THE TORPET

BULLETIN OF THE TORONTO PET USERS GROUP No.10 May 1982

$2.00—FREE to TPUG Members

CBM II and PET II

BY CHRIS BENNETT

-see page 5

the TORPET

published by the

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CALENDAR

The last Westside Chapter meeting scheduled for this year will be on Wednesday the 23rd of June at Sheridan College on Trafalgar Road 2 miles north of the QEW. The meeting starts at 7:30 p.m.

The last central chapter meeting of the year is the all day copy session and seminar described in the following article.

ALL DAY COPY-SESSION and SEMINAR

by Gord Campbell

The plans for the all-day copy session and seminar are now shaping up. The date will be Saturday, June 19, and the location will be the Casa Loma campus of George Brown College.

To get to George Brown by TTC, take the east-west subway to the Spadina station. Go north on the Spadina bus (number 103) to Davenport, and get off when you reach Kendal Avenue. The entrance is just south of Davenport on the west side of Kendal.

If you are driving, it is just as easy. Take Spadina north from Bloor, turn left (west) on Davenport, and left again (south) on Kendal. There is limited parking across from the College, and lots of parking off Bridgman Avenue, which is south and west of the college.

We are planning to be 'open for business' by 11:00 A.M., and run until 6:00 P.M.

The program will have three components. The first is a copy session. The procedure will be to fill out a slip, attach it to the cover of your diskette, and leave it at the appropriate copy station. Later in the day, the diskette may be claimed by showing YOUR MEMBERSHIP CARD, or membership receipt. (Memberships will be available at the door, of course.) If you forget your membership card, this will be a terrific opportunity to renew.

Dave Hook, the club librarian, reports that a new feature of the library, 'The Best Of ....' series will be available for the first time on June 19.

For members with tape only, Peter Smith will have the library for sale on tape at his usual low prices. Dave and Peter have completed a VIC project, so there are now three disks/tapes of VIC programs.

We are after at least 30 PET's and disk drives for the copying and presentations. If you can loan us equipment for the day, please call Jim Carswell at the number below. We expect to be able to pick up (Friday) and deliver (Sunday).

The second component will be demonstrations. We will have several commercial displays, and would like to have individual members showing things they have developed. If you have something to show, please give Gord Campbell 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 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. We hope to have at least four presentations at a time, starting every hour on the hour. If you wish to make such a presentation, please let Rob Lockwood know as soon as possible. We hope to publish a schedule in the June bulletin, so members will know when to show up for the sessions they are most interested in.

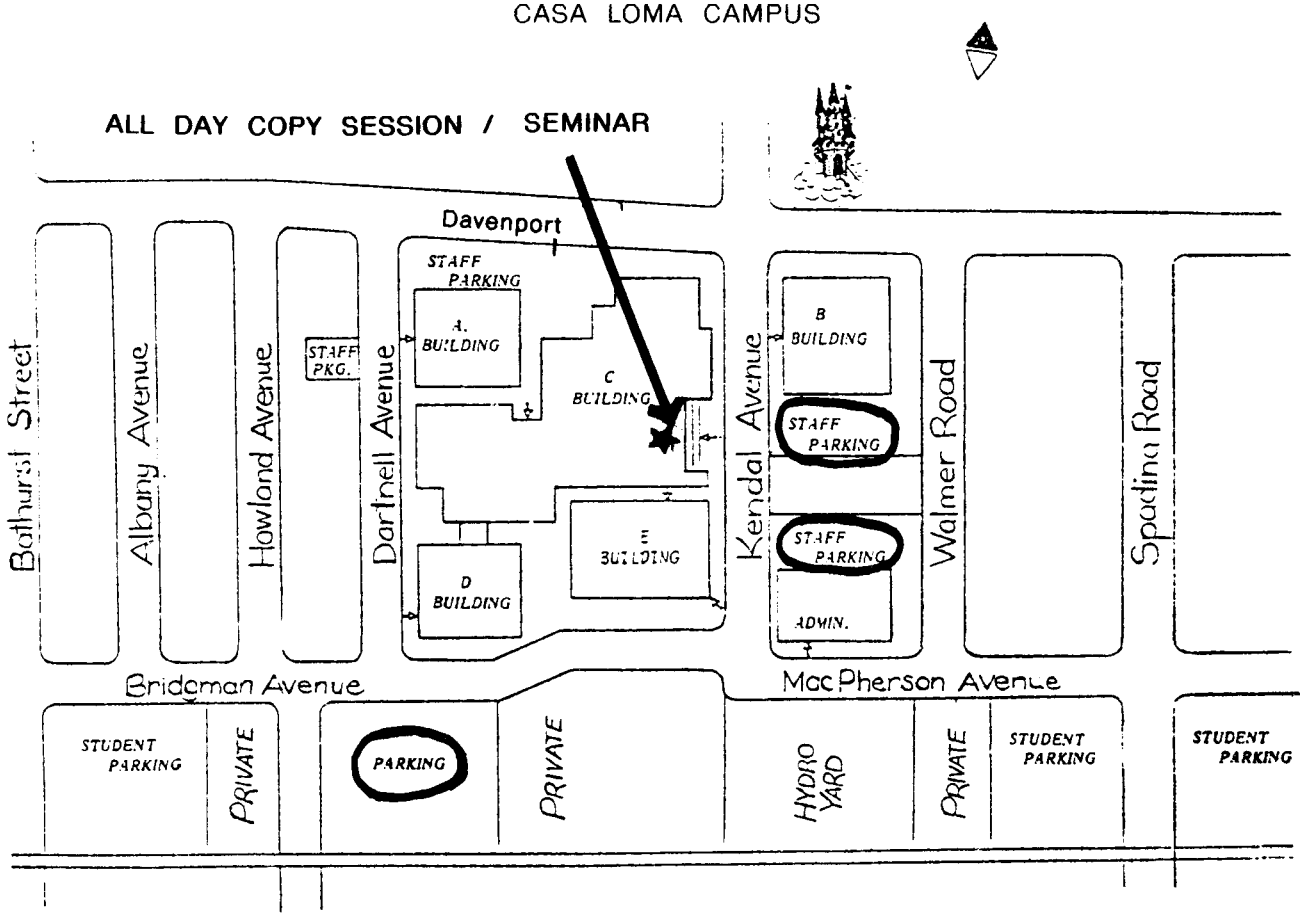
Other features of the day will include 'bull sessions' in the cafeteria, where food and drink will be available, and Chris Bennett at the 'Information Centre'.

The organizing committee is made up of (with home phone numbers):
Gord Campbell 492-9518
Rob Lockwood 483-2013
Jim Carswell 532-3815

We have lined up several more 'willing volunteers', but not enough. If you can help us in organizing for the event, or on June 19, please let us know.

GEORGE BROWN COLLEGE

CASA LOMA CAMPUS



MEMBERSHIP REPORT

In the January issue of the TORPET, I indicated that the membership would be over 1000 by the end of May. It is now the middle of May and the membership is over 1300. We have put an Ad in the April, May and June issues of Compute. This has increased the number of members from the U.S.A. We are also starting to get a large number of VIC users joining as more and more VICs are being sold.

At this time, I would like to describe the codes that I print on your mailing label. On the top right hand corner there are 4 fields. The first is your membership number. This is four numeric digits. The second field consists of a single alphabetic character which indicates the type of member you are. The codes are: A for Associate member, S for Student member and R for Regular member. The Associate member has all club privileges except he/she is too far away to attend our meeting. The Student and Regular members are those people in the Toronto area who attend any one of the four meetings per month. The third and fourth field are the month and year when the membership expires. Thus Aug 1982 means that you are no longer a member after the last day in August 1982. In this case you will recieve a renewal notice two months before that date asking you to pay for the next year.

The membership fees are as follows:

Canadian Associate members $15.

U.S. Associate members $15 in U.S. funds.

Overseas Associate members $20 in U.S. funds.

Canadian Student members $10.

Canadian Regular members $20.

The Student and Regular member fees will be increasing to $20 and $30 respectively after August 31st 1982. Until that time they remain $10 and $20.

Chris Bennett

VIC USERS

There are now between 200 and 300 VIC owners in the club with more and more joining each week. A couple of VIC members have commented on the fact that we don't have many articles about the VIC in the TORPET. This is very true and is caused by one simple problem. NO ONE HAS SENT US ANY ARTICLES.

We are a users group and we depend on our members to provide the information printed in our newsletter. If you don't send anything in, we will not be able to provide a great deal of information for other people.

Our VIC library is up to about 150 programs with more coming in all the time. We have officially released the first three disks/tapes (V1,V2 and V3). More will be released as time goes on. If you wish to donate a VIC program that you have written, send it to us either on disk or tape together with your address so that we can return the disk/tape after we have copied it.

Please note that we do not accept commercial software, only software in the public domain. This is true of all the programs in our library.

Chris Bennett

NEW DISKS

Since the last issue of the TORPET, we have released four more disks. These are: TH (May/82) and three VIC disks; V1 - VIC GAMES 1, V2 - VIC UTILITIES 1 and V3 - VIC DEMO 1. The directories of these disks are printed at the end of the TORPET. The complete list of all the disks previously released can be found in the April/82 issue of the TORPET (No. 9). Every THREE months, this list will be updated and printed in full in the TORPET. The following two issues will then contain any disks added in the mean time.

To order these disks via the mail, just send $10 for each 4040 disk, $12 for each 8050 disk and $6 for each tape (payable in advance). This includes the price of the diskette or tape, the labour involved to copy them and all postage and packaging charges. Do not send us any blank diskettes or tapes.

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 I get time.

Chris Bennett

CBM II AND PET II — BY CHRIS BENNETT

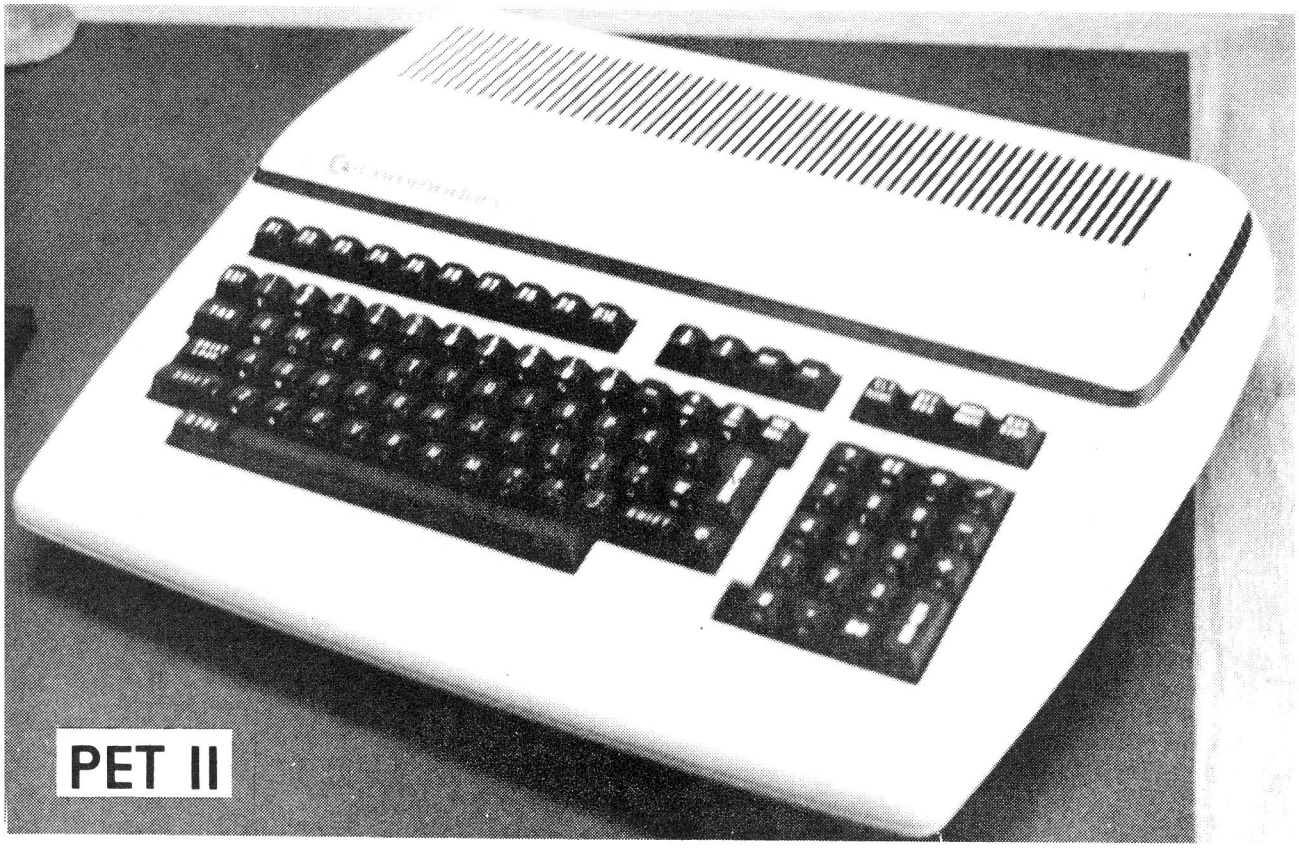
On April 21st 1982, at the Hannover Fair in West Germany, Commodore announced two new products, the PET II and the CBM II. Both of these products share common features. These include a high quality keyboard with 10 special function keys and numeric pad, a 6509 extended addressing 8 Bit Microprocessor and the ability to use up to 768K on RAM (256K internal, 512K external).

The specifications stated in this article are based on literature handed out by Commodore at Hannover plus other summary sheets. These specifications are subject to change.

The PET II in Europe will be sold as three models, the Commodore 505, 510 and 520 with 65K, 128K and 256K respectively. In Canada and the U.S.A., the basic model is called the PET II and will be the 128K version. The 6509 CPU is an 8 Bit Microprocessor, based on the 6502, that can handle more than 64K of memory by the use of a zero page location. It appears that only one 64K block at a time is actually addressed. Changing the zero page location will then allow other 64K blocks to be used. Also included with this new machine is a 6526 Complex Interface Adapter which handles serial I/O, 24-hour Clock/Alarm and other timers. The 6567 Video Display Chip allows 40 x 25 text display, 320 x 200 High-res graphics, 16 Foreground/Background and exterior colours and sprite graphics similar to the Commodore 64. The 6581 Music Synthesizer Chip is also the same as found in the Commodore 64. In addition, the PET II will have the IEEE-488 Bus and a RS-232 Port together with Composit Video, Audio, Modulated Audio/Video and two 9-Pin Joysticks/Paddle ports.

The PET II does not come with a built-in colour monitor. It is similar in looks to the Apple II except that it is not as deep. The price in Canada is expected to be below $1500 (under $1000 in the U.S.?) and will compete with the Apple II (if it is still around). The expected availability is probably early in 1983.

The CBM II consists of two parts. The screen, built-in disk and computer form one part while the keyboard forms the other part. The keyboard is connected to the rest of the machine with a small chord just like the IBM Personal computer. The price for this 256K machine is expected to sell for under $3300 Canadian ($2200 in the U.S.A.?) and that includes two disk drives of 170K each. Many of the feature found in the PET II are included except for the Colour Chip. The CBM II has a high resolution monochrome display although colour may be available as an option. The display both tilts and swivels



MAKING STRINGS
by Gord Campbell

Machine-language is often used to do things where speed is important. Sometimes you need to pass a result back to BASIC. The usual way is to let the BASIC program PEEK some location. This can be slow and awkward, and creates one more thing which is subject to change if you reorganize the program. One better way is to make a string from the machine-language.

The job is a little easier if the string is created initially in your BASIC program. As well, I will assume that both the machine-language routine, and the string which you are making, are in high-memory which is sealed off from BASIC.

Here are the steps to follow then:

- Find the string-pointer
- Mark the old string dead if neccesary
- Reset the string-pointer

String-pointers are seven bytes long. The first two bytes are the name of the string in ASCII. The second byte has the high-order bit turned on, to say this is a string. Thus, the entry for the string P$ will be (in hex) $50 $80

The third byte is the length of the string, from zero to 255. The next two bytes give the address of the contents, in the usual low/high format. The last two bytes are unused.

To find a string-pointer, start at the address pointed to by locations $2A/$2B (beginning of variables). These addresses are used in both 'Upgrade' and 4.0 ROM. If the first two bytes are the name of the string you are after, great, this step is completed. If not, step up by seven bytes. If you have reached the location pointed to by locations $2C/$2D, then the string doesn't exist, and aborting is in order. Keep going until you have one of these two results.

The contents of a string are just that on 'Upgrade' ROM, or if they reside inside your BASIC program as a literal or DATA. However, in BASIC 4.0 strings in free-memory have a two-byte backward-pointer to speed up 'garbage-collect'. For a live string, this points back at the length in the string-pointer. For a dead string, the first byte after the actual content contains the length of the string, while the second byte contains $FF. If the conditions above are true, you must mark the string as dead, since you are replacing it. Note that for a maximum-length string, the $FF goes 256 bytes past the start of the string, so you could get in trouble with simple indirect addressing, such as:

```
LDY LENGTH
STA (PTR),Y
INY
LDA #$FF
STA (PTR),Y
```

Instead of the INY, use:

```
INC PTR
BNE SETFF
INC PTR&1
SETFF ...etc.
```

Finally, set the length in the string-pointer to the length of the string which you have created, and make the address-pointer point to it. In your string (in high-memory), it is not neccesary to have a backward pointer, since garbage-collect is smart enough to avoid it.

However, two bytes should be reserved, since the new-variable-maker is not so clever. This is only a problem if you are setting up string arrays. If the BASIC program refers to a variable which has not previously been defined, the two bytes which follow your string may be subjected to being incremented by seven! One result of this is that you can't read a fixed-format record into memory, and then set several array string-pointers to point to different pieces of the record. I scratched my head for a long time trying to figure out why 'Gord' turned into 'Nord' before the cause became apparent.

And that's it. Making strings for BASIC to use directly is easy if you follow the steps outlined above.

REVIEWS

Comments by Peter Hiscocks

On the BMB Compusclence seven channel digital voltmeter

When I purchased this device, the service software was not available for BASIC 4. The design is such that is must be serviced from a machine language routine -- the BCD digits are multiplexed out via a PIA. After some discussion, BMB let me have a schematic of the board. Armed with this information, I was eventually able to write my own service routine. Fortunately the BMB unit is very similar to the unit described in Motorola Application Note AN-770, which helps in sorting out the idiosyncracies of the MC14433 voltmeter chip.

I imagine that there is now a BASIC 4 routine to service the voltmeter. It is nicely made, though it is also rather slow. Motorola claims 25 readings per second, but I encountered difficulty in getting accurate readings at that speed. Incidentally, it would have been a relatively simple matter to add some latches onto the board, thereby permitting the use of BASIC to service the voltmeter. Recommended.

On the "Tiny Basic Compiler"

(Abacus Software -25.00)

This is a reworking of FLOPTRAN IV, by Mark Zimmerman, a program that originally appeared in Byte Magazine. It seems well-documented. But how similar is it to a the version that is available from the TPUG library?

On the "Pet Machine Language Guide"

(Abacus Software - 9.00/11.00"foreign")

This i· a detailed description on how to use the Microsoft BASIC ROM routines fo· clocks, screen routines, reading the keyboard, and for floating point math. Much of the material has been published elsewhere, but this book is well worth the 9.00 (US) to have all of this stuff thoroughly explained under one roof. My only regret is that the author does not cover the important "evaluate an expression" routine. Recommended.

"On Feeling Good"

(See Jim Butterfield in TORPET, Jan. 1982, pp 7-8). I agree with Jim that Commodore machines are good, but I also think its important to learn from other systems. As devil's advocate, then:

- Its often pointed out that the Apple requires a large amount of memory for BASIC and DOS. There are some good arguments in favour of this. It is not necessary to swap ROMs to upgrade, and system software is more easily altered. Note that the Waterloo software uses this approach for the SuperPET.

- It is easier to add interface boards to the Apple. I will never undertand why Commodore dropped the memory expansion edge connector in favour of those pins. And then, in the Fat 40, the pin arrangement was changed again.

- Ever try to get a schematic from Commodore? Some computer manufacturers supply them as a matter of course. Most people seem to have little idea as to how the disk drive works, let alone a schematic and a source code listing.

- As far as BASIC is concerned, the utlities in BASIC Aid sould have been incorporated into the PET. Integer variables should be evaluated by interger math routines, and the software should have been documented.

Fifteen guns, Jim ...

HOW TO SUBMIT PROGRAMS

A number of people have asked how to submit programs and/or articles to TPUG. Programs can be sent to us either on disk or tape. The disk/tape will be returned as long as you have enclosed your name and address. Supporting documentation can be sent in any format desired. Wordpro on disk is the best way, but anything legible will be accepted.

Send all programs/articles to:
Toronto Pet Users Group
c/o Chris Bennett
381 Lawrence Avenue West
Toronto, Ontario, Canada
M5M 1B9

MIDNITE SOFTWARE GAZETTE

Spring 1982
Issue #8

The **Midnite Software Gazette** is published quarterly by the Central Illinois Pet Users Group, & paid for by donations & ads from readers. There is a program exchange through ATUG, the ASM/TED user group, c/o Brent Anderson, 200 S. Century, Rantoul IL 61866 (217/893-4577). The editors of the **Midnite Software Gazette**, 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.

CIPUG contributors for this issue are Brent Anderson (BA), Mark Niggemann (MN), John O'Hare (JOH), Jim Oldfield (JO), Michael Phillips (MP), Jim (JS) & Ellen (ES) Strasma, & Monty Throneberg (MT). We also thank all those whose names appear beside their comments & reviews for their help in making this issue.

COPYRIGHT NOTES

SARGON COPYRIGHT. Those wanting SARGON II will be pleased to know that HAYDEN is finally releasing the PET version for $30, & also plans a VIC cartridge. The legitimate version fixes a bug in the earlier (illegitimate) version, & runs much faster as a result. -info from Commodore.

VISICALC 8096. Several users have told us that VisiCorp, marketers of VISICALC, totally stonewall inquiries about PET VISICALC 8096. They apparently have no intention of enhancing PET VISICALC. However, someone had the audacity to do the job FOR them, developing an 8096 version with 69K RAM free for spreadsheets instead of the usual 10K. Supposedly, England has an even better version coming, different enough from VISICALC that VisiCorp's opinion won't matter. Therefore, don't bother contacting VisiCorp; try your local dealer or user group, instead. Until VisiCorp sets a price for the 8096 version, anyone who buys the regular VISICALC has already paid the only royalty they can, & may as well accept enhanced versions. -JS

MEANDERINGS

ATTENTION EVERYONE! Midnite #8 will officially end our second year of publication. In honor of that event, it will be a compendium of all reviews & resources from the dawn of our time until now, plus a special section reviewing some Public Domain programs, such as TPUG's games. All reviews are being reorganized by category. This is an issue you will want to keep!

MIDNITE #8 WILL BE A PAPERBOUND BOOK, TYPESET & PUBLISHED IN COOPERATION WITH TPUG. **You have to order it to get it.** (Sorry about that, but it will be over 100 pages long, & never fit in the envelopes on hand.) It will cost $5 in advance, postpaid in North America. After publication, it will cost more. Overseas, it will cost $10, since those postage costs are 4 times U.S. rates.

Dealers, we suggest stocking these for sale. User Groups, we'd like to have you order in bulk to one address. Companies may also sponsor ads in the book. Assuming an initial print run of 1000 copies, a full-page ad will cost $100. Since TPUG alone has over 1000 members, we're hoping to print more.

This compendium will include ALL back issues. Envelopes labelled #8 will NOT be used to mail the book; they will instead be renumbered to extend your subscription. New reviews deadline will be June 15th. Since it has to travel to & from Toronto, Ontario, to be printed, you receive it sometime in July.

We're really quite excited about having ALL reviews, hints, & information organized in one volume, along with information about ALL companies supporting Commodore computers. I still use my copy of **The Best of the PET Gazette** regularly, & I hope we'll all feel the same about this **Midnite Compendium** someday.

HERE'S HOW TO GET YOUR **MIDNITE COMPENDIUM** (ISSUE 8):

Send $5 ($10 overseas) in U.S. funds to CIPUG, c/o Jim Oldfield, 635 Maple, Mt. Zion IL 62549 USA. Please mark your check or note with: "MIDNITE COMPENDIUM". If possible, have your request in by June 30, 1982, to be sure of getting a copy.

2) As some of you know, we had hoped to have a CIPUG-ATUG meeting at the Chicago Consumer Electronics Show in June. That is out now (our annual clergy conference is the same week). Instead, we are planning a June 18 meeting at 7PM for interested Commodore users at **Computer Country** in Springfield, IL. We will follow Toronto's TPUG format, with two presentations, separated by a free Coke(tm) break, & end with distribution of a Public Domain program disk to those who want it. Everyone is invited, no charge, but don't miss it; we don't do this often. -JS

3) A word about NAMES: VIC & CBM owners are hereby officially advised that they ARE included in PET user groups & publications. Nearly all such groups use "PET" to mean all Commodore-brand computers, rather than just 40 column graphic keyboard models. -JS

4) JIM BUTTERFIELD, LEN LINDSAY, ARTHUR COCHRANE, JIM STRASMA, ETC...

Want to be famous, too?!? Or just want to see your name in PRINT?!? We can't guarantee you fame, but we can guarantee you'll be heard. Don't be afraid to send any reviews, views, opinions to **Midnite**; we are you. If you've bought a Commodore-related product, all it takes is an envelope, stamp & some time to do it. So do it!-JO

REVIEWS NEEDED: In scanning recent magazines, we noticed many companies whose products have never been reviewed. Come on, readers; surely some of you have seen this stuff. Is it any good? To jog your memory, here is a list of those companies & products we'd like to hear about. Until we do, LET THE BUYER BEWARE. -JS

First are those companies we know really exist, but whose current products haven't been seen or reviewed:

CMS Software's "General Accounting System II"
Cyberia's "Mari" medical package
Dataview's "Wordcraft 8096"
DES's "Acc/Sys GA 1600", "Orgaprozess", "4 pass Disk-Recovery", "Super-Basic" (sic), "Portexpander", "TYPE-SHARE" & so on.
Etcetera's "Backpack"
Voicetek's "Cognivox"

Here is a longer list of those we can't vouch for at all without your help:

Actek Micro Printer Marketing
Amplify, Inc.
MicroSpec Ltd.
Cmart MINISOFT'
CourseWare Magazine
Orange Cherry Media
DataMax
Philadelphia Computer Discount
Educational Activities, Inc.
PSK Evaluation Service
Huntingdon Computing
Questar International
MICRO Business World
Software Etc.

And for the VIC market:

Comm-Data Systems, Inc.
Recreational Software Services
Hypertech
Taylormade Software
MDS
TELE-TREX Software Systems
TSASA

5) **Cursor** UPDATE. **Cursor** Magazine as we know it is folding after the next issue, #30. The current issue, #29 includes a survey, as to what subscribers want to happen next. Please send your opinions as soon as possible.

Is there a place in the U.S. for a full, independent magazine limiting its coverage to Commodore computers? Such magazines already exist for Tandy & Apple computers. Some think the answer is "no". **Compute!** seems to have been trying to escape its **PET Gazette** origins for two years, & may have succeeded in the March '82 issue. I fear there will soon be very few computers not "covered" by them, & even fewer articles directly useful to PET owners. Worse yet, those articles, & the ads for Commodore-compatible products, will now be scattered all over the magazine, instead of being nicely grouped together for the convenience of busy readers. I've already sent them a letter asking for a return of the **PET Gazette**, & suggest you do likewise. We'll probably be ignored, but at least we won't have lost something special to the PET World without a peep. -JS

ADVERTISING NOTES

TRANSONIC LABORATORIES' president, Thomas Henry, writes, "I mentioned that we are a small company & I'm getting this thing started on a shoestring. Of course I want to advertise, & I know that advertising is expensive, but I nearly fainted when the rate card came in from **Compute!** I'm hoping that I can find many 'grass roots' & 'word of mouth' ways of advertising. I find the prices of most software items have skyrocketed, & I suppose the high prices reflect the advertising expenses. I'm trying to keep our prices as low as possible. This dictates finding some alternate ways of advertising."

Transonics isn't the only software house to contact us in shock after the recent advertising rate hike at **Compute!** Other magazines have raised their costs, too, but it is especially noticable at **Compute!**, since they get the most Commodore-related ads. Having all the ads together is very convenient for users -- no need to get a hernia holding the latest BYTE. However, with a quarter page ad costing $700 a month, advertising there has lost some of its appeal, especially since **Compute!** no longer has an identifiable PET section.

We originally accepted just enough ads to cover printing costs, but since that means shutting out new companies, we've decided to seek ads. If we get enough, we may begin printing on full-sized pages, for easier reading. Those who have advertised with us so far have been more interested in insuring our survival than in seeing circulation figures. But for the record, we are printing 1000 copies of this issue, & expect to run out before the next issue is ready. The **TORPET**, circulation 3000, reprints our text, but not our ads.

Because our ads are cheap, we insist they be simple for us to handle. There is only one size: 8-1/2 by 11 inch original. We just take a picture of what you send us. The rate has been $25, payable in advance; since this barely covers the cost of printing 1 ream of paper, expect an increase. As mentioned above, ads for the #8 Compendium will cost $100.

Speaking of ads, having William Shatner do Commodore ads is great. Most wage earners admire him as a very honest & intelligent fellow. I can't imagine Startrek's "Captain Kirk" hawking junk. Through these ads, Commodore is finally achieving brand recognition in the U.S.

COMPETITOR'S NOTES

Apple (tm) has 2 new 68000-based computers coming. One in the 5-figure price range, code-named LISA, is intended to scare the Hewlett Packard(tm) System 45 or at least the Xerox(tm) "Star", at NCC in June. The other may give the Osborne I(tm) a run for its money late in 1982. Supposedly smaller than the Osborne, it will cost $500 without disk, or $1,500 with two disks. Apple II will be replaced with the DIANA project, intended to be compatible with current units (hopefully more compatible than the Apple III; it can't handle Apple II programs that use peeks or pokes!). -JS & Hal Hardenbergh

On page 4 of **Midnite** #6, Hal Hardenbergh was quoted as saying that Apple III is too light to use as a boat anchor. I beg to differ! I have a 12' boat I use for fishing in San Diego Bay, & Apple III is the correct weight for a boat this size. The disk drive, with its whirring & clicking, actually seems to attract fish. (Although a CBM 8050 works even better - 2 drives, you know.) There are other problems, however. The power cord is much too short, requiring an extension cord to use the Apple in deep water (an additional expense). The greatest reason not to use the Apple III as an anchor is that because of its odd shape, it continually gets hung up in rocks! I personally have lost 4 Apple III's because of this. Unless Apple changes its design, I will be forced to use another micro, possibly a CBM, although bass like a color display...

Currently, the Apple is being used as a block to keep my car from rolling backwards on hills. However, I still think a brick works just as well.

I will continue my research, & keep you up to date on my search to find a use for the Apple III." -David M. Conley

ATUG NOTES

by Brent Anderson (& Bob Baker)

The ATUG library has had many requests since Bob Baker made it famous in the April '82 Microcomputing!

TUG GENERAL INFORMATION:

The Asm/Ted Users Group, started by JS, promotes good assembly-language programming. Our exchange DISKETTES (4040 format, readable by 2040) specialize in source files for Carl Moser's MAE & ASM/TED assemblers for PET.

PLEASE remember to DONATE GOOD MACHINE LANGUAGE ROUTINES, free of copyright, & PREFERABLY in assembler source form. JS's "Unassembler" program converts object program into MAE source (See March '81 MICRO; also available on our exchange diskettes.) We also accept good object programs & utilities. **I'd especially like to see some routines to aid use of the 8096's extra memory.**

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. (Includes guide to new features & editing MAE-files to work with ASM/TED for disk.)

13 OFFICIAL ATUG DISKS as of 4/82:

Recent & Pending Library Changes

New HELP diskette by JS samples useful instructive programs. See elsewhere in this issue for a more specific description.

New UV (VENTURES) has the Original Adventure game by MIT/Butterfield plus 3 adventures by group member John O'Hare (CAVERN OF RICHES, GREAT PYRAMID, & HAUNTED MANSION).

UC. COPYRIGHT-restricted files (*must certify buying **Compute** & **Micro** regularly*). Removed ADVENTURE & older BASIC AID files. NEW FROM **Micro**: GROWING KNOWLEDGE TREES (BASIC/ML) queries user about topic & analyzes results; FACES is graphic tool to display emotion-laden faces.

UE (ATUG ASM #2) now includes Punter's INTELCOM3 with IEEE modem software. Also has PET PILOT language (by O'Hare) soon to be published in **Micro**.

UH (BAID SRC+) is mostly source/ object/ guide for Seiler/ Butterfield/ JS/ Cochrane/? aid to edit/debug BASIC. Assembled for 4.0 or Upgrade BASIC; 40 or 80 columns; graphic or business keyboards; ASCII or CBM printers. Uses TOOLKIT-like commands PLUS: scroll program listings both ways, break to TIM monitor, dump screen to printer, change specified items in whole program or line range, list directly from disk, make Hex/Decimal conversion, kill scroll or BAID, flip upper/lower case mode, pack program, display sequential file, display program size & load address, SPOOL directly from disk to printer, un-new, define stop key as escape. Many commands' output can be paused or halted. Abridged variation POWER-AID (2/23/82 version) supplements Templeton's POWER (Personal Software). We are expecting a NEW version of POWER-AID soon.

UK (koch utilities) has MAE-label files for important locations in ROMs of ALL BASICs, "Autoload" of various utilities into reserved RAM area, digital speech record/playback, updated version of CBM's screen-input manager. **UM** has Bennett's sophisticated mail list program, enhanced/instructed by Strasma. 2.0 version works on upgrade BASIC. 4040 version works with BASIC 4 using relative files.

TO OBTAIN ATUG DISKETTES (indicate clearly which), send: quality diskette(s), a PROTECTIVE mailer (stiff photo mailers are cheap & good), pre-addressed return label, return U.S. postage, & $5 per diskette for our labor. If we have to provide diskette, mailer, postage or whatever, send $10 instead.

Good source files & programs keep coming (with your help) & will be added to new ATUG diskettes. TO GET THE LATEST ANNOTATED DIRECTORY OF ATUG DISKETTES, send SASE & request ATUG INFO.

If you have CBM's 4040 or 2040 Disk Drive, make ALL REQUESTS & PAYMENTS to:

Brent Anderson (ATUG)
200 S. Century
Rantoul, IL 61866

If you have CBM's 8050 Disk Drive, make all ATUG REQUESTS & PAYMENTS to:

Baker Enterprises
15 Windsor Drive
Atco, NJ 08004.

8050 ATUG Diskette Information from ROBERT BAKER:

So far, 8050 ATUG disks are as follows:

U1 ATUG SRC. 8050, UA, UE, UX 4040 disks.
U2 ATUG LANG. 8050, UF, UG, UB 4040 disks.
U3 ATUG UTIL. 8050, UH, UK, UM 4040 disks.
U4 ATUG (C) 8050, UC 4040 disk.

Also, UD is on 8050 format & will

(hopefully) be incorporated into U1-U4 as appropriate, if room permits.

Same terms apply as 4040 disks through Brent, except that I can accept VISA/MC! I also have the Osborne/JS 'HELP' disk in 8050 format. -Bob

COMAL NOTES
by Len Lindsay

The following are excerpts from Len's COMAL Users Group newsletter, the **COMAL Catalyst**, issue #2, April, 1982, & accompanying letter:

COMAL Users Group Announcements:

1) COMAL program exchange disks will no longer be available in 8050 format, since we don't have an 8050 disk drive. Only 4040 format will be provided.

2) User Group Disk 2 will be released in May 1982.

3) The COMAL STARTER KIT is discontinued due to arrangement with RESTON Publishing to professionally publish the COMAL HANDBOOK (in the fall). The newsletter will continue.

"Talks are under way to have the COMAL handbook & diskette included with each PET/CBM. Commodore England initiated this. A COMAL Users Group has been formed in England - it even has meetings. Contact is John Collins (4 Grimthorte House, Percival Street, London, EC1V OB5 England).

"A few months ago, Commodore USA said it was not going to support COMAL. Now, we hear that they are planning to give away 10,000 COMAL disks...

"...What everyone seems to want is an easy paced tutorial on programming in COMAL. Well, relief is on the way. Borge Christensen's book, **Problem Solving Using COMAL** should be available May 1982 from Ellis Horwood. It is presented in a textbook manner, with self tests & workbook. Another book from Ellis Horwood, **Structured Programming with COMAL-80** should also be released this Spring. A second COMAL newsletter is rumored to be about to appear, under the guidance of, once again, Ellis Horwood.

"(Issue #2) of the CATALYST is mainly a reference for you. You will find a list of articles already published, user groups, newsletters, books, & a list of addresses & rumors.... COMAL (in RAM) has been running on the CBM 8096 since July 1981. A ROM version that works in any PET/CBM also has been running since July 1981.... The word is that Commodore has finally reached agreement with the authors of CBM COMAL (Mogens Kjaer, Jens Erik Jenson, & Helge Lassen). Apparently, the rights are split - with Commodore getting rights to the disk-based CBM 8096 version (see under LANGUAGE REVIEWS), & INSTRUTEK getting rights to the ROM version. Both CBM 8096 & ROM versions (officially called 1.00) are said to be nearly identical. The earlier public domain version Commodore released last May is officially called version 0.11 (alias COMAL BLUE). It is not yet known whether Commodore will release the CBM 8096 version to the public domain. We would guess they'll try to sell it (but hope it is given away).

"We were really excited when we heard that COMAL was already running on VIC, complete with SOUND & COLOR - not only color control commands, but actual use of color in the presentation - KEYWORDS were color coded, adding a new dimension to a program listing. Fantastic! But as rumors go, we heard all development of COMAL on VIC was stopped since COMMODORE was not interested in it. If any company IS interested, it would be fairly easy to complete the implementation.

"A CP/M version of COMAL is currently available from METANIC APs. We just received their users manual, which is very well done. However, we have had problems with the interpreter.... Work is under way to run COMAL-80 with the 6809 processor under the FLEX operation system. Apparently, work at the Technical University of Copenagen was stopped on a COMAL version for INTEL 8080. COMAL-80 is running on the Data General NOVA. RC computers apparently haven't updated their version of COMAL yet. Thus, Borge Christensen said that only one version meets the latest COMAL definition - the CBM 1.00 version.

"MTU is considering implementing COMAL on their system. Tandy in Europe is apparently interested in COMAL. Research Machines in England has COMAL running on their RM-80 computer. Ireland has suppposedly endorsed COMAL for its education system. Sweden & England are heading that way, too."

IMPORTANT NOTE

The balance of **Midnite** #8 will be in the next issue of the TORPET. Jim Strasma and myself are preparing to publish a compendium of **Midnight** reviews, TPUG game disk reviews (being co-ordinated by Dave Goff on a 32k machine loaned to him by Peter Smith at RTC for this purpose) and a list of 2000 educational programs that Don Whitewood is going to provide along with an international screen standard for reviews. This should be the best resource yet for lists of VIC program sources.

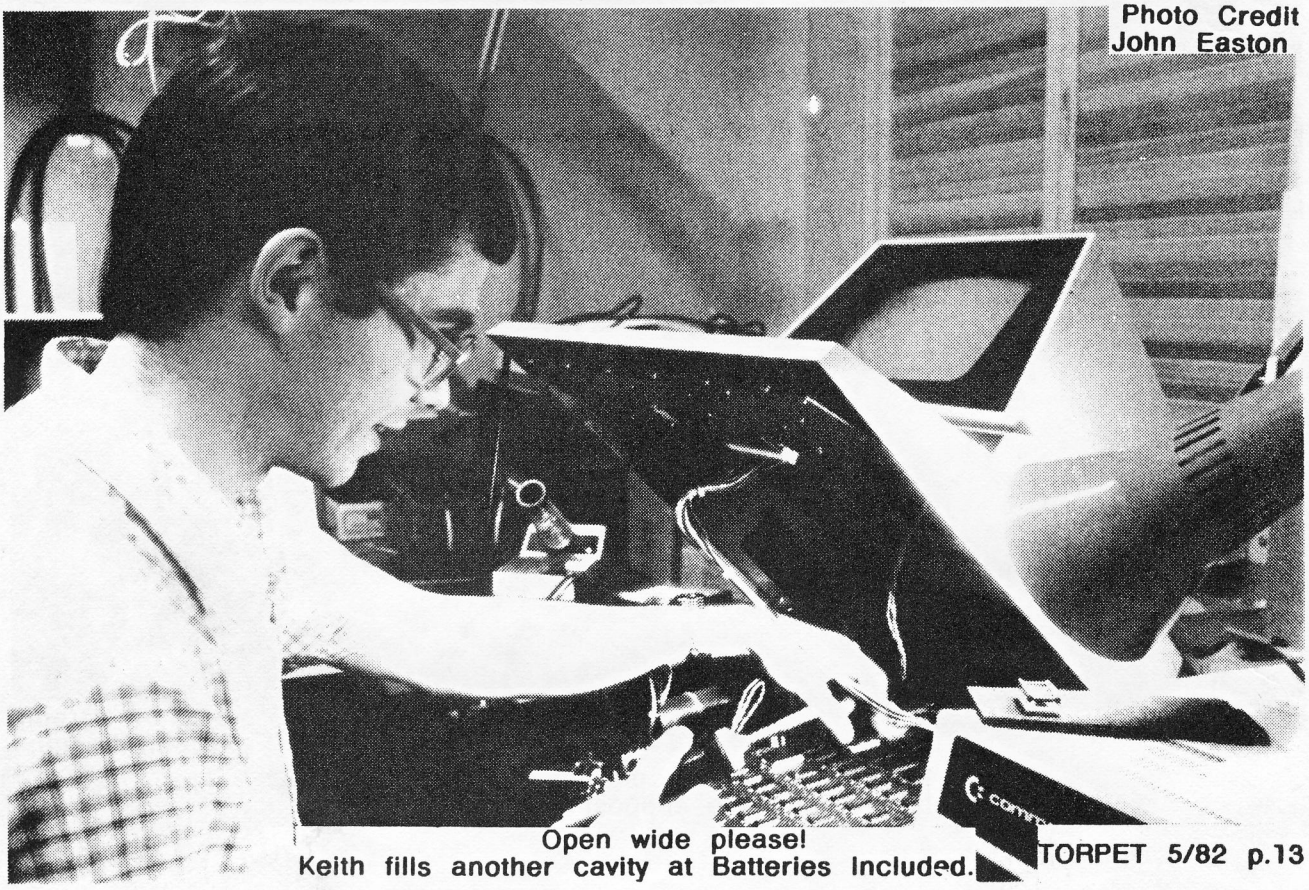
The compendium will not be available through the club (it was felt that the mailing effort would over tax the clubs resources) but several dealers in Toronto will be carrying it in their stores for $10 a copy.

OUR DEALER OF THE MONTH

Alan Krofchick, owner
and Marcie Swartz, chief battery charger
at Batteries Included

Photo Credit
John Easton

Photo Credit
John Easton



Open wide please!
Keith fills another cavity at Batteries Included.

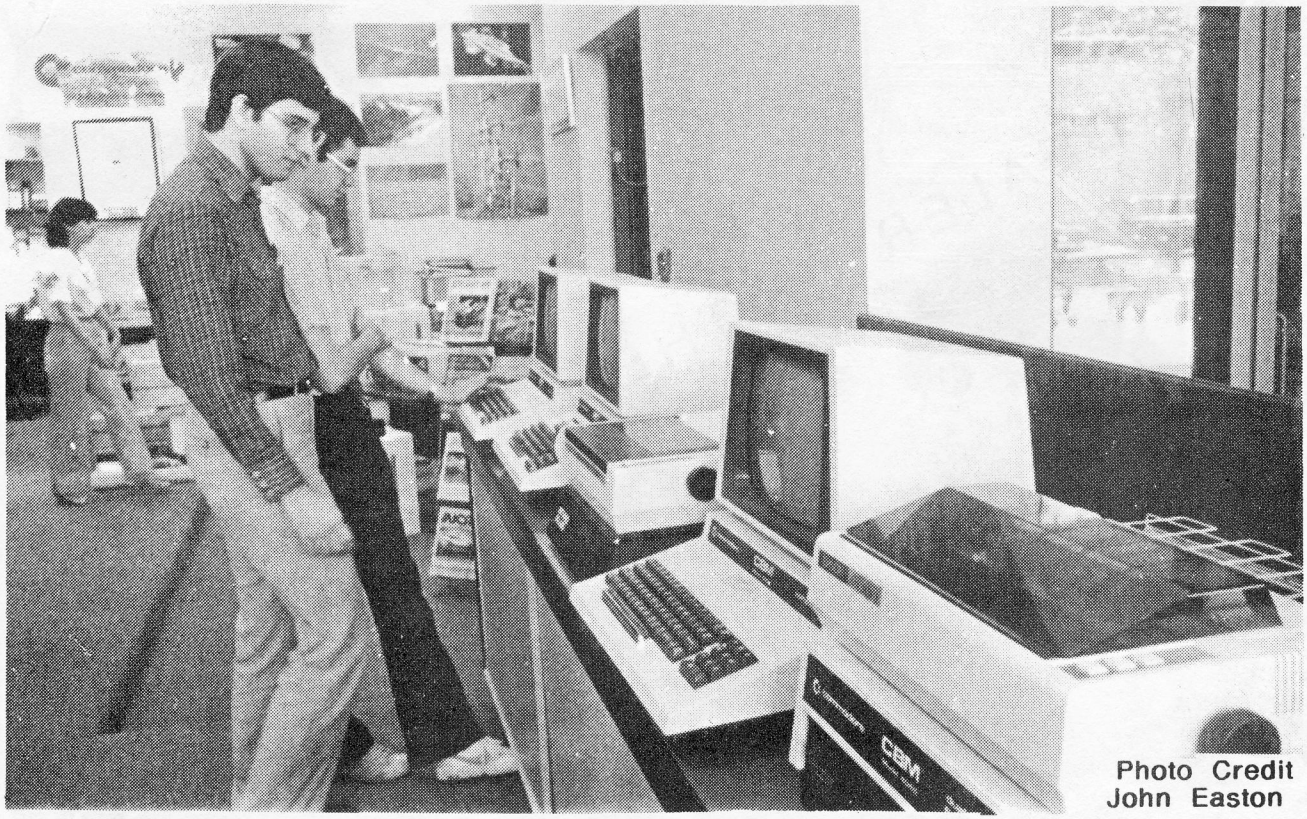


Photo Credit
John Easton

Part of the present store.
A new business division is being opened up nearby.
It will be headed up by Dieter Demmer.

Photo Credit
John Easton

The customer is playing games.
Robbie Krofchick is supposed to be working.

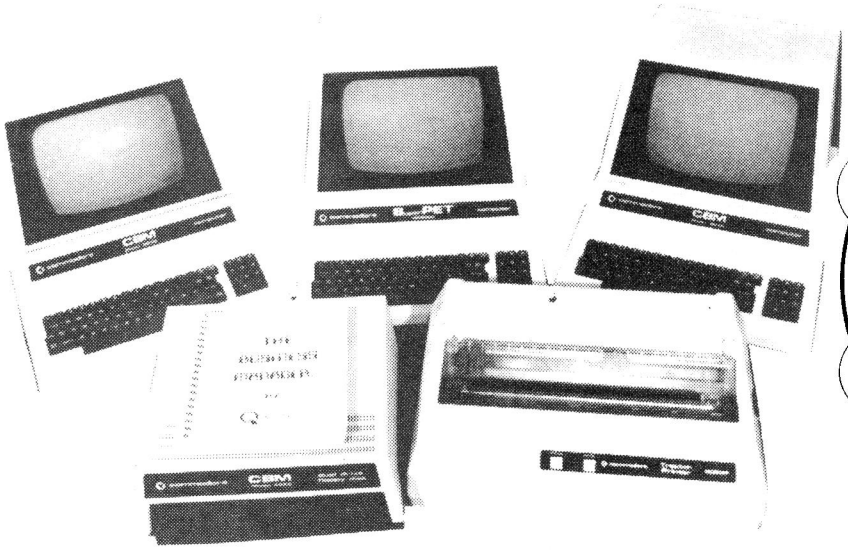
Photo Credit
John Easton

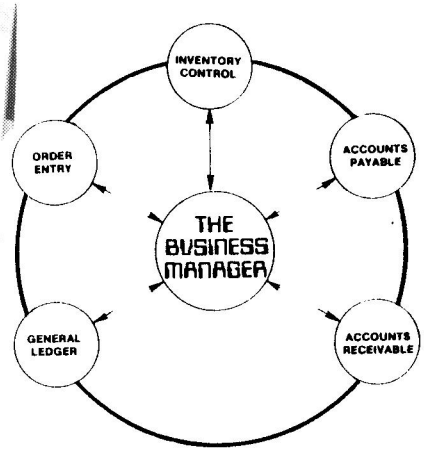
Yun-fu Li keeps on trucking!

THE BUSINESS MANAGER...

A fully interacitve accounting system designed for the Commodore CBM Microcomputer

NO DISKETTE CHANGING NECESSARY! ALL DATA ON LINE AT THE SAME TIME!
HARD-DISK (up to 80 megabytes) and multi-user versions available.





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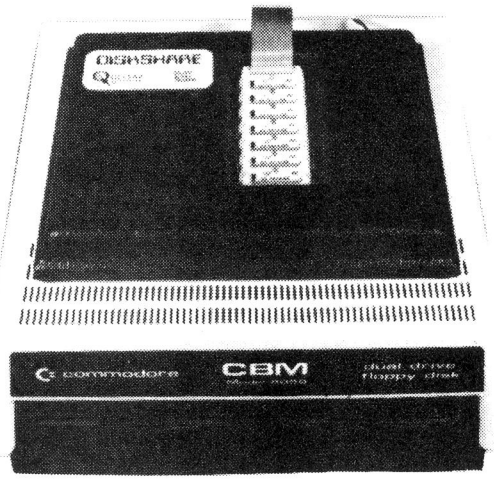

At Questar we specialize in microcomputers for business. Whatever your problem we can tailor a system to suit your needs. Drop by our showroom for a demonstration of our complete line of Commodore microcomputers and what they can do for you.

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QUESTAR INTERNATIONAL INC.

CCC- Christian Computer based Communications

(summary)

COMPUTER GAMES FOR ALL AGES

COMPUTER HELP FOR ALL AGES

WHAT IS C.C.C ?

Christian Computer/based Communications is a non- denominational group of Christians interested in the spreading of the Gospel by the use of computer technology. Alderwood United Church, Toronto serves as a centre for distributing C.C.C. information and material.

CCC GOALS.

The CCC aim is to encourage the preparation and distribution of GOD's revealed wisdom through the exciting and growing home microcomputer networks. In short, we envision a NETWORK of Christian Computer/based Communications across this continent within the next five years. METHODS.

The CCC network intends to achieve its objectives by...

1) Preparing computer programs of the type..

a) TUTORIAL
b) DRILL
c) GAME
d) QUERY

2) Distributing these programs to..

a) INDIVIDUALS
b) CHURCHES
c) SCHOOLS / UNIVERSITIES
d) INSTITUTIONS
e) COMPUTER NETWORKS
f) TELIDON-TYPE NETWORKS

3) Teaching YOUTH GROUPS how to use and prepare new Christian programs.

OBJECTIVES.

1) To promote GOD's LOVE among all people.

2) To help people overcome their identity Crises.

3) To answer questions that new Christians have about their Faith, Doctrines, Christian Organizations, and Cult Organizations.

4) To give people involved with DRUGS, CHRISTIAN SPIRITUAL alternatives to DRUG USES and ABUSES.

5) To promote alternatives to 'SHOOT'EM UP GAMES' with COOPERATIVE GAMES which enphasize CHRISTAN MORAL VALUES.

6) To promote programs and games which emphasize the CHRIST-CENTERED LIFE.

7) To promote the use of CHRISTIAN COMPUTER PROGRAMS through distribution to associate members.

TYPES OF COMPUTER PROGRAMS

TUTORIAL PROGRAMS

1) ALTERNATIVES TO DRUGS.

Gives Christian and secular alter- natives to drug abuse.

2) COPING WITH LIFE.

Gives scriptures as an aid to coping with life's problems.

3) FIVE STEPS TO A NEW LIFE.

Gives a tutorial on how to be BORN AGAIN.

Compares God's Answers with Man's Answers to basic questions of Life - Why am I here, Where am I going, etc.

DRILL PROGRAM.

This is a special program which enables the user to make files containing QUESTIONS and ANSWERS and then allows one to use the program in drill fashion using information in the files.

The player is continually encouraged and at the end of the drill a score is possible complete with a suitable reward of screen graphics.

QUERY PROGRAM.

This is a special program which allows the storage and retrieving of Christian information.

This program uses the KEY-WORD method to retrieve special topics from the system.

GAME PROGRAMS.

A library of various Christian games is continually growing.

1) BIBLE QUIZ
2) BIBLE BOOKS
3) WHO AM I?
4) 66 BOOKS
5) STEPS TO LOVE
6) THE WAY
7) YHWH
8) BIBLE VERSE
9) .....?

CCC-
Christian
Computer-based
Communications

by John Easton

You have asked, for a brief outline of the activities of our organisation, Christian Computer/based Communications - so here goes - please feel free to edit and condense to fit whatever you could use for the TPUG Bulletin.

In overview, we at C.C.C. have been involved in the concept of searching out and encouraging Christian and/or Church-oriented applications of Micro-Computer Technology since May of 1980.

It was at that time that a programmer member of our congregation, Frank Venezia, expressed his concern that the secular world was fast running away with usage and applications of Micro-computers to the detrement of any concept of Christian guidelines or values. I would cite the current abundance of Satanic (read the small print) Adventure games available to all in computer stores from coast to coast, the astrology programs, biorhythm tables, and even tarot card emulating programs available to all who should care to peruse the currently available popular home-computer magazines. WOW - own your own computer and become master of the world.

Whoosht. (as Pogo is wont to say) here we have before us the arrival of our own personal Master-the-World kit, available from your local Micro-shack for merely the cost of your soul...(how about that - your own personal anti-christ machine).

For any further proof that we are fast falling behind in this electronic age of instant information, try one of the commercial Data-base Access companies for any mention of Christ or the Church in our lives. The last time I searched the telephone-book sized directory of programs and services accessable thru the SOURCE, the only mention of anything related to Religion was a listing of what services were advertised for next sunday in New York City.

Chris, we as Christians are nowhere when it comes to addressing this age of Electronic Instant Communication (McLuhan's Global Village) or the Bible's mention of the Word being spread to the ends of the earth. The technology has arrived, and we Christians still wonder why the Bible and it's message of Good News (preferrably in Gideon King James Standard) is not automatically a part of everyones upbringing like Pablum and Coke. One doesn't become a Christian by osmosis - it requires a specific realization or confrontation followed by commitment to a living Christ. The world won't wait for dusty answers, our kids want and expect it NOW - accessable instantly thru their trusty home computers. And if SOMEONE doesnt supply the answers to the questions being asked, we're in for trouble - there are too many alternative solutions being suggested thru this instant electronic media.

The thought just occurred to me - translate the above scenario to the middle ages and a presentation to the board of some obscure monastery in Germany .... the name was Gutenberg.

Anyhow, down from the soapbox and back to our story -

I was forced to learn about the capabilities of these computers very quickly. As chairman of the Outreach Committee of our church, the computer project was handed to me to co-ordinate. Luckily (and I wonder how much of any of this is 'luck') at work our people had just acquired several PETs for evaluation of educational software, and over the next few months in lunch-hours I taught myself the intricacies of conversing with these little critters.

Congregational involvement? Rather sparse - but then, thru the Christian Computer/based Communications group, we have really attempted to direct our efforts on a wider scale. We report to the board of the church, but are given free rein and encouragement to spread our efforts wherever the Lord might direct. The congregation did come through with the financial backing for the project (plus the donation of a small computer!) - through personal pledges and donations some $6,000.00 has been committed to this project.

We have, with these funds, purchased two more computers, a dual-disk drive, printer and a Modem. Two of the computers are small 8k units used primarily for training and demonstration, while the two more computers, a dual-disk drive, printer and a Modem. Two of the computers are small 8k units used primarily for training and demonstration, while the third has 32k of memory and is used for program development and all the major work one might expect of the usual computer applications - Membership & Mailing lists, Word Processing, Budget

Reports, etc. It will also be tied in with our telephone within the next month to operate as a central terminal (11 pm to 8 am) for a Christian Communications Network. This network will allow anyone with a terminal to access the Bulletin Board, leave messages and requests, up and down-load programs for others to share - in general, acting as a central reference point to encourage the use of these machines in Christian applications. The above equipment is all manufactured by or for Commodore Business Machines, which we chose because of their almost universal use in schools of this Province. (and this firm is actually very active in the Toronto area, having originated here).

Most of our software, we have developed ourselves, or have encouraged others to develop. One solution, creatively shared, will usually produce several alternative or better applications once the sharing process is recognised for the help it can be. We have however purchased the Word Processing and Telephone Bulletin-Board packages - both too good to bother wasting time in developing alternatives.

We are using a MAIL-LIST, MEMBERSHIP package that was developed here in Toronto, modified by Rev. Jim Strasma in Illinois and re-applied to our needs here.

Our church secretary has come to rely on our monthly CHURCH ACTIVITIES CALENDAR to keep on top of all activities planned for the church. She up-dates the data once a week, and we give her a new calendar any time she wants - up to a year in the future. Our Committee chairmen also get an up-dated copy once a month covering the following two months for their use in planning activities. At last no one has an excuse for not knowing what is going on!!

Our church treasurer has access to our COMMITTEE BUDGET program, allowing monthly up-date and printout of spending by each department or committee. This program, based on budget allowances, keeps track of expenses and commitments by category and gives a running account of the balance.

Word-processing is of course a natural and logical usage of the Micro. And a very powerful tool it is. This particular version rivals the capabilities of the fancy $20,000 units installed at my place of work.

That is, for the moment, the extent of actual Church use of Micro-computers in the practical, business sense. Future developments will probably occur in the application of programs such as VISICALC to budgeting and forecasting - and perhaps we might even convince our Finance Chairman that this machine can greatly reduce his work in the weekly processing of tithes and offerings.

We have to a greater extent become active in the development of actual programs to aid in Bible Study, Bible Games, Bible Principles, etc. - one application seems to lead to another. We do not necessarily do all this on our own machines, but attempt to encourage the interest in, and development of these programs by others

Our Daily Vacation Bible school this year was blessed with the loan of 10 Commodore PETs from a local Christian dealer (Peter Smith of Richvale Telecommunications). The machines were programmed to re-inforce the lessons covered by the teachers and the whole experiment was apparently an unqualified success. Participation and interest has never been so noticeably observable, and even kids who would never under normal circumstances darken the door of any church were manfully tackling the problem of answering questions about this Jesus guy just to experience the thrill of operating the computers. That this involvement lead to several new commitments to Christ was an added bonus - and thru means of a technology that 'till now seems to have eluded the thinking of our evangelical advisors.

Why use the computer? All of the aforementioned applications of the computer are being done better by the computer - else we wouldn't be doing them. There comes a trade-off point somewhere when the input or access of information is best handled by traditional pencil and paper, and our Finance Chairman is probably quite right in doing what he knows best in the manner he feels most comfortable. In like manner, these machines will never replace the Pastor, nor the Sunday School teacher - but they might well allow them both to spend their time more productively engaged in pastimes wherein the personal contact of their duties may be utilised to the fullest. Take away the drudgery of record-keeping, report-writing, form-filling and rote-teaching that are best done by a machine, and you will release that person to more fully realise their potential in the area wherein they are fully qualified - a living, breathing emissary of Christ. (see Collossians I)

Future plans ? Hard to tell, we're kept so busy now attempting to be obedient to the leading of the Lord that we haven't really had too much time to try and outguess Him. But here are a couple of developments we are praying about -

CABLE T/V MESSAGES - constantly scrolling messages from the Word of God, formatted to T/V requirements. A local cable company has offered this service as part of their Community Information channel. Messages would be changed as required or deemed necessary by the Pastor or congregation preparing the work. This is presently being developed by a church some 40 miles away, with technical input from our CCC network.

CHRISTIAN TRADES DIRECTORY - How often have you needed a good workman or service from someone you could depend upon? With the advent of our Electronic Bulletin Board, it will be no problem to also implement a directory of Christian tradesmen and services. This service actually carries with it the possibility that we might well be able to generate a source of income for our endeavours (a set fee for listing and/or for each reference accessed). And should you not forsee in the immediate future your own terminal to access this information, our church secretary, with a fully cross-indexed program available to her could supply the references to anyone on request. Individual churches are being questioned as to whether their members might make use of such a system.

That takes care of our predictions for this week. Next ? - Well now, perhaps you have heard of the TELIDON information delivery system developed right here in Canada. Telidon is an information-delivery package which ties in with your local cable T/V people (or your telephone), wherein thru means of a small calculator-like attachment, you may access page-at-a-time information of a general (sports, news, weather) interest, or specifics such as local shopping or religion. These topics are all menu-accessable by entering the appropriate numbers on cue from the screen menu. Some of our general help programs - DRUGS - COPING WITH LIFE - and the like should lend themselves ideally to this format. And there we have it - taking Christ to the marketplace.

NOTE - as of December 1, we have been on line in the Toronto area with a program on Where do I Come From - Why am I Here (Man's interpretation vs. the Bible's). And, though I haven't yet seen it, I think the DRUG program is now up and running on the same system.

If you happen to be near a Bell/Vista Telidon demonstration like Simpson's downtown or the Bay at Bloor and Yonge, why not try us - our access number is 8181.

Obviously we are interested in meeting anyone interested in this particular application of micro-technology. Why not contact us - we'd love to share what we have with others. My home phone is 251-1511, and at work you can generally catch me at 965-1230.

John Easton
for Christian Computer/based Communications
(an outreach project of Alderwood United Church)
44 Delma Drive
Toronto M8W 4N6
Ontario

CCC PRESENTATIONS

a short history

1980 SUMMER

During the summer we were present at both the JESUS '80 Festival in Carlisle and at a FESTIVAL OF PRAISE in Square One Mall. Reception was fantastic. The Five Steps to Life was effective in leading at least a half-dozen strangers to Christ.

1980 FALL

JOHN EASTON and FRANK VENEZIA demonstrated some of the CCC programs to the Ontario Society for Microcomputers in Education.

1980 WINTER

The C.C.C. presented the new DRUG program to the TOC ALPHA YOUTH CONFERENCE in Hamilton, Ontario.

1981 SPRING

CHURCH WORKSHOP-

One day workshop at Japanese United Church, Toronto - a great blessing.

C.C.C. CONFERENCE-

Alderwood United Church in Toronto. The first of what should be an ongoing forum of information-sharing and inspiration to all involved in the Christian applications of Micro-computer technology.

1981 SUMMER

JESUS 81 - Carlisle Ontario

What a blessing! praise GOD! the C.C.C. booth was continually crowded with young people hungry for the Word of God.

CELEBRATION 81 -

Square One Mall was the location of a repeat invitation from the organizers of last year's Festival of Praise. Adults were the principal users of computers at Celibration 81. The feedback was positive and valuable contacts were made for the CCC network.

DAILY VACATION BIBLE SCHOOL

The donation of 10 additional computers by local Christian dealer, Peter Smith, added greatly to the reinforcement of lessons. A special program supplied by Peter proved to be a powerful tool in the area of student records and student motivation.

VIC 6560 Chip

Jim, Butterfield

$9000	Inter-lace	Left Margin (=5)		
$9001	Top Margin (=25)			
$9002	Scrn Ad bit 9	# Columns (=22)		
$9003	bit 0	# Rows (=23)	Double Char	
$9004	Input Raster Value: bits 8-1			
$9005	Screen Address bits 13-10	Character Address bits 13-10		
$9006	Light Pen Input	Horizontal		
$9007		Vertical		
$9008	Paddle Inputs	X		
$9009		Y		
$900A	ON	Voice 1	Frequency	
$900B	ON	Voice 2		
$900C	ON	Voice 3		
$900D	ON	Noise		
$900E	Multi-Colour Mode (=0)	Sound Amplitude		
$900F	Screen Background Colour	Foregnd /Backg	Frame Colour	

TORPET 5/82 p.24

VIC MEMORY MAP
Compiled by
Jim Butterfield

Hex Decimal Description

36864
0000-0002 0-2 USR jump
0003-0004 3-4 Float-Fixed vector
0005-0006 5-6 Fixed-Float vector
0007 7 Search character
0008 8 Scan-quotes flag

36865
0009 9 TAB column save
000A 10 0LOAD, 1VERIFY

36866
000B 11 Input buffer pointer/# subscrpt
000C 12 Default DIM flag

36867
000D 13 Type: FFstring, 00numeric
000E 14 Type: 80integer, 00floating point

36868
000F 15 DATA scan/LIST quote/memry flag
0010 16 Subscript/FNx flag
0011 17 0INPUT;$40GET;$98READ

36870
0012 18 ATN sign/Comparison eval flag

36871
0013 19 Current I/O prompt flag
0014-0015 20-21 Integer value

36872
0016 22 Pointer: temporary strg stack
0017-0018 23-24 Last temp string vector

36873
0019-0021 25-33 Stack for temporary strings

36874
0022-0025 34-37 Utility pointer area
0026-002A 38-42 Product area for multiplication

36875
002B-002C 43-44 Pointer: Start-of-Basic

36876
002D-002E 45-46 Pointer: Start-of-Variables

36877
002F-0030 47-48 Pointer: Start-of-Arrays

36878
0031-0032 49-50 Pointer: End-of-Arrays

36879
0033-0034 51-52 Pointer: String-storage(moving down)
0035-0036 53-54 Utility string pointer

VIC 6522 Usage

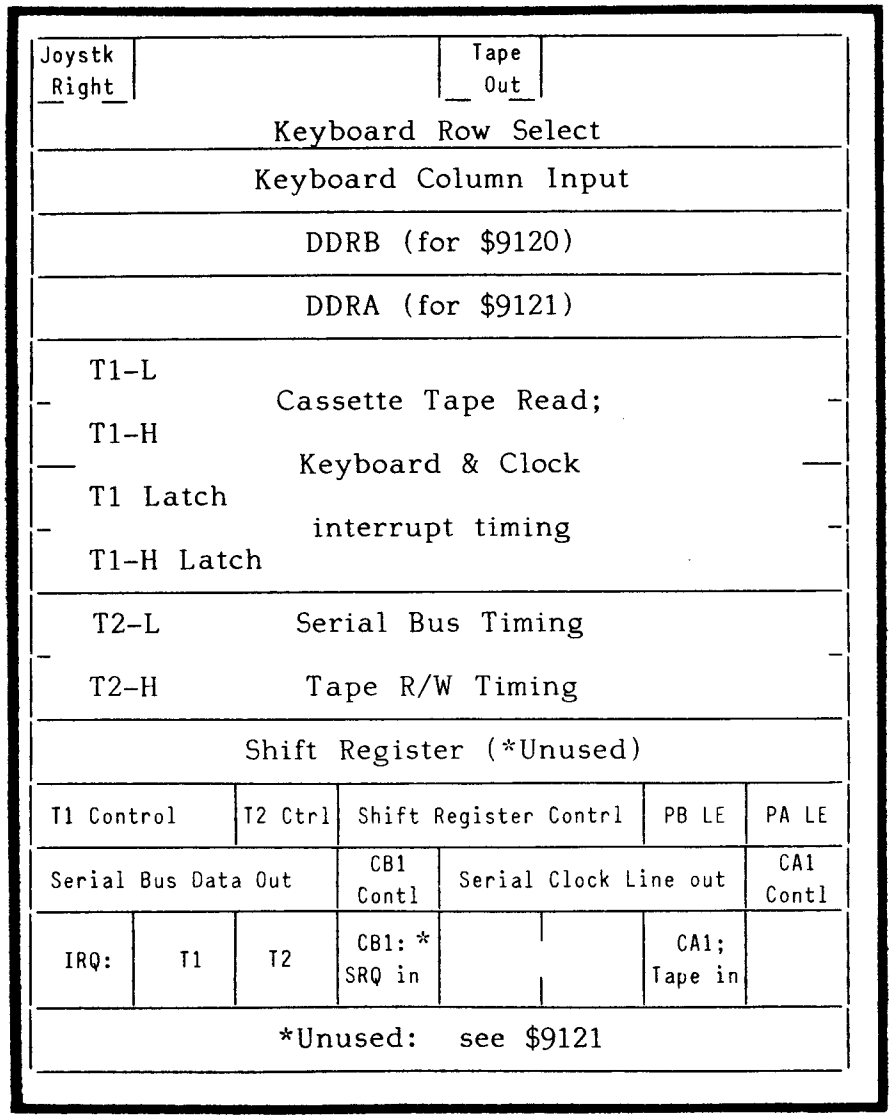
Jim Butterfield

$9110	DSR in	CTS in		DCD* in	RI* in	DTR out	RTS out	Data in
	RS-232 Interface or, Parallel User Port							
$9111	Unused - see $911F							
$9112	DDRB (for $9110)							
$9113	DDRA (for $911F)							
$9114	T1-L							
$9115	RS232 Send Speed; T1-H Tape Write timing							
$9116	T1 Latch							
$9117	T1 Latch H							
$9118	T2-L							
$9119	RS-232 Input timing T2-H							
$911A	Shift Register (*unused)							
$911B	T1 Control		T2 Cnt	Shift Reg Control			PB LE	PA LE
$911C	CB2: RS232 Send			CB1 C	CA2: Tape motor ctrl			CA1 Ctl
$911D	NMI:	T1	T2	CB1: RS232 in			CA1: RESTORE button	
$911E								
$911F	ATN out	Tape sense	-------Joysticks-------- Button	Left	Down	Up	Serial Data in	Serial Clk in

37136	0037-0038 55-56 Pointer: Limit-of-memory
	0039-003A 57-58 Current Basic line number
	003B-003C 59-60 Previous Basic line number
	003D-003E 61-62 Pointer: Basic statement for CONT
37137	003F-0040 63-64 Current DATA line number
	0041-0042 65-66 Current DATA address
37138	0043-0044 67-68 Input vector
	0045-0046 69-70 Current variable name
37139	0047-0048 71-72 Current variable address
37140	0049-004A 73-74 Variable pointer for FOR/NEXT
37141	004B-004C 75-76 Y-save; op-save; Basic pointer save
37142	004D 77 Comparison symbol accumulator
	004E-0053 78-83 Misc work area, pointers, etc
37143	0054-0056 84-86 Jump vector for functions
37144	0057-0060 87-96 Misc numeric work area
37145	0061 97 Accum#1: Exponent
	0062-0065 98-101 Accum#1: Mantissa
37146	0066 102 Accum#1: Sign
	0067 103 Series evaluation constant pointer
37147	0068 104 Accum#1 hi-order (overflow)
37148	0069-006E 105-110 Accum#2: Exponent, etc.
37149	006F 111 Sign comparison, Acc#1 vs #2
37150	0070 112 Accum#1 lo-order (rounding)
37151	0071-0072 113-114 Cassette buff len/Series pointer
	0073-008A 115-138 CHRGET subroutine: get Basic char

VIC 6522 Usage

Jim Butterfield



007A-007B 122-123 Basic pointer (within subrtn)
008B-008F 139-143 RND seed value
0090 144 Status word ST
0091 145 Keyswitch PIA: STOP and RVS flags
0092 146 Timing constant for tape
0093 147 Load0, Verify1
0094 148 Serial output: deferred char flag
0095 149 Serial deferred character
0096 150 Tape EOT received
0097 151 Register save
0098 152 How many open files
0099 153 Input device, normally 0
009A 154 Output CMD device, normally 3
009B 155 Tape character parity
009C 156 Byte-received flag
009D 157 Direct$80/RUN0 output control
009E 158 Tp Pass 1 error log/char buffer
009F 159 Tp Pass 2 err log corrected
00A0-00A2 160-162 Jiffy Clock HML
00A3 163 Serial bit count/EOI flag
00A4 164 Cycle count
00A5 165 Countdown,tape write/bit count
00A6 166 Tape buffer pointer
00A7 167 Tp Wrt ldr count/Rd pass/inbit
00A8 168 Tp Wrt new byte/Rd error/inbit cnt
00A9 169 Wrt start bit/Rd bit err/stbit
00AA 170 Tp Scan;Cnt;Ld;End/byte assy
00AB 171 Wr lead length/Rd checksum/parity
00AC-00AD 172-173 Pointer: tape bufr, scrolling
00AE-00AF 174-175 Tape end adds/End of program
00B0-00B1 176-177 Tape timing constants

00B2-00B3 178-179 Pntr: start of tape buffer
00B4 180 1Tp timer enabled; bit cnt
00B5 181 Tp EOT/RS232 next bit to send
00B6 182 Read character error/outbyte buf
00B7 183 # characters in file name
00B8 184 Current logical file
00B9 185 Current secndy address
00BA 186 Current device
00BB-00BC 187-188 Pointer to file name
00BD 189 Wr shift word/Rd input char
00BE 190 # blocks remaining to Wr/Rd
00BF 191 Serial word buffer
00C0 192 Tape motor interlock
00C1-00C2 193-194 I/O start adds
00C3-00C4 195-196 Kernel setup pointer
00C5 197 Last key pressed
00C6 198 # chars in keybd buffer
00C7 199 Screen reverse flag
00C8 200 End-of-line for input pointer
00C9-00CA 201-202 Input cursor log (row, column)
00CB 203 Which key: 64 if no key
00CC 204 0flash cursor
00CD 205 Cursor timing countdown
00CE 206 Character under cursor
00CF 207 Cursor in blink phase
00D0 208 Input from screen/from keyboard
00D1-00D2 209-210 Pointer to screen line
00D3 211 Position of cursor on above line
00D4 212 0direct cursor, else programmed
00D5 213 Current screen line length
00D6 214 Row where curosr lives
00D7 215 Last inkey/checksum/buffer
00D8 216 # of INSERTs outstanding
00D9-00F0 217-240 Screen line link table
00F1 241 Dummy screen link
00F2 242 Screen row marker
00F3-00F4 243-244 Screen color pointer
00F5-00F6 245-246 Keyboard pointer
00F7-00F8 247-248 RS-232 Rcv pntr
00F9-00FA 249-250 RS-232 Tx pntr
00FF-010A 256-266 Floating to ASCII work area
0100-103E 256-318 Tape error log
0100-01FF 256-511 Processor stack area
0200-0258 512-600 Basic input buffer
0259-0262 601-610 Logical file table
0263-026C 611-620 Device # table
026D-0276 621-630 Sec Adds table
0277-0280 631-640 Keybd buffer
0281-0282 641-642 Start of Basic Memory
0283-0284 643-644 Top of Basic Memory
0285 645 Serial bus timeout flag
0286 646 Current color code
0287 647 Color under cursor
0288 648 Screen memory page
0289 649 Max size of keybd buffer
028A 650 Repeat all keys
028B 651 Repeat speed counter
028C 652 Repeat delay counter
028D 653 Keyboard Shift/Control flag
028E 654 Last shift pattern
028F-0290 655-656 Keyboard table settup pointer
0291 657 Keymode (Kattacanna)
0292 658 0scroll enable
0293 659 VIC chip control
0294 660 VIC chip command
0295-0296 661-662 Bit timing
0297 663 RS-232 status
0298 664 # bits to send
0299-029A 665 RS-232 speed/code
029B 667 RS232 receive pointer
029C 668 RS232 input pointer
029D 669 RS232 transmit pointer
029E 670 RS232 output pointer
029F-02A0 671-672 IRQ save during tape I/O
0300-0301 768-769 Error message link
0302-0303 770-771 Basic warm start link
0304-0305 772-773 Crunch Basic tokens link
0306-0307 774-775 Print tokens link
0308-0309 776-777 Start new Basic code link
030A-030B 778-779 Get arithmetic element link
0314-0315 788-789 Hardware interrupt vector (EABF)
0316-0317 790-791 Break interrupt vector (FED2)
0318-0319 792-793 NMI interrupt vector (FEAD)
031A-031B 794-795 OPEN vector (F40A)
031C-031D 796-797 CLOSE vector (F34A)
031E-031F 798-799 Set-input vector (F2C7)
0320-0321 800-801 Set-output vector (F309)
0322-0323 802-803 Restore I/O vector (F3F3)
0324-0325 804-805 INPUT vector (F20E)
0326-0327 806-807 Output vector (F27A)
0328-0329 808-809 Test-STOP vector (F770)
032A-032B 810-811 GET vector (F1F5)
032C-032D 812-813 Abort I/O vector (F3EF)
032E-032F 814-815 USR vector (FED2)
0330-0331 816-817 LOAD link
0332-0333 818-819 SAVE link
033C-03FB 828-1019 Cassette buffer
0400-0FFF 1024-4095 3K RAM expansion area
1000-1FFF 4096-8191 Normal Basic memory
2000-7FFF 8192-32767 Memory expansion area

8000-8FFF 32768-36863 Character bit maps
9000-900F 36864-36879 Video Interface Chip
9110-912F 37136-37151 VIA Interface - NMI
9120-912F 37152-37167 VIA Interface - IRQ
9400-95FF 37888-38399 Alternate Colour Nybble area
9600-97FF 38400-38911 Main Colour Nybble area
A000-BFFF 40960-49151 Plug-in ROM area
C000-FFFF 49152-65535 ROM: Basic and Operating System
FF8A-FFF5 65418-65525 Jump Table, Including:
FFC6 - Set Input channel
FFC9 - Set Output channel
FFCC - Restore default I/O channels
FFCF - INPUT
FFD2 - PRINT
FFE1 - Test Stop key
FFE4 - GET

VIC-20 ROM Organization

Jim Butterfield
Toronto

c000 ROM control vectors
c00c Keyword action vectors
c052 Function vectors
c080 Operator vectors
c09e Keywords
c19e Error messages
c328 Error message vectors
c365 Miscellaneous messages
c38a Scan stack for FOR/GOSUB
c3b8 Move memory
c3fb Check stack depth
c408 Check memory space
c435 'OUT OF MEMORY'
c437 Error routine
c469 Break entry
c474 'READY.'
c480 Ready for Basic
c49c Handle new line
c533 Re-chain lines
c560 Receive input line
c579 Crunch tokens
c613 Find Basic line
c642 Perform [NEW]
c65e Perform [CLR]
c68e Back up text pointer
c69c Perform [LIST]
c742 Perform [FOR]
c7ed Execute statement
c81d Perform [RESTORE]
c82c Break
c82f Perform [STOP]
c831 Perform [END]
c857 Perform [CONT]
c871 Perform [RUN]
c883 Perform [GOSUB]
c8a0 Perform [GOTO]
c8d2 Perform [RETURN]
c8f8 Perform [DATA]
c906 Scan for next statement
c928 Perform [IF]
c93b Perform [REM] c94b Perform [ON]
c96b Get fixed point number
c9a5 Perform [LET]
ca80 Perform [PRINT#]
ca86 Perform [CMD]
caa0 Perform [PRINT]
cb1e Print message from (y,a)
cb3b Print format character
cb7b Perform [GET]
cba5 Perform [INPUT#]
cbbf Perform [INPUT]
cbf9 Prompt & input
cc06 Perform [READ]
ccfc Input error messages
cd1e Perform [NEXT]
cd78 Type-match check
cd9e Evaluate expression
cea8 Constant - PI
cef1 Evaluate within brackets
cef7 Check for ')'
ceff Check for comma
cf08 Syntax error
cf14 Check range
cf28 Search for variable
cfa7 Set up FN reference
cfe6 Perform [OR]
cfe9 Perform [AND]
d016 Compare
d081 Perform [DIM]
d08b Locate variable
d113 Check alphabetic
d11d Create variable
d194 Array pointer subroutine
d1a5 Value 32768
d1b2 Float-fixed conversion
d1d1 Set up array
d245 'BAD SUBSCRIPT'
d248 'ILLEGAL QUANTITY'
d34c Compute array size
d37d Perform [FRE]
d391 Fixed-float conversion
d39e Perform [POS]
d3a6 Check direct
d3b3 Perform [DEF]
d3e1 Check FN syntax
d3f4 Perform [FN]
d465 Perform [STR$]
d475 Calculate string vector
d487 Set up string
d4f4 Make room for string
d526 Garbage collection
d5bd Check salvageability
d606 Collect string
d63d Concatenate
d67a Build string to memory
d6a3 Discard unwanted string
d6db Clean descriptor stack
d6ec Perform [CHR$]
d700 Perform [LEFT$]
d72c Perform [RIGHT$]
d737 Perform [MID$]
d761 Pull string parameters
d77c Perform [LEN]
d782 Exit string-mode
d78b Perform [ASC]
d79b Input byte parameter
d7ad Perform [VAL]
d7eb Get params for poke/wait
d7f7 Float-fixed
d80d Perform [PEEK]
d824 Perform [POKE]
d82d Perform [WAIT]
d849 Add 0.5

d850 Subtract-from
d853 Perform (SUBTRACT)
d86a Perform (ADD)
d947 Complement fac#1
d97e 'OVERFLOW'
d983 Multiply by zero byte
d9ea Perform (LOG)
da2b Perform (MULTIPLY)
da59 Multiply-a-bit
da8c Memory to FAC#2
dab7 Adjust FAC#1/#2
dad4 Underflow/overflow
dae2 Multiply by 10
daf9 +10 in floating pt
dafe Divide by 10
db12 Perform (DIVIDE)
dba2 Memory to fac#1
dbc7 FAC#1 to memory
dbfc FAC#2 to fac#1
dc0c FAC#1 to FAC#2
dc1b Round FAC#1
dc2b Get sign
dc39 Perform (SGN)
dc58 Perform (ABS)
dc5b Compare FAC#1 to mem
dc9b Float-fixed
dccc Perform (INT)
dcf3 String to fac
dd7e Get ascii digit
dddd Float to ascii
df16 Decimal constants
df3a TI constants
df71 Perform (SQR)
df7b Perform (POWER)
dfb4 Perform (NEGATIVE)
dfed Perform (EXP)
e040 Series evaluate 1
e056 Series evaluate 2
e094 Perform (RND)
e0f6 ?? Breakpoints ??
e127 Perform (SYS)
e153 Perform (SAVE)
e162 Perform (VERIFY)
e165 Perform (LOAD)
e1bb Perform (OPEN)
e1c4 Perform (CLOSE)
e1d1 Parameters for load/save
e203 Check default parameters
e20b Check for comma
e216 Parameters for open/close
e261 Perform (COS)
e268 Perform (SIN)
e2b1 Perform (TAN)
e30b Perform (ATN)
e378 Initialize
e387 CHRGET for zero page
e3a4 Initialize Basic
e429 Power-up message
e44f Vectors for $300
e45b Initialize vectors
e467 Warm restart
e476 Program patch area
e4a0 Serial output '1'
e4a9 Serial output '0'
e4b2 Get serial input & clock
e4bc Program patch area
e500 Set 6522 addrs
e505 Set screen limits
e50a Track cursor location
e518 Initalize I/O
e54c Normalize screen
e55f Clear screen
e581 Home cursor
e587 Set screen pointers
e5bb Set I/o defaults
e5c3 Set vic chip
e5cf Input from keyboard
e64f Input from screen
e6b8 Quote mark test
e6c5 Set up screen print
e6ea Advance cursor
e715 Retreat cursor
e72d Back into previous line
e742 Output to screen
e8c3 Go to next line
e8d8 Do 'RETURN'
e8e8 Check line decrement
e8fa Check line increment
e912 Set colour code
e921 Colour code table
e929 Code conversion
e975 Scroll screen
e9ee Open space on screen
ea56 Move screen line
ea6e Synch colour transfer
ea7e Set start-of-line
ea8d Clear screen line
eaa1 Print to screen
eaaa Store on screen
eab2 Synch colour to char
eabf Interrupt (IRQ)
eb1e Check keyboard
ec00 Set text mode
ec46 Keyboard vectors
ec5e Keyboard maps
ed21 Graphics/text control
ed30 Set graphics mode
ed5b Wrap up screen line
ed6a Shifted key matrix
eda3 Control key matrix
ede4 Vic chip defaults
edfd Screen line adds low
ee14 Send 'talk'
ee17 Send 'listen'
ee1c Send control char
ee49 Send to serial bus
eeb7 Timeout on serial
eec0 Send listen SA
eec5 Clear ATN
eece Send talk SA
eee4 Send serial deferred
eef6 Send 'untalk'
ef04 Send 'unlisten'
ef19 Receive from serial bus
ef84 Clock line on
ef8d Clock line off
ef96 Delay 1 ms
efa3 RS232 send (NMI)
efee New RS232 byte send
f016 Error or quit
f027 Compute bit count
f036 RS232 receive (NMI)
f05b Setup to receive
f09d Receive parity error
f0a2 Receive overrun error
f0a5 Receive break error
f0a8 Receive frame error
f0b9 Bad device
f0bc File to RS232
f0ed Send to RS232 buffer
f116 Input from RS232 buffer
f14f Get from RS232 buffer
f160 Check serial bus idle
f174 Messages
f1e2 Print if direct
f1f5 Get..
f205 ..from RS232
f20e Input
f250 Get.. tape/serial/RS232
f27a Output..
f290 ..to tape
f2c7 Set input device
f309 Set output device
f34a Close
f3cf Find file
f3df Set file values
f3ef Abort all files
f3f3 Restore default I/O
f40a Do file opening
f495 Send SA
f4c7 Open RS232
f542 Load program
f647 'SEARCHING'
f659 Print file name
f66a 'LOADING/VERIFYING'
f675 Save program
f728 'SAVING'
f734 Bump clock
f760 Get time
f767 Set time
f770 Action stop key
f77e File Error Messages
f7af Find any tape header
f7e7 Write tape header
f84d Get buffer address
f854 Set buffer start, end pointers
f867 Find specific header
f88a Bump tape pointer
f894 'PRESS PLAY .. '
f8ab Check cassette status
f8b7 'PRESS RECORD ..'
f8c0 Initiate tape read
f8e3 Initiate tape write
f8f4 Common tape read/write
f94b Check tape stop
f95d Set timing
f98e Read bits (IRQ)
faad Store characters

fbd2 Reset pointer
fbdb New tape character setup
fbea Toggle tape
fc06 Data write
fc0b Tape write (IRQ)
fc95 Leader write (IRQ)
fccf Restore vectors
fcf6 Set vector
fd08 Kill motor
fd11 Check read/write pointer
fd1b Bump read/write pointer
fd22 Powerup entry
fd3f Check A-rom
fd52 Set kernal2
fd8d Initialize system constants
fdf1 IRQ vectors
fdf9 Initialize I/O regs
fe49 Save data name
fe50 Save file details
fe57 Get status
fe66 Flag ST
fe6f Set timeout
fe73 Read/set top of memory
fe82 Read/set bottom of memory
fe91 Test memory location
fea9 NMI interrupt entry
fed2 RESET/STOP warm start
fede NMI RS232 sequences
ff56 Restore & exit
ff5c RS232 timing table
ff72 Main IRQ entry
ff8a Jumbo jump table
fffa Hardware vectors

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.

MODEM RENTALS
By Gord Campbell

These modems connect directly to the Pet user port, so no extra hardware is required. The software which comes with the modem will run on any Pet except 'original ROM'. It does support logging data on disk or printer, but not (yet) download from the club bulletin-board.
$20 for one month.

To arrange renting a modem, give me a call at 492-9518 any evening between 7 and 11.

THE MARCH TPUG RELEASE DISK

(This listing corresponds to the disk released to the Leaside Meeting and differs slightly from the library copy)
Conversions a and **conversions b**: Two programs from Charles Brown, of San Diego, that carry out most common conversions for measures of weight, volume, length, etc.. These are useful, but probably more useful as subroutines in larger programs unless loading a program to do a volume conversion happends to be convenient.

Planets: provides planetary positions by data and time within 300 years of 1980. After 40 seconds of calculation, the program delivers a table of planetary positions and of relative distances.

Weathercast: predicts tomorrow's weather if you have good data on yesterday's and today's weather.

Set-up: a menu driver for utility programs.

lottario: selects 6 random numbers from 1 to 39. I cannot see how this would assist in winning the real thing.

Shl-mtz lib 2.0: Another version of K. Lowndes' directory program which generates a directory of all your disks. Note that is you break out of the program, the write file remains open. Also, capital letters are not well supported. Otherwise, this is a very useful program.

Critical path: Just what you require to organize a series of tasks or other scheduling problems. It is also well`-documented and virtually crash-`proof. John Easton donated this program to the club library and he encourages us to let him know of any creative modifications that are made by club members.

march 6: A fail-safe demo by Eric Brandon of a user-friendly method of getting an input of date and year.

Word invaders: Get the aliens and learn how to spell. Some kids will enjoy this, others will load the next program.

Petman 2: Packman on a PET. Its not as colourful, though I think that the PET version is just as difficult. This 40 col. program runs well on an 80 col. screen without loading in a 40 col. window

Tax 81 Ont. v1: Jim Butterfield's annual tax program. Its still useful for late filers, or as a base for your own '82 tax program.

Graphic Editor: Edits graphics subroutines from a menu-driven series of choices. At the time of writing, I could not figure out how it operates.

Vic Programs: A game, "Lunar Lander" and three utilities, "vicload4.rel", "vicload2.rel", and "bargraph", are included in the library disk. These will be reviewed separately with other VIC programs.

Gerry Gold

TPUG-VIC GAME 1

V1

ROCKET COMMAND
INVADERS
ARTILLERY
DAM BUSTERS
DEPTH CHARGE
MASTERMIND
OTHELLO
CHECKERS
RACE
ARROW
GRAND PRIX
PINBALL
STAR CHASER
SAMU
TRAP
BLACKJACK
BUSH TRAIL
UFO
KILLER COMET
LUNAR LANDER
BREAKOUT
RUGBY
MUKADE
DEFLECTION
VIC SNAKE
DRM BREAKOUT
STAR WARS
DRAGON MAZE
FOREST DRIVER
MAANLANDER
TANK-UFO
CAR RACE
ARROW 2
RIJTEST
BARRICADE
MEMORY
SCHUIFSPEL
REACTION TEST
LONG DIVISION
BANDIT 1
FIRING TANK
PING PONG
BIORHYTHM
PISTOLEN PAULTJE

TPUG-VIC UTIL 1

V2

TINYMON1 FOR VIC
TINYMON INST
PROGRAMBLE CHAR
VIC CHAR GENR
VIC CHAR DEMO
BUTTERFIELD DEMO
HISTOGRAM
VICLOAD4.REL
VICLOAD2.REL
BASICODE READ
BASICODE SEND
ADDRESSES
VIC DIS1
VIC DIS2
VIC DIS3
DISASM
DIR
VIEW BAM
DISPLAY T&S
CHECK DISK
PERFORMANCE TEST
SEQUENTIAL FILE
RANDOM FILE

TPUG-VIC DEMO 1

V3

MERRY VIC-MAS
VIC SOUND DEMO
FRERE JACQUES
GRAPHICS+SOUND
DEMO
SOUNDS
VIC KEY
GRAPHDEM0
GRAPHDEM1
GRAPHDEM3
VIC-DEMO
GENERAL DEMO
VIC-KALEIDOSCOPE
LIGHT SHOW
KALEIDOSCOPE
COLOUR BARS
VIC SIL. NITE
HIRES PLOT
CIRKELDEMO
MIAUW
BUMBLEBEE
ROBOTS
MOSAIC
KALEIDOSCOOP
SNOOPY HIRES
HIRES DEMO 1
SOUND DEMO
KEYBOARD DEMO
MORSE
BIRDS DEMO
PIANO
DRAGON
GRAPHIC DEMO 1
HANDIC DEMO3

TH - MAY/82

COPY/ALL
LOG & LOGO
HI-RES CLOCK
CALCULART
PETMAN 3
TANK VOLUME
SUPER VICMON2
TRAVERSE
VIC CLOCK
VIC FREIGHTER
NEW LOTTARIO
POWAID4.R
POWAID2.R
POWAID4.RUN
POWAID2.RUN
FLOADER
MLOADER
ADDCOMS.PAL
SUPER1 V1.1
F32 WATAID 4
F16 WATAID 4
S32 WATAID 4
S16 WATAID 4
8032 WATAID 4
INS WATAID 4
VIC LISSAJOUS
LOCKDISK
BREAK/PADL/TEST
SCREENW/CBM

CLASSIFIED ADS

5 cents per word

with $1.00 Minimum.

payment in advance to:

Chris Bennett
381 Lawrence Avenue West
Toronto, Ontario
M5M 1B9

FOR SALE: KSR-35 Teletype machine (110 baud ASCII, 20ma current loop). Asking 4175 or best offer. Peter Fischer, Oakville 845-9384.

WANTED TO PURCHASE: Word Pro Three or Three Plus software and manual. Must work with Fat Forty (12-inch screen). Contact Ruth Lukaweski Home (782-9377); Work (487-3381).

AXIOM EX-801p PET printer (4225) IEEE to IEEE cables ($25ea) 2708 EPROMS ($1ea) Realtime Baseball for original and upgrade rom ($5) Jerry Brinson 10136 E. 96th ST. Indianapolis, In. U.S.A.

WANTED:Disk drive (#8050), and/or printer (letter quality), in working order. Waks, 562 W. 171 St. NYC, 10032. Phone: 212-795-5284

HELP WANTED! I have a 8032 with 8050 Dual Drives and an Olivetti priter. Need student who can use Word Pro 4, Plus to adapt for our business, and maybe teach us how to use same. Don Mills-Finch. Barry Lebow 224-2662.

2022 COMMODORE TRACTOR PRINTER- used for less than one box of paper. $700. Call Bob 846-5363.

TABLE OF CONTENTS

Next Month: Rest of Midnite
- with more good VIC stuff