUOTEABLE QUOTES, from Hal Hardenbergh in **Dtack Grounded**:

1) "How does one write 68000 software, design not one but two 68000 attached processors, keep another business going to pay the bills & still find time to write a newsletter? Hint: this page is being written on Thanksgiving Day."

2) "We make both Commodore compatible 68000 boards & FULLY Commodore compatible boards. The FULLY compatible boards are the ones which have big holes drilled in the unpopulated RAM locations."

COMMENT ON UPGRADES:

In my change from BASIC 2.0 to BASIC 4.0, my biggest concern was that some of my favorite and/or expensive software would cost a fortune to convert to BASIC 4.0. I found that some packages like WORDPRO & VISICALC worked on both Others like AB's VISIBLE MUSIC MONITOR required only a few POKEs. Other companies upgraded my version of programs for about 10-15% of purchase price. Eastern House (MAE), IDPC (FullFORTH+), & ABACUS (VIGIL, TINY PASCAL) were all very helpful. In addition, many companies seem to now be offering newer versions of their old software to puchasers for only a small fee. Have the

MIDNITE CONTINUED ON PAGE 27

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.

SUPERPET COMMUNICATIONS

The SuperPET and the VIC are the first computers in the Commodore line that offer a RS232C communications port as standard equipment. Both use 6551 ACIA software protocols to setup the communications, though the SuperPET actually has this chip while the VIC emulates the chip with software and hardware. Both permit the user to send and receive data through the port under program control but the SuperPET has elementary terminal software in ROM. Both computers, however, need terminal software to make them useful.

The simplest method to use a SuperPET as a terminal is to plug your cable straight in, switch the system to the 6809 and the type 's' (return), and the system will prompt you with a setup menu as described in the system overview. You should enter the appropriate baud rate, 'tab' to the next position and hit 'return'. When the setup is complete, the main menu will return, and you may now select a language system. To operate as a terminal, simply type 'm' (return) to enter the monitor, and then 'p' (return) to enter the terminal mode. Your SuperPET is now an asychronous ASCII terminal and ready to communicate with external devices. The same mode may be reached from any of the language systems by typing 'edit' to go into the editor, and then 'talk' to enter the terminal mode. You can exit the terminal mode by simply pressing the run/stop key. If your system requires any 'control codes' to perform special functions, control a - j can be sent by pressing shifted 1 - 9 on the numeric keypad.

To access the port under software control, one should first 'setup' the communications protocols, and then open a file to the port (or [ITIE with APL) and then simply print and input as one desires. The example below was written for Waterloo microBASIC

```
open #5,'serial',inout
:open the port bidirectional
print #5, a$
:send the string
linput #5, b$
:block get to a
```

From the 6502 mode, a program must be used to access the serial port for terminal or program communication. We offer a versatile terminal program to our SuperPET customers, but since it requires a hardware modification of the system it is not available elsewhere. However, to make life simplier for general users, the 6551 ACIA that we designed into the system is a very simple chip to program if you have a few clues as to its abilities.

The serial port uses 4 bytes of memory space:

$eff0 data register
$eff1 status register
$eff2 command register
$eff3 control register

poking $eff3 with 54 will setup the chip for 300 baud, 7 bit word, 1 stop bit

poking $eff2 with 107 will set even parity, disable interrupt generation and leave both DTR (Data Terminal Ready) and RTS (Ready To Send) lines high.

After the two registers have been setup you should poke the outgoing byte to $eff0 and then wait for the 16 bit in $eff1 to go high to indicate a transmitted byte. Checking the 8 bit in $eff1 will indicate whether a byte has been recieved, and if so, it will be found in $eff0. This information, plus a 6551 data sheet, that may be obtained from Commodore, Rockwell or Synertek, should allow you to do anything with the port.

Basic Program that can be used with the RS232 port of the SuperPET to communicate at 300 baud.

While we're on the subject of the SuperPET, the 16 4K blocks of memory may be accessed very simply. All the user has to to is assign a 'subscript' of 0-15 to each of the blocks (block 0 is present after reset), and then poke 61436 (eff0 hex) with the subscript to switch that 4096 block of ram into the $9XXX block.

Example: poke61346,1 places block one in to the PET memory map starting at 36864 and going to 40959, while poke 61436,15 places the 15th block into the same location.

ADVERTISEMENT

AUTHORS OF 'THE MANAGER'

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

KUB KAR '82

KUB KAR TRACKING SYSTEM

CUB NAME: CHRIS LOVELACE CUB PACK: 1ST HORNBY

DISTRICT: HORN REGISTRATION NUMBER :102

RACE	POSITION	POINTS	RACE	POSITION	POINTS
1:	2	3	2:	1	4
3:	4	1	4:	1	4
5:	3	2	6:	-	0
7:	-	0	8:	-	0
9:	-	0	10:	-	0

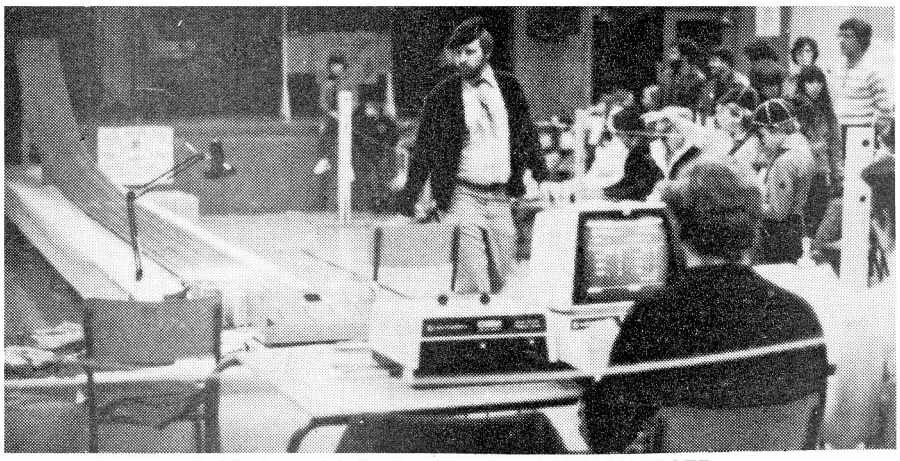
FUDGE: TOTAL POINTS: 14

Sample MANAGER screen used to track the scores of a local Kub Kar Rally.

Imagine a large Quonset hut in early March, where the noise is at 98 decibels as a result of 150 Wolf Cubs who have gathered to cheer their wooden creations to victory in an annual Kub Kar Rally. It was in this environment, three years ago, that we realized how important a reliable and friendly database is when the pressure is on. We learned this because we 'volunteered' to computerize the scoring and racelists for the local cubs. With 200 kids and parents looking over your shoulder you can not afford to make a mistake.

The Halton District Scouts run their rallies by racing four cars at a time down a sixty-foot track and awarding each car a number of points dependant on it's place. First place yields four points while fourth yields but one. After all 100 - 170 cars have run, they run a second heat in which only first place finishers run against each other and then the second place finishers, the thirds etc. to insure that all cars get an equal chance for victory. This is quite easy to organize for the first two heats, but for the third and latter sets of races only the race cars with equal numbers of points against each other (eg. only cars that place 1-2 or 2-1) race together. In previous years the first heats ran smooth enough, but there could be up to an hour's delay before the third and fourth races while cars were grouped together by points. Four years ago they tried a silver and black coloured plastic computer, but when it took over 20 minutes to sort 100 scouts before reporting, it didn't seem worth the bother.

This year, using a standard Commodore Manager, the results were entered and a control break report (by score) was run to produce a new racelist. The data entry screen is shown below with real data in the fields. The Manager arithmetic was used to calculate the point values from the finishing position, and to sum the individual scores to a grand total. After a set of races was completed, we checked the following timing marks during the report.



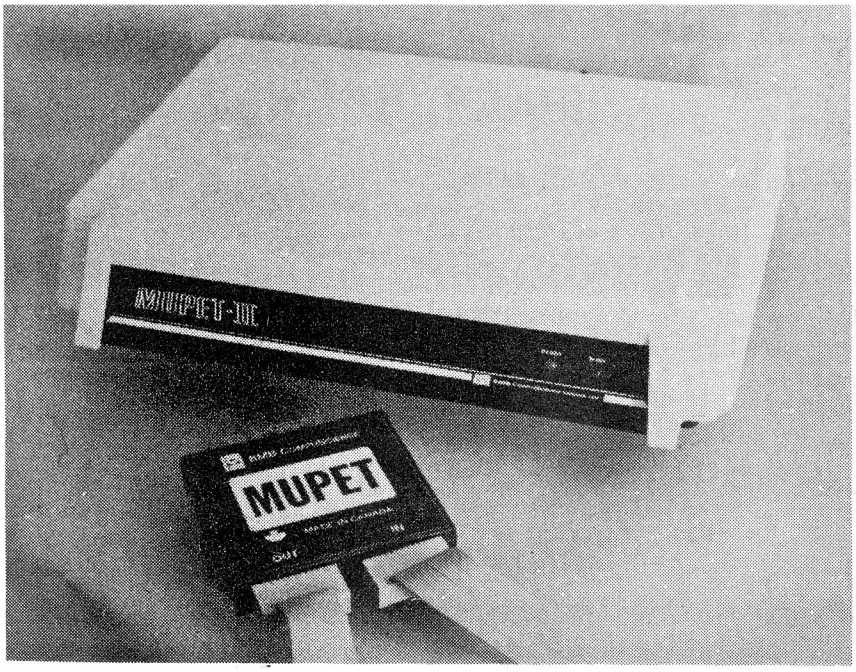
Bill MacLean (at the keyboard) and THE MANAGER keeping track of the local Kub Kar Rally.

60 seconds
-backup the file
40 seconds
-read in the file/sort write it back to disk
90 seconds
-print out two sets of racelists on four part carbonless paper

We have been invited back for a fourth year...

CREATORS OF 'THE MUPET'

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



The new BMB MUPET II controller with the familiar MUPET module.

Two years ago a revolutionary new product was introduced to the Commodore community called a MUPET. The acronym was derived from the expression Multi User PET and was one of the first products that utilized the unique distributed architecture of the Commodore hardware. It allowed several computers shared access to common peripherals, such as a disk drive and/or printer, without colliding with one another. Since that time, over 5000 Commodore computers on five different continents have been linked together using the MUPET.

The unique feature of the MUPET system is that it needs no software to help police activity on the IEEE bus; and it is therefore, fully compatible with virtually all software systems. Even the SuperPET software, written on the 6809 microprocessor, will run smoothly on the MUPET. This system has found many applications throughout the world, ranging from multistation word-processing with WordPro and Wordcraft, to Computer Aided Instruction, and automated electronic testing.

BMB CompuScience is now releasing the next generation of CBM networking. The MUPET II controller, is available as a system or as an upgrade to any existing MUPET system. In the simplest sense, the new controller extends the system to 16 computers from eight and lengthens the total distance from the shared peripherals to 100 ft from 60 ft.

Both Centronics parallel and RS232C interfaces are now incorporated into the controller so that devices with these communication standards can also be shared by all computers. Not only can each computer send data directly to both these and IEEE devices, but printer outputs, for example, may be spooled automatically to the disk and then printed 'background', permitting simultaneous disk access and printing (background plotters anyone ?).

In the educational environment, the MUPET II controller can be configured to provide protected access to the disk drive. This can limit a user's access to his own programs or system programs as well as not allowing disk commands such as 'header' or 'backup' to be executed by non-specified users.

Since the MUPET II controller is a 32K 6502 computer, we will make available an assembler as well as a complete memory map for those users who wish to develop extended software for the system. The new MUPET II system at $995 will allow three users to link to shared peripherals, while additional users can be added at a price of $200.

We expect that the MUPET II system will prove to be a very powerful product for the Commodore community. Future software developments include background communications through the serial port, enhanced disk file handling, true multi-user databases and many others that you, as Commodore users, will create.

Perhaps the most elusive, and thereby most valuable commodity in the microcomputer field is simple information. It is indeed for that very reason that organizations such as TPUG exist, and it is oftentimes this, and not price, that determines where a user should purchase a computer system.

BMB CompuScience has become world renown for our knowledge and technical expertise with the Commodore line. We have shown this by developing products such as the MUPET, the SuperPET, the Manager, the Medical Manager, the Softrom and our line of I/O products.

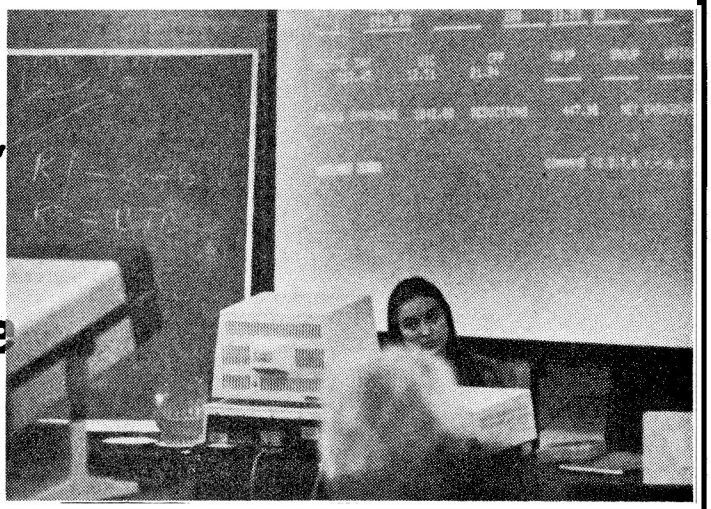
We have begun, in early March, a parallel series of monthly seminars for businessmen that are designed to provide detailed operating information for current users or clear introductory information for potential users and management. The seminars are held in a central hotel (thus far, the airport Skyline) and attendance is limited to 30 participants.

The detailed seminars are generally split into a Manager session and a Word Pro session. In the Manager session we review all sections of the program set, reveal many of the 'tricks' that we use, and present tutorial applications that utilize many features of the system. After lunch, we illustrate the ease with which The Manager and Word Pro can be integrated, and then split into separate Manager and Word Pro groups. These divisions offer an interactive environment where we endeavor to explain the intracacies of the packages to their respective users. Several members of our staff spend the entire day at the seminar site and we are prepared to answer most questions concerning the systems at that time.

The introductory seminars are designed to give an overview of microcomputer uses for the businessman and for small industry. These half day sessions review general software packages such as Visicalc, Word Pro and the Manager. Their uses with respect to general accounting, inventory management, mailings, statistical reporting, and general 'filing' will be discussed. Extensions to the computer through communication will also be presented, with illustrations of electronic mail and local access to 800 trillion characters of data in larger business databases.

All these sessions are offered free of charge to those who have purchased business systems from us. For others, there will be a nominal charge for participation. If you are interested in attending one of these seminars please phone (416) 878-0581 or 426-2516 from Toronto to reserve your spot.

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



Frances Wright demonstrating the BMB Payroll Package to participants at the Skyline Seminar.

BMB COMPUSCIENCE CANADA LTD.
363 Main Street, Milton, Ontario, Canada L9T 1P7
Tel.: (416) 878-0581 or 826-2516

software producers begun to see the light? Do many of them now understand that the better the documentation & the more complete the support, the more programs they will sell? -Ralph Bressler (The PET Paper), Box 460, Livingston Manor NY 12758

DEALERS

DATACAP: "...after receiving ARROW (see review under UTILITIES), I was unable to perform any high speed functions associated with the chip. Remembering that another chip with similar cassette features required the newer type cassette deck, I decided to trade my old one. When the new deck arrived, I eagerly plugged it in & recorded a program in high speed... (unsuccessfully). So I decided to place a call to DataCap to find out once & for all what I was doing wrong. Mr. Milt Bathurst listened to my story & then suggested that if I was using tape that had a leader, that I run past the leader before recording. To my amazement, my program was saved.... Since (I) purchas(ed) ARROW in (5/81), Milt has made an improvement in High Speed Save by adding a 10 second header." -Pete Vandrew, 135 Cochran, Manhattan IL 60442-0374

In SPRINGFIELD, IL: Welcome to the **COMPUTER COUNTRY.** This St. Louis chain has just moved into our area in Springfield, & temporarily at least, their entire lineup is from Commodore. What's more, they're SELLING lots of Commodore computers. MAIN STREET COMPUTERS of Decatur, IL., praised a couple of issues back, has also just opened a Springfield branch, also selling Commodore computers. -JS

In **MANHATTEN, KS:** "I would also like to mention the local Commodore dealer (Bob Johnson, MIDWEST COMPUTERS, Manhatten, KS.), as he is very helpful with both hardware and software problems. He has written quite a bit of software and gives it away with hardware purchases (i.e., he furnished a modem program & enough advice to allow me to interact with the Kansas State University mainframe computer, which has half-duplex dial-in lines.)" -RTBS

SKYLES ELECTRIC WORKS. "June 1980 I bought a SKYLES ELECTRIC WORKS 8K memory-expansion board. Worked wonderfully until recently, it began to hang up my PET. Writing Skyles about their honoring TWO-YEAR GUARANTEE & some possible alterations, I received in a FEW DAYS a phone-call & letter from Bob Skyles assuring me they would. So far my dealing with Skyles has been great!" -BA.

AND THIS REFLECTION **FROM A DEALER, ON ADVERTISING:**

"One lesson I have learned about marketing anything to do with computers is an ad does not sell your product, but draws postcards asking for more free information. So if you ever sell a program through the magazines, sell the documentation, or add to the price to cover sending many letters out with little return." -Chet Lewis of PROGRESS COMPUTERS

USER GROUPS

"Is address for **EPSON USERS GROUP** correct (1017 Trollingwood Ln., Raleigh, NC 27609)? Letter I sent was returned undeliverable. I thought there may have been an error under Resources in issue#5. Thanks for your attention."-Steve Paldin(?) from SUNRISE ASTROLOGY SERVICE, 44 Rockwood St., Boston MA 02130

(Editor: Sorry, someone requested my only copy of the newsletter, & I gave it away, to parts unknown. Don't bother writing the above address. I think it was originally sent to me by Maisie Irish Cohen of MicroXchange -JS)

LAS VEGAS AREA PET USERS GROUP (LVAPUG): Contact Gerald Hasty (702/453-3544) & Jim Widener, 1700 Gateway Rd., Las Vegas NV 89115 (702/452-7032). "Non-profit organization formed in June 1979. Initial membership fee $6...new members will receive 6 programs from the group master library, free subscription to the GILA NEWSLETTER, participate in education seminars, & benefit from group discounts."

PET USERS GROUP KC & I (Kansas City & Independence MO): Contact Rick West at Kansas City Computers, 5214 Blue Ridge Blvd., Kansas City 44133. Meets 7-10pm first Wednesday each month at Blue Valley Federal Savings & Loan, Independence MO.

ROCKFORD (IL) AREA PET USERS GROUP: Contact Mark Niggemann, 912 St. Andrew's Way, Rockford IL 61107. General interest group specializing in anything we can. Group has over 50 members of which maybe 1/3 show up at each meeting. MN is temporary president of this group, working hard to increase membership. Meetings are held every 2nd Thursday each month at Rock Valley College, Building 2, Room 228. For info or trade of non-copyrighted software, send SASE to address given above. -MN

SCOPE, Dallas TX: For your files, the SCOPE PET User Group has about 40 members, although I send out about 50 announcements each month. It meets once a month on the second Sat. (unless space pre-empted by another group & moved to the third Sat.] from 11:30 AM to 1:30 PM. President is Don Kassbaum, Vice President is Bill Knight, Treasurer is Dennis Allen, Secretary/Newsletter Editor is Sam Cook. A new set of officers will be elected shortly. Members come from

the Dallas-Fort Worth area: most from North Dallas, some from as far north as Greenville, & several teachers from Irving which has recently acquired about 20 PETs for their elementary schools. Some of the members have VICs; most have Pets or CBMs. Quarterly, we have a software exchange of non-copyrighted programs. Other meetings we have a lecture or demonstration. New developments are discussed. We need more public domain software programs for club distribution. Lately, due to tight finances, we have been meeting in rooms available at no charge: the Jaycees park building in Irving, & at the Texas Power & Light meeting room in Richardson. We have tried to assist the teachers in Irving program some useful things on their PETs. -Sam Cook

ANOTHER USER GROUP? FOR **PEDISK OWNERS:**

Yes! I would like to start a user group/column for all the owners of PEDISK II systems for the purpose of exchanging ideas. Have you written any programs that use the PEDISK II ? Any interesting applications? Would you like to share them with others? If so, drop me a line at CIPUG, so that we can get together with our ideas. JOH has kindly got the ball rolling with a few programs that includes menus (even for light pens!) & various other utilities. PEDISK versions for the MAE assembler & PAPERMATE word processor are also reviewed in this issue (See under Utilities & Business Reviews). Did you know WORDPRO (tm) will be available soon for your system? Next issue we'll try to include a program in this section. ATUG disks are now available for PEDISK II's at the same ATUG price. If you are interested in these, contact JO at CIPUG address for further information. Let me hear from you! -JO

ANYONE LOOKING FOR A HAMPUG?

Clark Stewart, of 104 Henrietta St. Ravenswood VA 26164 (304/273-4680) is interested in starting a PET user group for **AMATEUR RADIO OPERATORS.** So far 16 have expressed interest. Meetings will be via radio. Send a self-addressed, stamped envelope to Stewart if interested. (Ed: So far, Steve Case (WA7ETE), Gary Barrell (K40AH) & Gary Plunkett (943 E. Cleveland, Decatur IL 62521) have PETs & ham radios. Try contacting them, too!)

BUSINESS REVIEWS

COMPUTER HOUSE DIVISION PROGRAMS, from F.L.C., Inc. Requires Upgrade or 4.0 BASIC & CBM disk. **Kilobaud** gave me these programs for review & then decided not to print the resulting opinions, because they don't print very unfavorable reviews. I have never seen programs of so little distinctive value protected so heavily! If you must buy them, limit yourself to technical programs with no commercial equivalents, such as BOLT CIRCLE 2.0, SPUR GEAR, TANK THICKNESS, & TRIG/CIR/TAN X&Y. The other dozen programs checked are less capable/reliable than other commercial/public domain programs, & impossible for most users to modify for special needs. Some can't even be run on new equipment. NOT recommended. -JS

COMMUNICATION SYSTEMS REVIEWS

ABBS GAMEMASTER is a 'dial up' computer system featuring games & other services. Requires MODEM. Fee is $75 for FULL membership (includes 8 hrs. system time & 5 mos. mailbox), or $10 for ALA-CARTE membership (time & mailbox bought as needed). Time costs $2-$3/hour. I've had it for a week & think it's GREAT. -JOH.

The**SOURCE.** (Review #1 in **M#3** was negative, #2 in **M#4** was positive. So, here's the tie-breaker, review #3.)

If you are thinking about buying a modem, or already have one, reconsider the source, lately they have many sources of information for PET/CBM/VIC users, provided by both Commodore and the Source Pet Users Group. (From what JOH reports, you can find Commodore staffers to chat with on the Source most anytime. -JS)

If you are already a member, try the following at command level:

>BASIC (12)CL2505>READ
>BASIC (12)TCY946>READ
>CBM
>POST READ CBM/PET-COMPUTERS.

HERE are some useful **MODEM NUMBERS** for MIDNITE READERS (either free bulletin boards, to reach CIPUG members, or all PET):

ABBS GAMEMASTER, Chicago IL 312/475-4884 (24 hrs.)

BULLET-80, Springfield IL 217/529-1113

NET-WORKS C.A.M.S., Decatur IL 217/429-5541

PETBBS#2, Milwaukee WI 414/282-8118

PETBBS#1, Ypsilanti MI 313/484-0732

PunterBBS, Toronto ONTARIO 416/624-5431

EDUCATION REVIEWS

MINDSTRETCHER SERIES, $20/each of 5 program sets from Island Software. Protected. These 5 program sets are meant for gifted & talented upper elementary students (grades 3-6), but seem to fascinate all ages. Are NOT drill & practice, but help develop critical thinking & problem solving. Each set includes 2 programs;

potential buyers should not be put off by stange names like Welter, or Black/Kayles. Excellent use of PET graphics made throughout ALL programs. 1 program does 2-dimensional representation of Rubik's cube, another has students try to beat each other or PET at a game similar in strategy to NIM but with great graphics while another has devilishly clever jigsaw puzzles. Programs are protected but the reasonable price hardly makes this a problem. All problem tapes are promptly replaced. Several sheets of background & teaching suggestions comes with each program. A BEST BUY for everyone. -Ralph Bressler

FIRMWARE REVIEWS

ARROW, $60 from DataCap. 2K EPROM machine-language utility program. Requires BASIC 2.0 or 4.0 (40- or 80-col. screens). Adds 10 great features to Commodore operating system: 6 commands using (new) CN2 cassette deck (3600 baud high speed save, load, verify, append; read/write data block access; 1-9 blocks of tape positioning), fast repeat key function (15 times/sec.), flip (graphic/text) character set, hexadecimal/decimal calculator (up to decimal 65,535), & quadruple density (80x50 or 160x50) plotting outside any screen text. When purchased, documentation was lacking in some areas, but Milt Bathurst has taken care of that in his new instruction sheet. (See also comments on high speed save under DEALERS.) I would recommend ARROW to anyone. If you're forced to use cassette drive, then 6 commands will be the most useful. Also works well with PROGRAMMER'S TOOLKIT. -Pete Vandrew, 135 Cochran, Manhattan IL 60442-0374

MIKRO -Chip based ASSEMBLER, $80 from Skyles Electric Works. Assembler chip Skyles imported from England. I now use it for all SHORT assembly jobs, which most of mine are. You must weigh convenience of using a SYS to have assembler present against its price. Can write assembly just like you would BASIC, giving full use of PET's screen editor. Compatible with COMMAND-O, which can be used for editing. Only 3 commands: 1 gives formatted listing to screen, another does assembly, & last does base conversion. Assembly may be listed to printer; all standard mnemonics & addressing used. Good documentation; points out some GOTCHA's. Biggest aggravation: allows BASIC to tokenize your source code, so that standard labels like CHRGET cannot be used, since parts of them are changed to tokens. -Ralph Bressler

GAME REVIEWS

ASTEROIDZ, $10 from ComputerMat. Arcade-type game patterned after asteroids. 4 skill levels. Uses machine lang. for fast graphics & good sound effects. Game is fun and challenging, but differs some from original asteroids. GOOD. -JOH.

REVIEW#2: With acceleration. Asteroids fly across wrap-around screen. If you hit one, only dents it (not break up). Since game only keeps track of 3 missiles at a time, erases 1st one if you fire 4th time. If used to real thing, you'll be disappointed. -JP

REVIEW#3: Good use of graphics. In BASIC with some ML subroutines. SLOW action, especially at level 4. Poor structure & self-modifying code. Poor. -MN

MUNCHMAN, $10 from ComputerMat. Variation of PACMAN arcade game. Good PET graphics & excellent sound effects, but action TOO SLOW for some. Object: 'eat' all dots while avoiding Zip & Zap (2 computer foes). Good game for children. -JOH.

REVIEW#2: 2 Munchmen search for you in a maze, one horizontally, other vertically. In BASIC & ML with sound, but extremely slow, yet still challenging & addictive. No fruit (bonus points) as in PAC-MAN(tm). Not bad for $10. -JP

REVIEW#3: Has self-modifying code (hard to make backup copy). Needs slight change to work on FAT 40. Being a regular player of arcades PACMAN, I think this program is not well written. Poor structure. Not recommended! -MN

SARGON II, from Hayden Books. User Fritz Schafer reports this is available in Europe; write him for more info. First, a bit of history; Programma International, a subsidiary of Hayden paid a HUGE price for the rights to Sargon a couple of years ago. They released the Apple II version, intended a PET version, but then went belly up. In the process, they took me for quite a ride regarding my Subsort program. Hayden never reimbursed me a dime.

Now for the **review**: I set up Sargon to play the prior PET Chess King, MICROCHESS. With Sargon at level 0 of 6 & Microchess at 8 out of 8, they played about evenly. When Sargon was raised to level 1, it wiped Microchess out in very short order. Level 6 apparently takes forever to play, but that presumes someone who can beat it at lower levels. The graphics are excellent, the game is very eay to play, & all it lacks is Microchess's clock. Highly recommended. -JS

HAL Game Reviews
by John O'Hare

Each of the following games are $20-25, from Systems Formulate. All for Upgrade BASIC 2.0, require HAL6500 programmable character generator, & use high-resolution

HAL GAME REVIEWS
by John O'Hare

Each of the following games are $20-25, from Systems Formulate. All for Upgrade BASIC 2.0, require HAL6500 programmable character generator, & use high-resolution graphics & sound effects. Request exact prices. -JOH

MOLE ATTACK. Smash invading moles on the head with a hammer, but you'll lose points if you hit a bomb by mistake!

NIGHT DRIVER. Unseen, but if it's as good as others, you can't go wrong!

PACKMAN. Excellent game, JUST like arcade version, right down to the sound effects. One of the Best!

RALLY-X. Arcade type game where you must steer your car thru a maze (of which only a portion is shown on the screen) scoring points while running over flags, but watch out for enemy cars and rocks! Also has 'radar' display which shows general locations of Flags, Enemy Cars, & your car.

SUPER GALAXIANS. Another fantastic game, just like arcade version in which you try to fight off the dive-bombing invaders with your 'Galaxip' ships.

ULTRA INVADERS. Best available Space Invaders game for PET, exactly like the arcade version.

HARDWARE REVIEWS

CBM 8023P, $995. 150 cps bi-directional 8 dot matrix printer with logic-seeking (that means FAST! with choice of fair or good print quality.) 15" carriage tractor plus friction-feed printer has it all! Features: overstrike correspondence mode (for GOOD print quality), 16 cpi condensed mode, bit image mode for high-resolution graphics, all PET graphic characters, formatting & commands from earlier CBM printers, plus true descenders in lower case text. Advantages: quiet (compared to earlier models), easy paper/ribbon loading, flip lever to change from friction to tractor-feed. Built-in diagnostics recognize faulty electronics AND blocked carriage, missing paper, or lifted cover. For only $200 more than the 4022, it's no contest! Compared to Epson MX-100, 8023P is totally PET-compatible, twice as fast, easier to switch from friction to tractor-feed modes, & cheaper (no IEEE interface needed). Disadvantages: normal fast print gives poorer print quality than 4022 & Epson MX-100, durability unknown, & not likely to match massive, reliable Tally 8024 for continuous business use. But for all lesser uses, definitely recommended! -JS

C2N EXTERNAL CASSETTE UNIT. $75 from Commodore. Replacement for original tape deck w/o counter. Cream in color with added tape counter. However, there are several problems: first one I bought had an incurable tape head alignment problem; capstan drive on second one would let tape slip every now & then (original PET frequently had same problem). Have heard several others complain about similar problems (mostly VIC owners). If you're planning to buy a new tape deck to replace your old deck w/o counter, have dealer check out the deck first.-MN

ELTEST MSF-2, IEEE-488 to parallel or serial interface, $68 for parallel version, $85 for serial version, from Progress Computers. Test version is parallel, serial version uses same board. Full instructions, including schematics. Seems well designed & manufactured. Parallel connection almost trivial, requiring only standard plug-in cables. Like other reviewed interfaces, takes power from Centronics parallel connector pin 18. Most parallel printers expect this, & supply +5 volts to that pin. No case or switches to control character conversion & device address. (Set now via soldered jumpers as device 7, code correction 'on'.) One great advantage over PIE-C board: can't crack the computer's main board with this one!

Vitals on untested serial version: 300 baud, mark parity & 1 stop bit are standard. Changing parity requires changing a couple of minor components. Baud rate change takes 2 new components, & an oscilloscope or CMC's baud rate tester program. Serial version cannot halt output when print buffer fills, but has a 400 millisecond delay for carriage return. Output levels are true RS232, but **you** supply +5, +12 & -12 voltages. (CMC's SADI interface uses only +5 volts, fudging the standard, but cutting costs.) In short, if you or a friend can solder, the ELTEST boards may save $50 or more. But you make the modifications. Of the 2 offered, I'd recommend parallel version.-JS

"The **EXECOM 80** char. board you see advertised in COMPUTE! & MICRO is real. I have one of the first shipped. It seems to be a quality product, if not first class, then it is running a very close second." -Tim Tremmel.

GRAPHIC-80 PET, a "Fat 4016" upgraded to 32K & 80 columns. I love the price, 32K, BASIC4 disk commands & faster garbage collect, 80 col. screen for word processing & editing programs, built-in sound, expansion ROM sockets,

graphic keyboard & repeat keys. Negs: having to use keypad decimal point for period, not (yet!) having 8032 special ESCAPE & TAB keys, & the hassle getting old programs (esp. with screen memory POKEs) to work on the screen. -BA.

HAL 6500 PROGRAMMABLE CHARACTER GENERATOR, $180 from Systems Formulate Co. Upgrade BASIC 2. You redefine 64 PETS characters. Great for designing custom character sets for games, mathematical symbols, foreign character sets, etc. Includes built in CB2 sound effects (improved to eliminate 'noise'), & totally powered by the PET. Comes with 2 tapes: #1 contains very good demo of the Hal's capabilities, & set of programs to help design characters: #2 contains Super Slot Machine game --the BEST slot machine game I've seen on PET (uses hi-res graphics & great sound effects!). Only disadvantage: you lose upper case when in upper/lower case mode, but hardware fix given; can also fix using a program to load in original character set (not supplied). Also available: 6 other GREAT games (see under game reviews). Highly recommended. -JOH.

HESCOM, $49.95 from Human Engineered Software. Cable to connect VIC & PET user ports plus 2 ML routines that sit in high memory in each machine. Requires PET & VIC. Includes demo program. Package comes from same company that produced excellent HESBAL assembler package. Another triumph of clear, concise programming & excellent documentation. You can transfer program or any memory block from VIC-PET or PET-VIC, almost without a pause. Can also allow PET to use VIC's music or joystick capability. 2 machine games also explained. Package definitely has some on list & list them on 4022 printer is nice. Its usefulness may decline as more VIC peripherals hit the market. Documentation should serve as a model for entire PET software field. -Ralph Bressler.

PEDISK II Floppy disk Model 540-1, $595 from CGRS Microtech.

REVIEW#1: Low-cost IBM-compatible drive which plugs directly into $e000 slot with an interface board. Board has its own 2K operating system, which adds commands preceded by ! . Could be used as remote data entry facility for large OBM-compatible facility. Handles program or data files, but 4040 programs will have to be modified for PEDisk (possible in BASIC, but nearly impossible for machine-language programs)). CGRS has popular packages like MAE, Papermate, & Flexfile available to work with their drive. Less expensive than a 4040, even if you buy 2. Its direct memory access avoids IEEE bus & makes it up to 4 times faster thanthe Commodore line. Its incompatibility with 4040/8050/2031 disks may be too much of a problem for some. -Ralph Bressler

REVIEW#2: (1 double-density drive, 143k storage on 5 1/4" disks). System includes: 1 disk drive + housing, logic board, ribbon cable, manual, master diskette containing DOS with monitor. Instruction manual gives step by step instructions on installation & start-up & many clear illustrations on all PEDISK II commands & error message codes. DOS uses 2K from top of BASIC RAM, & operates with 'sys59904' command.

Two modes: DOS & direct mode. Direct mode (BASIC) has all familiar commands, plus extensions, such as !load !save !open !print !input & !run, & linked to your BASIC by the supplied ROM. !run command acts like a SHIFT/RUN, & can chain programs (e.g., !run"invade:0" to load & run INVADERS on drive 0). !list (version 5) lets you view disk contents w/o disrupting programs in memory. DOS monitor includes disk utilities to format disks, compress files, rename files/programs, copy entire disks (even with 1 drive), save machine-language programs with starting & ending addresses plus the execution addresses.

Good points: Since disk loads directly into memory, it's FAST!! (8K program which takes 2 min., 18 secs. to load from cassette loads in less than 2 1/2 secs, & 24k program takes over 7 mins. from tape compared to a PEDISK II load time of 4 secs!) (Vastly faster than CBM disks, too. -JS) Controller board connects up to 3 disks, easy to use, cheaper (by $100) than Commodore's 2031 single disk drive, & excellent support (including phone conversations & now a newsletter). I've had no problems with the disk system (in over 4 mos. use).

Bad points: Will not read CBM disks, takes top 2K (2050 bytes) of your memory (if your program uses this, you'll need to 'sys' to access the disk again), can't use TOOLKIT(tm) ROM with disk, file names are only 6 characters long, & cannot read CGRS quad density disks with the double density system.

For anyone who's been using a tape recorder with their PET/CBM computer, this product is a much needed relief. A disk does to cassettes what keyboards and CRTs did to LEDs & toggle switchs (remember them?). As an alternative to mass data storage devices on the market today, PEDisk II disk system is worth considering. Recommended. -JO

Updates on:

2031 SINGLE DISK DRIVE: My 2031 (see M#5) disliked 4040-formatted diskettes, & vice versa. After much checking, trouble was blamed on Shugart SA390 drive. Apparently, Commodore got a batch with

bad belts. However, on careful testing, drive was well within specifications, & only a bit off in motor speed. Since testing has to be done in a 2040/4040 drive under DOS 1, I then swapped the 2031 drive with one from my 4040. That cured it! No one at Commodore knows why, unless 4040 has more error correction logic than 2031. If your 2031 gives trouble, especially ID mismatch errors, check belt & motor speed, by inspection, not with test program. If OK & you still have troubles, try another drive. Commodore says 2031 has been quite reliable so far, except for belt problem. -JS

TO CHECK MOTOR SPEED: Turn your disk unit upside-down & watch strobe on bottom of drive under flourescent light while disk drive motor is on. (You may have to remove drive from its cabinet.) If strobe marks stay still, all is well. If not, adjust pot, either on rear of drive or on analog board. If preceding sentence is confusing, leave adjustment to your dealer. Don't just run motor speed test program --it passes some disks that show adjustment needs under strobe. -JS

4022 PRINTER: "A word on using either Wordpro or Wordcraft with the Commodore 4022 printer. If you do an 'open7,4,7:print#7:close7' so that the printer is in upper-lower case mode rather than upper case-graphics mode & load in either Wordpro or Wordcraft to print a document, the results will be in upper case-graphics mode. Before using the wordprocessing software, be sure to reset the printer with 'open10,4,10:print#10:close10 '." -RTBS

STARWRITER-II, by C. Itoh, around $2,000. Needs a serial or parallel interface to PET. Cost roughly $300 higher than Starwriter-I. Nearly identical to Starwriter printer we've used & loved for the past 9 mos., but nearly twice as fast (45 cps). According to 1 ad, faster overall than a 55 cps NEC Spinwriter. It does run circles around our other Starwriter. Print quality still good, altho fainter. A real bargain if you have the extra $300, & need lengthy printouts. Recommended. -JS

SADI, $290 from CMC. Versatile bidirectional serial & unidirectional parallel interface for PET, but may drive you nuts in daily use. SADI can't just be plugged in & used. First, you must command a baud rate (unless it's 300), & other information, outside WORD PRO, etc. Once set, SADI is OK until a power failure. Unfortunately, mine was defective, & had to be reset every few hours, to unlock the IEEE bus. (CMC has an unconditional 30 day money-back guarantee.) If you need a powerful interface, SADI is a true 6502 computer, complete with two 6522 VIAs. But if a simple bi-directional RS232 interface is all you need, try the NETWORKs 2000 instead. -JS

MAGAZINE REVIEWS

COMMODORE MAGAZINE, $15 for 6 bimonthly issues from Commodore U.S. Another season, another name for Commodore's magazine, & another editor as well, but **finally** an improvement. Issue #1 under the new name was fairly decent for beginners, & issue #2, which nearly made it out in the cover month, is quite respectable. If it continues improving at the same rate for a few more issues, they'll really have something. Still mostly for beginners. Advanced users should take Commodore Canada's **Transactor. (Midnite #5** made the cover of the current **Transactor.** Ah Fame! Now, if only we could get a mention in **Compute!)**

FARM COMPUTER NEWS, $40/yr. from ?? Vastly overpriced, on basis of sample copy received. -Candy Jens

GILA NEWSLETTER, from Las Vegas Area PET Users Group (LVAPUG),4884 Irene Ave, Las Vegas NC 89110. Editor: Gerald Hasty. Free to members. Well-formatted, beautifully illustrated 12-page newsletter with general articles, hints, software news, & descriptions of programs in the club library. -ES

IPUG Newsletter, from Independent PET Users Group, England. Seems to be Users Groups' User Group, along the lines of "International Apple Corp". All PET, & much like **Midnight** in size, contents, print quality & viewpoint, though pages far less crowded, & fewer reviews. User-oriented, includes several good programming hints. I'm sure I'd subscribe if I lived there. -JS

Update on **MICROCOMPUTER PRINTOUT:** See M#4 & 5. No longer only for PET, but still HEAVILY PET-oriented. Lots of fine products that we just don't see this side of the "lake." Magazine was recently available for $29 a year to readers of Bob Baker's PETpourie column in (now $58). First issue took a while to come, but arrived in good shape. Good British humour, well-done business & technical articles, some full reviews, & some fine brief programming hints. -JS

TORPET, $1 per issue, or free to TPUG members (bimonthly or quarterly now?). If you like **Midnite,** you'll LOVE TORPET! Official newsletter of Toronto (Ontario) PET User's Group includes "Butterfield Box" for beginners, "BASIC Box" & many good programming articles, hints, full & comparison reviews, printed documentation for large TPUG programs &...the next to latest **Midnite.** Print quality improves with each issue. Apply for "associate membership" to receive it. (Note: this is a biased review...) -ES

UTILITIES

FILEMASTER II, from Software by Sasso. This update on a very capable disk utility program adds much faster directory read routine. For 8050 user, also adds idiot light flasher routine, to you when and which drive to feed diskettes. Unfortunately, same nice routine also sends 4040 drive out to lunch. Presumably will do same to any DOS 3.0 drive, when that upgrade is released. Since program auto-starts from disk, disables STOP key while running, and RESETs PET when done, is hard to disable flasher routine. Very smooth, powerful, and user-proof for those with 8050 drives. But if you use 2040 or 4040, request old, slower (but still good) version for all CBM disks.-JS

FULLFORTH+, $75 from IDPC. Excellent implementation of FORTH, in its 5th version, and best I've seen on PET. Supports all FORTH structures and FIG standards. Many added enhancements to handle special PET and PET peripheral features. Upgrades offered for just postage and handling costs. Many significant improvements might qualify it as new product. Maintains program compatibility between versions. Company support includes HOTLINE, excellent newsletter with tips, new user structures and screens. Compiler addition means FORTH programs can be run w/o fullFORTH system present. Package would be excellent value at twice the price. Advantage over Bill Seiler's version is the company's support.-Ralph Bressler

MAE (PEDISK VERSION), $170 from Eastern House Software. Version of MAE (Macro Assembler Editor) for PET owners with a CGRS PEDisk system. See for reviews of CBM disk versions. By far the best assembler available for PET; even includes a Word-Processor. Works very well with PEDisk system; commands include PUT a file, GET a file, KILL a file, and assemble in modules from disk. Highly recommended.-JOH

MASSAGE 8050, by SBS and free from Commodore. 8050 version of Massage 2040 package reviewed in M#2 (price later reduced). This badly-needed utility helps user or dealer try to repair faulty disk data. Like PET's built-in machine-language monitor, it's not for beginners, but in proper hands, can restore priceless lost data. Commodore U.S. bought program to supposedly add it to 8050 system disk packed with each drive. One reason you may not have seen it yet is that in other hands, it can bypass many protection schemes, including one used by Filemaster II above. If that's the reason for the delay, Commodore may as well release it, as similar programs are becoming available now. Until it makes the system disk, have your dealer contact Commodore for your copy.-JS

MENU, $39.95 from SBS. Requires 80 col. display. "Hello" program intended to be first one on diskette, loaded with shifted RUN key. Displays a well-done directory, then loads and runs program you select. Ideal for those unable to handle disk commands in immediate mode.-JS

ROBERT BAKER PROGRAM COLLECTION, $29 (later $39) from Baker Enterprises. Some 40 programs collected, with full documentation, on two 4040 or one 8050 diskettes. Appears to include Baker's entire commercial software catalog of routines from his "PETpourie" column in **Kilobaud** plus longer ones (e.g., DISK MASTER) that he used to sell separately. Many programs previously reviewed, (M#2). Well-written and well-explained. Amazingly low-cost way to start library of useful programs, plus 2-3 games. **$29 price is only for Midnite readers (Visa and Mastercard accepted) until selling arrangements with major software house are complete.**My favorites:

COMPACTOR (squishes BASIC programs tighter than my own similar utility); UNCOMPACTOR (unsquishes squished programs); and XREF (lists all variables used BEFORE program is run, whereas TOOLKIT, POWER, etc., only list variables already used during program run.) Highly recommended.-JS

SCROLLING PROGRAM, $6 from Eastern House Software. Versions for all models. (See related AD.) Scrolls thru BASIC program listings by simply holding down CURSOR UP or CURSOR DOWN keys. Hitting DELETE moves cursor to blank line at bottom of screen to ease program changes. Well-done REPEAT function on all keys. Unlike many REPEAT routines, not affected by LOAD and SAVE commands. Sits in 1K of high memory. Cooperates with ROM software, if called before SCROLL, & with DOS Wedges, so long as they are run after SCROLL. A bargain.-JS

VIC SOFTWARE REVIEWS
by John O'Hare & M. Niggeman

AMOK, $18.95 from United Microware Industries. Best game for VIC-20 I've seen so far. Excellent graphics, very fast, has 9 difficulty settings. ATARI(tm) type joystick essential, but can be played from the keyboard. My only complaint is occasionally

being shot by a robot that I just destroyed, but this is a minor fault. Highly recommended! -RTBS

REVIEW #2: Similar to the Arcade game BEZERK; fight your way thru robot infested rooms armed only with your laser gun. Good game, but not as good as some of the cartridges being released by Commodore & UMI. -JOH

ALIEN BLITZ, $25 from UMI. BEST space invaders game I've seen in 3.5K RAM VIC. Smooth graphics exactly like arcade, including UFO's! Recommended. -JOH

ARTILLERY, $10 from ComputerMat. Target game in which two players try to destroy each other by firing cannon shots over a computer generated mountain. Includes sound & color graphics. Good fun for 2. -JOH.

BLACKJACK, $10 from COMMODORE. Most complete version of '21' for a micro I've ever played. Plays by Las Vegas casino rules. Fair use of graphics. Minor bug causes a syntax error whenever you double, but easy to fix. If you love to play '21', this one is for you. Good. -MN

CATTLE ROUNDUP, $10 from ComputerMat. Object is to return 1 to 8 'cows' back to their pen before time runs out. Variety of options, from pushing to coaxing to help you capture the beasts. Fun, but becomes frustrating after a while. Fun for kids. -JOH

GUARDIAN, $10 from Hal Labs. Patterned after DEFENDER arcade game. Requires joystick. Even includes scrolling landscape as enemy ships zip by your spaceship. Another well done game from Hal Labs. -JOH.

METEORS, $10 from Hal Labs. Almost like ASTEROIDS arcade game. Requires standard atari joystick. Everything uses re-defined, FAST hi-res graphics. A must for all asteroids fans. -JOH

MUSIC MACHINE, $6 from PETTED. Music editor program. You write, play, load, & save music in 3 possible voices. Major flaws: Inputting music is very difficult, & you can't play music in all 3 voices at once. Poor. -MN

STAR WARS, $17 from UMI. Similar to STARFIRE arcade game. Kill as many T.I.E. fighters as you can in the time given. Several difficulty levels. I couldn't even shoot down 1 fighter at level 1; fighter movements are too random & don't shoot back at you. Could have used HI-RES graphics. -MN

VIC-MAN, $15 from PETTED. Arcade style game similar to PACMAN. Protected. Mostly machine language, HI-RES color graphics, nice use of sound effects. Joystick option-$2 extra. 3 levels of difficulty. Monsters are normally smiling, but frown when you eat an energy dot, making it possible to play on a B/W TV. Nice addition to anyone's library. Recommended. -MN

VIC MONITOR, $7 from PETTED. Machine-language monitor written in BASIC. Very slow. Can only dump memory, enter code & execute it. No register display or load/save routines. Wait until Commodore's monitor comes out. Poor. -MN

VIC PROGRAM PACK #2, $24.95 from PETTED. Includes MONKS, MEMORY, & BLACKJACK. Protected. Absolutely worthless. None of the games are original in concept. Commodore's BLACKJACK is 10 times better than this one. Not recommended. -MN

(Editor:Oh well, there goes another potential advertiser... -JS)

VICVADER, $10 from Hal Labs. Needs joystick. Space Invaders game for VIC is one of the best VIC games I've seen so far. Uses great sound effects & has HI-RES invaders in color! Great. -JOH

VIC CARTRIDGES

JUPITER LANDER, $30 from Commodore. Very similar to "Moonlander". Excellent use of HI-RES & good sound effects. Uses function keys to control thrust. No joystick provision. I crashed several times running out of fuel. Very impressive. Highly recommended.-MN

REVIEW#2: Commodore's variation of LUNAR LANDER arcade game: you are given 3 spots to land (harder spots earn more points), & fuel. Object is to land your Jupiter Lander as many times as possible before running out of fuel. Enlarged view of each landing spot given when you get within a certain distance, & must land as softly as possible to earn points & extra fuel. Recommended. -JOH

ATUG NOTES
by Brent Anderson

How about this! I actually have something for the Midnite & also on time. Because of recent programs you users sent, ATUG has a NET gain of 3 official diskettes. Also note Punter's terminal programs on the UE disk as promised in Midnite a while back. Likewise, I wrote a BASIC 4.0 version of ASM/TED for disk with a guide for new ASM/TED commands & for editing MAE files to work with it.

ATUG GENERAL INFORMATION:

ASM/TED Users Group (ATUG), started by JS, promotes good assembly-language programming. We manage a DISKETTE (DOS 2.0) exchange library specializing in source files for Carl Moser's MAE & ASM/TED assemblers (PET versions). PLEASE DONATE GOOD MACHINE LANGUAGE ROUTINES, free of copyright, & PREFERABLY in assembler source form. JS's "Unassembler" program converts

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The MFS-2 comes tested and ready. It is addressable, fully 488 compatible and can mount anywhere on the bus. Has an instruction book, and both connectors. No cables are provided.

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object program files into MAE source files (See 3/81 MICRO; also available on our exchange diskettes.) We also accept good object programs & utilities.

To get ASM/TED COMPATIBLE WITH MAE disk files, request diskette "Campbell#2." SPECIFY UPGRADE or 4.0 BASIC & include proof of ASM/TED purchase, such as the serial # on the manual. (WILL INCLUDE guide to new features & editing MAE-files to work with ASM/TED for disk.)

11 OFFICIAL ATUG DISKS AS OF 12/81: UA FOR MAE source files; UB for BASIC & object files; UC for Copyright-restricted files (*must buy COMPUTE & MICRO regularly*); UD for program documentation in Wordpro3/4 format. UE is more MAE source files now PLUS Steve Punter's Terminal Programs. UF is very complete FORTH by Seiler. UG is 6502 source & instructions for FORTH.

UH is mostly source/object (with guide) for **latest** BASIC AID (aids edit/debug BASIC). One may assemble BAID for 4.0 or Upgrade BASIC, 40 or 80 column screen, graphic or business keyboard, ASCII or CBM printer. Variation POWER-AID works in tandem with Templeton's POWER (from Personal Software). UM has Bennett's very sophisticated mail list program, enhanced/instructed by Strasma: 2.0 version works on upgrade BASIC; 4040 version works with BASIC 4 using relative files.

(UK) koch utilities: src from Hans Koch (Ger.), trans by B. Anderson

label.2001,3001 mae-labels for Old ROM, Upgrade ROM;

label.4001,8001 basic 4.0/40 col; basic 4.0/80 col

unassembler updated vrsn w/ labels as above.

autoload.asm load/execute '.' routines at reserved memory

dump.asm dumps variables & arrays

find.asm similar to toolkit find

help.asm similar to toolkit help

hex.asm hex to decimal conversion or dec to hex

list.asm special basic-list for adcomp-x80-sp printer

page.asm see special mem-page, serviced from interrupt

reverse.asm reverse screen

uhr.asm time (interrupt-driven) at upper right screen

exec.asm execute seq file as commands (merge, batch s/r's)

autoload assembled example of autoload

.dump .dump assembled

.find--.exec .find, etc. assembled

screen-editor updated vers of CBM's screen-input for 8032

inst/keyb instring & keyboard together

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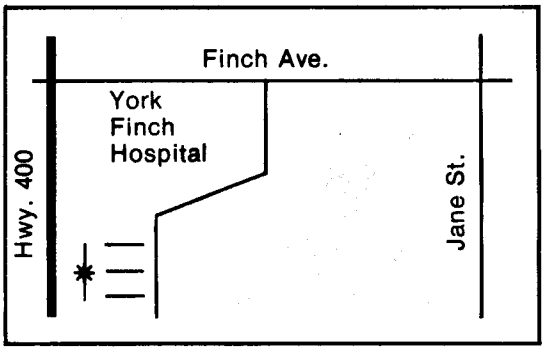

INCLUDES:
- APL
- FORTRAN
- WATERLOO BASIC
- COMMODORE BASIC
- 6809 ASSEMBLER

APPLICATIONS:
- PAYROLL
- ACCOUNTING
- WORD PROCESSING
- INVENTORY
- RESEARCH

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C= VIC AVENGERS C= SUPERSLOT C= VIC SUPER ALIEN C=

editor.ctl-m03 src files for CBM screen-input

instring.asm instring routine: sys in,a$,b$,c,d

keyboard.asm Special graphic chrs for 8032

schlaf gut papa 'sleep well papa', from Koch's 2 yr old daughter

speech.asm Digital speech recording & playback, source

day of week convert dd/mm/yy to day of week (BASIC)

UX is source/object code (with guide) for Micromon & Micromon Addition's latest extensions to machine language monitor in UPGRADE & 4.0 BASIC PETs (updates 12/81 COMPUTE!) Now supports additional ONE CHARACTER commands: change character sets; hex, decimal, binary, & ASCII conversions; hex addition & subtraction; calculate branch; checksum; exit to original monitor or BASIC with Micromon disabled; printer disassembly or memory dump; show load address; load from disk; PRINTER ON/OFF; send to PROM programmer; SPECIFY LOAD ADDRESS; text/graphics flip; dos support commands; control characters for 8032 special features.

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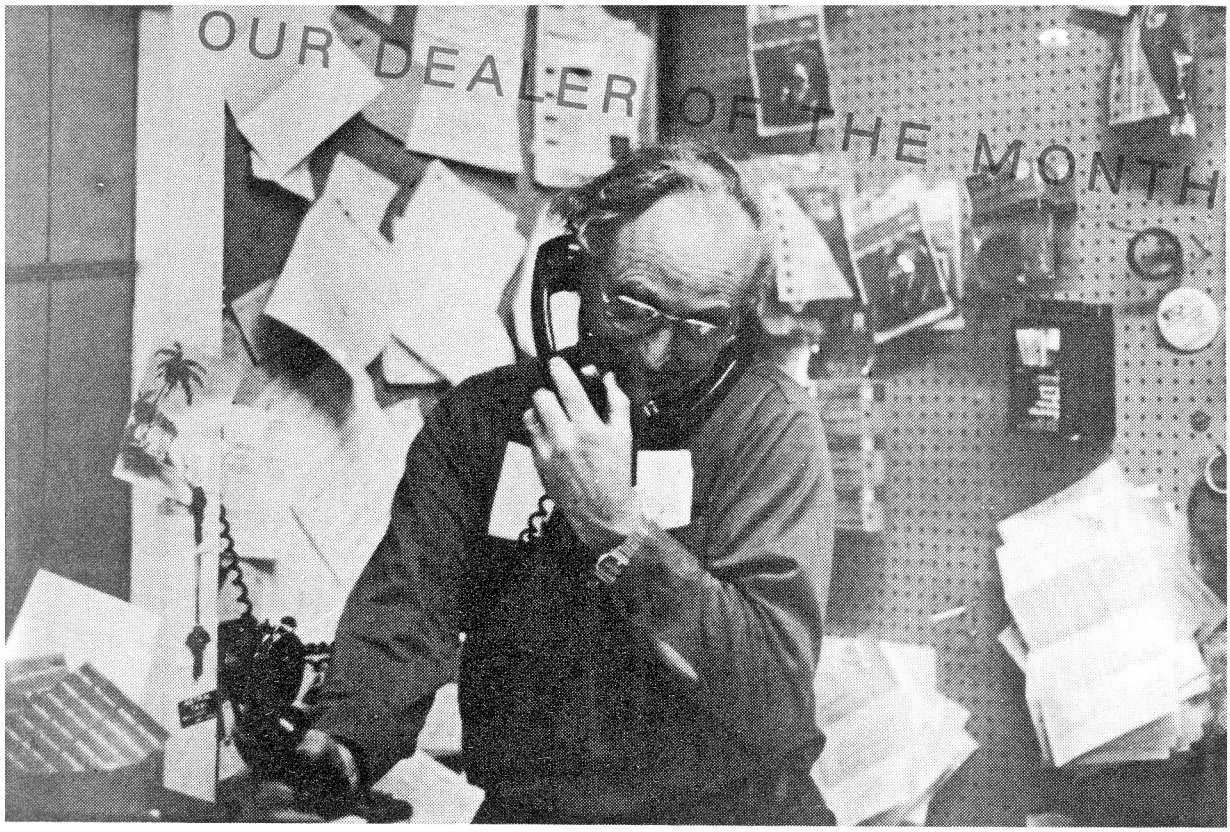
VIC NOTES
by John O'Hare

To load a VIC program without its being automatically relocated by the VIC, type: LOAD "",1,1

If the screen position on your TV seems to be off center when using Commodore's Game Cartridges, the whole screen may be adjusted using the cursor keys.

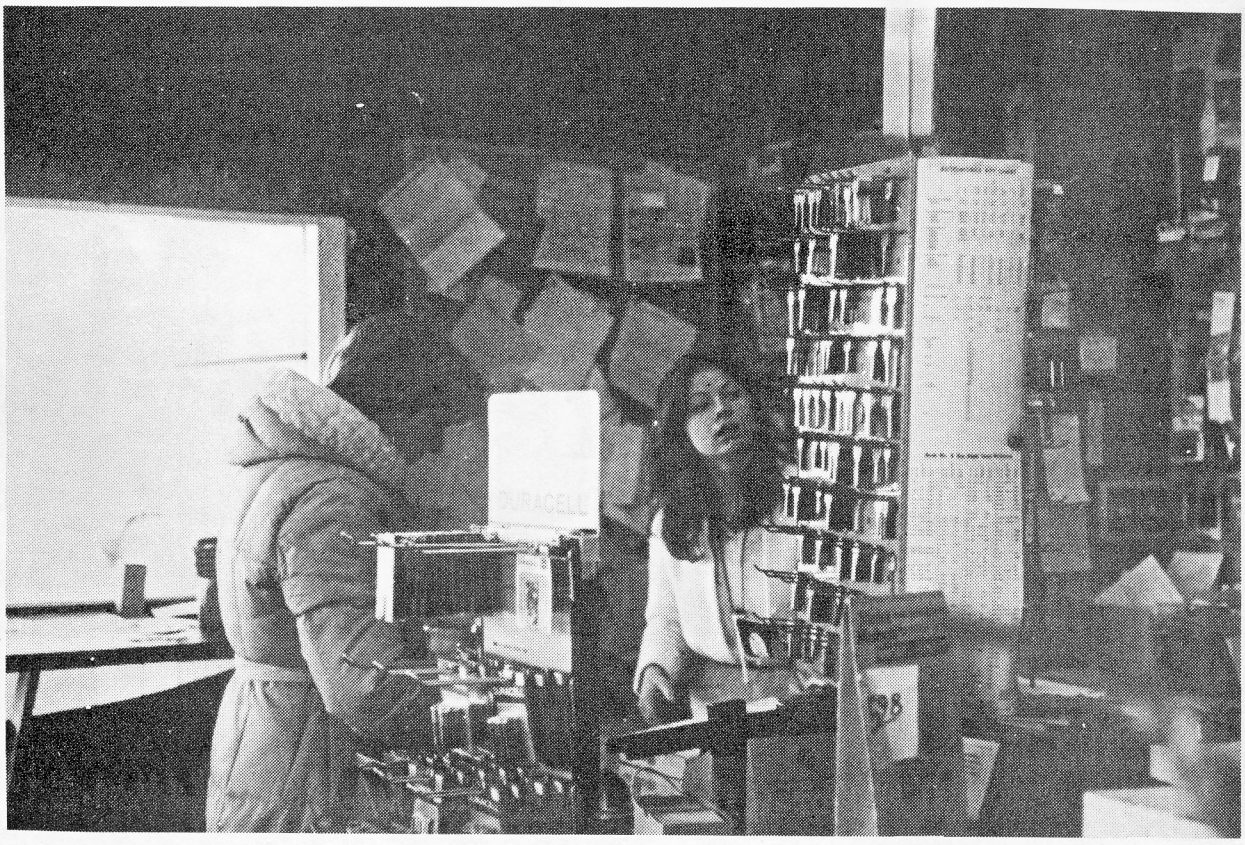
If you have just finished using a game which uses redefined characters, type POKE 56,30 before loading a new game. This restores the top of memory pointer which may have been altered by the program.

If yours is an early VIC, & you are having RF interference problems, see your dealer for a free 'fix' from Commodore (installation may cost $25).

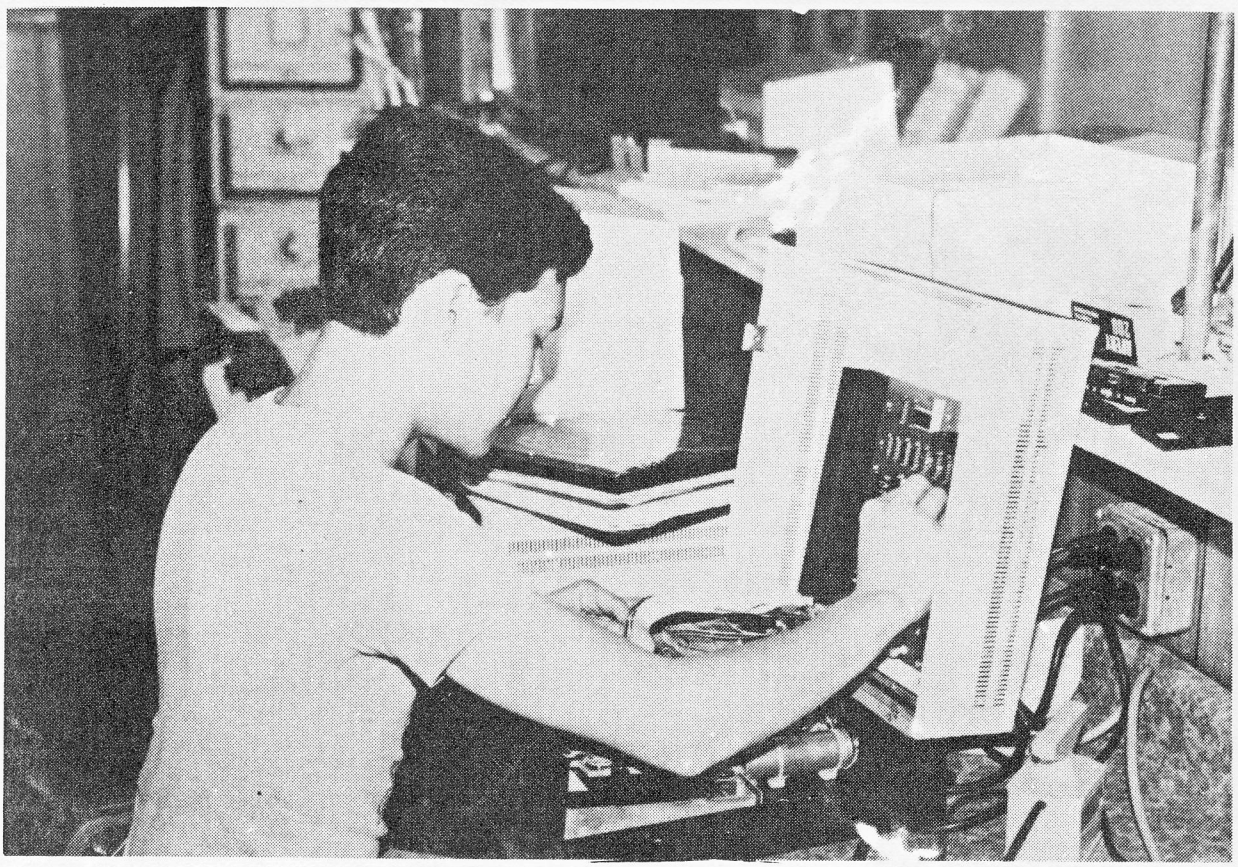


Peter Smith - stick it where?

RTC's present store



Rhonda Hely, one of RTC's key personnel



Troy Hacker– a man of many talents.
Thanks for developing these pictures, Troy.

Ye Olde Editor congratulates Peter on his new store

LIBRARY DISK LISTINGS

ASSEMBLER

A1

3D.PLOT.ASM
CBM.TO.MAE
DOS.ASM
EPROM.PRGM.ASM
EPROM.PRGM.EXE
EPROM.PRGM.INS
EXMON.CT
EXMON.M01
EXMON.M02
EXMON.M03
EXMON.M04
EXMON.M05
EXMON.M06
EXMON.M07
EXMON.M08
EXMON.M09
EXMON.M0A
EXTRAMON.EXE9.0B
EXTRAMON.EXE9.0G
FREQ.CTR.ASM
IEEE.LIB
KEYSORT.ASM
L.C.LISTER.ASM
LEARNING.AID1
LEARNING.AID2
LEARNING.AID3
LEARNING.AID4
LEARNING.AID5
LEARNING.AID6
LEARNING.AID7
MAE.PAT.ASM
MAE.TO.CBM
MAE/DOS
MAE/DOS.ASM
MLMACROS.MLIB
PET.LIB
PET16.ASM
PET16.MAC
SECTOR.CTL
SECTOR.EXE
SECTOR.PGM
UART.CT
UART.M01
UART.M02
UART.M03
UNASSEMBLER/CBM
UNASSEMBLER/MAE

A2

AID.CT
AID.M01
AID.M02
AID.M03
APPEND.ASM
APPLE.LOADER.ASM
BASIC.AID.EXE
BASIC.AID.INS
BMBSTRINGTHING
EXTRAMON9.3B
EXTRAMON9.3G
MAE/DOS
MINI-COMPILER
PGMR.UNIV.ASM
PGMR4.0.EXE
SC1.S - OLD
SC1.S I/O FIX
SCREENPRINT.ASM
SCREENPRINT.EXE
TINY.PILOT.ASM
TINY.PILOT.EXE
TINY.PILOT.INS
UN-NEW.ASM
UNASS.EXE60C
UNASS.INS.WP
USERS.LETTER
V40.2.O
V40.2.S
V40.4.O
V40.4.S
V80.4.O
V80.4.S

A3

AID INSTRUCTIONS
B1.S
B2.S
B3.S
B4.S
BAID.LIB
BAID.O
BAID4.CT
BAID4.DOS
BAID4.M1
BAID4.M2
BAID4.M3
BAID4.M3 +
BAID4.M4
BASIC AID 4
COPY ALL
ERIC ASSM
INSTRUCTIONS
LITTLEMON+.CT
LITTLEMON.ASM
LITTLEMON.M01
MUSIC.ASM
UNASSEMBLER
UNASSEMBLER.CBM
UNASSEMBLER.MAE
UNASSEMBLER/C
UNIVERSAL WEDGE

A4

AID4.ASM
APP LOAD SOURCE
ASM CONV MOS
COM
COPY ALL
FORMS.CT
FORMS.M1
FORMS.M2
JUMP2
JUMPTABLE
KEY.PRINT3&4.ASM
LITTLEMON.ASM
MEAN 14/PET.ASM
MICROMON.CTB
MICROMON.M01
MICROMON.M02B
MICROMON.M03
MICROMON.M04
MICROMON.M05
MICROMON.M06
MICROMON.M07A
MICROMON.M08A
MICROMON.M09
MICROMON.M10
MICROMON.M10.5B
MICROMON.M11B
MXCL.SRCE
NECCL.SRCE
PGMR.UNIV.ASM
PRINT TIME.ASM
REAL.CT
REAL1
REAL2
SET.KEY.ASM
SRC.EX HELLO.ASM
TIM.CTL
TIM.M01
TIM.M02
UNIVERSAL WEDGE
USEIZE.ASM
WEDGE/BASIC4.ASM

A5

BAID.MOVE
BAID4.CT
BAID4.DOS
BAID4.M1A
BAID4.M1B
BAID4.M2
BAID4.M3A
BAID4.M3B
BAID4.M3C
BAID4.M4
BAID4.ROLL
BAID4.TRS

BUSINESS

B1

APARTMENT.INCOME
APR 80
BUS.PR\CASH\ROI
CAR.COST\MILE
CURRENCY.CONV
DATES-BTTRFLD
DAY OF THE WEEK
DECISION.MAKER
DEMO 8032
DYNATEXT
DYNATEXT.INS
E.G SET-UP 80COL
FEB 80
FINANCIAL CALCS
GROWTH RATE
GROWTH.CALC
HOME.ACCOUNTS.IN
HOME.ACCOUNTS.SU
INVESTMENT.ALT
IRREG.CASH.FLOW
JAN 80
LOAN.ALT
MAR 80
MARKS-BTTRFLD
MAY 80
MILEAGE-BTTRFLD
MORTGAGE-BTTRFLD
PORTFOLIO-BTRFLD
PRICE.LIST
RECIPE.SIZER
SALES.ANAL-OP
STOCK.LIST
STOCK.OPTION.VAL
TAX 79 ONT V0.2
TAX 80 ONT V1.0
TAX ONT 1978 V3
TEXT
TEXT EDITOR
TYPER.ALT2
TYPEWRITER.ALT-O
TYPING TEST
UNIVERSAL WEDGE
V40.2.B
V40.4.B
V80.4.B
WP3/4 INST1
WP3/4 INST2

B2

4040 FORMAT
4040 MENU
4040 PRINT
4040 UPDATE
8050 FORMAT
8050 MENU
8050 PRINT
8050 UPDATE
FORMAT
INTEREST
JOURNAL
MAIL BACKUP
MAIL LIST 2.0
MAIL LIST 4.1
MAIL LIST 4040
MAIL LIST 8050
MENU
PRINT
TAX 80 ONT V3.0
UNIVERSAL WEDGE
UPDATE

COMMUNI-CATIONS

C1

8010 MODEM DRIVR
BBS PROGRAM
CBM 8010
COMMUNICATE TEST
ED-TERM
INTELCOM1
INTELCOM2
INTELCOM3
INTELCOM4
MODEM LOG
MORSE TUTOR
MORSE-BTTRFLD
PC.NET.MODEM
RS232-1200@4096
RS232-300@4096
TELE DIALER
TERM.IEEE
TERM.RS232
TERMINAL
TERMINAL.IEEE
TERMINAL.RS232
TNW488/103A
UNIVERSAL WEDGE

EDUCATION

E1

20 QUESTIONS
ADDITION GAME
AFRICA & ASIA
ANIMAL
ANIMAL.DATA
ASK
BIG MATH 1.1
CASH REGISTER

CRYPTOGRAM
DISPLAY
DONUTS
EASY ADD & SUBTR
EDU-TILITIES
ELIZA
EUROPE
EUROPEAN CAPITOL
FISHERY
FLASH CARDS
FRACTIONS
FRENCH
FRENCH VERBS
GLOBAL
GRAMMAR
HAIKU 5
HANGMAN
HANGMAN 2
HANGMAN(HJS)
HIDDEN.WORDS
HISTOGRAM
ICE CREAM PAR
MATH DICE
MATH IQ
MATH TUTOR
MATH.QUIZ
MISSING NUMBER
NO
NOT.SO.EASY
PETS
Q'S & Z'S
READER
SPEED.READING
SPELLING BEE+FIL
SPELLING.TEST
STATES&CAPITALS
STORY.PROBLEMS
TACHISTOSCOPE
TYPING DRILL
UNIVERSAL WEDGE
US PRESIDENT QUI
VOCAB 1
WORLD CAPITAL QU

E2

A V OR MINERAL
AMORT'N TABLES
CAPITALS
DART
DISK DATA
DUM 3.2
GEIGER COUNTER
GRAPH SNAPSHOT
GRAPH SUBROUTINE
GRAVITY TIMER
HANGMAN
HEAT SOLVER 16K
HEAT SOLVER 8K
HYPO SIMULATOR
JOHN GRAPH
MATRIX SOLUTION
METRIC
MICROMATH DEMO
MM1.1 SHERIDAN
MM16.1
POLLUTION
PRIME NUMBER 16K
REFLEX TIMER
SMALL MATH
SOLVE BY GRAPH
SPEAK AND SPELL
TIC-TAC-PET
TITRATION
TRACE.REL
TRIANGLE SOLVING
UNIVERSAL WEDGE

E3

BEADS
CALENDAR
CLOSED-3
CURVE-FIT
CURVE-FIT DRUNKARD
EXPECTANCY
GEOGRAPHY
HAMMURABI
HANGMAN
HICALC
HIST
HURKLE!
LISSAJOUS
METCONV
MULTIPLOT
NUMINT
POINTS
POLAR
POLICY
POLUT
POP
PROBABILITY MACH
PROJ-PLOT
QUEUE
RESULTANT
S-HYPHEN
S-PUNC
S-SPELL
SMOG SIMULATION
T-HYPHEN
T-PUNC
T-SPELL
TICTACARITH!
TICTACPET!
TRACE.REL
UNIVERSAL WEDGE
USPOP
WATER
WORLD 2
YELLOW LIGHT
Z-SCORE

E4

80 COLUMN DEMO
A STORY
BAIRSTOW NTH EQS
BASIC STATISTICS
BEST FIT(LEAST)
COMBINATION WARS
COPY DISK FILES
DRIVING TEST
ELEMENT DRILL
FFT
FLIGHT SIMULATOR
FOREST FIRE
FRACTION GAME2.0
GRADES
GRAPH PLOTTER
HANG MATH
HANGMAN 3.0
HARMONIC DISPLAY
HELLO
JOTTO
JULIAN CALENDER
LIFE EXPECTANCY
LIFESTYLE
LIN-PRO
LISTENER
LONG DIVISION
MARBLESTAT
MARKS(GRADING AI
METRIC CONVER'N
MORSE CODE
MORSE DECODER
MORTGAGE PRINTER
OPTICAL ILLUSION
POLIFIY
PRIMES
PROGRAMMER RPN
QUADRATIC
READABILTY
REG'D PWR SUP DE
ROOT FINDER
SCROLL
SIM INVENTORY
SIMEQ SOLVER
SIMPLE PENDULUM
SPEED READ
UNIVERSAL WEDGE
WEIGH
WEIGHT WATCH 4.0

E5

AMORTIZATION HEL
AUTO FILE WRITER
BALANCING EQU
BIG BINARY
BONDS
DDR
DEPRECIATE
DIET
EARTHQUAKE
EASY EDIT
ENZYMC
FIFO
GENERAL ANOVA
HEX DEMO
INTRO. JACQUES
INTRO. SYLLABLES
INTRO. TO PERCEN
JACQUES A
JACQUES B
LETTER SEQUENCES
LOCKEY
MICROSCOPY
PERCENT
PHOSYN
SYLLABLES
UNIVERSAL WEDGE

E6

8010 MODEM DRIVR
ADD&SUB
AID2
AID4
ALPHA-LIST
CBM 8010
CHEM NOMINCLATUR
COMPOSE
DATES
DYNALOGIC
FACTOR RACE
FACTORS
FRENCH VERBS FWC
FUNCTION GRAPH
FWCI INTEGER TTT
LIFE TABLES
PALKO'S AUDIT
RELATION GRAPH
RELATION SKETCH
STOCK TICKER
STRUCTURE-BASIC
SUPERMON 2.REL
SUPERMON 4.REL
SUPERMON2/4 INS
TAX 80 ONT V2.0
UNIVERSAL WEDGE

E7

'PERCENT' DRILL
AFRICAN CAPITALS
ASIAN CAPITALS
C-C'S AUST & AME
C-C'S CAN & EUR
CAPITAL CITIES
CENTRAL CONICS
DECIMALS
DIVISION
FACTORING DRILL
FACTORING WHOLES
FLASHER
FRACTIONS DRILL
INSTRUCTIONS
INTEGERS
LINEAR SYSTEMS
MAT 250 MLA
MECHANICS
MLA--ARITHMETIC
NICE TRIG RATIOS
PLANES
POWERS & ROOTS
SKELETON DRILL
SPELLING DRILL
STRAIGHT LINE
U.S. CAPITALS
UNIVERSAL WEDGE
VECTORS
WHOLE NUMBERS
WHOLES

E8

ANTONYMS!
BALANCING EQU
BASE CONV.ALT
CHEMISTRY CALC
CHICK
CHICK RESULTS
DOC-SCARDIAC 7B
ENGLISH GRAMMAR
HANGMATH/O'H
LIMERICKS
MARTIAN.HUNT
MATH IQ
MELODY CHANGES
MULT DRILL
PI.CALCULATOR
PICTURES
POGO V7
POGO.INS.WP
PUZZLE.BOX
PUZZLE.ENTER
RATIONAL
SCARDIAC 7A.INS
SCARDIAC V7
SOLAR SYSTEM
TRACE.A.WORD
TURTLE
UNIVERSAL WEDGE
WORD LADDER
WORD.SEARCH+

GAMES

G1

ADV30 GAME
ADV30 INTRO
ADVBOOT
ADVENTURE
ADVENTURE GAME
ADVENTURE-M.B.
ADVF 0
ADVF 1
ADVF 10
ADVF 11
ADVF 12
ADVF 13
ADVF 2
ADVF 20
ADVF 21
ADVF 22
ADVF 23
ADVF 24
ADVF 25
ADVF 26

ADVF 27
ADVF 28
ADVF 29
ADVF 3
ADVF 31
ADVF 4
ADVF 5
ADVF 6
ADVF 7
ADVF 8
ADVF 9
ADVITM
ADVKEYS
ADVMAP
ADVSHOR
DOG.STAR.ADVEN
DUNGEON 1.4
DUNGEON.ALT3
EXPLORE-BTTRFLD
FISHERY
HAMMURABI
HAMURABI
KINGDOM/PICS
LIFE
POLUT
POWER INSTRUCT
POWER SIMULATION
QUEST 3.0
TOMBS A-BNNYCSTL
TOMBS B-BNNYCSTL

G2

AFO WITH SOUND
ATARI II
C.C.STARWAR
C.C.STARWAR.INS
DEEPSPACE 1.0
EASY.DUNGEON!
ELIZA
HUNTER.SATELLITE
KLINGON CAPTURE
LUNAR LANDER 1
LUNAR LANDER-BFD
OSC LUNAR
PLANET.PROBE
SPACESHOOTER.ALT
STAR TREK
STAR WAR TRANINE
STAR WARS
STAR WARS!
STARBASE&UFO!
STARTREK V18 #
STARTREK.ALT4
SUPER STAR TREK
SUPERLANDER
UNIVERSAL WEDGE

G3

3D TIC-TAC-TOE
ANDROID NIM!
BAGELS-BUTTRFLD
BAGELSX2-BTTRFLD
BINGO
BRAIN STRAIN
CONCENTRATION.7
CRAPS.ODDS
CRYPTO-BTTRFLD
FAMOUS PHRASES
GUESS IT
HANGMAN
HANGMAN-2/PETS
HANGMAN.ALT
HANGMATH
JOTTO-BTTRFLD
KENO
LETTER.15
MAGIC.SQUARE
MASTERMIND
MATH IQ
NIM-BUTTRFLD
PIGS
REVERSE-PUNTER
REVERSE.#S
SIMON!
STARS
TIC-TAC-TOE 2.0
UNIVERSAL WEDGE

G4

AIRPLANE
ARROW-BTTRFLD
AWARI
BATTLESHIPS
BL JACK-PUNTER
BLACK BOX!
BLACK JACK 4.1
BLACKJACK!!
BOMBER
BOWLING
BREAKOUT
CHASE/ROBOT
CHECKERS 1
CHECKERS 2
DAMBUSTERS
DEFLECTION
DUCKSHOOT
FLIGHT SIMULATOR
GO-MOKU
HORSE RACE
INSP. CLEW-SO
KENTUCKY DERBY
LABYRINTH
LIFE WAR
MOTORCYCLE
OTHELLO
PETALS ARND ROSE
PINBALL
POKER-PUNTER
PRO FOOTBALL
RACETRACK
ROBOT CHASE!
ROULETTE
SKI
SNAKES!
SOLITAIRE-PUNTER
TARGET-BUTTRFLD
TOKER
UNIVERSAL WEDGE

G5

ANTI-AIR/BUS
ARROW
BATTLESHIP.ALT2
BILLIARDS!
BREAKOUT
CARD SNAP
CARDS UTILITY
CLOUZOT!
CLUE
CONCENTRATION
DEPTH CHARGE
DICE.PIG
DOMINOES
DRAGON.MAZE!
DRAW.POKER
FAWLTY
FIND.COLOR
GRUNGY TOWERS
GUNNER
KILLER BUNNIES
M.B.INSTRUCTIONS
MADMAN.RACE
MILLE BOURNE
MOUSEMAZE
MOVMAZE1
MOVMAZE2
OSERO
OTHELLO
QUANDRY
QUBIC.ALT
SNAKE 2
SNAKE.ALT
SPADE.INSTRUCTS
SPADES
SUBMARINE
TARGET
UNIVERSAL WEDGE

G6

ARTILLERY TRAP
AWARI
BASKETBALL
BILLIARDS
BLACKBOX
BLACKJACK.ALT
BOGGLE
BOMBER.ALT
BOWLING
BOXING
BREAKOUT 3.1
BRIDGE BID TRAIN
CHECKERS.ALT
DOT RACER
GOLF
HORSERACE
HORSES
HURKLE
IAN'S RACE (N)
KNIGHT.TOUR.SOL
MUGWUMP
PONG
POP SHOT
QUBIC
REFLECTIONS
ROAD RALL
SIMON
SINNERS
SLOTS/JACKPOT
SNOWFLAKE
SOLITAIRE POKER
SUBMARINE
T.TENNIS
TAG
TANK.BATTLE
TANK.WAR.ALT
TORPEDO.BOMBER
TREES
UNIVERSAL WEDGE

G7

ADV9 0
ADV9 1
ADV9 10
ADV9 11
ADV9 12
ADV9 13
ADV9 2
ADV9 20
ADV9 21
ADV9 22
ADV9 23
ADV9 24
ADV9 25
ADV9 26
ADV9 27
ADV9 28
ADV9 29
ADV9 3
ADV9 31
ADV9 4
ADV9 5
ADV9 6
ADV9 7
ADV9 8
ADV9 9
ADVENTURE80
ADVITM
ADVKEYS
ADVMAP
ADVSH8
ADVSH9
AFRICAN ADV-32K
BABY CARE
HS.OF.7.GABLES
LOST DUTCH GOLD
NEW ROM WARLORDS
NEW WARLORDS INS
NEW WATER
NICHE
OLD ROM WARLORDS
OLD WARLORDS INS
SPELUNKER
SWORDS & SORCERY
UNIVERSAL WEDGE

G8

BREAK80
BREAKOUT
CAR RACE 4.0
CRAZY 8'S
MISSION IMP
MONOPOLY
ROULETTE
STOCK
STOCK 80 COL
UNIVERSAL WEDGE

G9

CASTLE ADV-32K
KING.TUT
OHARE'S #1
OHARE'S #2
OHARE'S #3
SORCERERS.CASTLE
TRIP TO ATLANTIS
UNIVERSAL WEDGE
WIZARD'S.CASTLE
WEIGH
WUMPUS.ALT
YAHTZEE

MATH/ SCIENCE

N1

3D PLOT
BIOPRINTER 6.3
BIORHYTHM 1.5
CHI SQUARE
CRITICAL PATH 2A
CROUT ALGORITHM
CURFIT-BTTRFLD
DEMO SORT
DERIVATIVE
EDU-TILITIES
ELECTRONICS.CALC
FACTORS-BTTRFLD
FUNCTION.MACHINE
GLOBAL
GRAPHICS.DEMOS-G
HEAPSORT DEMO
INTERMOD
LAT+LON.DISTANCE

LEAST SQUARES
LIFE EXPECTANCY
LISTENER
MATH TEST-BTTRFL
METRIC CONVER'N
METRIC TEACHER
METRIC-BTTRFLD
NATAL CHART
NEWTONS ZERO
OHMS LAW
PLANET POSITION3
PLOTTING
POLIFIY
PRESSURE CURVE
PROGRAMMER RPN
QUADRATIC
QUARTIC
RANK CORRELATE
REDUCTION
REG'D PWR SUP DE
ROOT FINDER
ROULETTE.THEORY
SIMEQ SOLVER
SORT
SORTING DEMO
SQUARE ROOT TEST
TREND-BTTRFLD
TRIANGLE-BTTRFLD
UNIVERSAL WEDGE
WEATHERMAN
WEIGHT WATCH 4.0

N2

AUDIO DESIGNER
BAR GRAPH 2.4
BONE TUMOR DIAGN
COMPLEX NUMBERS
CRYPTARITHMETIC
FILTER
FREQ GENERATOR
NET1
PHYSIOLOGIC WT
PLEURAL EFFUSION
POWER SUPPLY
UNIVERSAL WEDGE

MISC.

Z1

ABACUS
BAR.GRAPH.ALT
BASIC.HUMOROUS
BIG LETTER ADS
CALENDAR-LOWNDES
CALENDAR.ALT
CANARY
CANBAL&MISSY.SOL
CANNATA
CARTOON
CASCADE
DARTH.VADER.PIC
DISPLAY LETTERS
DRAGON
ETCH-A-SKETCH
FORMAT
GRAPH.PRINTER
GRAPHICS-DEMO
GRAPHICS-LOADER
GRAPHIX INSTR
HALLOWE'EN
HALLOWE'EN2
HEART DRIVER
JULIAN CALENDER
KALEIDOSCOPE
LOVE
MAZE
MELODY CHANGES
MEMO CALENDAR
MEMORY CALENDAR2
MEMORY MONITOR
MYSTERY-BUTTRFLD
NIGHTMARE
ONELINE SQUIGGLE
PATTERN MAKER
PATTERNS
PEOPLE
PET CHARACTERS
PHUZZY & WHUZZY
SCAN
SCRAMBLE-BTTRFLD
SCRAMBLED.MSG
SNOOPY.DANCING
TIMES SQUARE
UNIVERSAL WEDGE

MUSIC

S1

1950'S MEDLEY!
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