THE TORPET

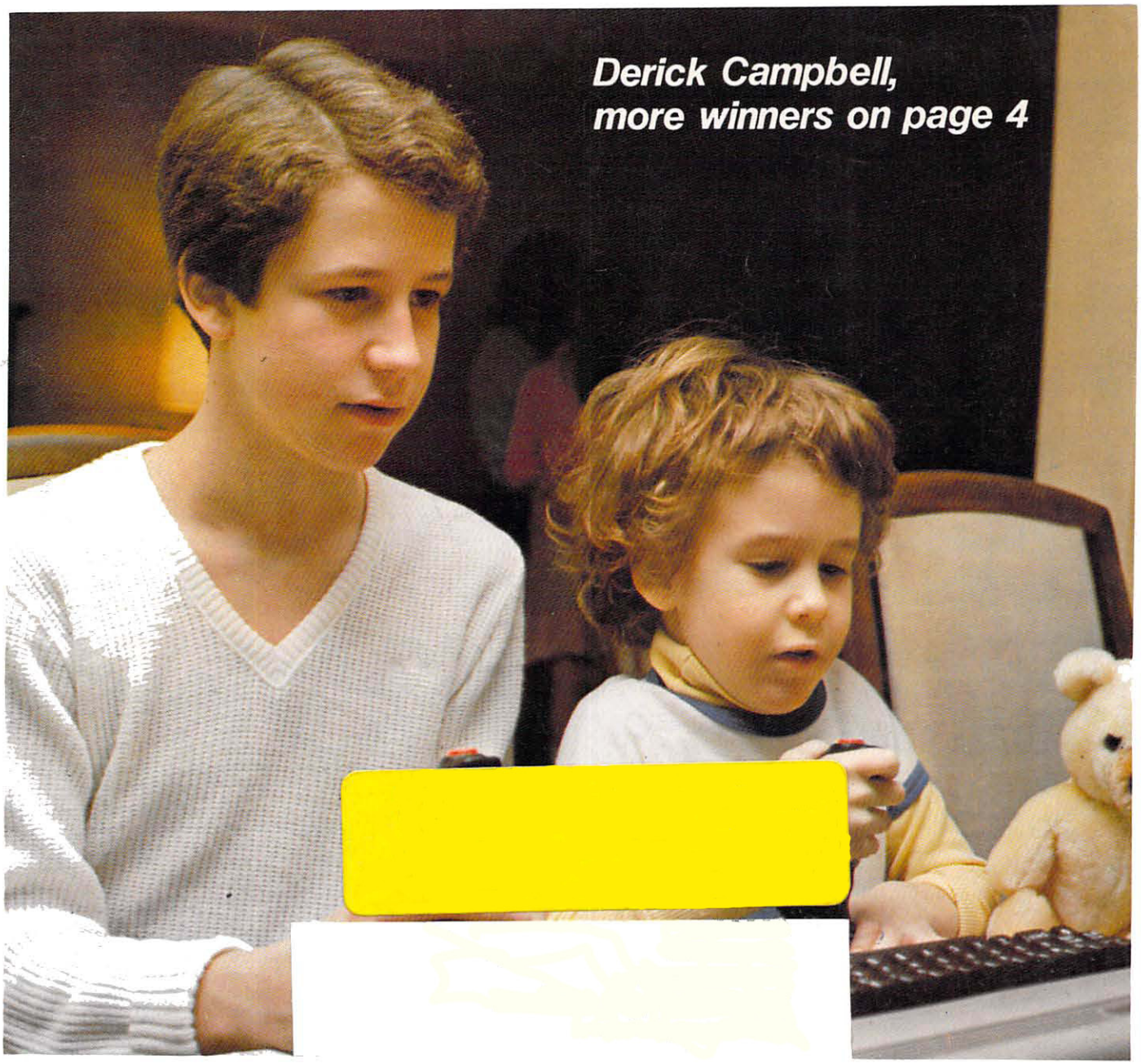
Second Class Mail Registration no. 5918, Shelburne, Ontario

The INDEPENDENT Commodore Users' Magazine **No. 22** August **1983**

$2.00

New C-64, VIC and PET Products

The Chicago C.E.S. Report by Chris Bennett p.15



New, Updated Lists of Thousands of Public Domain Programs p.73

Richvale Telecommunications

10610 BAYVIEW (Bayview Plaza)
RICHMOND HILL, ONTARIO, CANADA L4C 3N8
(416) 884-4165

$185.00 Canadian
$149.00 U.S.
PLUS CUSTOMS BROKERAGE, HANDLING AND MAILING CHARGE.

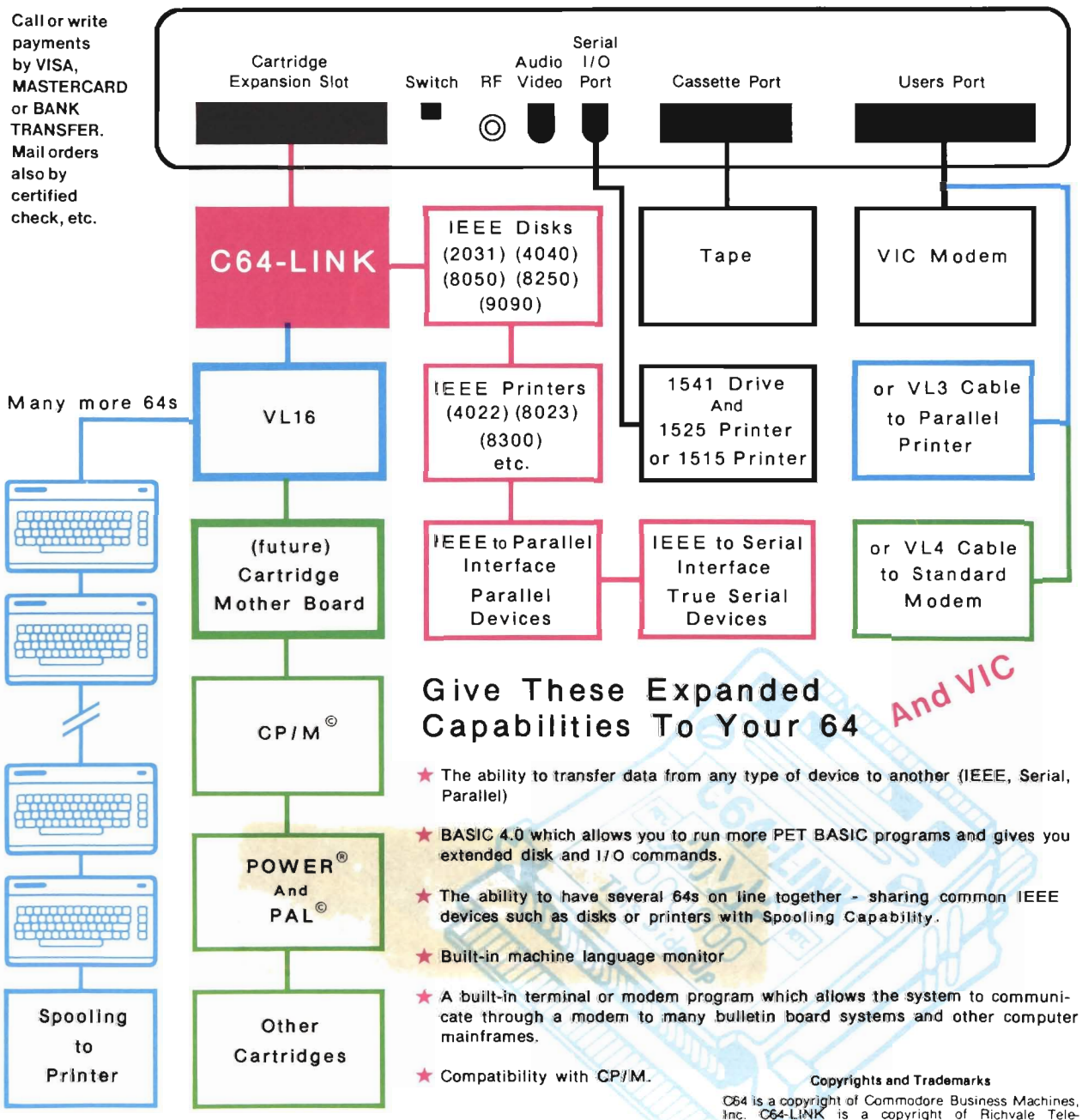
RTC

C64-LINK© The Smart 64

Also available for VIC 20

RTC

Call or write payments by VISA, MASTERCARD or BANK TRANSFER. Mail orders also by certified check, etc.



Give These Expanded Capabilities To Your 64 And VIC

- ★ The ability to transfer data from any type of device to another (IEEE, Serial, Parallel)
- ★ BASIC 4.0 which allows you to run more PET BASIC programs and gives you extended disk and I/O commands.
- ★ The ability to have several 64s on line together - sharing common IEEE devices such as disks or printers with Spooling Capability.
- ★ Built-in machine language monitor
- ★ A built-in terminal or modem program which allows the system to communicate through a modem to many bulletin board systems and other computer mainframes.
- ★ Compatibility with CP/M.

Contact your local Commodore dealer or RTC.

TABLE OF CONTENTS

PAGE		
2	Letters to the Editor	
3	Editorial Page	
4	TPUG Programming Contest Winners	Michael Bonnycastle
5	Farquharson Features	Al Farquharson
7	HELP	Doris Bradley
8	Stick to VIC	Terry Herckenrath
9	TPUG Library Additions	
8	TPUG's This and That	Doris Bradley
15	1983 Chicago CES Show	Chris Bennett
22	1984 TPUG Conference Survey	
27	Programmers Do It In Software (Conclusion)	Hal Chamberlin
31	CHIPP!	Mike Richardson
32	Book Review	Terry Taller
33	If .. Then Branching	Vince Sorensen
39	Non-destructive PET Reset	Harold Anderson
41	EXECOM-80 (A review)	T. Tremmel
44	Tips and Tricks	Ian A. Wright
46	Butterfield Box (Input Idiosyncracies)	Jim Butterfield
51	The New Business Computer	Gord Campbell
53	Color 80 (A review)	G. R. Walter
54	More (less) on LIFE	Edwin L. King
56	Papermate to WordPro Converter	Thomas Henry
63	The Smart 64 Terminal	Robert A. Chandler
65	ROMPACKER (A Review)	William E. Wilbur
66	Game Reviews	Bonnar Beach and David Hill
67	Differential Relocation of Machine Code	Harold Anderson
68	Hardware Hacker	Hank Mraczkowski
69	TPUG June Central Meeting	Ian A. Wright
73	TPUG Info and NEW Library List	
95	Classified	
96	INDEX OF ADVERTISERS	

The TORPET
ISSN # 0821-1809
published by
The Publisher
Horning's Mills, Ontario
Canada L0N 1J0
(519) 925-5376

Use above address for both manuscript submission and advertising

U.S. Address: The TORPET
1 Brinkman Ave., Buffalo, N.Y., 14211

Bruce M. Beach, Publisher and Editor
Sandra Waugh, Associate Editor

Published monthly (except April and December)
Single subscription rate - $18.00 per year

Printed In Canada
Canadian Second Class Mailing Permit Number 5918
Mailed at Shelburne, Ontario
U.S. Second-Class Postage paid at Buffalo, N.Y.

Cover Credit: Graham Bailey
Cover Models: Derick Campbell Age 14; and Bradley Campbell, Age 5.
Cover Story: Page 3

POSTMASTER: Send changes of address to The TORPET, 1 Brinkman Ave., Buffalo, N.Y., 14211

Letters to the the Editor

Allow me to use this opportunity to congratulate you with the TORPET organization. There is nothing like it here in Norway, and by being attached to your experience I reckon my children and I will avoid jumping the leap in two steps.

In a short time I hope to bring you more members from Trondheim, as there is a rapidly growing interest for data also here in Norway.

Borre Sandnes #3990
Trondheim, Norway

I think you are doing a great job with all the new members in the club. I don't know how you have held it together this long without more troubles than you have. I think your doing "Great".

Ray W. Beardslee #4493
Camanche, Iowa

Many thanks for the great magazine. You make up really interesting stuff.

Hans-Borje Pettersson #4772
Kristianstad, Sweden

Thank you for your continued interest in upgrading TORPET. I'm grateful for each copy and always find something of interest.

David C. Dorward #2577
Edmonton, Alberta

Congratulations on a super conference. Wish I could have been there both days and attended more sessions, but I really enjoyed the time I spent on Saturday. One of the most enjoyable aspects of the conference for me was the opportunity to meet Doris Bradley and others from TPUG. You are not just names in the TORPET and unapproachable. I do wish I was closer so I could participate more often.

I also am enjoying my issues of the TORPET. Like other publications I've been receiving, it improves with every issue and just keeps growing. Keep up the good work.

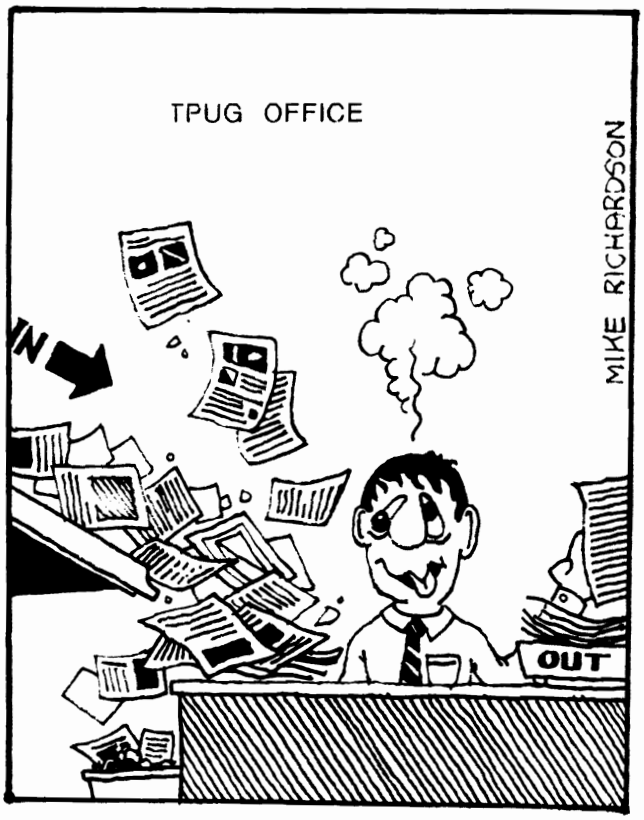
Martha Rodger #3110
Dryden, Michigan

I very much enjoyed your conference and copy session held in May and look forward to it becoming a regular feature. The organisers are to be commended for their hard work and coping with the ultimate of bugs--a power failure!

John Ambrose #0129
Mississauga, Ontario

TPUG Executive

Bruce Beach Editor 519-925-5376
Barb Bennett Director 416-782-9252
Chris Bennett Vice-President 416-782-9252
Mike Bonnycastle President 416-654-2381
Gord Campbell Conference 416-492-9518
Sandy Cavan Treasurer 416-962-0744
Gary Croft Recording Sec. 416-727-8795
John Easton Westside Chapter 416-251-1511
Al Farquharson Westside Chapter 519-442-7000
Gerry Gold Director 416-225-8760
Mike Hyszka C-64 Chapter 416-249-5805
Steve Punter Bulletin Boards 416-625-1786



EDITORIAL

How to start a new club!

Several times a month I get a phone call asking how one should go about starting a new users club. We can give you lots of help from our experience.

Step one. Find other interested Commodore users. This is easy. Photocopy the poster on page 25 of this TORPET and print in your name (some of those rub on letters would make it look neat.) Then photocopy another 20 or thirty copies. These placed in computer stores, schools, and on various community public bulletin boards will probably get you quite a number of replies.

Be sure to ask those persons replying to bring interested friends to the first meetings. (The old but true saying is that birds of a feather flock together). Some small ads in the classified section of your local paper may also be helpful. Your local paper will probably even consider it newsworthy if you will send them a picture of yourself at your computer along with a write-up. They may want to do an interview. You will probably be surprised at how many people you will find who are interested.

Step two. Set up an initial meeting time and location. If the location is publicly announced be sure you have enough space for lots of drop-ins. You can usually get space cheap if not free at a public school or in some community hall. A home will probably not have enough room.

Step three. Prepare an initial program. Arrange for about four speakers. Have one explain some elementary thing about programming and be willing to answer questions. Have another speaker demonstrate some commercially available program. Have a third and fourth explain some program of their own which they are willing for the attendees to copy for free. Put the free programs onto a disk along with some of the public domain programs from TPUG and let the attendees come up and copy them after the meeting.

Step four. Plan for future meetings. Ask for volunteers to serve on an executive. Accept everyone who volunteers and set a date for a business meeting that is separate from the next club meeting. DO NOT MIX CLUB MEETINGS AND BUSINESS MEETINGS. Pick a club meeting night that always remains the same such as the second Thursday of each month. Also try to pick a location that will not have to change for a while.

Step five. At the executive meeting hold an election and then get volunteers for needed positions like secretary, librarian, etc. Try to get every member of the executive to take responsibility for something. You will soon learn who you can depend on. Keep meeting formalities to a minimum.

Other hints. It will be a great boon to everyone if you set membership fees high enough so that you can send $15 for each member to TPUG. For this they will receive a monthly copy of **The TORPET** and will be a member of TPUG in their own right. For every twenty-five members in your club who are members of TPUG you will receive a free monthly disk from TPUG.

As a club you may consider using some of your membership dues to order a complete copy of the TPUG library for the club.

A very good idea is to use some of the club funds to provide refreshments at each meeting for an informal social period. Donuts, coffee, fruit juice are all that is needed.

Fees need not be very high. $30 per year per member should cover the costs for any club. Single time attendees should be allowed to attend as many times as they wish by paying $5 at the door. Start on night number one. This will cover **your personal** start up costs for the meeting place, advertising, refreshments, etc.

Good speakers can be found at computer stores, in schools and universities, among students, and among those who reply to your ad. Ask everyone who replies if they have something they could tell about. Hold excess names for future agendas. Be sure not to let anyone individual speak for more than about twenty minutes.

A video projector is a real boon if you can find a school or some other organization that has one. With a large crowd of 75 or more it is a must, but up to around fifty you may be able to make do with several monitors.

It is not necessary to start publishing a newsletter right at the outset. We will be glad to list your meeting dates and locations in **The TORPET** and will also publish news items for you. When things have settled down and you know who can be depended upon and have a number of the mechanics functioning smoothly you are welcome to use articles from **The TORPET** to form a nucleus for your own newsletter. We hope later to be able to furnish TPUG associated clubs with additional articles for which we did not have room in **The TORPET**.

The best advice I can give is to stay away from organizitis. The idea is to have fun and share experiences, information, know-how, new programs, and ideas about the computer.

FEATURE

TPUG CONTEST WINNERS

by Michael Bonnycastle Toronto, Ont.

The results of the TPUG Programming Contest were announced at the June meeting. The winners were as follows:

-Vince Sorenson - Marston City - VIC 20
-Derick Campbell - Light Cycles - C-64
-Walter Lewaniak - Library Overdue Manager - PET
-Allan Yates - Graphic Aid 4.0 - PET

In the games division for the VIC, the entry by Vince Sorenson from Regina called Marsden City was the winner. This is a dynamic program in which you try to shoot down a critter before it gets to the bottom line of the screen. There were excellent graphics, good colour and sound effects. The action is fast and reasonably challenging, BUT not too hard so the judges could get into it and enjoy the game. Vince gets a VIC 20 for this game.

Also in the games area, a super program for the C-64 called Light Cycles by Derick Campbell was a winner. Derick re-configured the character set and provided a good, two player action game, fast enough to be challenging, and with good colour. Congratulations and a VIC 20 for Derick.

On the Business side, several students from Cardnal Newman High School in Hamilton submitted programs which were useful in the administration of the school. While we didn't test them exhaustively, LIBRARY OVERDUE MANAGER by Walter Lewaniak was outstanding. It ran well, had good documentation, and performed a highly useful function which was fairly complicated, as these applications tend to become. Congratulations to Walter, he wins a VIC 20 for this submission.

Finally, for a program so unique, useful, well thought out and well documented that we could not help but provide a special award, Allan Yates wins a VIC 20 for GRAPHIC AID 4.0. Running on a 40 column PET, this series of machine language subroutines enlarges the structure of BASIC 4.0 to include 17 additional commands. These include commands that position the cursor anywhere on the screen, draw horizontal and vertical lines, define frames or boarders, scroll areas across the screen (or up or down), draw bar graphs and place large letters on the screen using quarter square graphics. The user documentation was excellent, and the machine code was so well presented that we could not help but provide an award for this entry. Congratulations, Allan.

There were many other fine programs submitted and these are finding their way into the library. Three special Contest Disks - one PET, one VIC and one C-64 were available at the TPUG Conference last month at George Brown, and can be obtained by contacting the TPUG office.

Several programs are worth special mention. David Francis submitted a fascinating series of hi-res graphic items on the C-64, woven together in a series called VOYAGER. Scott Allan sent in nine games on a disk, all good, but all different. A VIC game called HELLICOPTER by Michael Sigmundt came a very close second to the winner, and there was an excellent truck driving game called SEMI by Gerid Schwartz of Michigan for the PET in which you guide a truck up a mountain path full of obstacles. I.A. Wright of Toronto, Ont. sent in a super simulation of open pit

mining, called PITS!.

Some comments on the programs. Firstly the lack of documentation was very frustrating, particularly if the program required something special such as joysticks. Several programs needed them, but it was not mentioned anywhere. Several people sent in notes with their programs, but these got misplaced in the judging, and an instruction file, or rem statements in front of the program would have served far better and kept the entire thing intact.

Secondly, some of the programs were well conceived and well presented, and they ran all right, but in some, seldom used subroutine they crashed!!!! - That was too bad, because we took a lot of points off for that.

Thirdly, sometimes it was hard to figure out the object of the program.

We also had our share of load errors - Why didn't you put two copies of the program on the tape or disk? Just in case!! Some of the games worked awfully slowly. And that's typical of BASIC. I would have liked to have seen some BASIC programs with a few machine language subroutines to push them along when they got slow.

By and large, we had an excellent group of entries, and my thanks go to all of you who worked so hard to get those entries in. Look in the mail soon, as I will get back to all of you eventually with copies of the appropriate disk for your library. If you sent in a VIC entry, we'll send you a VIC tape of the contest entries. If you sent in a disk, we'll send it back with the Pet entries. Thanks again, and have a good summer.

Farquharson Features...

by Al Farquharson

PEEKS AND POKES

Those before computers would consider this to be a story about some mustachioed, top-hatted character in black who would peek around the curtain and run out to poke someone in the nose. Us c.o.'s (clever one's) with computers know better. The concept is very simple.

PEEKS

Some of us have seen a hotel clerk's counter with a large number of boxes located behind the clerk on the wall. Some of the boxes contain door keys and messages, letters, etc. You may ask the clerk, "Is there any mail for me?" He will likely reply with a question. "What is your room number sir?" You say room 212. The clerk and yourself will both look up to box 212 to see if any mail is there. There may be hundreds of boxes but you are only interested in one, room 212.

This is precisely the way a computer handles a peek. What number is located in memory location 212? The answer is <u>always</u> a number from 0 to 255. So what good is that? It may represent many things when interpreted by the computer and/or you but it is only a number. If you wish a different value to be stored there, you may change it. PEEKING DOES NOT CHANGE COMPUTER VALUES STORED IN ANY LOCATION.

POKES

You have a letter for me and the clerk says I am not in my hotel room at the moment. He will "poke" the letter into room 212 and I may pick it up later. Poking to a location (a memory address) will destroy or change the former value of the number at location 212 and place in it the new value: some new number. Try to keep the number no greater than 255 or the computer will tell you about your sin: syntax error.

HELP

Do you have anything for this column? The three headings are: (1) Helpful Hints (2) Who's Got the Answer? and (3) "PET" Pals Wanted. Just send your contributions (including answers to any questions which have appeared) to:

Toronto PET Users Group
Dept. Help
1912A Avenue Rd., Ste. 1
Toronto, Ontario M5M 4A1
Please let us know if you wish your full address published.

HELPFUL HINTS

Recently I purchased a KBA disk from TPUG for my Commodore 64. Every program worked fine with the exception of 2 programs "Dates" and "Calendar". On these 2 programs as soon as they got to the menus the screen began to wave back and forth and I noticed that the cassette motor started to run. Normally if the cassette is in wind or rewind I have the same interference. After much checking I discovered what was causing the problem. On both programs on line #40 it read POKE U0,0. The problem was the first 0 was "number zero" and it should have been "letter O". I corrected this error and they have been perfect ever since.

Dick Briggs #7669
Lexington, Mass.

(?) Has anyone used the RAMAX advertised in Compute? Ken Clybor, Illinois

I bought one in Jan. this year and have been absolutely pleased with it. It is well constructed and each block of memory can be switched in or out independently as needed. I have used each of the 8K blocks separately and in different combinations and never had a memory problem with the unit!! Even the 3K block and block 5 'the switch that turns the game cartridges on & off' has functioned perfectly. The game can be in either of the extra sockets. I've found it perfect for isolating high memory for utility routines from BASIC or software resets...just don't turn power off and do another system call for the needed routine.

George L Dennis
VanNuys, California

(?) Looking for a fix for RF interference on a standard TV hooked up to a C-64.

Try purchasing a large (1"-1.5") toroid magnet from Radio Shack and then looping the cable from your 64 around the magnet several times. For many people that has cured the problem.

Alfred Johnson,Jr. #0840

Cary, North Carolina

PET PALS WANTED

I would like to hear from members who use their PET/CBM for business uses. My uses are in the clothing retail business. Visicalc, Accts Payable, Accts Receivable, Sales Analysis. I'm presently truing to locate an inventory system for my 4032.

Jim Clefstad #2034
James Men's Wear Ltd.
P.O. Box 154 Mackenzie, B.C. V0J 2C0

Writer doing research would like to hear from women who make a living at home using a computer. Write:

Patricia Connel
Box 1002
Moab, Utah 84532

WHO'S GOT THE ANSWER?

Can someone tell me where I can obtain a public domain VIC terminal program which will allow one to send BASIC and Machine Language programs over the phone using the VIC modem and cassette recorder. In short, I want an inexpensive VIC terminal program which allows tape uploading and downloading.

Alfred Johnson Jr. #0840
Cary, North Carolina

I am curious about the Pet Tree for the C-64. It would seem to be a very valuable tool, but the advertising is less than complete in it's description of the instalation and compatability with other elements of the C-64 peripherals. I am in hopes that someone can shed some light on the subject.

Michael K. Cope # 5002
Franford, West Virginia

I have a Commodore 64 system with a NEC-8023AC printer. I would appreciate it, if someone could recommend a printer interface to enable me to get screen dumps of III-RES graphics.

Ronald Miller
Sault Ste. Marie, Ontario

I am working in Assembly language on the 6502 processor, trying to locate detailed, technical information on the kernal subroutines, and other aspects of machine language (information that does more than skim the surface).

I would appreciate any information on available resources, names of other programmers I could contact etc.

Sandy K. Mackey #7949
Laurel, Montana

Looking for technical drawings for the KIM computer. Can anyone help?

Ron Clysdale #2438
(Work) (416) 623-3341

Since December 1982, I have not been able to use my VIC modem on my VIC-20 to log on our Hewlett-Packard HP3000. I have tried evey possible configuration with no success. Does anyone out there know the correct configuration or the reason I can not log on?

Henry Laszel
331 Penn Road
Beaconsfield, PQ H9W 1B5
(O) 514-337-5007 (H) 514-695-2646

I have recently expanded the memory of my VIC-20 to 32K by purchasing a RAMAX, and am interested in using it as a word processor. I have used WordPro 4+ and like that program. Professional Software do not offer such a program. Is there anyone who has modified a WordPro program to work on the 32K VIC-20? If I can find a copy that works on the VIC-20, I will gladly purcnase another copy from Professional Software so that they receive their royalty.

Gillette, Wyoming

Can anyone tell me how I could modify the "LISTER" program to work properly with an EPSON MX.80FT.

Andre Rondeau
Aylmer, PQ

I have a Prowriter 8510 parallel DMP, hooked up to the serial port with a MW 302 interface. I have had no luck in sending ASCII printer codes to the printer. I called Commodore and they referred me to the program on 357 of the Programmers Reference Guide. This program does nothing except return an Illegal Quantity Error in 370 message. So now I'm left with a very good printer that I can't do anything with. Can one of the members advise me on this?

Also, is there any way to change the cursor character from a flashing block to a non-flashing line?

Bill Crimando # 0842
Carbondale, Illinois

CALENDAR OF TPUG EVENTS

There are no monthly meetings for the Central, Westside, VIC-20 and Commodore-64 chapters in July and August. **Summer Sessions** (pre-registration required) for VIC 20 and Commodore 64 owners who are new to computers

Tue. Aug. 2
Mon. Aug. 22

Call Mike Hyszka
416-249-5805

FALL SCHEDULE

CENTRAL CHAPTER - Leaside High School, Bayview & Eglinton Aves. at 7:30 p.m. in the auditorium (tentative) for PET/CBM/SuperPet

Wed. Sept. 14

VIC-20 CHAPTER - Earl Haig S.S., Kenneth & Princess Aves. (6 blocks north of Sheppard, 2 blocks east of Yonge) at 7:30 p.m. in the auditorium

Mon. Sept. 12

Commodore-64 CHAPTER - Earl Haig S.S., Kenneth & Princess Aves. at 7:30 p.m. in the auditorium

Tue. Sept. 20

WESTSIDE CHAPTER - (tentatively booked at: Sheridan College, Trafalgar Rd., Oakville at 7:00 p.m. in the cafeteria (PET/CBM/VIC/C-64)

Wed. Sept. 21

Stick to VIC

by Terry Herckenrath

PROBLEM..

Bruce Pyle of Akron Ohio came to us with the following problem: Have been using the VIC TREE for a few months. The PET TRANSLATOR goes 'out of memory' in line 410. Is there a cure for this?

SOLUTION..

The VIC decides it has run out of memory when either the pointers that the VIC uses to keep track of the variables used by the program, or the pointers that the VIC uses to keep track of 'performed subroutines', show that there is not enough memory left to either create a new variable or to perform a subroutine. In the first case, there really is no more free memory left for the VIC to store variables in. Bruce's problem however, is an example of the second case. Each time a subroutine is performed (GOSUB) the VIC keeps track of where processing of the program must return when the RETURN statement is encountered. No matter how much memory has been plugged into the VIC, there is only a maximum of 256 bytes available for this. This area is called the 'processor stack area'. The usual cause of this problem is a missing RETURN statement, which happens to cause the VIC to keep performing a subroutine FROM WITHIN THAT SAME SUBROUTINE. Bruce, to fix your problem, change line 500 to: PRINT#2,A$:RETURN.

QUESTION..

J.F.Betz of Quakertown, Pennsylvania wants to know where one can get a memory map of the VIC.

REPLY..

Jim Butterfield has put togetner a memory map of the VIC well over a year ago. This map has since been published in several magazines. The one that I'm sure of that it appeared in is the NUMBER 5 TORPET (1982). To order a copy of that issue, send $2.00 to the TPUG office stating which TORPET you want.

QUESTION..

Donald Weiner of Colby, Kansas wants to know whether TPUG has any program listings that can be used to type in programs from, or whether we know of books with such listings.

REPLY..

We haven't been publishing program listings in the TORPET, but other, commercial magazines usually do. COMPUTE! is one such magazine and there are others as well. As for books, I obtained the following two titles from a local computer book store here in Toronto: VIC INNOVATIVE COMPUTING published by Melbourne and MORE THAN 32 PROGRAMS FOR YOUR VIC 20 published by Dilithium Press. I have not read these books and I am not implying that I recommend these books. I only want to make you aware that such books are currently available.

This is all for this month. Please keep those questions coming, I'll do my best to answer all of them.

New Additions to the TPUG Library

TPUG June 83 (p)tv

list-me PTV.l	this description for June PET group disk/tape
boggle a.p	a word search game against the pet-not easy to beat
boggleml b.p	a machine language part of the boggle a.p prog
g o l f.p	a very good golf program-9 holes and differant clubs
train - chief.p	a math and time estimation program
king.p	simulation of ecconomics in a game format
pogo v7.8	logo on the pet
epidemic.4	simulation game of an epidemic
naming cmpds.4	naming chemical compounds - educational
schoolmarm255.p	a quiz program needs tape file from 255quest maker
255quest maker.p	program to make a question file for schoolmarm255
pet agenda.4	program to run a daily agenda (uses tape)
ski 4.f	ski program for fat 40
turtle.8	turtle graphics on the 8032
scroll message.p	horizontal scroll messages
any window siz.p	get screen windows on the 40 col similar to 8032
auto data hex.p	read a data file and get hex output
storywriterv11.p	latest version of the story writer editor
galactic gt.4	galactic war chase with screen action
expansion pres.p	info on pet/cbm expansion ports-print or screen lists
graphic aid 4.p	40 col pet graphics drawing program
g.aid 4.p	called prog for graphic aid 4.p
graph aid inst.p	instructions for graaphic aid 4.p
stars bas pr.8	log heavenly objects-astronomy
power spectrum.p	calculate the power spectrum of a signal

TPUG June 83 (v)tv

list-me vtv.l	this description for june vic group disk/tape
drive dism	utility disassembles the rom in disk drive or vic
crown 3d	this program demonstrates animation on the vic
calculate base.v	this program calculates binary,hexadecimal & decimal
alpha. sorter.v	this program sorts strings in alphabetical order
metric convert.v	this program converts from imperial to metric
date formater.v	calculates relitive dates;good for use in accounting
speed reading.v	this program tests and improves your reading speed
enrol list 8k.v	this gives a sample enrolment for night school
vision test.v	this program tests your peripheral vision
long division.v	translation of game program that tests long division
one arm bandit.v	translation of dutch slot machine game
target shot.v	translation of dutch shooting gallery game
starship 3k.v	your starship destroys stars using keyboard
ping/pong(t).v	translation of dutch ping/pong (breakout style) game
state capital.v	a quiz of the state capitals of the united states
usa song.v	plays american national anthem with picture of flag

New Additions to the TPUG Library

TPUG June 83 (c)tv

LIST-ME (C)TV	(C)TV LIST ME
SLIDESHOW.C	SEE A SLIDE SHOW, PICK THE PICS YOU WANT TO SEE
HRSUPP.D	MACHINE LANGUAGE LOADED BY SLIDESHOW.C & HRTEST.C
HRSUPP/BASIC.C	A BASIC LOADER OF HRSUPP.C
HRSUPP.SRC.C	SOURCE CODE FOR HRSUPP.C
HRTEST.C	A DISPLAY OF GRAPHICS. VERY NICE STUFF!
DRAGON.D	A PICTURE OF A DRAGON, LOADED BY SLIDESHOW.C
TANK.D	A PICTURE OF A TANK, LOADED BY SLIDESHOW.C
POLISH.D	A PICTURE OF A POLISH COMPUTER, LOADED BY SLIDESHOW.C
BLITHER.D	A PICTURE OF A VIOLIN, LOADED BY SLIDESHOW.C
UNCLE.D	A PICTURE OF UNCLE SAM, LOADED BY SLIDESHOW.C
GLOCKENFLUTE.D	A PICTURE OF A GLOCKENFLUTE, LOADED BY SLIDESHOW. C
RATRUN.C	FIND THE CHEESE IN A COMPUTER GENERATED MAZE
SPACE NIM.C	AN INTERESTING NEW VERSION OF THE POPULAR GAME NIM
BIO-COMPAT.C	ARE YOU COMPATIBLE WITH THAT SPECIAL SOMEONE
BIO-PLOTER.C	PLOT YOUR BIORHYTHM
BIO-PRINTER.C	PRINT YOUR BIORHYTHM
HANGMAN.C	GUESS THE WORD CORRECTLY OR KILL THE MAN
STORY.C	TYPE A FEW WORDS FOR THE COMPUTER, AND SEE A STORY
SUPERMON.C	MACHINE LANGUAGE MONITOR, FOR ASSEMBLY BY HAND
SUPERMON INST.C	INSTRUCTIONS FOR SUPERMON.C
SOUND HELPER.C	LEARN HOW TO MAKE SOUND USING THE SID CHIP

TPUG's This & That

by Doris Bradley, Assistant Business Manager

New Members

Yes it did happen! Member number 8,000 was registered on Tuesday, June 7th. A great big welcome to Mary Law, a Commodore 64 owner from Cambridge, Ontario.

Renewals

Here's how the system works. Let's take as our example someone who's membership card indicates an expiry date of August 1983. We send a "first notice" of renewal early in June, a "second notice" at the beginning of August, and a "final notice" early in September. This member will become inactive September 1, 1983 if the renewal cheque has not been received by the end of August. If this membership lapses it means (s)he will miss the October TORPET since the mailing list for this issue is produced the first of September.

New Member Survey

Did you ever wonder how many of our new members own VIC 20s, PETs, Commodore 64s, SuperPets? Well we did a survey of the 228 new members who joined during one week recently and here's what we found:

Percentage	Type of Computer
50.2	Commodore 64
42.8	VIC 20
3	PET (2000 & 4000)
3	PET (8000)
1	SuperPet

Membership Numbers

We are having a rash of orders without membership numbers included. PLEASE include your number--your order can be processed more quickly. As a matter of fact it's not a bad idea to include your membership number in ALL your correspondence with the office. Thanks.

HAMS

All member HAMS please send in your name and call. We plan to print a list so that you can communicate with each other.

Associate Club Chapters

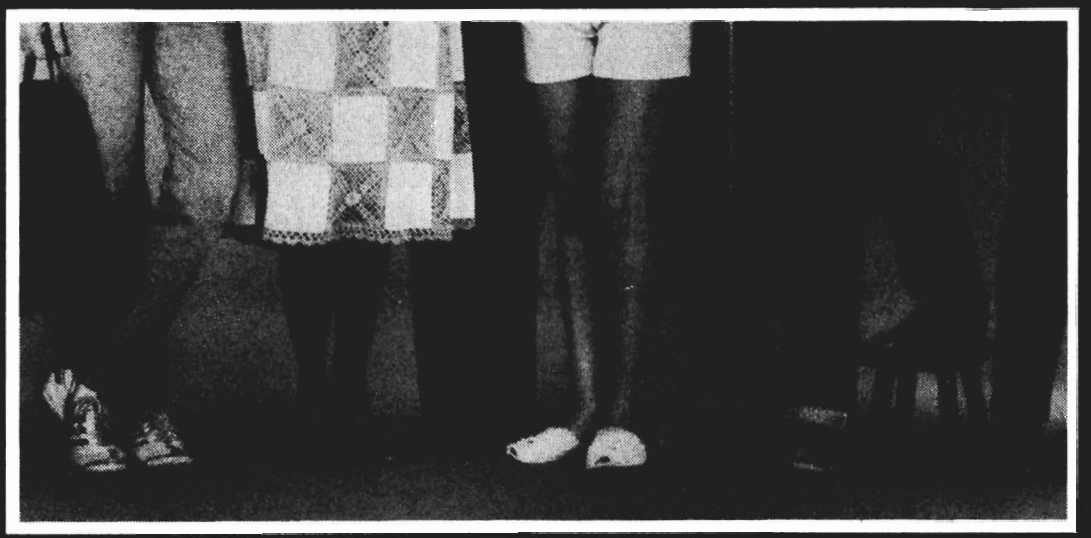
We now have 7! (What a difference a month makes.) In addition to the PET Educators Group (Windsor), London Commodore Users Group, and Genesee County Area PET Users Group we have the Indian Affairs Teachers Using Computers, Michigan's Commodore 64 Users Group, Sacramento Commodore Computer Club, and Edmonton Commodore Users Group.

Commodore Dealers

We now have the Authorized Dealer List, Spring 1983 from Commodore U.S.A. as well as the Canadian list updated to May 20th. If you're having difficulty locating your nearest dealer we'll do what we can for you from these lists.

Membership Cards

There has been a rash of lost membership cards of late. If you are an associate member, all that you need is your membership number and we'll be glad to supply that upon request. If you are a regular or student member then you need your card to get into meetings. You can obtain a replacement card for $1.00 from the office.



offers you a step in the right direction by presenting the All New and ... programs, the most powerful and easy to use software available for the Commodore 64.

The Most Powerful Database Management System

- 100% Machine Language
- Free Form Design and Input
- Sort on Any Field/Any Level
- Calculated Fields
- Max. Record size = 2,000 Characters

80 Column Screen Display Without Additional Hardware

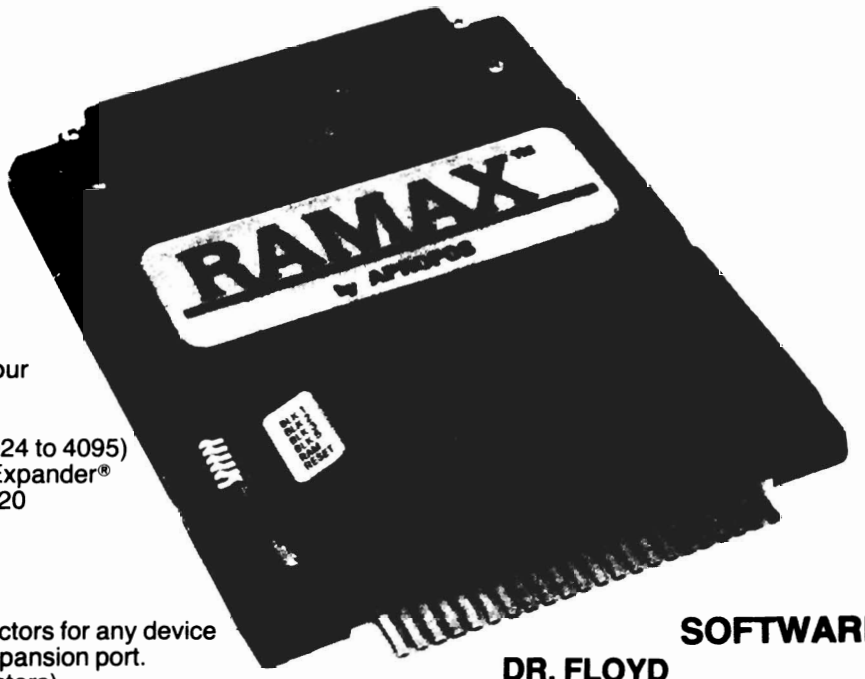
- 100% Machine Language
- Over 70 Single Keystroke Commands
- Printed Page/Line/Character Counters
- True Word Wrap
- Search, Replace and Block Operations

"A Step Ahead!"

2519 W. Shaw, Suite 106 / Fresno, CA 93711 / Customer Support: (209) 227-8369
Order Number: (800) 641-1441 Order Number (in Calif.): (800) 641-1442

RAMAX™

by APROPOS
The ONLY MEMORY your VIC-20® will need



FEATURES

- A full 27k bytes of RAM (added to VICs 5k equals 32k.)
- Fully switchable in sections:
  - BLK 1 switches 8k (Adr. 8192 to 16383)
  - BLK 2 switches 8k (Adr. 16384 to 24575)
  - BLK 3 switches 8k (Adr. 24576 to 32767)
  - BLK 5 allows/disallows your 8k ROM (games) (Adr. 40960 to 49152)
  - RAM switches 3k (Adr. 1024 to 4095)
  - May be used with Super Expander® games or **ANY** other VIC-20 compatible cartridge.
- Built in RESET switch.
- Fuse protected.
- Totally self-contained.
- 2 duplicate extension connectors for any device normally plugged into the expansion port. (BLK 5 is switched to connectors)
- Very low power usage. (.150 amp max.)
- High reliability gold plated connectors.
- 6 month parts and labor warranty.
- Factory service. - Extended service always available.

THIS SUPERB PLUG-IN GIVES YOUR VIC-20 REAL POWER AND EXPANDABILITY

FOR ONLY $149.00 Shipping included

10 DAY SATISFACTION OR YOUR MONEY BACK GUARANTEE

WE ARE NOW OFFERING "RAMAX Jr." (19k), which is identical to RAMAX in EVERY way, except the top 8k (BLK 3) is not incorporated. Our introduction price is **$129.00**, shipping included.

WE SERVICE WHAT WE SELL

TO ORDER:

Send Check or Money Order For the Total
Calif. residents add 6% tax.
Phone orders: CALL **(805) 482-3604 24 HRS.**
For credit card orders, include all information on card.
or **contact your local dealer.**

VISA Foreign orders, add $15.00. MasterCard

All items shipped from stock.
DEALER INQUIRIES WELCOME

SOFTWARE

DR. FLOYD

Psychoanalysis by computer? — well, not quite, but Dr. Floyd will carry on a conversation with you using psychoanalytic techniques giving the appearance of artificial intelligence. Requires 16k RAM or more.
$14.95 shipping included.

WORD PLAY

"WORDPLAY" is a collection of programs which allow the user to make original stories, write a form of Japanese poetry, play the fun game of Animal (children love this one), and create jargon. A bonus secret message (cypher) program is also included. In a word, "WORDPLAY" is a bargain.
Requires 16k RAM or more.
$14.95 shipping included.

TYPE FOR YOUR LIFE

With more challenge than an arcade game, learn to type up to 75+ words/min. (User selectable, but no FOOLING AROUND allowed). TEXT IS WIDELY VARIED SINCE IT COMES FROM THE PROGRAM TAPE. Action color graphics with sound fix your eyes to the screen (away from your fingers - clever!) Your man rows your boat up stream as fast as you can type. Maintain speed and destroy the Sea Monster; slow down and he will get you. Runs on the unexpanded VIC.
$14.95 shipping included.

All software is on high quality cassettes and is replacement guaranteed.

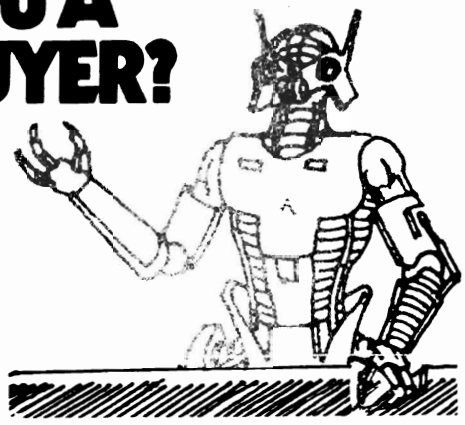
350 N. Lantana Ave., Suite 821
Camarillo, CA 93010

APROPOS TECHNOLOGY

NEW for

VIC-20 and Commodore 64

ARE YOU A SMART BUYER?



MINI JINI™ for **$89.95** is a smart buy!
Record Keeper

- Keep records for home, school, club, or office better and more quickly than by hand
- Hold 50-500 records on tape or disk
- Have the plug in ease of a cartridge
- Put addresses, books, and more in order
- Track appointments, meetings, valuables
- Print any number of reports and labels
- Do checkbook, class or sports statistics
- Make lists for letter writing software

Available now, in plain, simple English.

Available NOW in Spanish (Mini-Jini Archive Instante)
French and German versions available soon

"A winner...Learn Mini-Jini Record Keeper in 20 minutes" - Commander Magazine
"Super duper data base for VIC-20 and Commodore 64" Software International

Application Templates for...

1. General Demo (69 pre-defined files) **disk only**
   - amature radio
   - paper route
   - etc.
2. Organize the HAMSHACK (12 files)
3. Classroom Planning (10 files)
   - plan lessons
   - analyze tests
   - keep attendance
   - library records
4. Party Plan (10 files)
   - birthdays
   - Christianings
   - Proms
   - Graduations
   - Weddings
   - Anniversaries
   - Etc.

TEMPLATE
DISK OR TAPE
$14.95

- **Visa — Mastercharge — C.O.D.**
- **Dealer inquiry welcome**

Immediate shipment if in stock. If personal check is sent, allow additional 2 weeks. Prices subject to change. Shipment subject to availability. Ships UPS frt collect.

Commodore 64 and VIC-20 are registered trademarks of Commodore Electronics, Ltd.

Any one who keeps records can use

the Mini-Jini Record Keeper
For the UNEXPANDED VIC

Administrators	Medical persons
Agencies	Organizations
Bond Clippers	Party Planners
Check Writers	Postal services
Collectors	Salespersons
Educators	Schools
Families	Store owners
Greeting card writers	Teams
Hobbyists	Writers
Libraries	

JINI MICRO-SYSTEMS, INC.

P.O. Box 274 • Riverdale, N.Y. 10463
PHONE: (212) 796-6200

Prices in U.S. dollars

FEATURE

1983 INTERNATIONAL SUMMER C.E.S. SHOW

by Chris Bennett — Toronto, Ont.

The Summer Consumer Electronics Show was held in Chicago from June 5th to June 8th 1983. This was the second C.E.S. show I have attended. The first was the Winter show held in Las Vegas January 6 to 9th 1983 (see the report in the February 1983 issue of the TORPET - issue #17).

My wife, Barbara, and I started out on Saturday morning on the 500 mile drive from Toronto to the show. We stopped overnight in Michigan and started out fresh Sunday morning for the remaining 90 miles to our hotel. One main problem was that, because we registered fairly late, the only hotels available were the ones at the airport, 20 miles from downtown Chicago. This we found was a one hour drive in rush hour traffic.

After checking into the hotel at noon, we then drove down to the show to get an initial first day feel of what was in store for us. First we had to park! Next we had a one mile walk to McCormick Place which was the main conference centre. Since the show gets bigger and bigger each year, the exhibits spread over more than one building. The Microcomputer exhibits alone filled the three levels of McCormick West. First, we visited the McCormick Place just to get a quick look around. This building covers many acres and consists of three floors. Most of the standard electronic exhibits were here. There were such things as audio/video, telephones, calculators, watches plus many different types of magazines and newspapers all related to electronics. Since there was too much to cover and I was more interested in the computer exhibit, we went over to McCormick West and headed straight for the Commodore booth.

It was quite disappointing! Just a standard mixture of VIC 20s and Commodore 64s, plus a few of the products shown at the Las Vegas show. There were no new products and such things as the new portable 64 were not on display. However, we did have an invitation to the Commodore press conference that night on the 'Commodore Clipper'.

After dinner, we drove over to the Naval Pier where the 'Commodore Clipper', a 300-foot yacht, was anchored on Lake Michigan. This was where the bulk of the new hardware and software products were being demonstrated. Commodore invited dealers, distributors and buyers to the Commodore yacht and provided transportation to and from the floating exhibit, which was anchored a few miles from the convention centre. A free buffet was going all day long downstairs and the bar and theater were upstairs. I was not sure what to expect at this 'press conference' since the two others I had attended were very poorly run. However, I was in for a pleasant surprise. This one went very smoothly with various managers within Commodore being introduced and presenting the new software and hardware products.

One of the first major announcements was that the prices of hardware to the trade (dealers and distributors) were to be slashed by up to 25 percent. The prices of the Commodore 64 and its peripherals have dropped $100 in U.S. funds. It is now possible in some places in the U.S.A. to pick up a Commodore 64 for under $200 (U.S.) and disk drives, printers and monitors for $250 (U.S.). Commodore, at the NCC show a week before, had drastically chopped the prices of all the business machines (ie 8032, 4040, 8050, 8032P etc.). This reflects how determined Commodore is to be the leader in the home and hobby markets.

The second announcement, and the most important, was made by Sig Hartmann who was recently appointed as Commodore Software President. He announced that new software packages for the Commodore 64 are priced substantially under $100 and the new VIC 20 software is priced under $30. He predicted that Commodore soon will reach one-half billion dollars in annual software sales and it will be the top-notch software company in the country in terms of sales. In all the trade magazines, Commodore was running one page ads with the following text.

"LAST YEAR
WE SAID WE WERE
GOING TO BE NUMBER 1
IN COMPUTERS.
AND WE WERE.

THIS YEAR WE'RE
GOING TO BE
NUMBER 1 IN SOFTWARE."

This is a complete change from the Commodore that I have known over the years. They have never paid much attention to software but have let third party software developers do most of the work. Now, Commodore has gone out and aggressively sought out and signed up many software products from outside sources that will be manufactured and distributed as Commodore products. Let it be known, Commodore is in the software market and in it in a big way! They have done what many of us said they would have to do if they wanted to stay number one in the home computer market. Top management in Commodore, at that time, considered Texas Instruments to be their only real competitor. This was before TI announced a 100 MILLION dollar LOSS in their last quarter. Looks like Commodore is well in first place at least for the time being. I also saw nothing at the show from the competition that should make any significant difference to this in the next 6 months.

Now for some of the products on display.

C-1520 Plotter Printer

This is the same printer/plotter that I described in the Feb/83 TORPET. It is $199.95 (U.S.) with a serial connector for either the Commodore 64 or VIC 20. It prints four colours (black, blue, green or red) and can print text at up to 14 characters per second. The device can produce either 20, 40 or 80 characters on a line as well as producing high resolution graphs and charts. The pen can move horizontally or vertically on the 4 1/2 inch roll paper to produce high resolution pictures or graphs. The device can also print text sideways down the page as well as across the page.

Executive 64 Portable Computer

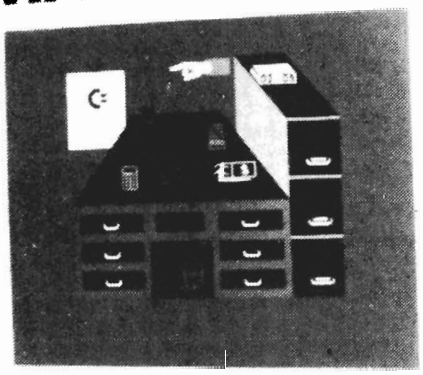
The Executive 64 is a briefcase style portable computer based on the Commodore 64 and 1541 disk drives. This was called the SX-100 when I last wrote about it. Expected delivery is September 1983 at a price of $995 (U.S.). This includes the Commodore 64 packaged with one disk drive (1541) and a 5-inch colour monitor inside a nice looking carrying case. A two disk drive model will be available for $1195 (U.S.). Since this device contains a standard Commodore 64 inside, all of the software available now and in the future will run on it. Since the 64's software base is going to be VERY VERY large within the next year, many people will find this a very attractive package. Like the Commodore 64, the Executive 64 has plugs for an external video port for a monitor, a serial port (printers and extra disk drives), a cartridge port and joystick ports. The keyboard feels better than the 64's keyboard and the screen while quite small is easy to read. However, I don't think I would want to spend many hours in front of such a small screen, so for extended periods of time, a monitor would we needed.

Music Keyboard

Since my report in the February TORPET, Commodore's music keyboard has undergone a few changes. The release date is now set for September of this year not May. The unit comes with a four octave keyboard instead of three octave. Finally, the software written by Paul Higginbottom has had some new features added. One of

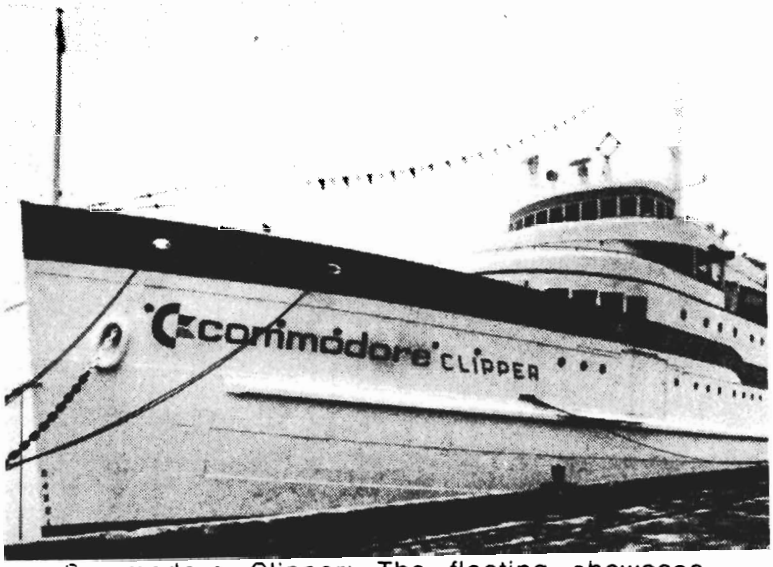
COMMODORE INTRODUCES

MAGIC DESK



THE ULTIMATE FRIENDLY PROGRAM

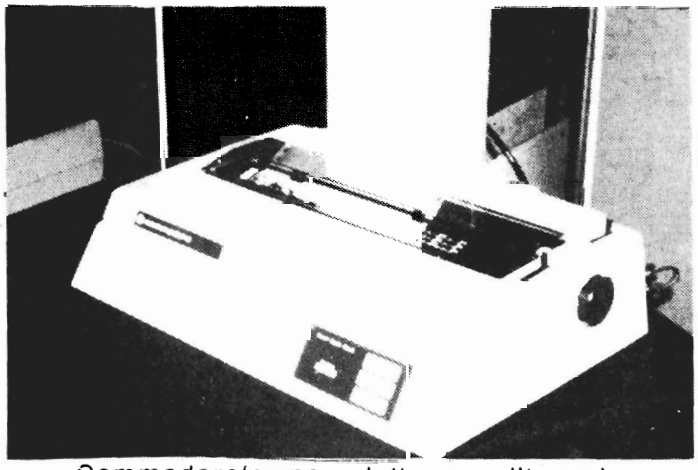
Commodore's answer to "Lisa"



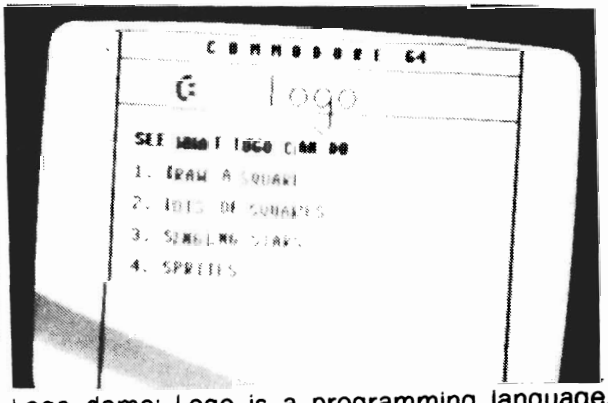
Commodore Clipper: The floating showcase for "A Boatload of Software"

Musician Joe Gattone (middle) explaining keyboard.

Barbara Bennett with C-64 Portable



Commodore's new letter quality printer (not yet an official product)



Logo demo: Logo is a programming language.

these is the ability to lay down one track of music in memory and then add, one after the other, up to three more tracks of music which will play all together as if they were recorded at the same time. This device will be selling for $79.95 (U.S.) and will include the keyboard, cartridge interface and some software. Since 3 more SID chips are added with this device, the system is a twelve voice music synthesizer. Music can be saved onto disk for later recall. You can tune the device up or down 7 increments of an eighth of a semitone plus transpose up or down several semitones.

C-1526 Printer

Commodore was showing a new printer for the VIC 20 and Commodore 64. This is the C-1526 printer which is an 80 column, bi-directional, dot-matrix printer identical to the CBM 4023 printer available for the PET and CBM lines. The only apparent difference is the serial IEEE needed for the VIC and '64. The machine prints an 8X8 dot matrix at about 70 characters per second and uses a cartridge ribbon. The cost should be about $450 (U.S.).

Speech Module for the 64

I first saw the speech module at the Las Vegas show. Not much has changed since then except that the release date is now expected to be in September. The module plugs directly into the cartridge port of the Commodore 64 and contains an additional port into which other talking and non-talking cartridges can be inserted. Some of the games cartridges that I saw working with this device included GORF and the WIZARD OF WOR. Apparently, the Speech Module can support game cartridges of up to 128K bytes. The module contains a built-in vocabulary of 235 words in a female voice. The voice speed can be user defined as slow, normal or fast. The words can be programmed directly from BASIC or assembler. Many more different words as well different voices (male, 'Valley Girl', cartoon characters and space sounds) will be made available on disk and cartridge.

Commodore 6400 Printer

This new daisy wheel printer is the replacement for the CBM 8300P. It uses standard Diablo print wheels and cartridge ribbons and runs at 40 CPS - bi-directional. The cost should be well under $2000 (U.S.). The Canadian list price is $2695. One of the most impressive features was the low noise level when printing. It is much quieter than most other medium speed daisy wheel printers. It is also much nicer to look at with a low profile modern look.

Two New Unannounced Printers

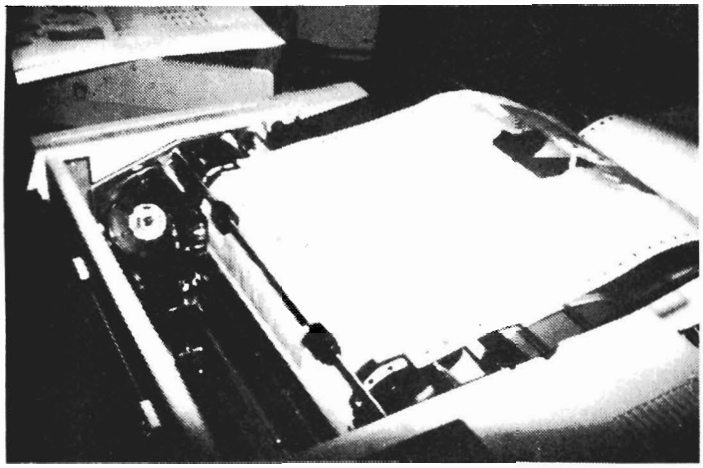
Also on the boat were two new printers that Commodore has not yet officially announced. One was labelled the MPP-1361. This is an 8023P printer in a new sleek cover. Other than that, there seems to be no difference other than the appearance. The other printer on display was a full-size colour printer that is supposed to sell for under $600 U.S. It had a full-size 9-inch carriage and printed in seven colours.

NEW SOFTWARE PRODUCT FROM COMMODORE

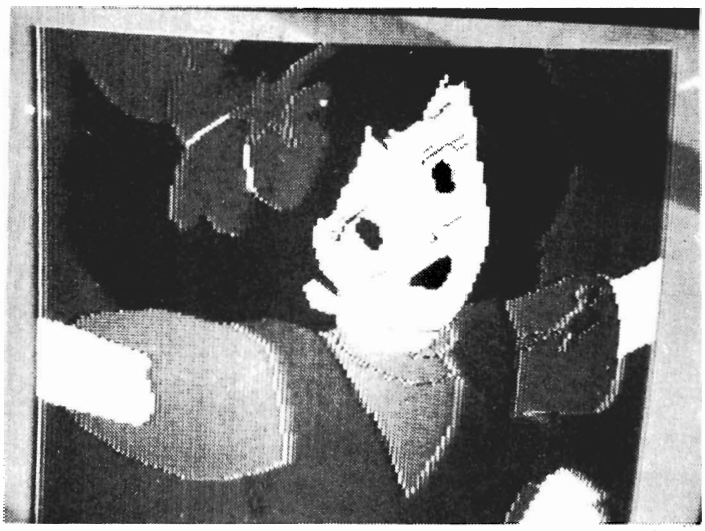
More important than the price reductions on hardware and the new products on display, was Commodore's announcements about software. It was the largest single software introduction in the history of the company, with Commodore introducing more than 70 new software products for the Commodore 64 and the VIC 20. Not only was there a large number of new software products, but Commodore has committed to bring them to the general public at prices far below anything seen so far. Since I can't describe all the new products, I will talk about those that I saw at the show.

The Manager

One of the best software packages on the market today and one that I use in the office all the time, is The Manager. This is a data base program that presently runs on the CBM 8032 and cost $250 (U.S.). In a couple of months, this program will be available for the '64 at $49.95 (U.S.). This is not just a copy of the version that runs on my 8032, but it has been extensively improved for the Commodore 64. The biggest problem with The Manager is the same problem with Visicalc. The power of the program is limited to the imagination of the person using it. Bill MacLean, owner



Yet unannounced 7-colour printer, printing image shown below



CRT image of the picture being sent to the 7 color printer

One of the many displays in the Commodore Clipper.

of BMB Compuscience (Milton, Ontario), who is responsible for the development of The Manager, expects to produce a large number of applications that use The Manager.

Wordprocessors

EasyScript is a wordprocessing package similar in operation to the Wordpro package that most of us have used for many years. The main difference is that this '64 software package will also sell for 49.95 (U.S.). At this price, there should be no excuse from '64 owners for not doing some kind of wordprocessing on their machine. Vicwriter is a wordprocessing program for the VIC 20.

Spreadsheet Programs

There were two spreadsheet programs that Commodore will be selling for the '64. EasyCalc will sell for 49.95 (U.S.) and Multiplan for $99.95 (U.S.). Multiplan, developed by Microsoft, is said to be one of the most powerful software packages for home computer users. The VIC 20 spreadsheet program is called Simplicalc.

Accounting Programs

Info Designs and Commodore have signed an agreement to produce a series of accounting programs for the Commodore 64. These include: General Ledger, Payroll, Inventory Control, Accounts Receivable and Accounts Payable. Each of these programs will sell for $49.95 (U.S.). I recently saw these products on the shelf of a Canadian dealer for $319 (Can), so don't buy until the price goes down.

Magic Desk

One of the interesting programs shown at the press conference was the Magic Desk. The main screen shows an animated, full colour desk. There's a typewriter, index file, telephone, calculator and financial journal on the desk and a wastebasket under the desk. There's also an artist's easel and a vertical file cabinet with a digital clock on top of it. To use any feature of the Magic Desk, you use a joystick, trackball or mouse to move a pointing finger to one of the objects on the screen. After selecting an object, you press the 'fire button' and that feature is selected. This is Commodore's answer to 'LISA' and they expect to sell it for under $100 (U.S.).

General Comments on Software

Most of the software that Commodore is releasing seems to be for the Commodore 64 with only a small percentage for the VIC 20. I am sure that the Commodore 64 is going to be the main machine from Commodore for the next few years with the VIC being phased out sometime in the future.

RANDOM RAMBLINGS

Commodore expects to sell one MILLION Commodore 64s this year and three million next year. There should be three MILLION VIC 20s sold this year. One person at Commodore suggested that the VIC production line would be up to 500,000 per month by September or October of this year.

The P-500 is dead! Commodore confirmed at the show that the P-500 (C500, PET II etc.) has been dropped from the product line. The B-500 (CBM II) has been renamed to the Commodore B128/256-80. I even have a colour brochure on this product so Commodore will probably start shipping soon. This is the new 128K (optional 256K) business computer with an 80 column by 25 line screen but no built-in monitor or disk drives. The top-of-the-line machine is now being called the Commodore BX256-80. This is a 256K computer with built in disk drives and screen. It is a dual processor machine with both the 6509 and 8088 CPU included. Both of these machines I believe are interim solutions until Commodore comes out with their new business computers built around the Zilog Z-8000 CPU. These Z-8000 machines could be announced later this year.

Info Designs is producing a series of consumer oriented "how to" video training tapes known as InfoVision(tm). Over 18 tapes will be released initially covering such titles as: 'How to use the Commodore 64', 'BASIC programming', 'EasyScript Word Processing', 'The Manager Database', plus many more interesting titles. Each InfoVision program is accompanied with a VHS or Beta videotape, instruction card, a program index and an optional study guide.

FEATURE

Commodore International's sales were up 130% in the third quarter (ending March 31, 1983) over the third quarter for the previous year. This is quite different from some other microcomputer companies such as Atari and Texas Instruments who have reported heavy losses. Looks like the competition is fading away!

You can now buy a Commodore 64, a 1541 disk drive, a 1701 monitor and a 1525 printer in the U.S.A. for under $1000. Combined with the low price of software, every small business can now afford their own computer that two years ago would have cost $4000.

The PET emulator for the Commodore 64 has been put in the public domain. Many of TPUG's programs for the PET/CBM will run on the '64. Therefore, TPUG has hired a student for the summer to look into programs that will run correctly with the PET emulator.

Commodore will be increasing the number of ads on TV starting on June 30, 1983. The key targets are adult males between the ages of 18 and 49. Look for these ads on such programs as Monday Night Football, NFL Playoffs and baseball.

1984 TPUG Conference Survey

Last month you read Gord Campbell's report on our conference this year held in May at George Brown College, Casa Loma Campus. This month the conference committee is asking for your ideas and preferences for next year. Planning for the 1984 conference, in late May (26th & 27th), probably at a hotel in the Greater Toronto area, is already underway so please fill in this sheet and return to:

TORONTO PET USERS GROUP
Att'n: Conference Committee
1912A Avenue Rd., Ste. 1
Toronto, Ontario, Canada
M5M 4A1

1. What Commodore machine(s) do you use? PET 40 column / / VIC-20 / /
PET 80 column / / Commodore 64 / /
SuperPET / /

2. What range of fees would you be prepared to pay for a two-day conference?
$15 to $30 / / $51 to $70 / /
$31 to $50 / / $71 to $90 / /

3. Would you like convention-rate hotel accommodation? Yes / / No / /

4. Do you require a special suite for disabled guests? Yes / / No / /
(They are available.)

5. Would you like to bring your family? Yes / / No / /

6. Would you like to be--near the airport? Yes / / No / / (Parking free)
--downtown? Yes / / No / / (Parking extra)

7. Would you like a banquet on Saturday night? Yes / / No / /
(increases the registration fee by $15 to $30)

8. Would you like a special room for quick food for delegates only, during the day? Yes / / No / /

9. Would you like to see a "Dealer Show" of computer Products? Yes / / No / /

10. What subjects would you like to see covered, and at what level?
Subject Beginner Intermediate Advanced

11. Who would you like as a speaker, and (if appropriate) for what topic?

12. Would you like a hands-on session for
a) kids? Yes / / No / /
b) yourself? Yes / / No / /

13. Did you take part in the copy session this year? Yes / / No / /
If yes, any comments or suggestions?

14. Would you be willing to pre-register (in January or February) and pay less at that time? Yes / / No / /

Please feel free to make any other comments or suggestions that you think would be helpful in planning for next year. If you like, send us your thoughts about the TORPET and TPUG as well.

ACCOLADE COMPUTER PRODUCTS

HARDWARE

Commodore 64	$419.95
1525-E Printer	$329.95
1515 Disk Drive	$329.95
BMC Color Monitor	$349.95
Star Micronics	
Parallel Interface	$69.95
Gemini 10	$329.95
Gemini 15	$536.95
24K Golden Ram	$149.24
Vic Rabbit	$39.95
Wico Joystick	$22.50
Wico Joystick "Red Ball"	$25.00
HES Sound Box	$12.50

BOOKS

Commodore Reference Guide	$19.50
VIC Reference Guide	$16.50
1st Book of VIC	$9.50
2nd Book of VIC	$12.95
1st Book of Commodore 64	$12.95
Tricks for VICS	$9.95

SOFTWARE (COMMODORE 64)

Avalon Hill

B1 Nuclear Bomber	$12.00
Midway Campaign	$12.00
North Atlantic	$12.00
Nuke	$12.00
Planet Miners	$12.00
Andromeda Conquest	$13.50

Broderbund Software

Choplifter	**$33.95**
David's Midnight Magic	$33.95
Sea Fox	$29.95
Serpentine	$29.95

HES

HESMON 64	$29.95
HES Writer 64	$33.95

Royal

Quick Brown Fox	$59.95

Sierra on Line

Frogger (disk)	$29.95

Sirius

Blade of Blackpoole	$29.95

Spinnaker

In Search of the Most Amazing Thing (disk)	$29.95

Synapse

Ft. Apocalypse	$26.95
Survivor	$26.95
Pharoh's Curse	$26.95

UMI

Renaissance	$29.95

NO REFUNDS ON OPENED SOFTWARE

ACCOLADE COMPUTER PRODUCTS
4858 Coronado Avenue
San Diego, CA 92107
(619) 223-8599

Dealer inquiries invited

California residents add 6% Sales Tax
Add $3.00 for shipping and handling (except hardware, add 3% of price
C.O.D. Charge $1.50 C.O.D.'s, Cashiers Checks or Money Orders only
We accept Money Orders, Cashiers Checks,
personal checks must take 2 weeks to clear

Foreign orders paid in U.S. funds, add $5.00 for shipping and handling
(or 5% of hardware price)

DEVELOP-20

DEVELOP-20
DEVELOP-64

SOFTWARE DEVELOPMENT SYSTEMS
to
Help you develop your skills and the power of your computer.

These complete development systems for the VIC 20 and the Commodore 64 computers are tools for the professional and learning aids for the developing programmer. A must for anyone who wants to understand the internal workings of the computer or who wants to design fast-action graphics or other powerful machine language programs.

The Full-featured Assembler, Screen editor, Loader, Decoder and Debugger are accompanied by a tutorial on machine language, graphics programming and sound generation programming. The book also guides you through step-by-step instructions for the use of the tools and contains the most complete memory map available. A complete list is included of all the internal programs in ROM and the means by which you can call them from your own programs. Sample programs are fully explained.

All programs support disk, tape and printer output. A special limited-feature version is available for the 5K VIC 20.

Ask for Develop-20 and Develop-64 at your local software store.

French Silk smooth ware

To order direct send $49.95 U.S. funds plus $2.00 p&h to French Silk, PO Box 207, Cannon Falls, MN 55009. VISA/MC charges accepted (please include expiration date). Please specify Develop-20 or Develop-64 and the 5K version for the VIC 20 if so desired. Programs are distributed on cassette or diskette. Please specify your preference.

Dealer enquiries invited.

VIC 20 and Commodore 64 are registered TM of Commodore Business Machines Inc.

DEVELOP-64

JOIN
JOIN
JOIN

For C-64,
VIC,
PET,
Users

New Local Commodore Club Starting Now

We plan to affiliate with TPUG
the world's largest Commodore Users Group.

★ Meet other interested users
★ Receive monthly subscripton to The Torpet
★ Have access to world's largest public domain program library
★ Share experiences and problems at monthly meetings
★ See new programs and equipment demonstrated

Contact

Phone

Programmers Do It In Software

by Hal Chamberlin Raleigh, NC

Conclusion

A More Advanced Technique

The foregoing technique and core sound generation routine was first published in Byte magazine in 1977 and has been the basis for numerous music programs on 6502 as well as other processors. Although they were playing with this kind of thing in the early '60s at Bell Labs, it was quite a breakthrough in the micro world at the time. As is though, it has some limitations. In particular, no matter what waveforms you put into the tables, the music is always organ-like; just an infinite variety of stops. The reason for this is that the amplitude envelope of the tones produced is always rectangular, that is, off-on-off, just like pressing an organ key. Even though you may be able to obtain the waveform or harmonic structure of a familiar instrument such as a piano, the rectangular envelope will impart an organ-like character.

The usual way of adding an envelope to a synthesized tone is to use a gain-controlled amplifier in which the gain (volume) is varied according to the desired contour. For a piano note, the gain would suddenly go from zero to maximum for the attack and then slowly decrease back to zero for the decay. The tone input to the amplifier would be constant. In a digital audio system, gain control is usually accomplished by multiplying waveform samples by a gain factor. As before however, actual multiplication is too slow on an 8 bit micro to consider.

Another factor that contributes greatly to tonal variety is the fact that the waveform of most instruments is not constant during a note. In a typical case, such as a trumpet note, the tone is "brighter" (greater proportion of high harmonics) during the attack than during the decay. Any attempt to synthesize a trumpet tone with a constant waveform yields a flat sound without the characteristic "toot" of trumpet notes. In addition, most "novelty sounds" for which a computer music system would be expected to be good at, have very prominent waveform shifts during the sound.

Both of these desirable characteristics can be added to the software system by using a scheme first proposed by Frank Covitz and Cliff Ashcraft, long-time PET and AIM-65 owners respectively. The idea is to use a sequence of many waveform tables, each differing slightly from its neighbor in both harmonic content and overall amplitude. By reconstructing the core sound generation loop somewhat and using the time "wasted" when TEMPO is not reloaded, it is possible to periodically change the third byte (the waveform table page number) of the pointers noiselessly for a smooth shift from one table to the next. For additional flexibility in programs that actually use this technique, another set of tables, called waveform sequence tables, specify a list of waveform table addresses so the sequence of wave tables actually played need not be consecutive in memory. Additionally, the sequence tables allow sequencing through wave tables rapidly when the envelope is changing rapidly, and more slowly at other times thus conserving wave tables and memory. The power of the 6502 instruction set really shows in the double indirect-indexed addressing required to implement this idea.

Although the scheme just described really didn't look very promising on paper, the results when actually implemented in 1979-1980 were spectacular. Residual noise when switching from table to table was less than expected and fewer tables were needed for smooth sounding envelopes than were expected. It was found that generally 16 to 32 tables requiring 4K to 8K was sufficient for most instrument sounds. Thus, in a 32K machine, there is sufficient space for 3 to 6 "instrument definitions" with 8K left for the score and music playing program. Experiments with published

analyses of instrument sounds, such as string, horn, and piano tones produced surprisingly accurate reproductions within the 3.5KHz frequency limits of the sustem. At the opposite extreme, the oddball sounds never stopped; just about anything that was put into the waveform computation routine produced some kind of unique tone color.

Filling the Waveform Tables

So far nothing has been said about actually filling the waveform tables with data representing desirable sounds. In theory, just about any list of numbers will produce a recognizable tone when scanned but the sound is likely to be raucous and grating.

One obvious method is to draw one cycle of the waveform on graph paper and then laboriously read off 256 sample values and enter them into the table. The drawn shape could come from an oscilloscope photo of a musical instrument sound or from imagination. Besides the effort involved, the drawn shape must span exactly 256 grid lines in exactly one cycle to be valid. One could also make use of a light pen or graphic digitizer in conjunction with a drawing program to do the same thing with much less effort. The biggest problem when using imagination is that there is no simple relation between the appearance of the drawn shape and the resulting tone color. Thus, if a particular shape produces a sound that is close to what is desired, there is no way to know what must be changed to make it sound even closer.

Probably the best way to fill waveform tables is to write a program that accepts harmonic specifications, computes the corresponding waveshape, and automatically enters it into memory. There is a very definite correlation between the harmonic makeup of a tone and its timbre. One can also occasionally find published harmonic analyses of musical instrument tones, particularly organ pipes. **Figure 8** shows the listing of a very simple BASIC program that can be used to create waveform table data and POKE it directly into memory. The statements starting at line 2000 first amplitude normalize the waveform, convert the samples into integer form in the range of 0 to 63 (to avoid overflow when 4 are added up) and then poke them into memory.

FIG 8 Waveform Table Fill Program in BASIC

```
1000 REM WAVEFORM TABLE FILL PROGRAM
1001 REM SELECT RANDOM OR SPECIFIED PHASE REM
1002 ENTER HARMONIC NUMBER FOLLOWED BY
     RELATIVE AMPLITUDE
1003 REM HARMONIC NUMBER =0 FILLS THE TABLE AND
     EXITS
1010 DIM W(255): Z=6.283185/256
1020 FOR I =0 TO 255: W(I) =0: NEXT I
2000 PRINT "RANDOM PHASE ANGLES? (Y/N) ";: INPUT A$
2010 PRINT "ENTER HARMONIC NUMBER ";: INPUT N
2020 IF N =0 GOTO 3000
2030 PRINT " ENTER RELATIVE AMPLITUDE ";: INPUT A
2040 P =RND(1)
2050 IF A$ ="Y" GOTO 2070
2060 PRINT "ENTER PHASE ANGLE ";: INPUT P
2070 P =6.28318*P
2080 FOR I =0 TO 255: W(I) =W(I)+A*SIN(N*I*Z+P): NEXT I
2090 GOTO 2010
3000 M =0
3010 FOR I =0 TO 255
3020 IF ABS(W(I))>M THEN M =ABS(W(I))
3030 NEXT I
3040 M =M+.00001: REM MAKE ALL TABLE ENTRIES<1.0
3050 A =0
3060 FOR I=0 TO 255
3070 W(I) =W(I)/M
3080 A =A+W(I)*W(I)
3090 NEXT I
3100 PRINT "RMS AMPLITUDE IS "; SQR(A/256)
9999 STOP
```

The biggest advantage of using harmonics to specify waveforms is that alias distortion can be readily avoided. Alias distortion occurs whenever any frequency component of a waveform exceeds 1/2 of the sampling frequency. This can easily happen with high notes using waveforms rich in harmonics. For example, if one attempts to play high C (523Hz) using a waveform with 10 significant harmonics through an 8KHz sample rate system, the 8th, 9th, and 10th harmonics will alias since they will all be above 4KHz. Aliasing means that intended frequencies are altered ("reflected" off the 1/2 sample rate ceiling) and usually produce an objectionably harsh sound. Thus waveform tables used to play high notes should have their upper harmonics restricted while those for low notes may have dozens of significant harmonics if desired.

Figure 7. Complete 4 Voice Sound Generation Routine

```
PLAY    LDY #0          ; SET Y TO ZERO FOR STRAIGHT INDIRECT
        LDX TEMPO       ;SET X TO TEMPO COUNT
                        ; COMPUTE AND OUTPUT A COMPOSITE SAMPLE

PLAY1   CLC             ; CLEAR CARRY
        LDA (V1PT+1),Y  ; ADD UP 4 VOICE SAMPLES
        ADC (V2PT+1),Y  ; USING INDIRECT ADDRESSING THROUGH VOICE
        ADC (V3PT+1),Y  ; POINTERS INTO WAVEFORM TABLES
        ADC (V4PT+1),Y  ; STRAIGHT INDIRECT WHEN Y INDEX =0
        STA X'1700      ; SEND SUM TO DIGITAL-TO-ANALOG CONVERTER
        LDA V1PT        ; ADD INCREMENTS TO POINTERS FOR
        ADC V1IN        ; THE 4 VOICES
        STA V1PT        ; FIRST FRACTIONAL PART
        LDA V1PT+1
        ADC V1IN+1
        STA V1PT+1      ; THEN INTEGER PART
        LDA V2PT        ; VOICE 2
        ADC V2IN
        STA V2PT
        LDA V2PT+1
        ADC V2IN+1
        STA V2PT+1
        LDA V3PT        ; VOICE 3
        ADC V3IN
        STA V3PT
        LDA V3PT+1
        ADC V3IN+1
        STA V3PT+1
        LDA V4PT        ; VOICE 4
        ADC V4IN
        STA V4PT
        LDA V4PT+1
        ADC V4IN+1
        STA V4PT+1
        DEX             ; DECREMENT & CHECK TEMPO COUNT
        BNE TIMWAS      ; BRANCH TO TIME WASTE IF NOT RUN OUT
        DEC DUR         ; DECREMENT & CHECK DURATION COUNTER
        BEQ ENDNOT      ; JUMP OUT IF END OF NOTE
        LDX TEMPO       ; RESTORE TEMPO COUNT
        BNE PLAY1       ; CONTINUE PLAYING
TIMWAS  BNE *+2         ; 3 WASTE 12 STATES
        BNE *+2         ; 3
        BNE *+2         ; 3
        BNE PLAY1       ; 3 CONTINUE PLAYING
ENDNOT  RTS             ; RETURN
                        ; TOTAL LOOP TIME =114 STATES =8770 HZ
    ; THE FOLLOWING VARIABLES SHOULD BE IN PAGE ZERO

V1PT    .BYTE 0         ; VOICE 1 WAVE POINTER, FRACTIONAL PART
        .WORD WAV1TB    ; INTEGER PART AND WAVE TABLE BASE
V2PT    .BYTE 0         ; VOICE 2
        .WORD WAV2TB
V3PT    .BYTE 0         ; VOICE 3
        .WORD WAV3TB
V4PT    .BYTE 0         ; VOICE 4
        .WORD WAV4TB

V1IN    .WORD 0         ; VOICE 1 INCREMENT (FREQUENCY PARAMETER)
V2IN    .WORD 0         ; VOICE 2
V3IN    .WORD 0         ; VOICE 3
V4IN    .WORD 0         ; VOICE 4

DUR:    .BYTE 0         ; DURATION COUNTER
TEMPO   .WORD 82        ; TEMPO CONTROL VALUE, TYPICAL VALUE FOR
                        ; 3:4 TIME, 100 BEATS PER MINUTE, DUR=64
                        ; DESIGNATES A QUARTER NOTE
```

Although the **Figure 7** program can be used to compute waveform tables, most of the DAC synthesis music programs available for 6502 computers include machine language routines for computing waveforms from harmonic specification in much less time (typically less than 1 second per table). The more advanced programs using sequences of waveform tables actually let you specify an amplitude envelope for each individual harmonic as a series of straight-line segments as in Moorer's published analyses. The program then will compute a whole series of tables automatically from just the envelope specifications.

Conclusion

Although the discussion of software music synthesis has necessarily been brief, I hope that it is now apparent that purely software synthesis still claims many advantages over even the most sophisticated music synthesis chips currently available, at least on 6502 processors. The techniques presented are being further refined on the 6502 based MTU-130 computer (a full-blown music compiler is now available for that system) and being extended to the 68000 microprocessor which among the new 16 bitters is best at synthesis calculations. Progress is being made in delayed playback synthesis using 8" floppy disks for sample storage which has the potential for professional sound quality. Following is a list of references for further study into this fascinating software area.

REFERENCES

Refer to the following articles for a more detailed description of software synthesis and additional sample routines and programs.

1. Chamberlin, Hal, "A Sampling of Techniques for Computer Performance of Music", September, 1977, BYTE.

2. Chamberlin, Hal, "Advanced Real-Time Music Synthesis Techniques ", April, 1980, BYTE.

3. Chamberlin, Hal, "Simulation of Musical Instruments", January, 1981, Kilobaud Microcomputing.

4. Chamberlin, Hal, "Software Techniques of Digital Music Synthesis", April, 1981, Creative Computing.

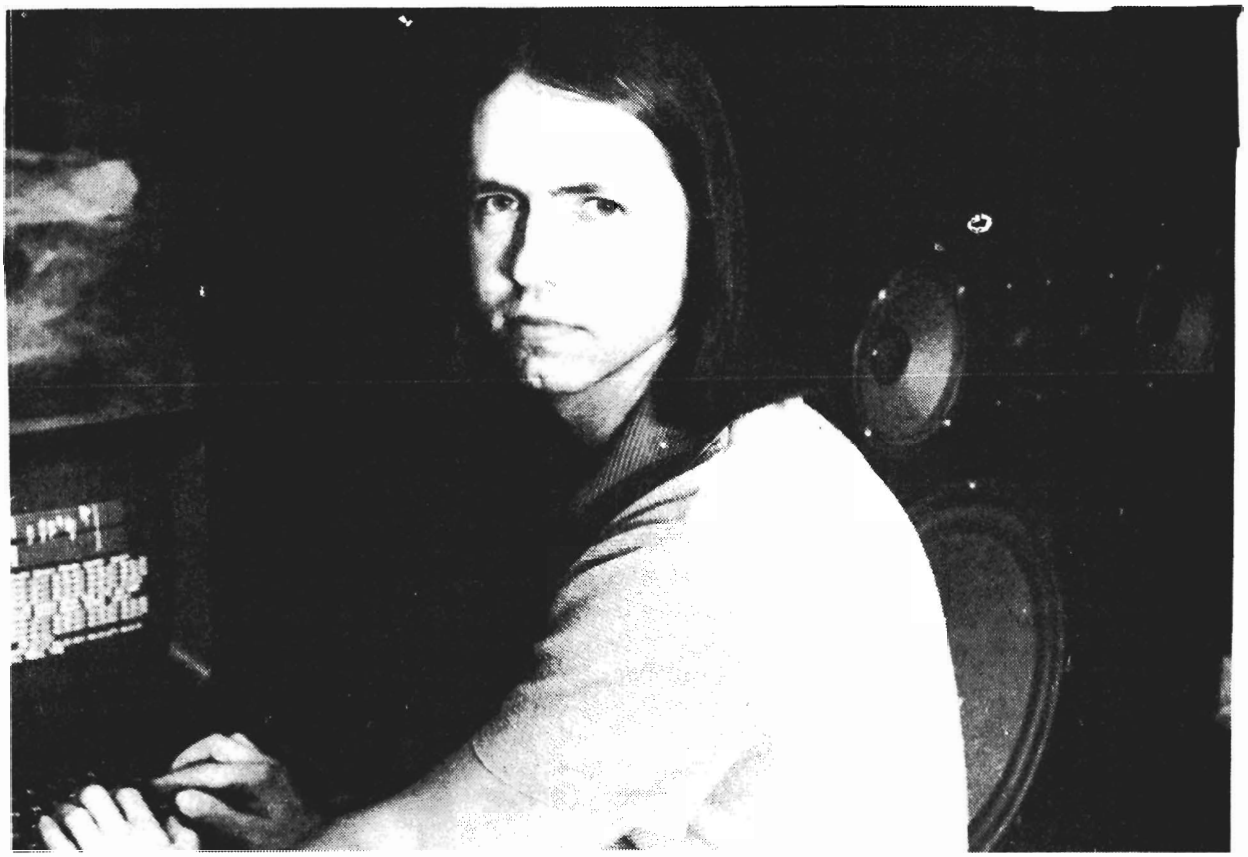
5. Moorer, J. and J. Grey, "Lexicon of Analyzed Tones", Computer Music Journal, vol. I and succeeding issues, MIT Press, Cambridge, MA.

6. Mathews, Max, The Technology of Computer Music, MIT Press, Cambridge, MA, 1969.

7. Chamberlin, Hal, Musical Applications of Microprocessors, Hayden Book Co., Rochelle Park, NJ, 1980.

Note: Reprints of references 1 and 2 and copies of reference 7 are available from Micro Technology Unlimited, Box 12106, Raleigh, NC 27603, USA. DAC boards and the more advanced music program for PET computers are also available from MTU.

GENERAL



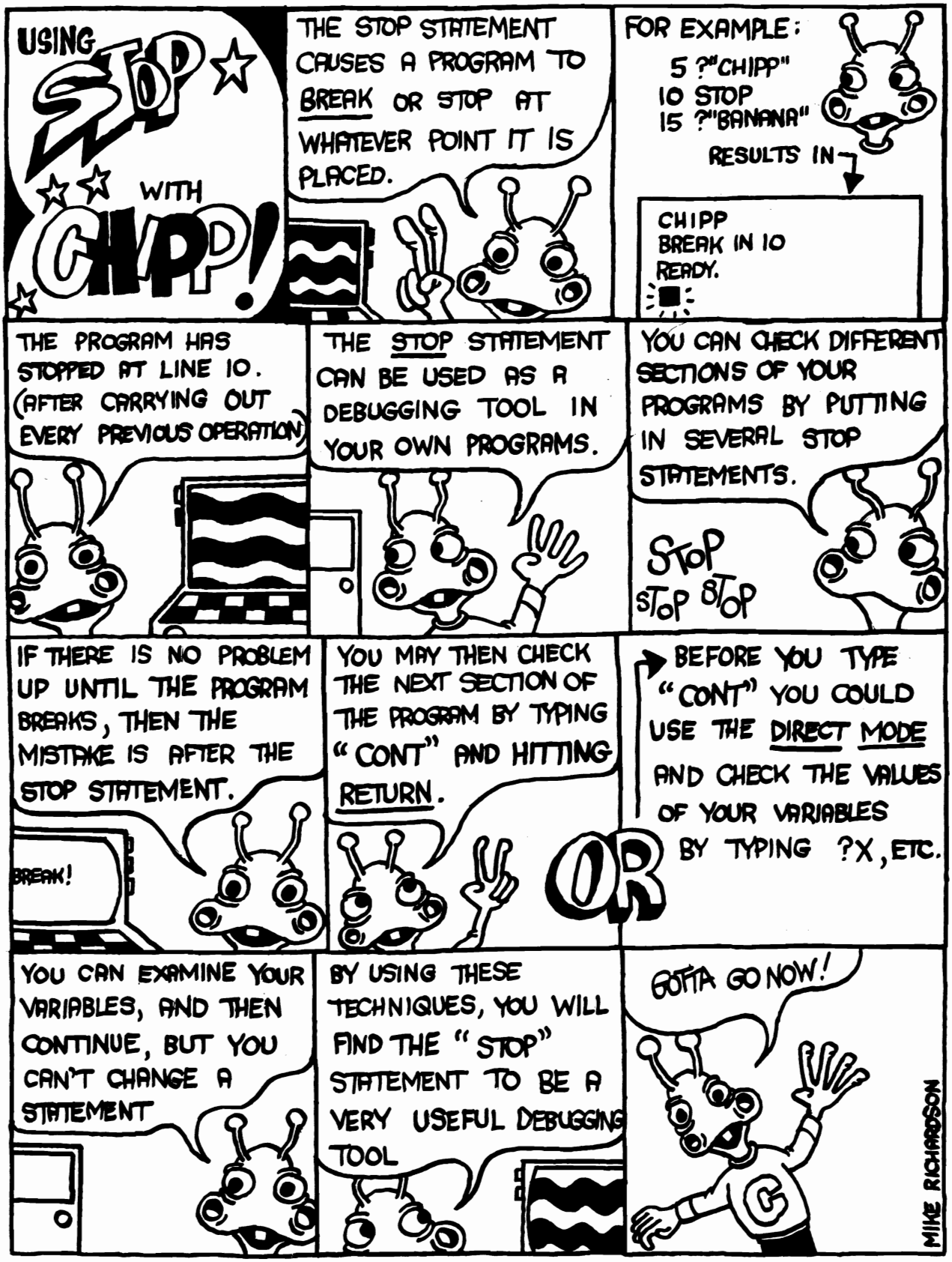
HAL CHAMBERLIN: The series by Hal Chamberlin is concluded in this issue. He holds an MS (1973) degree in Electrical Engineering from North Carolina University. While in school he worked part time for IBM in speech recognition and synthesis research. He also had the opportunity during this time to use a signal processing computer for music generation experiments using his own programs.

He is an active speaker at computer shows on the topics of computer graphics and music and is the author of numerous articles on computer music synthesis and microprocessor circuit design. He has recently written a comprehensive book titled Musical Applications of Microprocessors which is published by Hayden Book Company and has enjoyed uniformly favorable reviews and strong sales.

He is presently single and lives in the country near Wake Forest, North Carolina.

In our next issue we shall continue our music series with an article by Dr. Frank Covitz.

by Mike Richardson



BOOK REVIEW Programming: A Complete Course

Reviewed by Terry Taller

Kanata, Ont.

As soon as one purchases a microcomputer there is usually the shocking discovery that the thing doesn't work by itself. There follows a sometimes sizeable expenditure for software (and that's after the monitor, tape player or disk, printer, etc.). Once one uses the software there follows the second shocking discovery that the commercial software is meant for the average computer user in Madison Heights, Michigan but doesn't have much applicability in Hornepayne. That leads to the conclusion that one has to learn to program the little devil.

Having come to that conclusion there follows the inevitable trip to the computer bookstore where one is met with a blizzard of books on programming in BASIC. So the unsuspecting novice computerphile purchases the first book in BASIC only to discover that the book is machine specific for a brand of computer that one doesn't own. So, back to the computer bookstore. This time you purchase a book which appears to be suitable for your machine only to discover that in order to use it, you need a post-graduate degree in mathematics. And on it goes. What I would have given for somebody who had actually used a book, whose primary interest is in reading history novels rather than the challenge of complex mathemaical formulae, and had actually learned to program successfully by using the book.

Sitting here in my computer room/study I can actually count 13 books which have titles like INTRODUCTION TO BASIC, BASIC BASIC, A BIT OF BASIC, LEARNING BASIC FAST, BEGINNING BASIC. While they are all very interesting, none of them proved useful. Each one had a particular strength but none managed to help me through the formidable task of being completely comfortable.

And then along came Margaret McRitchie from Winnipeg who has written what I consider the definitive book on getting started in, and being comfortable with, BASIC. It's nice to know that a Canadian has written such an outstanding text and that it is being marketed around the world!

Why is her book so good? Because it assumes that one is a pure novice from the outset. She assumes that you are not a mathematician (certainly she expects--and has every right to--that you can add, subtract, multiply and divide). One never sees anything resembling some complicated algebraic formula to solve (as opposed to BASIC BASIC from Hayden).

She is very much aware that there are various kinds of microcomputers in people's hands so she ensures that each concept taught is self-contained. For those who have TRS-80's she provides a session on PRINT USING and IMAGE; however, material which follows is not dependent on that concept. The same is true of MAT functions; for those who have it she deals with it. If you don't have MAT she tells you to go on to the next session. Also when she provides problems she sets them out for those who do have, for instance, PRINT USING and those who don't.

The book is written by someone who has obviously struggled to teach programming to people who want it but who are unsure of their ability to master it. In the text portion she gives ample examples of a particular topic then she carefully explains what it means and gives more examples. She sets out her problems with an approach which allows one to feel successful right from the start. In the first category of problems she provides simple ones; if one is honest and attempts to solve it (without looking) she then provides both the answer and the flow chart for the answer. By carefully following her, one becomes quickly comfortable with each concept. The second set of problems closely parallels each of

the problems from the first part--only this time she doesn't provide the answer. What she does provide is a printout of what the answer will look like after you have solved it correctly.

She also has problems which carry on through the chapters. This is a subtle way of showing how each new programming concept is tied to the last one. Certainly when I started with her book I taught myself from start to finish and found that I was able to deal with all Of BASIC without any difficulty.

If I had any recommendation for the next edition it would be that she spend a little more time on string handling. She goes a little too quickly through STR$, LEN, and VAL; I found that when I wrote a program which had to manage all of the teachers of certain subject areas and what they taught that I needed to use these BASIC functions a great deal. However, let that not detract from the incredible overall quality of the book; that's just a problem I faced.

The book is a little more expensive than most ($25), but by the time you have bought your third book before you find McRitchie's book you will have spent that amount ot money anyway.

So, if you are going to buy a book for yourself in order that you can master this thing called BASIC, why not buy what I consider to be the best on the market and make a Canadian a little bit richer?

Assembly Language "If...then" Statements Branching

by Vince Sorensen

Regina, Sask.

After the ML beginner has understood how to say "LET" and "STORE" (LDA and STA), the next thing he'll probably want to learn is how to say "IF...THEN". With these commands, most applications can be accomplished. However, saying "IF...THEN" in ML involves many more commands than just an "IF" statement and a "THEN" statement, and this is where many beginners can be led astray. It has happened to everyone I know just starting out, including myself.

The thing to remember is that there are eight conditions which can be used as part of the ML "IF"...THEN" or branch statement. If there is or isn't a carry left over, if the last number referenced to was or wasn't a zero, it it was or wasn't negative; or if there was or wasn't an overflow, you can check for it. When you load a register or accumulator (your three ML variables are A for accumulator, X for the X register, and Y for the Y register), the result is examined for negatives, or zeros. When you compare, increase, or decrease, the result is again checked, for negatives, zeros, carries. This is what I mean by the last number referenced. Your eight commands for these possibilities are:

BCC - Branch if the carry is clear
BCS - Branch if the carry is set
BEQ - Branch if equal (last result was zero)
BNE - Branch if not equal (not zero)
BMI - Branch if minus (negative)
BPL - Branch if plus (not negative)
BVC - Branch if overflow clear
BVS - Branch if overflow set

Along with these branch commands, you will usually use comparison commands (when in doubt, check or compare again). To compare, you will use CMP, CPX, and CPY. In my examples, I will use immediate mode, where the register is compared with what immediately follows.

Due to the fact that I believe that you learn more from demonstration, here is an example of a typical branch:

```
LDA $A2     Load the accumulator with the
            low byte of VIC's clock.
```

CMP #$10 Compare it with 10. If it is 10, then the ZERO or equal bit will be set, and the negative bit cleared. If the accumulator is less than 10, the negative bit is set, and the carry register is cleared, as well as the zero. If it is more, then the negative bit is cleared, the zero bit cleared, and the carry bit set.

BEQ EQUAL If the zero bit is set then goto the EQUAL routine.

BCC LESS If the carry is clear, then goto the LESS routine.

BCS MORE If the carry is set, then goto the MORE routine.

In place of BCC, BMI could have been used. In place of BCS, BPL could have been used. However, BEQ should be the first operation, since the fact that zero is considered positive could have you going to the MORE routine if you're not careful.

Already, you have the BASIC branch statement under control. After you programs get longer, however, you'll have to watch how far away you are branching to. Since branches use relative addressing (that is to say, they go to a certain spot a certain number of bytes away from themselves), they can only go so far. If you wish to branch further than 128 bytes in either direction, you are unable to. The solution to this is to use absolute addressing, where saying goto $4000 will take you to location $4000, instead of $4000 bytes up. An example of this coding:

```
      LDA $A2
      CMP #$10
      BEQ EQ1   }
      BCC LE1   }  Branches to correct
      BCS MO1   }  jumping point
EQ1   JMP EQUAL }
LE1   JMP LESS  }  Jumps to correct
MO1   JMP MORE  }  routine
```

The command JMP says to go to a location, no matter what. Thus you can use branches as an "IF...THEN" statement, and the JMP command as a "GOTO" statement. At this point, we run into the problem that beginners keep straying into. They try this coding:

```
LDA $A2
CMP #$10
JMP ITS10
```

Sorry, it's less work, but it doesn't work at all. When the JMP statement is executed, it doesn't care if you're comparing or not. The proper way to code this is:

```
      LDA $A2
      CMP #$10
      BNE CONT
      JMP ITS10
CONT  ■■■■■■■
```

With this kind of coding, you'll notice that the only time the JMP statement is run into is when the accumulator has $10 in it. Otherwise, your program carries on at CONT. What I am trying to emphasize here is that if you give your computer a chance to make a mistake, it will. Always make sure that you have compared what you wanted to compare, and then use that comparison. Then you are well on your way to becoming a good ML programmer.

Further reading on Assembly Language Programming:

6502 Assembly Language Programming - by Lance Levanthal (Osborne/McGraw Hill)

VIC & C-64 Programmer's Reference Guide from Commodore (Howard W. Sams & Co., Inc.)

Compute! Magazine (Small Systems Publications)

These should be available at your local Commodore dealer's.

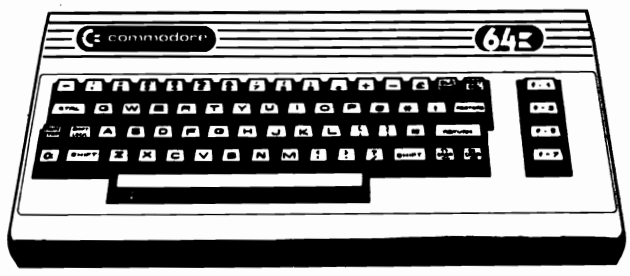
*In ML, negative numbers are those that are from 128 to 255. This is due to the way that numbers are stored, as bits.

BUSICALC/BUSICALC II

BUSICALC A Honey of an Electronic Spreadsheet

Why electronic spreadsheet programs?

Electronic spreadsheet programs allow the user to create a gridsheet, spreadsheet, worksheet, or any other table of information, using the memory of the computer as pencil and paper. The computer display or terminal acts as a window through which the user views the information as it is entered. Textual information (such as headings), numerical values, and formulas can easily be entered into the spreadsheet.



NOW BUSICALC II for Commodore 64 Lightning FAST FAST FAST FAST

For Commodore 64
For Commodore VIC 20
For Commodore PET/CBM 40 columns
For Commodore CBM 80 column/SuperPet

BUSICALC Your Computer Drone for Repetitive Calculations

The outstanding advantage of using a computer is that it acts not only as a pencil and paper but as a perfect eraser and an automatic calculator. The user can quickly and easily make any number of alterations to the data within the table. The BUSICALC will evaluate any formula using the data that has been entered. Further, it retains the formulas and displays the resulting value. With BUSICALC controlling the entry of data, providing a comprehensive memory, and performing arithmetic, the preparation of a spreadsheet is faster and more accurate than if it were prepared by hand.

BUSICALC With the Sting Removed from the Prices

BUSICALC 20. . . . . only **$49.00** for the VIC 20
BUSICALC 64. . . . . only **$69.00** for the CBM 64
BUSICALC 40. . . . . only **$79.00** for the original 40 column PET/CBM
BUSICALC 80. . . . . only **$89.00** for the original 80 column CBMs and SuperPets

For CBM 64 BUSICALC II only $99.00

BUSICALC AVAILABLE NOW FROM YOUR LOCAL DEALER
(800) 227-9998
FOR THE NAME OF YOUR NEAREST DEALER

California, Canada, Alaska and Hawaii please call (415) 965-1735

Skyles Electric Works
231G South Whisman Road
Mountain View, CA 94041

Europe please contact Supersoft, Winchester House, Canning Road, Harrow Wealdstone, Middlesex, England HA3 7SJ, Tel. 01 861 1166

Prices in U.S. dollars

POWER 64

Basic Utility for the

Commodore 64

- **Easy to learn**
- **Easy to use**
- **Program faster and more efficiently with better results**
- **MOREPOWER included FREE**

99.95

Powerful Programmer's Utility
by Brad Templeton
Manual by Jim Butterfield

PAL 64

Assembler for the

Commodore 64

- **Easy to learn**
- **Easy to use**
- **Fast**
- **Comprehensive manual**

99.95

Personal assembly language
by Brad Templeton
also available for the Commodore
4,000 — 8,000 — 9,000 series

VIC-20 SOFTWARE

CD001 Froggee	$29.95
CD002 Centipod	$29.95
MD001 Snakman	$29.95
CM401 Paratrooper	$29.95
CS007 City Bomber & Minefield	$39.95
NU2003 Krazy Kong	$25.95
NU2006 Rescue from Nufon	$24.95
SYN002 Crabs	$18.95
SYN003 Cyclones*	$23.95
CS013 Astroblitz (K)	$59.95
CS017 Choplifter (K)	$59.95
UMI1604 Spiders of Mars (K)	$69.95
UMI1636 Cloud Burst (K)	$69.95
ORM004 Crossfire	$39.95
HESC307 Shamus (K)	$59.95
Introduction to Basic I	$49.95
Introduction to Basic II	$49.95
Sidewinder	$44.95
Galactic Blitz	$39.95
Martian Raider	$24.95
Shark Trap	$24.95

* Requires 3K exp. (K) Cartridge

COMMODORE 64 SOFTWARE

Power 64	$99.95
Pal 64	$99.95
Road Toad (Formerly Froggee) (disk)	$34.95
(cassette)	$29.95
Wall Street (disk or cassette)	$29.95
Cosmic Split (disk or cassette)	$39.95
Supercycles (disk)	$29.95
Cyclons 64 (disk)	$34.95

BOOKS

Best of Transactor Vol I.	$12.00
Best of Transactor Vol. II.	$16.00
Pet Graphics	$23.95
Library of Pet Subroutines	$23.95
PET Basic	$19.95
VIC 20 Prog. Reference Guide	$29.95
Programming the PET/CBM	$39.95
Elementary Commodore 64	$17.95
C64 Prog. Reference Guide	$29.95
VIC Revealed	$18.95
Compute's first book of PET/CBM	$19.95

COMPUTER SUPPLIES

C10 Cassette Tapes	$1.00 ea.
C20 Cassette Tapes	$1.25 ea.
Cassette Boxes	25 ea.
Verbatim Disks M0525-01	$49.90/10
Memorex Disks 013481	$39.90/10
K10 Disk Storage Box	$5.95
Flip Sort Storage Box	$39.95
Printer Paper	
15 lb 9½ × 11 2850 sheets	$39.00
20 lb 9½ × 11 2200 sheets	$40.00

JOYSTICKS

WICO Command Control	$39.95
WICO Red Ball	$44.95
Commodore Joystick	$19.95
Atari Joystick	$20.95

*All Joysticks will fit VIC 20 or Commodore 64 computers

ORDERING INFORMATION

Cheque, Money Order, VISA, Master Card accepted. Ontario residents add 7% sales tax. Add 5% for shipping (minimum charge $1.00).

VISA

MasterCard

ELECTRONICS 2001 LTD.

5529 Yonge Street, Willowdale, Ontario M2N 5S3
Tel: (416) 223-8400

Non-destructive Reset for the PET

by Harold Anderson
Oakville, Ont.

NEED

Anyone who dabbles in machine language to any extent has probably installed a reset (some people say reboot) button on his computer. This button trips the reset line to the 6502 microprocessor, and activates the initialization routine, which the computer normally goes into when the power is first turned on. Such a button is useful for recovering from a crash. It is easily installed, the only part needed being a push-button switch. (For more details see my article on page 21 of the November 1982 TORPET.)

If the reset switch is used without any other hardware modifications the computer overwrites the entire program storage area of memory with $AA. This means that anything of use in memory is wiped out when the reset button is pushed. This is not necessary: you can beat the problem by investing in a 2048 byte EPROM (about $6.00) to replace one of the operating system ROMs.

Features of standard reset routine

First let me explain why everything gets overwritten with $AA during the reset routine. When the PET is first turned on, it goes through a series of tasks often called housekeeping. The most essential part of this routine is the setting of the proper values in the bottom 1024 bytes of RAM. This area of RAM is basically the scratch pad for the operating system, and must contain certain values before the computer can do anything useful such as interpret key board input or write to the screen. One of the minor things that the reset routine does is to check the entire program storage area of RAM to see if it can be written to and read from. This is done for two reasons:

a) It tells the operating system how much memory is available in the machine.

b) It allows the computer to detect and lockout bad memory locations.

In order to do this, the computer first writes 01010101 ($55) into each location and then reads it back to verify that it reads back the same bit pattern that it wrote into the location. The test is then repeated with 10101010 ($AA). In this double test, each bit in each location is proven to be capable of storing a 1 and a 0.

Features of modified reset routine

What is needed is a modification to the reset routine which:

a) Does not wipe out the original contents of RAM.

b) Proves the capability of each bit in RAM to store both a 1 and a 0.

c) Does not occupy more code space than the original routine. (If it were longer than the original reset routine, we would require an extra ROM, or relocation of part of the PET operating system).

The first thing that I did was to find the location of the RAM testing routine in the PET ROMs. (I have level 2.0 ROMs.) A search for the machine language command LDA #$55 pointed me to the right section of ROM (this instruction is at $E165). The original routine is shown in disassembly #1. I modified the operating system between locations $E15D and $E173. The modifications are shown in disassembly #2.

The modified routine assumes that the original contents of the RAM location being tested are storable since they are already there. It parks the original byte in the X register ($E16A) and then writes the complement of the bit pattern into the location ($E16D). After checking that the complement reads back properly ($E16F), it restores the original byte ($E15E). I even had one location left over hence the NOP at $E173.

This routine is applied to all memory locations from $0400 to $7FFF (unless it detects a bad location, in which case it stops and sets the top of RAM pointer to that location). If you look at the modified routine closely, you will see that for the first location tested, the original contents are not restored properly. This does not matter since it is overwritten with a $00 later anyway.

How to use the nondestructive reset

If you are interested in a block of memory above $0403, then pressing the reset button will not alter the contents at all. If you have a BASIC program in RAM, then you will have all of the program intact after pressing the reset button, except for the following points.

a) Locations $0401 and $0402 which should contain the link to the second line of the BASIC program now contain $00.

b) The page zero pointers which tell the operating system where the program ends are set to zero program length.

The repair work is pretty simple:
a) Break into the monitor and repair the link at $0401 and $0402 so that it points to the first byte of the next link. When you drop back into BASIC you will find that the program can now be listed.

b) The page zero pointer still has to be fixed, or the system will crash when you try to edit the program. The easiest way to do this is to use a BASIC aid package. First, list any line. Then type delete##, where ## is the line you listed. In the process of the delete operation, the BASIC aid package restores the page zero pointers to their proper values. Now put the cursor on the line which you listed and then deleted. When you hit return, the line will be re-entered into your program. You are now back in business. This works with the BASIC aid package that I use and I would be very surprised if it did not work with all packages.

The whole procedure mentioned above can be done in a minute or so.

How to change your operating system

First you need to purchase a 2516 or a single power supply 2716 EPROM and find someone who has an EPROM burner. (In the level 2.0 BASIC the ROM needing modification is the $E000 and up ROM. Only locations $E000 to $E7FF are used since the locations $E800 to $EFFF are devoted to the input output chips. It is possible that on some of the other versions of BASIC, the modifications are required in one of the 4K ROMs, in which case you will have to purchase a 2532 which is a 4K EPROM.)

Next you will have to use Supermon or similar routine to download the contents of the proper ROM into RAM. Use the mini assembler in Supermon to alter the proper locations. Now either burn your new EPROM with your own equipment or save your new version on tape or disk and get someone else to burn it for you.

Caution

Don't install the EPROM backwards.

No effect on operation of computer

Since the reset routine is never called by a program, this modification will not affect the operation of any of your programs. In fact, if you stay out of the monitor you will not be able to tell that it is not the standard operating system. The only kink, that I can think of, occurs when you try to find the boundaries of a program using the monitor. Originally you could tell where the program stopped by finding where the $AAs started. To do this now, you will now have to preload the RAM of your computer with $AAs before loading the program to be examined.

I have had this modification in my 2001 PET for about 5 months. I have been writing a lot of machine language in that period and it has often been very useful.

continued on page 41

- farmers will be DISKing the land, planting RANDOM SEEDS and raising SERIALS

a Ylimaki

Disassembly #1, Original Routine

```
.; E152  A0 04     LDY #$04
., E154  85 28     STA $28
., E156  84 29     STY $29
., E158  85 11     STA $11
., E15A  84 12     STY $12
., E15C  A8        TAY
., E15D  E6 11     INC $11
., E15F  D0 04     BNE $E165
., E161  E6 12     INC $12
., E163  30 0F     BMI $E174
., E165  A9 55     LDA #$55
., E167  91 11     STA ($11),Y
., E169  D1 11     CMP ($11),Y
., E16B  D0 07     BNE $E174
., E16D  0A        ASL
., E16E  91 11     STA ($11),Y
., E170  D1 11     CMP ($11),Y
., E172  F0 E9     BEQ $E15D
., E174  A5 11     LDA $11
., E176  A4 12     LDY $12
., E178  85 34     STA $34
., E17A  84 35     STY $35
.?
```

Disassembly #2 Modified Routine

```
.; E152 A0 04     LDY #$04
., E154 85 28     STA $28
., E156 84 29     STY $29
., E158 85 11     STA $11
., E15A 84 12     STY $12
., E15C A8        TAY
., E15D 8A        TXA
., E15E 91 11     STA ($11),Y
., E160 E6 11     INC $11
., E162 D0 04     BNE $E168
., E164 E6 12     INC $12
., E166 30 0C     BMI $E174
., E168 B1 11     LDA ($11),Y
., E16A AA        TAX
., E16B 49 FF     EOR #$FF
., E16D 91 11     STA ($11),Y
., E16F D1 11     CMP ($11),Y
., E171 F0 EA     BEQ $E15D
., E173 EA        NOP
., E174 A5 11     LDA $11
., E176 A4 12     LDY $12
., E178 85 34     STA $34
.?
```

EXECOM-80 -- a review

by T. Tremmel

Racine, Wisconsin

By now most everyone has seen the advertisements in COMPUTE and MICRO magazines for EXECOM Corp., the makers of an 80 character conversion board for the PET 2001 series computers.

I bought one a few weeks ago and have been using it since. What this board does is convert the 40 char. screen width to 80. True...stuffing 80 characters on one line means making the characters narrower but since you don't sit across the room from your computer anyhow, it is very easy to get used to the new display. So easy in fact, that the original 40 will look odd.

As stated in the ads, you can switch back and forth between the 40 & 80 character modes. This can be done with a POKE or a SYS, from the keyboard or from a program, something that the 8032 can't do,(yet). All BASIC print statements will work the same, but if you use ML or POKES to the screen you'll have to make some changes.

The original screen locations have opened up and made room between themselves for the extra screen locations. The original screen is called block 1 and the added screen block 2. While the first screen location is 32768, the next is 33793 and so on. ML programmers will have use of the extra 1024 locations in the 40 char. mode.

The EXECOM-80 board is dual-sided with plated thru holes, and is completely assembled & tested ready to install (more on that later). It comes packed in an anti-static foam lined box (cardboard) with a disk containing demo programs to show some ways of programming for it. Also included are sockets, wire, a dip jumper cable, spare 7413373, jumpered header plug to force 40 char. if board should have to be removed for repair, 2 eproms, and the 80-C board. The 80-C is a little board with 2 sockets that plugs into $E000, the original screen editor and one of the eproms plug into it and are switched from

the EXECOM-80. The other eprom is called the reference rom. It can plug into any open rom socket, (be sure to specify which one). This is used to SYS back and forth - a **MUST** have for BASIC 3.0 and nice but not necessary for 4.0. Without it there is no SYS to change modes(4.0 only).

There is another pad on the EXECOM-80 to allow the use of another 80-C to be used in anotner rom socket to switch roms. Also available is the 80-B, another board that will allow 2 2K eproms to behave like a 4K.

Last, but not least, are the most important and often overlooked instructions. I would suggest reading them over once or twice. There is some trace cutting and wire soldering to be done. If you take your time and double check your work you should have no troubles.

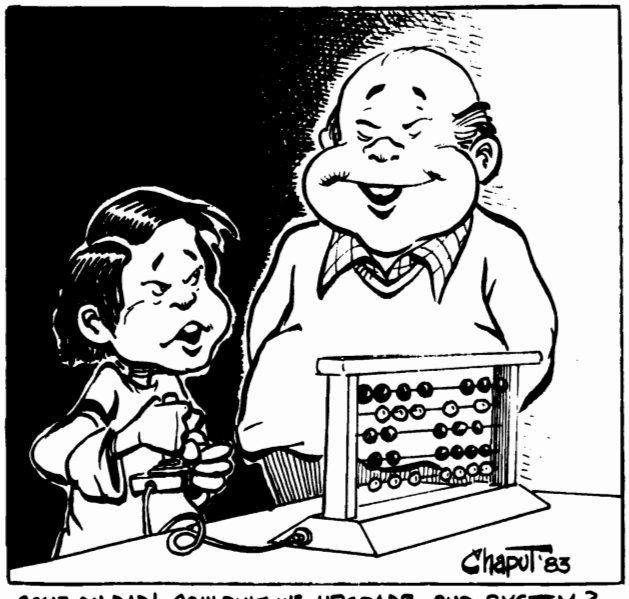
This new product should put some new 'zip' into an old but still useful computer, especially if you're like me and can't afford the 8032 or would rather fight than switch. Since the 2001 series doesn't have the window, tabs, little bell, etc. that the 8032 has, it might be worthwhile for some dedicated ML nut to come up with something that will do it.

Some programs that have been found to work are: Flex-File, Paper-Mate Word Processor, McTerm, & the Neeco Source Kit. Unfortunately Word Pro ill doesn't work (are you listening Steve Punter?), nor do Space Invaders or Visicalc.

One note on Visicalc is that it doesn't work right in either mode. To make it work like it should, only one change has to be made. Load the first program only;(VC STARTER). Go to the monitor and change the 84 at location $044E to 80. Then resave from $0400-$1260. This little change will get it to run in the 40 character mode like it should.

Space Invaders and most games are no loss and might not even be worth the trouble of converting, with a simple POKE at the beginning, you still have the original 40 character screen.

I have been told that members of user groups will get a 20% discount. I am not part of Execom nor do I have anything to do with the operation of the business. I paid the same price for the Execom-80 that anyone else would. This board does exist and I feel people should know about it.



COME ON DAD! COULDN'T WE UPGRADE OUR SYSTEM ?

COMMODORE 64

SO MUCH MORE FOR YOUR 64

NEW 8.4 VERSION OF THE PET™ LOADER/EMULATOR CASSETTE

- Automatically resets colors. No poking necessary.
- Loads into upper memory in just 80 seconds.
- Runs all CBM public domain software.

COMMODORE 64

Expand Your 64 Library

Run Thousands of **PET** Programs

COMMODORE 64

The Pet Loader/Emulator reconfigures the Commodore 64 memory regardless of **any** recent ROM change to duplicate the PET internally without interfering with BASIC user memory.

SO MUCH FOR SO LITTLE

JUST $19.95 prepaid

The Education Circuit, Inc.
P.O. Box 333, Landing, NJ 07850

Dealer Inquiries Invited—201-398-6185
Pet is a trademark of Commodore Business Machines

COMMODORE 64

Prices in U.S. dollars

Tips and Tricks

by Ian A. Wright — Toronto, Ont.

During a 1983 Central meeting, there was a panel consisting of Chris Bennett, Mike Bonnycastle, Jim Butterfield, Gord Campbell, and Mike Donnegan, who answered questions about using Commodore products. Due to space restrictions, this material did not get published, but the information is still of great value today. (especially if you did not make the meeting!)

Since that time, I have gathered more data on similar topics and added them in where appropriate. Some of these ideas originated from other TPUG members via the various Bulletin Board Systems in Toronto.

Cleaning and Maintenance

- Clean and demagnetize tape decks, but unless you are very competent, don't take them apart.

- Many tape-read errors result from badly aligned heads. There have been articles about head adjustments (Compute! #8) or take it to your dealer.

- Some disk drive manufacturers have stated that the various disk cleaning kits can do more damage than they repair. Many people are using them with no complaints.

- Cigarette ash is the worst danger to the keyboard and some members have already bought a number of $75.00 keyboards. There are some things that can be done to improve a 'tacky' board before having to buy a new one. If you are not prepared for the 23 tiny screws that remove the back cover, and a lot of picky cleaning with swabs, then take the machine in to the professionals. Use 111 tri-chloryl ethane or a tape-head cleaner on the circuit board and the rubber key inserts. Rubbing alcohol is not good enough because it leaves contaminants behind after evaporation.

- A vacuum cleaner is a valuable maintenance tool for keeping equipment in operating order. I have removed dust balls, pencils, and an eraser from various machines at my school. Printers seem to be particularly apt to collect debris.

Disk Drive Problems

- The 1541 disk drives that have trouble writing to track 1 on double density disks can be helped by not using 4040 formatted disks. As a general rule you should format and write on only one type of drive, although any disk can usually be read by another drive.

- Since this problem was presented at the meeting, I have lost one disk of files because of writing from one drive to another. I have three friends who have had the same experience. Although all disk drives of the 2040 and 4040 type can read disks formatted on each other, do NOT write between them. The problem may not show up for months, but one day ... blippo ... no files! This is especially true of single/dual drive interchanges. We have instituted a system in which all files are kept on 4040 formatted disks. A temporary file is written to a 2031 (or 1541) format disk and then copied onto the 4040 disk for storage and later processing.

- Verbatim #577 disks have had some problems in use with 8050 drives. The solution was to use a bulk eraser to clear away spurious magnetism that was between the tracks. Verbatim #525's have been used reliably by TPUG, and most other manufacturers have reliable products.

- There is a new 2.7 ROM set coming for the 8050 which indicates in which drive an error has occurred.

- Commodore is still making the 4040 dual drives, but only in intermittent production. The new 2031 SL drive is the slim line replacement for the original (1981) single drive. So far there has been encouraging lack of complaints about its operation, unlike its predecessor.

- Many disk errors can be solved by correct centering of the disk in the drive. Make a habit of starting the disk in motion then slowly closing the drive door. Chris Bennett says that he has had hundreds of errors before learning this trick with the 2040 and 4040's. The disk copying errors can be reduced to negligible using this approach.

- If a disk is validated or collected and a bad file is not removed by this process - copy the good files using Copy-All and re-format the old disk. Do not continue to use the disk.

- Sometimes a disk can be recovered by formatting the reverse side. Although double-siding is not a good idea, this trick may prove useful in some cases where you want to retrieve material from the original side.

Here are Three Disk Rules a la Butterfield:

1. If you attempt to write on a disk that has a write-protect tab, an error will occur. Before continuing, re-set the drive by turning it off/on.

2. If a file is not properly closed (it has an asterisk beside it) do not attempt to scratch the file. Leave it alone or collect the disk. (see also above)

3. Don't leave two disks with the same I.D. in the same room. The backup facility makes it easy to insert a backup disk with exactly the same I.D. into the drive without re-setting it. The drive may not recognize the backup as a different disk and may continue writing where it left off!

4. Don't turn off the drive with a disk in it - and never when the drive is spinning. The drive may do wierd things as it 'loses its brains'.

- If there is no BAM, then you can use the tip #4 above to try to retrieve information. Initiallize a new disk with exactly the same header as the bad disk; now slip in the bad disk and read track and sector if possible.

- A read error means that you cannot depend on the data on the disk. A checksum error can be looked at, retrieved and re-written.

- A disk can be re-set without touching the on/off switch by OPEN 1,8,15,"U: then CLOSE1. This will work with the disk in or out of the drive.

- A USR file is a sequential file that has a special protocol that may differ from the standard ASCII. This designation allows the catalog to show a file as 'special' in its format.

General Information

- There are "new" manuals and reference guides available from Commodore that were printed in 1982. These include data on the 9060 and 9090 hard drives. There is no data on the slimlines.

- Epson has a new printer manual for the MX-80, again published in 1982. This manual includes a tutorial on various functions including Graftrax+ use.

- Commodore can be considered to be as good as most other manufacturers in terms of their program transportability between machines. Despite our problems, programs that are written without 'frills' can run on all machines. Many manufacturers introduce new models with no carryover, whatsoever.

Input Idiosyncracies

by Jim Butterfield

There are some kinds of information we can't seem to get with the INPUT statement. INPUTis a very clever command ... sometimes too clever for its own good. We seem to be forced to use GET to overcome all the things that INPUT does for us ... that we don't want.

Let's take an example. You have a program which asks,

INPUT "YOUR NAME":N$

and the user types in a reply such as STEVE PUNTER, PhD. the comma "breaks" the input and the user is told, ?EXTRA IGNORED.

We have a somewhat more severe problem if we use the colon character in our input. Not only is the EXTRA once again IGNORED, but we can't even get the second part of the input if we try for it. Coding:

INPUT "DATA";D$,E$

and responding with an input of ATTENTION: JIM, JACK will put ATTENTION into variable D$; but JIM and JACK will be lost (we'll get another prompt for string E$). Annoying. This is information that we might want to input and process.

Another problem in addition to the forbidden comma and colon: we are not allowed to input nothing. That sounds like bad grammar; let me restate it. We can't input "nothing" by simply striking a carriage return. PET/CBM machines will stop. VIC and 64 computers will leave the input string with its previous value. And yet "nothing" might be the correct response to various INPUT prompts (middle initial? apartment number? name of spouse? ... you might have no middle name, live in a house, and be unmarried).

There is an answer to all these clumsy things. It's simple, but it's a bit clumsy itself. Tell the user to put his or her reply in quotation marks. In other words, don't type STEVE PUNTER, PHD; instead type "STEVE PUNTER,PHD", including the quotation marks. Commas and colons will be allowed, and you may even type in "nothing" without stopping the computer.

The quotation marks will be removed by the INPUT statement, which leads to the lesser problem: you can't easily input quotation marks. But most of everything else will straighten out.

It seems a little stuffy to require the user to always put in the quotation marks. Mistakes and oversights may occur. The best answer to this problem is buffer-stuffing. Just before giving the INPUT command, place a quotation mark into the keyboard input buffer, and a count of 1 into the input buffer counter. On a recent PET/CBM, you'd do this with POKE 623,34: POKE 158,1; on VIC or C-64, you'd type POKE 631,34: POKE 198,1. This will cause the leading quotes to appear on the screen and be part of the input. The user doesn't really need to type in the closing quotation mark; the system will accept correct input without it.

This takes care of much of the problems of INPUT. A series of GET statements could accomplish the same thing and would be more bullet proof; but there would be more coding needed, and we might risk the danger of invoking a dreaded garbage collection.

However we do it, we are probably setting ourselves up for the next problem. Once we get the input data safely from the keyboard, it's likely that e will put it on a file. Later, when we read the file, we'll want to use the INPUT# statement. And the problem starts all over again.

One way to fix this input problem is to PRINT a quotation mark at the beginning of each record placed on disk or tape. So instead of saying PRINT#6,N$ we would code PRINT#6,CHR$(34);N$ and each line would start with the quotation mark.

I prefer to use STRING THING to get this kind of input. That's a small machine language routine that does the job without the need for the extra quotation mark. It's been published in The Transactor, and is in The TPUG library.

The important thing is to know to watch for these INPUT problems. Once you know how to spot them, you'll be able to think up a solution.

One more thing to watch when you are doing an INPUT# from a file--you can't get more than 80 characters or so at a time, and so when you write the information, be sure it is broken up into sufficiently small chunks.

INPUT and INPUT# are nice commands. They are fast and convenient. But watch for these problems of curious characters (comma and colon) and "null" inputs.

NEW

Assembler for the Commodore 64

PAL64

- easy to learn
- easy to use
- fast
- comprehensive manual

Personal assembly language
by Brad Templeton
also available for the Commodore
4,000 - 8,000 - 9,000 series

$99.95 from your local Commodore dealer.
For your nearest dealer call:

(416) 273-6350

PRO-LINE SOFTWARE

755 THE QUEENSWAY EAST, UNIT 8
MISSISSAUGA, ONTARIO L4Y 4C5

RTC
MICROCOMPUTER INSTITUTE

PROGRAMMING COURSES
BASIC, ADVANCED BASIC, ASSEMBLER
C-64 COLOUR, SOUND, MOTION courses

$89 and $10 lab and manual fee

COMPUTER CAMP '83

July 4, 18 August 1, 15
9:00-4:00 each day, 5 days

$150

for information and to register.
Phone Peter Gouvis 884-4165
10610 Bayview Ave., Richmond Hill, ON L4C 3N8
1 mi. North of Major Mackenzie Drive

DEVELOP-64

FIVE POWERFUL SOFTWARE DEVELOPMENT TOOLS

Plus The Exciting New Book

INSIDE THE COMMODORE 64™

THE BOOK

A complete clear explanation of machine language, Assembly language, Commodore 64 architecture, graphics, joystick and sound effect programming. Detailed step-by-step guide to the use of the development tools. How to combine BASIC and machine language, make auto-start cartridges, interface with the internal ROM-based programs of BASIC and the Kernal. Sample programs fully explained.

THE TOOLS

Assembler/Editor/Loader/Decoder/Monitor
Full-featured Assembler allows use of labels, comments and arithmetic expressions to create machine language programs. Create, save, modify Assembly language programs with the Editor. Load and link machine language modules with the Loader. Decode machine language back into assembly language for study or input to the Editor. Single-step program execution with the Monitor. Combines Assembler/Editor for maximum ease of use.

ALL FOR $54.95 PLUS $2.00 POSTAGE AND HANDLING Add $5.00 for disk version.

Send check, M.O., VISA/MC ($2.00 S.C.) or specify C.O.D. (add $3.00) to:

French Silk smooth ware

P.O. Box 207, Cannon Falls, MN 55009

507-263-4821

Commodore 64™ is a registered TM of Commodore Business Machines Inc

Prices quoted in U.S. dollars

Prices quoted in U.S. dollars

CARDETTE LETS YOU USE ANY CASSETTE PLAYER/RECORDER WITH YOUR VIC-20®

With the new CARDETTE from Cardco, Inc. you can interface with any standard cassette player/recorder to save programs and load them with ease into yur VIC-20®.

No longer are you restricted to using only the VIC Datasette. Just add a CARDETTE and you can use the tape unit of YOUR choice.

The CARDETTE comes with all necessary cables and wires to complete the hook-up. Nothing else to buy. All you need is YOUR tape player/recorder and your tapes.

Price: Just $30.95

COMPU SENSE

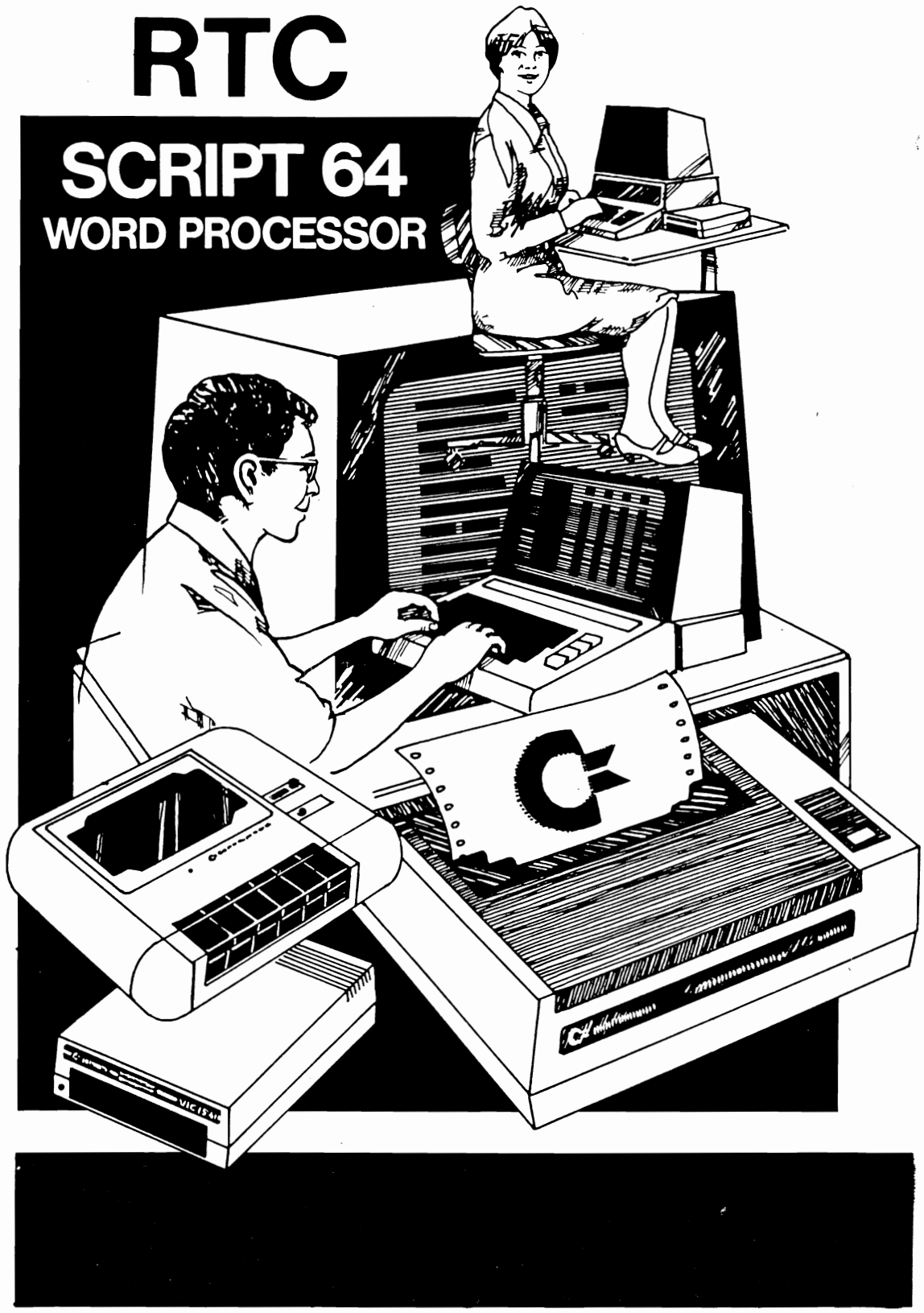
TO ORDER:
P.O. BOX 768
WICHITA, KS 67201
(316) 263-1095

AMERICAN EXPRESS® VISA MasterCard

Handling charges $3.00
C.O.D. (Add $2.00)
Personal checks allow 3 week delivery
VIC-20® is a registered trademark of Commodore
Prices subject to change

RTC

SCRIPT 64
WORD PROCESSOR



NOW WITH 80 COLUMNS

WITH DATA 20 OR WITHOUT

$129.00

Prices quoted in U.S. dollars

Compatible Accessories for your Commodore PET Computer

INTRODUCING

THE EASY ROM $89.00
Allows you to run many software packages without opening your computer to change ROMs

AUDIO/VIDEO INTERFACE $75.00
Utilize a remote monitor for screen display. Ideal for class instruction & demonstration

UPGRADE KITS
Modify your FAT40 to 80 columns
Expand your 16K PET to 32K
Custom EPROM chip, all parts & detailed instructions included
Some simple soldering required
Uses existing graphic keyboard
Runs 8032 software (eg.MANAGER WORDPRO4+ etc.)Specify ROM type

16K to 32K	$50.00
4032 to 8032	$50.00
4016 to 8032	$90.00

PURCHASE PRICE FULLY REFUNDABLE IF RETURNED UNDAMAGED IN 14 DAYS

Incl. $2.00 Shipping & Handling
Allow Three Weeks for Delivery
Ont. Residents Add 7% Sales Tax
Mail Order Only From

IDS ELECTRONICS INC

1935 CARSCADDEN CHASE
MISSISSAUGA ONTARIO L4W3R8

"THE MANAGER" is a trademark of BMB COMPUSCIENCE CAN. LTD.
"WordPro 4 Plus" is a registered trademark of Professional Software Inc. and Pro-Micro Software Ltd.
"CBM/PET" are trademarks of Commodore Business Machine Ltd.

CURSOR

For your Commodore 64

For only $12.95 each, our **CURSOR 64** tapes are your best buy for the Commodore 64. They take advantage of the color, sound, and sprites that make the 64 such a delight to use. Most of our packages include three excellent Basic programs on one cassette tape. The programs are not copy protected, so you can look at the source code, and learn how to make the 64 do its tricks.

We don't have room to describe all 25 of our **CURSOR 64** programs here. As a sample, you may want to order tape 64-5 with the exciting **Godzilla** program. You'll be challenged as you try to save Tokyo from from the rampaging Godzilla. Or try tape 64-3 with the popular **Miser** text adventure that will take you hours to solve (even if you cheat and read the program source).

We have super programs for the VIC 20, such as **Dungeon** ($12.95), a visual adventure for 16K VICs. Our **VIXEL** programs are also popular with VIC owners. And, we still sell all 30 of the original **CURSOR** cassettes for the original PET and CBM.

Call or write for a catalog today. Be sure and tell us whether you have a 64, a VIC, or a PET. We welcome credit cards, and ship most orders the same day they are received. Dealer inquiries invited.

CURSOR 64, Box 6905
Santa Barbara, CA 93110
805-683-1585

ITS THE PITS!

CINTECHS SOFTWARE
PRESENTS

RIKI TIKI

DEADLY MUTANT SNAKES
HAVE ESCAPED!
RIKI TIKI MUST STOP THEM
ITS FAST AND ITS DANGEROUS
BUT RIKI CAN'T STOP.
CAN YOU?

$15.98 all inclusive
money order or check, outside
Canada remit in U.S. funds

CINTECHS, PO BOX 2220, STN. A,
LONDON, ONTARIO, CANADA,N6A 4C3

B SERIES

The New Business Computer

by Gord Campbell — Toronto, Ont.

Part 1

Commodore's new computer series for business applications is just beginning to appear in the market. This article describes some of the features of these machines, and comments on conversion to them. The information is based on extensive exposure to prototypes, so there may be detail differences compared to the final product.

The series was announced some time ago, and has changed names in the interim. Samples of the current names are B256-80 and B128-80. As the names imply, these are business computers with 80-column screens and 256K or 128K of memory. There will also be a 'BXnnn' model, with a second processor. The only remark I can make about that configuration is, that the two processors appear to communicate with each other, unlike the SuperPET, where one processor is effectively disabled by an external switch.

There are two main variations within the models: the 'high-profile' unit has built-in disk drives, a tilt-and-swivel screen, and separate keyboard on a cable. The 'low-profile' model is just the keyboard unit, with the circuit board inside. A separate monitor and disk box are required. The case is approximately 3 times the bulk of a VIC-20.

PHYSICAL FEATURES

Much is new, for example:
- o SID-chip for sound
- o built-in speaker
- o audio-jack for external sound
- o 'switching' power supply
- o external reset button (in back)
- o internal 'user port'
- o unique cartridge port
- o true RS232 port (device 2)
- o 2 mega-herz clock

The hardware is also better utilized than in past systems. For example, the real-time clock and the cursor are both done in hardware instead of software.

The 'B' Series Keyboard

One of the major differences between the 'B' series machines and previous Commodore computers is in the keyboard, and how it is used.

The keyboard has 4 cursor-control keys; one each for up, down, left, and right. There is a key for NORM/GRAPH, a key labelled 'ENTER' (functions exactly like 'RETURN'), a '00' key on the numeric pad, a true 'control' key, and a 'Commodore' key. The latter is not a type of shift key (unlike VIC and 64). It causes the screen to freeze upon scrolling, and passes CHR$(2) to programs.

The numeric pad also contains a 'CE' (for clear entry) key. This one works just like delete, unless what is being deleted is part of number - then, the whole number goes. Very clever.

The body of the keyboard is arranged in the IBM style, so it takes a while to find the double-quote. This will only bother silly people who routinely use five different keyboards (like me).

Above the main keyboard is a row of 'programmable function keys'. There are 10 keys, which may be shifted, to yield 20 different values. When the system is turned on, these contain values like 'LIST', 'DIRECTORY', etc. However, the values may be changed very easily. A single key may be set to 'contain' up to 255 characters, although all the keys combined are limited to 512 characters. To set a key, enter in

direct mode, or from within a program, the command:

KEYn,string

where 'n' is the key number from 1 to 20, and 'string' is most often a literal, but may be any legal string value, eg. "RUN"+CHR$(13)

(which is three letters and a return).

One of the handy ways of using the function keys from within program, is to set them to values not usually passed from the keyboard. Then have the program interpret these values as commands.

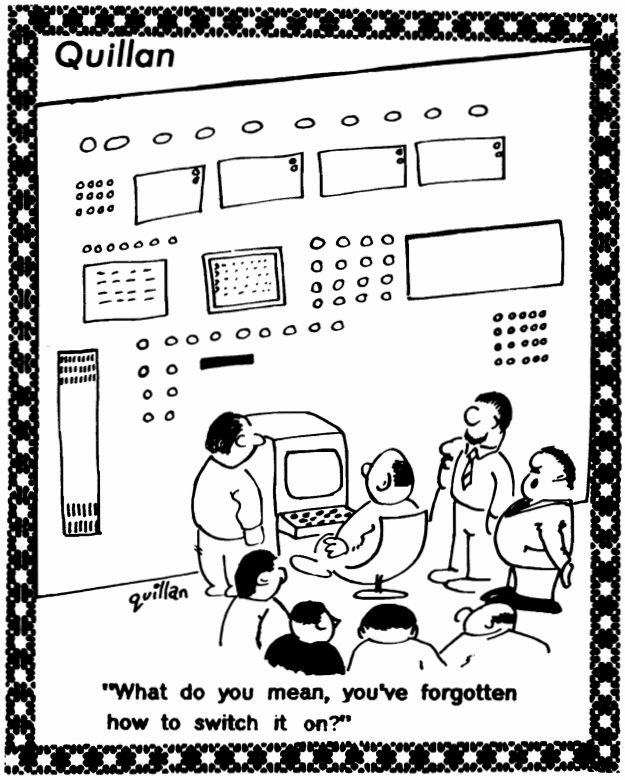
Use of the keyboard is closely linked to the screen editor, which has also been enhanced. Two lines on the screen may be linked, to create one 'logical line' of up to 160 characters. The 'ESC' key plus any letter now performs a function, such as:

ESC u - set underline cursor
ESC s - block cursor
ESC f - flashing cursor
ESC e - non-flashing cursor
ESC w - scroll down
ESC v - scroll up
ESC r - reverse whole screen
ESC n - set screen to normal
ESC q - clear to end of line
ESC p - erase to start of line
ESC a - set insert mode!
ESC c - cancel insert mode
ESC d - delete line
ESC i - insert line
ESC b - set bottom of window
ESC t - set top of window
ESC m - disable scrolling (page mode)
ESC l - enable scrolling
... and several others.

All of these sequences may be printed from within a program to produce the desired environment.

Speaking from personal experience, the number one reason I selected a PET instead of the competition was the screen editor and keyboard. Commodore has kept the competition in second place with the new features for the 'B' series.

to be continued



COLOR 80-- a review

by G.R. Walter

Proton Station, Ont.

This is a program for the C-64 which gives it an 80 column screen. It is sold by RTC for $35.00 (Richvale Telecommunications, 10610 Bayview Ave., Richmond Hill, Ontario, Canada, L4C 3N8). Unlike some other methods of obtaining 80 columns on the C64, the COLOR 80 program allows you to still use all the colors for printing that you normally could with 40 columns.

It is totally compatible with RTC's C64-LINK, and it takes away none of the BASIC program memory (the COLOR 80 program is stored under the BASIC, KERNAL, and I/O ROM areas).

Any BASIC program which just uses PRINT statements, (and no POKEs to the screen) will run as it normally did, except with 80 columns now instead of 40. Any machine language program which just uses the CHROUT routine at $ffd2 for printing, (and no 'pokes' to the screen) will run as it normally did, except now it has an 80 column screen.

The COLOR 80 program gives you 80 columns by using the bit map mode and its own character sets that are half as wide as the C-64 regular character sets (ie. the characters are 4*8 dots, instead of 8*8 dots). The high res map starts at 57344 ($e000), and the color memory starts at 55296 ($d800 - this is where it normally lives). Due to the fact that the characters are only half as wide as normal, you need a fairly high resolution monitor to be able to read all of the characters. A monochrome monitor is best (you can read everything perfectly), next in line comes the Commodore monitor (you can read everything perfectly under most color combinations, but with a few color combinations some of the letters are illegible), last comes a T.V. (unless it is a very good quality set you might have some trouble finding a combination of screen and character colors which will allow you to clearly read the entire character set). In other words, it is best to have a color monitor or better to use this program, and you may have to experiment to find the best screen and character color combination.

Switching from one character set takes a second or two, instead of the normal nearly instantaneous. This is to be expected because the COLOR 80 program has to search through a 8000 byte high res map to find the characters to change their case (instead of the 1000 byte regular screen that the C-64 regularily searches through).

When changing the screen (background) color you have to clear the screen after you do your color POKE in order to make the entire screen that color. (ie. POKE53281,12:PRINT"[clr]"). You can change the colors on the screen for each individual character, but before POKEing the color into the color RAM you have to switch out the I/O block at $d000.

You can switch from 80 column mode to 40 column mode (and back again) without turning your C-64 off, but not under program control (part of the routine needed to change from 80 column mode to 40 column mode is the [RUN/STOP] and [RESTORE] key combination).

The program is disk locked and the disk itself is locked (ie. it is very difficult to get a working copy of this program off the disk on which it came). This means that you cannot make backups. I don't know what RTC's policy is towards people who damage their disk with the COLOR 80 program on it, but from the quality of the program and from RTC's good reputation in other matters, I assume that they will replace (??) the damaged disk for some small fee (less than the original purchase price).

All in all, the COLOR 80 is an excellant product of extremely high quality, and I hope that RTC continues to come out with more like it.

I give it a rating of 8.5 out of 10

More (less) on LIFE

by Edwin L. King

Valdosta, Georgia

In the June issue of TORPET, Harry Baecker gave a rather detailed description of some of the uses and factors involved in a game called LIFE. For those of us without fancy APL systems and for those not familiar with the original game, let me present a much simpler BASIC version of this simulation. (So much simpler I hesitate to mention Mr. Baecker and this in the same paragraph).

Now for all the warnings: This has nothing to do with the Milton-Bradley game called LIFE; it has nothing to do with anything even vaguely resembling an arcade game; it is a mathematical simulation with very little user input.

Originally the game went something like this:

You begin with a 9x9 grid. On it place as many 'beings' as you wish in any pattern you wish. Each generation is one time through the entire grid.

To see what happens in one square in any given generation, consider what is in squares around it. If in the 8 squares surrounding it there are eight beings (he is surrounded) then he dies from overcrowding. If all eight squares are empty then he dies from loneliness. Otherwise, he makes it to the next generation. If a given square is empty then there will be someone there in the next generation only if there are two or more beings in the area surrounding it.

This is LIFE. The grand APL Equations are all variations on this basic theme. The program that goes with this called LIFEO does this simulation on the VIC-20. By the way, the only thing which restricts this program to the VIC is my 'cursor', whose only purpose is to let the user know how far the user has to go before the next generation. Delete these POKEs if you wish to run it on another machine.

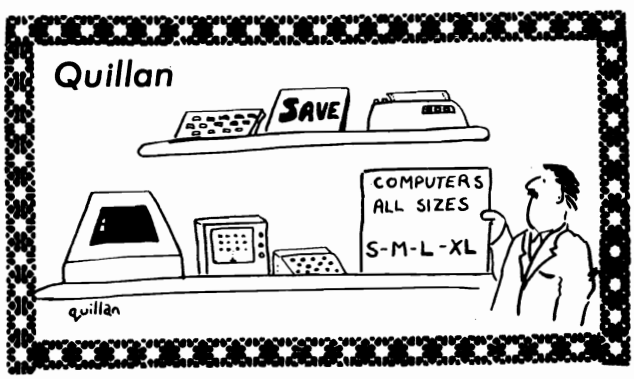
Also included is a program LIFE1. This one follows the same rules LIFEO, except that the entities come in two sexes instead of the traditional one. (Mr. Baecker was right, it does make the game more interesting.)

Now to the use of the programs. In LIFEO any key except three will place an entity at the current position on the board. These three keys are the space bar (which leaves a block empty), the RETURN key (which leaves the rest of the line blank), and the 'L' key which will load a previous session from disk.

Once the simulation begins the 'S' key will save the grid and the 'L' key will load a previous one. **Be warned:** an attempt to load a grid which is larger than the one in memory will cause an error.

LIFE1 operates basically the same way. The space bar, the RETURN key, the 'S' key and the 'L' key all have the same effects and hazards as in LIFEO. The difference is that only two keys will put our little ET's on the grid: 'M' for males and 'F' for females (clever, huh?)

After a little 'PLAY' you will begin to know which patterns will survive and which will not. One hint: given enough time the descendants of one male and one female will conquer any sized grid.



```
  0 rem      life 0
  1 rem
  2 rem by edwin l. king
  3 rem
  9 poke36879,8:print"":input"3grid size";xx
 10 dima$(xx+1,xx+1),b$(xx+1,xx+1)
 20 fori=0toxx+1:forj=0toxx+1:a$(i,j)=" ":b$(i,j)=" ":next:next
 30 gosub100
 40 print"3":fori=1toxx:forj=1toxx:printa$(i,j);:next:print:next
 50 fori=1toxx:forj=1toxx:poke38400+(j-1)+22*(i),5:rem***cursor***
 51 poke7680+(j-1)+(i)*22,peek(7680+(j-1)+22*(i))or128:rem***cursor***
 60 c=0:fora=-1to1:forb=-1to1:ifa$(i+a,b+j)="Q"thenc=c+1
 62 getf$:iff$="s"then200
 63 iff$="l"then250
 65 next:next
 70 ifc>7orc<2thenb$(i,j)=" ":goto80
 74 ifa$(i,j)<>" "thenb$(i,j)=a$(i,j):goto80
 76 b$(i,j)="Q"
 80 poke38400+(i*22)+(j-1),1:poke7680+(i*22)+(j-1),
    peek(7680+(i*22)+(j-1))-128:next:next
 90 fori=1toxx:forj=1toxx:a$(i,j)=b$(i,j):b$(i,j)=" ":next:next:goto40
100 print"3":fori=1toxx:forj=1toxx
110 geta$:ifa$="l"then250
111 ifa$=""then110
130 ifa$<>chr$(32)anda$<>chr$(13)thena$(i,j)="Q"
131 ifa$=chr$(13)thenfork=jtoxx+1:a$(i,k)=" ":next:j=xx+22:goto151
140 ifa$=" "thena$(i,j)=" "
150 printa$(i,j);
151 next:print:next:return
200 open2,8,2,"@0:lifesim,s,w":print#2,chr$(xx);:fori=0toxx+1:forj=0toxx+1
210 print#2,a$(i,j);:next:next:close2:goto40
250 open2,8,2,"lifesim,s,r":get#2,xx$:xx=asc(xx$):fori=0toxx+1:forj=0toxx+1
260 get#2,a$(i,j):next:next:close2:goto40
```

```
  0 rem    life 1
  1 rem
  2 rem by edwin l. king
  3 rem
  9 poke36879,8:print"":input"3grid size";xx
 10 dima$(xx+1,xx+1),b$(xx+1,xx+1)
 20 fori=0toxx+1:forj=0toxx+1:a$(i,j)=" ":b$(i,j)=" ":next:next
 30 gosub100
 40 print"3":fori=1toxx:forj=1toxx:printa$(i,j);:next:print:next
 50 fori=1toxx:forj=1toxx:poke38400+(j-1)+22*(i),7
 51 poke7680+(j-1)+(i)*22,peek(7680+(j-1)+22*(i))or128
 60 c=0:m=0:f=0:fora=-1to1:forb=-1to1:ifa$(i+a,b+j)="W"thenf=f+1:c=c+1
 61 ifa$(i+a,b+j)="Q"thenm=m+1:c=c+1
 62 getf$:iff$="s"then200
 63 iff$="l"then250
 65 next:next
```

continued on page 56

```
 70 ifc>7orc<2thenb$(i,j)=" ":goto80
 71 iff=0orm=0thenb$(i,j)=" ":goto80
 74 ifa$(i,j)<>" "thenb$(i,j)=a$(i,j):goto80
 75 ifrnd(0)>.5thenb$(i,j)="W":goto80
 76 b$(i,j)="Q"
 80 poke38400+(i*22)+(j-1),1:poke7680+(i*22)+(j-1),
    peek(7680+(i*22)+(j-1))-128:next:next
 90 fori=1toxx:forj=1toxx:a$(i,j)=b$(i,j):b$(i,j)=" ":next:next:goto40
100 print"3":fori=1toxx:forj=1toxx
110 geta$:ifa$="1"then250
111 ifa$<>"m"anda$<>"f"anda$<>" "anda$<>chr$(13)then110
120 ifa$="m"thena$(i,j)="Q"
130 ifa$="f"thena$(i,j)="W"
131 ifa$=chr$(13)thenfork=jtoxx+1:a$(i,k)=" ":next:j=xx+22:goto151
140 ifa$(i,j)=" "thena$(i,j)=" "
150 printa$(i,j);
151 next:print:next:return
200 open2,8,2,"@0:lifesim,s,w":print#2,chr$(xx);:fori=0toxx+1:forj=0toxx+1
210 print#2,a$(i,j);:next:next:close2:goto40
250 open2,8,2,"lifesim,s,r":get#2,xx$:xx=asc(xx$):fori=0to21:forj=0to21
260 get#2,a$(i,j):next:next:close2:goto40
```

- fertilizer needs will be handled with an ELECTRONIC SPREADSHEET

- by using data files, any farmer can be out standing his FIELDS!

a Ylimaki

Papermate to Wordpro 4+ File Converter

by Thomas Henry

Mankata, MN

PAPERMATE (by AB Computers) and WORDPRO 4+ (by Professional Software Inc.) are two very popular word processors for PET/CBM computers. PAPERMATE doesn't support as many features as WORDPRO 4+ and runs somewhat slower, but is quite inexpensive. As such it makes an excellent "first" word processor for users who aren't exactly sure if they need a big system. WORDPRO 4+, on the other hand, has just about every feature that you could possible want, but costs quite a bit more.

I have used PAPERMATE for several years now, but recently changed over to WORDPRO 4+. Needless to say, the two word processors employ considerably different methods for storing text files on disk and this presented something of a problem to me as an author. For example, recently I was writing a book, and half of the chapters were in PAPERMATE format while the other half were WORDPRO 4+ files. I clearly needed to organize the whole book under one format so that I could print out the entire manuscript using the global print command. One option was to retype all of the PAPERMATE chapters by hand, into WORDPRO 4+. This would be a long, tedious task and besides, like most writers, I'm not a very good typist! The other, more sensible option, was to get the computer to somehow convert the files for me.

Here is a program which will do just that! It takes any PAPERMATE text file and converts it to WORDPRO 4+ format. Since files can be quite a bit larger on PAPERMATE, it also splits the text automatically where needed into 100 line chunks suitable for loading by WORDPRO 4+. Operation of the program is convenient; simply specify the name of a file to be converted and start it going. In a bit, you will have a new file all set to load into WORDPRO 4+.

HOW THE CONVERTER WORKS

Even if you don't need a program like this, you will still want to look it over since it provides some insight into file handling, code conversion and disk drive methods. Refer to the program listing. Lines 250 through 320 take care of the file name setup. The program asks for the source file name (the original PAPERMATE file) which should be in Drive 0. Then it asks for the destination file name. The program automatically tacks the characters ".WP" onto the name so that you will know it's a WORDPRO 4+ file. Additionally, it also adds a number suffix (1,2,3,...) in case the original file needs to be split up. Thus, each "module" has the same name, with a differing suffix. This allows you to organize the modules in the proper order at a later date.

Note in line 290 that the PAPERMATE text is opened as a standard sequential file, while line 310 opens the WORDPRO 4+text as a program file. This is one of the main differences between the two formats: PAPERMATE texts are stored as sequential files while WORDPRO 4+ texts are stored as program files.

Another difference is that PAPERMATE files are stored as strings of ASCII characters, whereas WORDPRO 4+ stores the text in "screen code" form. Screen codes are the numbers that you POKE to the screen to create a graphic display. ASCII and screen codes are considerably different types of numbers, but fortunately there is a mathematical formula relating the two types of code. In line 440, you will find the formula which will convert an ASCII character (signified by A) into a screen code, B. A character is read from the source file, converted to screen code form and then sent to the destination file.

Two small details still need to be taken care of. Every line in the PAPERMATE disk file is enclosed with quote marks. This is due to a property of sequential files and hence the quotes should be stripped off before sending the line to a WORDPRO 4+ file. Line 420 does this (a quote mark is ASCII 34). Also, the carriage return (ASCII 13) at the end of every sequential file line is stripped off as well, this time by program line 430.

Carriage returns are indicated in both word processors by the back-arrow (ASCII 95). However, unlike PAPERMATE, WORDPRO 4+ pads out the rest of the screen line with blanks. Line 460 detects the presence of the back-arrow and if one is found, control is sent to line 490. The variable C has kept track of the column position so far; to pad out the line merely requires that 80-C more blanks be printed to the disk. Line 490 performs this task.

Since PAPERMATE files can often exceed the memory limits of WORDPRO 4+, the variable R keeps track of the number of rows or lines that have been sent to the destination file. When this hits 100, a new file is opened and the conversion continues. Thus one PAPERMATE file might lead to two or three linked WORDPRO 4+ files.

Finally, note in line 380 that a particular code is sent at the start of the WORDPRO 4+ file. This code tells the file where to start loading, and as such represents an address. I found it by experimentation. It may be that other versions of WORDPRO use a different code, so if you're having trouble check this first.

This program was written for the CBM 8032 and 4040 disk drive, but can be easily modified for forty column PET's and other disk drives. For example, change numbers 81 and 80 in lines 470 and 490 to 41 and 40, respectively, for forty column

PET's. The disk error checks in lines 290 and 310 could be changed to the 2040 style, simply by replacing the references to DS with the normal "open the error channel" procedure for this disk drive. Likewise, line 580 could access the error message from the channel and print it.

USING THE PROGRAM

Carefully enter the program into your computer using the listing as a guide. After punching it in, save it to disk. This is a utility program that you won't want to be without if you're currently changing over from PAPERMATE to WORDPRO 4+ so keep the program handy as you get through the transition stage.

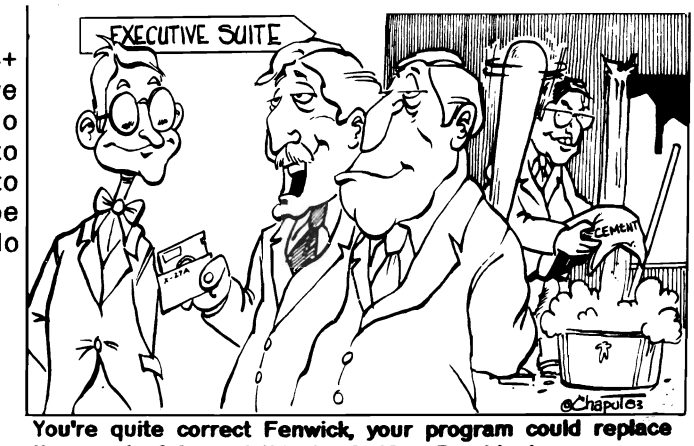
Load the program and run it. First off, remove the program disk from the drive. Then insert the PAPERMATE file disk into Drive 0 and WORDPRO 4+ file disk into Drive 1. Now answer the file name questions as they are asked and sit back. In about 10 minutes even your longest file will be converted!Even though the GET#8 in line 410 is a slow command, the results are still faster than retyping the document.

You will have to change the imbedded formatting commands (left margin, right margin, etc.), by hand, but this only takes a minute or so. Likewise, the tab indicators, quote marks, and other trivial characters may have to be changed, but WORDPRO's "search and replace" command can take care of these for you.

Since PAPERMATE and WORDPRO 4+ are such popular word processors, I have a feeling that I'm not the only one who was caught in the plight of wishing to change files over from one system to another. If you're in the same boat, type this program in and let your computer do the work!

PAPERMATE TO WORDPRO 4+ CONVERTER

```
100 REM
110 REM ..........................................
120 REM : PAPERMATE TO WORDPRO 4+  CONVERTER     :
130 REM :                                        :
140 REM :              THOMAS HENRY              :
150 REM :         TRANSONIC LABORATORIES         :
160 REM :           249 NORTON STREET            :
170 REM :           MANKATO, MN 56001            :
180 REM ..........................................
190 REM
200 REM
210 REM
220 REM *** FILE NAME SETUP ***
230 REM
240 REM
250 N=0: PRINT"[CLEAR]SOURCE FILE: [RVS]DRIVE 0"
260 PRINT"DESTINATION FILE: [RVS]DRIVE 1"
270 INPUT"[3 DOWN]SOURCE FILE NAME ";SF$
280 INPUT"DESTINATION FILE NAME ";DF$
290 OPEN8, 8, 8, "0:"+SF$+",S,R":IFDSTHEN570
300 N=N+1:CS$="1:"+DF$+".WP"+MID$(STR$(N),2)
310 OPEN7, 8, 7, CS$+",P, W":IFDSTHEN570
320 PRINT"CONVERTING [RVS]";CS$;"[OFF] NOW..."
330 REM
340 REM
350 REM *** MAIN CONVERSION LOOP***
360 REM
370 REM
380 PRINT#7, CHR$(16);CHR$(92);: R=1
390 C=1
400 IFS=64THEN590
410 GET#8, A$: S=ST: A=ASC(A$)
420 IFA=34THEN400
430 IFA=13THEN400
440 B=(((AAND128)/2)OR(AAND63))
450 PRINT#7, CHR$(B);
460 IFA=95THEN490
470 C=C+1: IFC=81THENR=R+1: GOTO390
480 GOTO400
490 FORI=C+1TO80: PRINT#7,CHR$(32);:NEXT
500 R=R+1: IFR<100THEN390
510 CLOSE7: GOTO300
520 REM
530 REM
540 REM *** DISK ERROR CHECK***
550 REM
560 REM
570 PRINT"[RVS]DISK ERROR!!![OFF]"
580 PRINTDS$
590 DCLOSE
```



You're quite correct Fenwick, your program could replace three out of four of this firm's Vice Presidents.

COMPU $ENSE

CS1 **QUICK BROWN FOX** $55.00
The Word Processor of this decade! For the VIC-20 and C-64.

COMMODORE 64®
$435.00

Plus you receive a free QBF Word Processor valued at $55.00

Write for FREE Catalog!

VIC-20®
$88.00

When you buy our 6 Game Pac or 6 Finance Pack $43.00

C-64 Software

Pet Emulator		$27.95
Editor Pac		67.00
File Pac		32.36
Account Pac		57.00
Farm Management I (Agricultural Software)		47.25
Home Budget		29.95
Stock Investments		76.95
Calc Result		140.00
650Z Professional Development System		27.95
Mail List		34.95
Vic Easy Lesson & Easy Quiz		35.97
Loan Calculator		15.95
Data Files		14.95
Research Assistant 2.0		28.00
Total Label 2.6 (Mailing Lables)	Tape	19.95
	Disk	22.00
Total Time Manager 2.6		37.00
Total Text (Word Processor) 2.6		40.00

C-64 Games

Flight 64 (Flight Simulator)	Tape	$13.95
	Disk	15.95
Gunslinger		13.95
Spellathon		16.95
Motor Mania		25.95
Renassance		25.95
Vic Clowns		25.00
Radar Rat Race		25.00
Jupiter Lander		25.00
Temple of Apshai		39.95
Upper Reaches of Apshai		16.95
Curse of Ra		26.95
Sword of Fargoal		19.95
Jump Man		26.95

VIC-20 & C-64 Hardware

VIC-1541	**Disk Drive**		347.00
VIC-1530	**Datasette**		67.50
VIC-1515	**Printer**		334.95
VIC-1010	**Expansion Module**		139.95
VIC-1311	**Joystick**		9.95
	Wico Joystick		28.00
VIC-1312	**Game Paddles**		19.95
	Telephone Modem Terminal Emulator (64)	Tape	9.95
		Disk	15.95
	40x25 Terminal Emulator VIC		40.95

VIC-1210 **VIC 3K Memory Expander Cart.** 34.95
Plugs directly into the VIC's expansion port. Expands to 8K RAM total.

VIC-1110 **VIC 8K Memory Expander Cart.** 52.50
8K RAM expansion cartridge plugs directly into the VI.

CM102 **24K Memory Expander Cart.** 119.95

VIC-1011A **RS232C Terminal Interface** 39.95
Provides interface between the VIC-20 and RS232 telecommunications modems. Connects to VIC's user port.

PETSPEED —
Basic Compiler for Commodore 140.00

Vic Rabbit Cartridge	35.00
CBM 64 Rabbit	35.00
Star G-10 Printer	360.00
Mura Modem	120.00
Smith Corona TP-1 Printer	650.00

CARDCO HARDWARE

CARDBOARD 6 $87.50
An expansion interface for the VIC-20. Allows expansion to 40K or accepts up to six games. May be daisy-chained for more versatility.

CARDBOARD 3 $35.95
Economy expansion interface for the VIC-20.

CARD "?" CARD/PRINT $76.00
Universal Centronics Parallel Printer Interface for the VIC-20 or CBM-64. Use an Epson MX-80 or OKIDATA or TANDY or just about any other.

CARDETTE $30.95
Use any standard cassette player/recorder with your VIC-20 or CBM-64.

LIGHT PEN $29.95
A light pen with six good programs to use with your VIC-20 or CBM-64.

16K Memory Expander $50.50
All CARDCO Products have a lifetime warranty.

COMMODORE SOFTWARE

VIC-1211A **VIC-20 Super Expander** $55.00
Everything Commodore could pack into one cartridge — 3K RAM memory expansion, high resolution graphics plotting, color, paint and sound commands. Graphic, text, multicolor and music modes. 1024x1024 dot screen plotting. All commands may be typed as new BASIC commands or accessed by hitting one of the VIC's special function keys. Includes tutorial instruction book. Excellent for all programming levels.

VIC-1212 **Programmer's Aid Cartridge** $45.99
More than 20 new BASIC commands help new and experienced programmers renumber, trace and edit BASIC programs. Trace any program line-by-line as it executes, pause to edit. Special KEY command lets programmers redefine function keys as BASIC commands, subroutines or new commands.

VIC-1213 **VICMON Machine Language Monitor** $48.99
Helps machine code programmers write fast, efficient 6502 assembly language programs. Includes one line assembler/disassembler.

VIC-20 Software

for Business & Home Applications

6502 Professional Development System		$25.00
Vic Forth (Advance Computer Language)		49.95
Hess Mon (Machine Language Monitor)		34.95
Hess Writer (Word Processor)		34.95
Turtle Graphics		34.95
Total Label 2.1	Tape	17.95
	Disk	22.00
Total Time Manager 2.1	Tape	28.00
	Disk	32.00
Research Assistant 2.0	Tape	28.00
	Disk	32.00
Total Text 2.5	Tape	30.00
Encoder		34.95
Acct. Payable & Receivable	Tape	29.00
	Disk	35.00

VIC-20 Games

Exterminator Plus (Excellent)		$17.95
Anti Matter Splatter (Disaster)		17.95
Rescue From Nufon (Great)		12.95
Tank Wars (War Game)		15.95
Simon (Great for kids)		13.45
Dam Bomber (Avoid the enemy)		13.45
Breakout		7.95
Snack Man (Pac Man)		17.95
Defender on Tri		17.95
Amok	Cart.	23.95
	Cassette	19.94
Starfighter		17.95
Torg		15.95
Gridrunner		34.95
Invasion Orion		20.95
8K Backgammon		19.95

TO ORDER:
P.O. BOX 768
WICHITA, KS 67201
(316) 263-1095

MasterCard VISA

Handling charges $2.00
C.O.D. (Add $2.00)
Personal checks allow 3 week delivery
VIC-20® is a registered trademark of Commodore
Prices subject to change

Prices quoted in U.S. dollars

Smith-Corona introduces the first printer with real character at the unreal price of $1095.*

The Smith-Corona Daisy Wheel Printer

Until now, if you wanted to include a reasonably-priced printer as part of your computer or word processing system, you had to use a dot matrix printer. Daisy wheel printers were just too expensive.

Not anymore. Now Smith-Corona* offers a daisy wheel printer at such an incredibly low price, you can't afford *not* to include it. That means that even the smallest installation or business can now have letter quality printing capabilities at every work station.

The Smith-Corona printer operates with micro-processor-controlled daisy wheel technology, and is available with industry standard serial or parallel data interfaces.

Best of all, it produces results identical to those of our very finest office typewriters – printing with real character. So it can be used to create letters or documents that have to look perfect. As well as financial statements, inventory reports, direct mail campaigns – anything that requires quality printing.

And it's easy to use – just turn on the power, load the paper and away it goes. (It works equally beautifully with letterhead bond or fanfold paper.) There are drop-in ribbon cassettes and a choice of easy-to-change, snap-on daisy print wheels for a variety of fonts.

So why not get your hands on a real bargain: letter-perfect printing at an amazingly low price. Because, thanks to Smith-Corona, a printer with real character is no longer expensive.

Ask for it by name. **Smith-Corona**

*suggested retail price

DIVISION OF SCM® (CANADA) LIMITED

Please send me more information on the Smith-Corona daisy wheel printer.

Name_____

Title_____

Company Name_____

Business Address_____

City_____ Prov._____ Postal Code_____

Type of Business_____

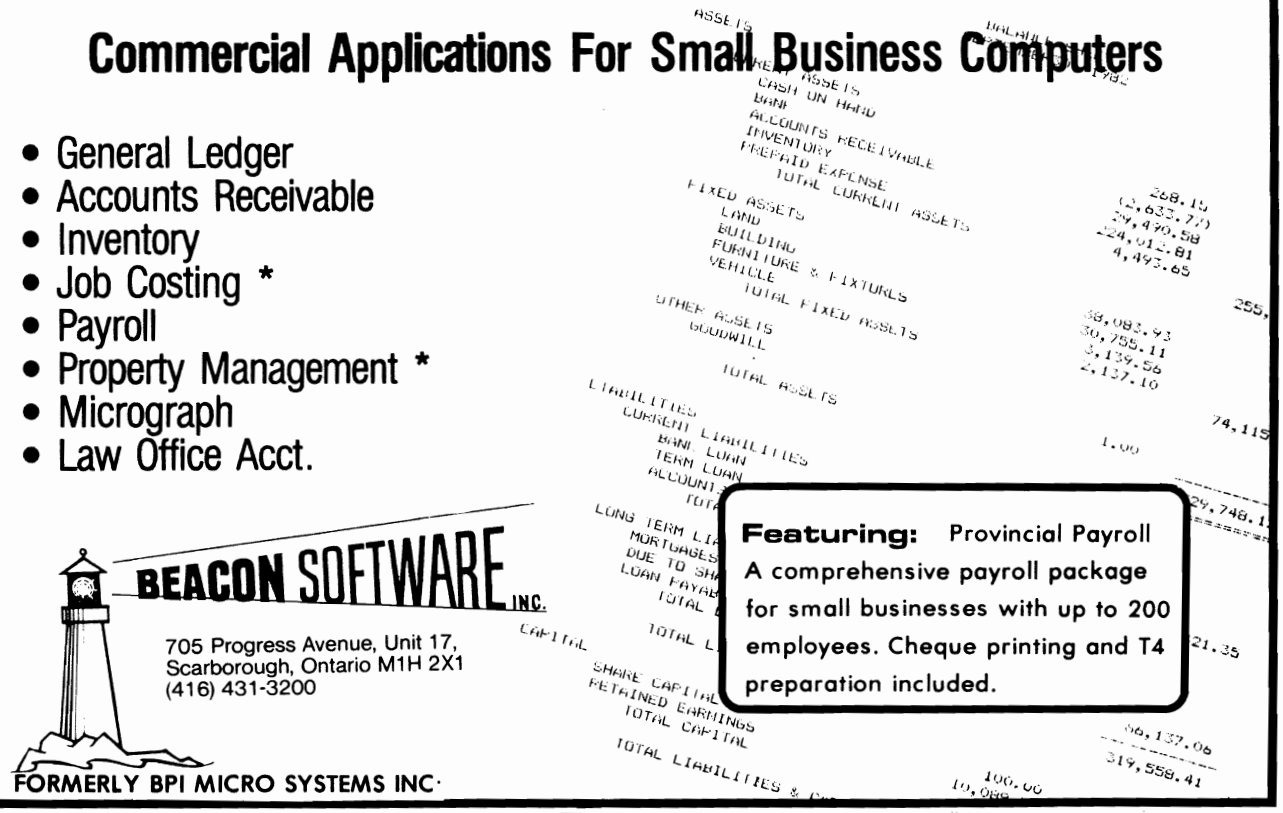
Mail coupon or call:
Education Director,
Smith-Corona
29 Gervais Drive, Don Mills, Ontario M3C 1Z1
(416) 449-0164

T

S O F T W A R E

Commercial Applications For Small Business Computers

- General Ledger
- Accounts Receivable
- Inventory
- Job Costing *
- Payroll
- Property Management *
- Micrograph
- Law Office Acct.



BEACON SOFTWARE INC.

705 Progress Avenue, Unit 17,
Scarborough, Ontario M1H 2X1
(416) 431-3200

FORMERLY BPI MICRO SYSTEMS INC.

Featuring: Provincial Payroll
A comprehensive payroll package for small businesses with up to 200 employees. Cheque printing and T4 preparation included.

AMAZING!!!
SPELLPRO

Jim Butterfield's machine language spelling checker for **WordPro 4+** on CBM 8032

- **simple to use**
- **works fast; only seconds to check every word on a full page**
- **fully WordPro 4+ compatible for quick spelling corrections**
- **Use existing WordPro 4+ documents to easily update the SpellPro dictionary**
- **up to 80,000 word dictionary on a CBM 8050 disk**

only **$179.95** from your local Commodore dealer.
For your nearest dealer call:

(416) 273-6350

PRO·LINE SOFTWARE

755 THE QUEENSWAY EAST, UNIT 8,
MISSISSAUGA, ONTARIO L4Y 4C5

C64-FORTH
for the Commodore 64
FORTH SOFTWARE FOR THE COMMODORE 64

C64-FORTH (TM) for the Commodore 64 - $99.95
- Fig Forth-79 implementation with extensions
- Full feature screen editor and macro assembler
- Trace feature for easy debugging
- 320x200, 2 color bit mapped graphics
- 16 color sprite and character graphics
- Compatible with VIC peripherals including disks, data set, modem, printer and cartridges
- Extensive 144 page manual with examples and application screens
- "SAVETURNKEY" normally allows application program distribution without licensing or royalties

C64-XTEND (TM) FORTH Extension for **C64-FORTH** - $59.95
(Requires original **C64-FORTH** copy)
- Fully compatible floating point package including arithmetic, relational, logical and transcendental functions
- Floating point range of 1E+38 to 2E-39
- String extensions including LEFT$, RIGHT$, and MID$
- BCD functions for 10 digit numbers including multiply, divide, and percentage. BCD numbers may by used for DOLLAR.CENTS calculations without the round-off error inherent in BASIC real numbers.
- Special words are provided for inputting and outputting DOLLAR.CENTS values
- Detailed manual with examples and applications screens

(Commodore 64 is a trademark of Commodore)

TO ORDER - Specify disk or cassette version
- Check, money order, bank card, COD's add $1.50
- Add $4.00 postage and handling in USA and Canada
- Mass. orders add 5% sales tax
- Foreign orders add 20% shipping and handling
- Dealer inquiries welcome

PERFORMANCE MICRO PRODUCTS

770 Dedham Street. S-2
Canton, MA 02021
(617) 828-1209

Prices quoted in U.S. dollars

COMMODORE-64

The Smart 64 Terminel

by Robert A. Chandler — La Mesa, CA

Are you tired of not being able to upload, and download from your terminal program? Have you had bad experiences with so called fast running programs that actually give you enough time to get a cup of coffee in the time it takes to print a screen? After scrounging up the money to buy your hardware, do you find yourself leery of spending big bucks trying to find a terminal program that will do what it is supposed to do, and will run on your C-64? Then friends what you need is the Smart 64 Terminal program.

That may sound like a pitch from an old medicine show, but it pretty well describes how I felt before I found The Smart 64 Terminal.

Now for the technical stuff. The Smart 64 Terminal is a menu driven program, that I found to be extremely user friendly, a grave necessity for a person with my limited knowledge. The program is availiable on either disk, or tape, and is accompanied by a twenty-four 8 1/2 by 11 inch page manual. The manual is relatively complete, and instructs the user in the building of a custom system disk. Though I feel the program was designed with Compuserve type systems in mind. The building of a custom system disk allows the user to tailor the disk for use with whatever system he wishes to log on.

When you first build, and run your system disk, you will be asked to set the colours that you want to see (border,screen, and character). Once set these will be permanent, unless you choose to change them via the menu. Next you will be asked to define each of four function keys, that you can set up to print repetative commands. I have one disk set up with all of the passwords I use on the local systems in my area. Once you have done this you will be asked to set your I.D. and password function keys. After setting these the I.D. will print on the screen, but the password will not be seen, an added security measure for those times when other eyes are watching your screen. There is also a printer option that you will be asked to define. This is to allow the program to be used with a 1515, or 1525 printer with upgraded ROMS

Once all of that is done you are ready to start. After loading the program via the boot, the screen will show the various loading functions taking place, and when finally loaded you are presented with the function menu. The menu gives the user fifteen options to select from. They are as follows:

1 **Online**: pretty self explanatory.

2 **New File**: this allows the user to re-open the download file.

3 **Close File**: allows closing of the download file, and empties the buffer to allow for extracting, changing disks etc.

4 **Print File**: gives you a hard copy of what you have downloaded.

5 **Extract**: this gives you the ability to create individual files from the downloaded text.

6 **Text to BASIC**: lets you create a BASIC program from a downloaded sequential file so you don't have to type it out.

7 **BASIC to Text**: the opposite of the above. Will allow you to transmit the file in PETSCII if you name the file with the first letter being an "x".

8 **Editor Link**: will load an editor or word processor to allow you to create upload files.

9 **User I.D./Password**: lets you change your password and I.D. number.

10 **Function Keys**: lets you change the user defined function keys.

11 **Colours**: Gives you the ability to change the colours you have set.

12 **Printer**: lets you change your printer set up.

13 **Modem**: This is pre set to the standard defaults, but selection of this function will allow you to change the defaults to whatever you need.

14 **Disk Commands**: selection of this gives you the ability to manipulate your disk with the DOS 5.1 commands (C-64 wedge).

15 **End**: this is an exit from the program. It is necessary to use this to make sure any open files are closed properly.

Well there it is. Seems like a lot doesn't it. Hold on though because there is more.

Included in the user's manual is a program that will allow the user to define and customize the transmit and receive tables used by the program. This means you can define your keyboard to transmit whatever you want it to, within ASCII limitations of course, and that you can set up the program to read incoming data that may be exclusive to a particular system you use. Standard control key functions are pre-implemented but this also allows you to change these if you wish.

The program is compiled via PETspeed, and in my opinion runs faster than some of the machine language programs I have tried. The download buffer is 28k big, and gives you the choice of either allowing auto-dump to the disk, or selective clearing if you don't want to keep what you have downloaded. The buffer is also dynamic, allowing you to turn it on and off as you desire. On is signified by a little box with a down arrow in the upper right corner of the screen. Another little nicety, (if you are a tightwad like me) is a timer you can set. This counts down your online time, and upon expiration signals you with an audible tone, and a flashing box in the center of the screen that says "Time To Quit".

In all honesty however, I do have to admit that I find having to create my upload files with an outside word processor to be somewhat of an inconvenience. Also I found that not all word processors will create the right type of files compatible with the upload feature. I use Wordpro 3+/64, and find that it works perfectly. This is a small inconvenience, and I feel is off set by the many other features the program offers.

CUSTOMER SUPPORT: I know this may be a term that you Commodore users have lost touch with. I can't start closing this review without throwing in a word along this line though. My experience in computing is still at the novice stage, and being so, I find that at times the simplest solution to a problem can be completely out of sight. I found the creator of Smart 64 Terminal receptive to all of my questions, good or bad, and willing to give me unlimited assistance with whatever my problem was. In my experience, this type of CUSTOMER SUPPORT is very hard to find these days.

At this point I was going to include a few lines about the updated version, planned for release around the first of July. However after just getting off the phone with creator Joe O'hara, I think the updated version will deserve a review of its own. So, for now I'll just tell you that it will have all of power I've just told you about, and many more new and exciting tools as well.

On a scale of one to ten, I give The Smart 64 Terminal eight stars.

* * * * * * * * *

THE SMART 64 TERMINAL
$24.95/TAPE-$27.95/DISK
FROM
MICROTECHNIC SOLUTIONS INC.
NEW HAVEN, CONN.

WORLD'S WORST COMPUTER PUN

a Ylimaki

If you can't figure out what the HEX is wrong with your M.L. program, leave it in first CRASH condition.

ROMPACKER -- a review

by William E. Wilbur — Kittery, Maine

ROMPACKER System and User Cartridges

From: Business Computer Systems of New England, P.O. Box 2285, Springfield, MA 01101, U.S.A. Tel. (413) 567-8584.

To quote from the user manual introduction; "The ROMPACKER SYSTEM was conceived as a powerful tool to enable the Commodore VIC-20 computer to be used in dedicated stand alone applications". After several months of working with and using this system, I' have to say that the opening quote was an understatement!

The ROMPACKER User Cartridge is designed to fit into the VIC-20 memory expansion port. The cartridge measures about 5 1/2" by 2 3/4" with sockets for six (6) 2532 EPROMS. The cartridge is well made, protective coated, and double-sided with plated thru holes. The cartridge retails for $39.95 and includes one (1) 2532 which is programmed (1K) with the BCS ROMPACKER Menu and Auto-start program; this leaves about 3k for the first user program.

The ROMPACKER Starter System, which retails for $179.95, includes the above User Cartridge, a 2532 EPROM Programmer which installs in the VIC-20 user port, one(1) 2532 programmed with the EPROM Programmer Manager Program, and one(1) blank 2532.

One's first thought is "So what, I can't program in machine language! What does this do for me?" Well, here is one of the beauties of this system; it allows you to save your BASIC, that's right, BASIC, programs in EPROM. Not only that, but you can chain, link, and overlay (while passing variables) these same BASIC programs! the result of this is that one can run a 23K program in a 3.5K VIC-20. You can also have a program load and run automatically on power-up or system reset. The program load and run speed must be experienced to be believed.

Let's take a look at some of the operating features of this system. For the purposes of this review, I'll assume that we are using the full starter system.

First step is to turn off the VIC-20. Then we install the ROMPACKER Eprom Programmer on the VIC user port, then plug the User Cartride into the VIC's memory expansion socket. Now turn on the VIC.

The first display on your screen is the BCS ROMPACKER Menu. At this stage of the game we will have only two(2) selections, 1-Menu and 2-BCS Copyright. Hit the "2" key and almost instantly the Copyright program is loaded, run, and we have a "ready" and a flashing cursor. So far, so good.

Now comes the fun part! Load your favourite game or utility program using the standard VIC loading procedures. Then enter SYS30720, following the screen prompts, install the blank 2532 Eprom in the ZIF socket of the Eprom Programmer. Hit "return", enter the program name, and stand by. After a short period of time (about 2 1/2 minutes for 4K) you will be instructed to remove the Eprom from the Programmer. Please do so.

Now turn off the VIC and remove the User cartridge from the memory expansion socket. Carefully, install your newly programmed Eprom in one of the user Cartridge's open sockets. Re-insert the User Cartridge.

Turn the VIC back on, and you should now have three(3) items listed on the Menu: 1 - your program, 2 - Menu, and 3 - BCS Copyright. Hit the "1" key. Your program is loaded and run in the blink of an eye!

If your program is larger than 3.5K, no problem, the fully populated User Cartridge leaves Block 1 ($2000 to $3FFF) open so

you can install an 8K RAM cartridge. The User Cartridge is addressed to Blocks 2,3,and 5.

The 2532's can be programmed two(2) different ways with this system. The first, and easiest way to make changes, is one program per Eprom. By starting a program on one 2532 and continuing on another, you can make maximum use of the programming space available. Programming can be in BASIC or machine language. If the ML program is not relocatable, then that Eprom MUST reside at the proper address on the User Cartridge! If a program starts on one Eprom and continues on to another, then those Eproms MUST reside in adjacent sockets on the User Cartridge.

The uses of this system are endless (almost). One amateur radio group I am involved with developed a radio repeater control program, in BASIC and is using a VIC-20 (local discount $149.00) and a ROMPACKER User cartridge to replace a dedicated repeater controller that cost over $950.00!!! When the group wants to alter their program, they just erase the existing EPROM and burn in the new program. Of course, if you have a program in any 2532 compatible chip, all you have to do is plug it into the cartridge, call up the EPROM Manager, and tell it to duplicate that socket.

The ROMPACKER System User's Manual is well written and full of hints and very complete operating instructions. About the only complaint I've heard was that the manual was printed using a dot-matrix printer!

Overall, I rate this product as excellent. This device allows you to fully exploit the capabilities of the VIC-20 in a very easy, simple manner.

Game Reviews

by Bonnar Beach and David Hill

Horning's Mills, Ont.

Fire - Put out the fire before it spreads too much and before the time runs out. Fire has really good graphic and sound, but is simple to play. It is too difficult for really young players and becomes boring for older ones.

Draw - Draw a Hi-Res portrait of anything you want. It's as simple as drawing a line with a pencil. We had lots of fun with this one.

Race - It takes some skill to collect a lot of points. This game has good graphics and is a lot of fun for anyone.

VOL 2

Safari - Shoot the natives and animals with your **camera**. Isn't that nice! This game has great graphics but the game is so easy that it's probably a good game for a five-year-old.

Super Font - A great program for designing characters using Joystick or Keyboard. Results can be stored on tape. This program is a utility for the advanced programmer.

Quix - A game of memory--you must remember a series of colour and sound and replay them. The series gets longer and longer. Fun for a while.

Warp - You fly a space ship through a warp tunnel without hitting the walls, which get closer on the way. It has good graphics and good sound, a lot like ski, and we prefer it to ski.

Fifteen - Try to get the numbers from 1 to 15 in order (fairly difficult). Has good sound and graphics.

Rail - WOW! This is a great game for a party. We had lots of fun! You must control twelve switches to get a train to its destination. It starts with one train and ends with eight. Playing this game by yourself would be impossible, and with four people (to watch the screen) it is still hard. It has excellent graphics and good sound.

Rail, Race and Draw, in that order, were our favourites.

MACHINE LANGUAGE

Differential Relocation of Machine Code

by Harold Anderson — *Oakville, Ont.*

Any person who has tried to relocate a sizeable block of machine code without the benefit of a source listing knows that this can be nearly impossible. There are some obvious fixes required, such as changing the destination address of jump statements so that they go to the same place in the relocated code as they did in the original code. You can, in fact, easily write a program to do this for you.

In practice, most machine code contains far more subtle problem points than this. For example, there may be a table of destination addresses which are used in indirect jumps. The table will not even disassemble!. In the face of this or similar problems, I suggest that you had better find something more sophisticated than brute force editing of the code.

One of the solutions which works in some cases is what I call "differential relocation". Given two versions of a block of machine code assembled to run at different locations, it is possible to generate a third version to run at any desired location. The only limiting factor is that all three blocks of machine code must be separated by an integral number of pages. For example, if one block of code starts at an address equal to 47 + 51 x 256, then the other blocks must start at 47 + N X 256 where N is an integer. This limitation is not a significant impediment.

One good example of where this would be useful is for generating a ROM version of Supermon. (Supermon is a public domain, extended machine language monitor for the PET.) This program comes with a relocator which will allow you to generate a version which will run anywhere in RAM. This is not much help if you want a ROM version to run at $9000, a location where there is no RAM. Use of the program listed in this article allows you to generate a version to run at $9000, starting from two versions assembled to run at $7000 and $6000. ($9000 is a ROM location whose decimal address is 9 x 4096. $7000 and $6000 are RAM locations whose decimal addresses are at 7 x 4096 and 6 x 4096.) Even better the version to run at $9000 can be parked wherever you want it, (in RAM) so that you can save it, and then take it to your friendly neighbourhood EPROM burner.

The listing is pretty well documented with its own remark statements. A brief discussion of the philosophy may be of some help. The program looks at corresponding bytes in the two initial blocks of machine code. If the bytes are the same, (test made in line 205), it assumes that the value of the byte is not dependent on the address at which the code is assembled to run. It then puts this byte value in the corresponding location in the code being generated. When the program discovers a pair of corresponding locations, in the initial blocks of code, that contain different byte values, it assumes that the value of the byte is dependent on the address at which the code is assembled to run. In this case it calculates the value for the code being generated by using a linear extrapolation. (Extrapolation done in line 210.) Before storing the byte, it checks that it is a legal byte value, i.e. between 0 and 255. This is done in line 220. If the value is not an acceptable byte it prints unresolvable byte at ....." on the printer and the screen. This usually indicates that the byte is past the end of the assembled code or is a meaningless inclusion in the code and can be ignored.

The listing of the program in this article is set to work with two initial blocks of code, 1400 bytes long, starting at $7000 (7 x 4096) and $7800 (7.5 x 4096). The code produced is parked at $5000 (5 x 4096) and also runs at that location. Edit lines 120 to 160 to handle different configurations. The program as shown here was used to generate a version of code to

run at $5000 which happened to be impossible to do with the asembler I was using, since it landed in the middle of the source code.

I have used this program about five times to relocate quite sizeable blocks of code. So far it has worked 100% of the time. One caution: The two initial blocks of code must be IDENTICAL in all respects except running location, otherwise you will get garbage.

```
100 REM PROGRAM NAME =DIFFRELOCATE
105 REM WRITTEN BY HAROLD ANDERSON MARCH 18,1983
110 REM THIS PROGRAM IS DESIGNED TO PRODUCE A
    THIRD RELOCATED VERSION OF A
111 REM PIECE OF MACHINE CODE FROM TWO BLOCKS
    PROPERLY ASSEMBLED TO RUN AT
112 REM A1 AND A2
118 POKE53,64:REM LOWER TOP OF MEMORY
119 OPEN4,4
120 A1=7.0*4096+00:REM ADDRESS OF FIRST BLOCK
130 A2=7.5*4096+00:REM ADDRESS OF SECOND BLO CK
140 AR=5*4096+00:REM ADDRESS AT WHICH MODIFIED
    CODE WILL RUN
150 AP=5*4096+00:REM ADDRESS AT WHICH MODIFIED
    CODE WILL BE PUT
160 LN=1400 :REM LENGTH OF BLOCK OF CODE
200 FOR X=0TO LN-1
205 BY=PEEK(A1+X):IF PEEK(A2+X)=BY THEN 225
210 BY=BY+(PEEK(A2+X)-PEEK(A1+X))*(AR-A1)/(A2-A1)
220 IF BY>=0 AND BY<=255 THEN 225
221 PRINT#4,"UNRESOLVEABLE BYTE AT X=";X
222 PRINT"UNRESOLVEABLE BYTE AT X=";X
223 BY=0
225 POKE(AP+X),BY
230 PRINTX: NEXT X
240 END
READY
```

Hardware Hacker

by Hank Mraczkowski — Houston, Texas

DIVE! DIVE! OOOGha-OOOGha...The VIC-20 went down again. The latest price is BELOW $100. Specifically, the VIC was sold for $89 from two discounters this week. Now, considering that the C-64 costs less than the VIC to manufacture ($20 to 35 are popular guesses). I speculate that the C-64 will undergo a board change to accommodate either the VIC-20 chip set or the C-64 chip set. Then Commodore only has to stuff the printed circuit board with the appropriate parts for the model produced. Did you follow that?

OK then, where does that put the MAX? It's very unlikely that Commodore, who is going through growing pains, will divert the already short supply of the large scale integrated circuits used in the MAX from the C-64. Nor do they have the floor space or the personnel to spare! The MAX can't compete with their own VIC, Atari's 400 or the Timex/Sinclair 1000. I'd say MAX died.

Did you just ask where I got this preposterous idea of redesigning a higher end product for a lower priced one...why, from Commodore, of course. They had produced the PET 4032 and the CBM 8032 until someone discovered that it was costing $50 more to build a computer that sold for less! Thus, the FAT-40 was born and the PET 4032 died. Commodore redesigned both the forty column and the eighty column machines with one common printed circuit board. That's why you can convert your FAT-40 to an eighty column machine. Still following?

Continuing onward, I am taking a large presumption by assuming that with over one million VICs sold, Commodore won't abandon the VIC until there aren't any more under-$100 computers (or video game machines) competing for the bottom end of the market. Too much high quality software and support or the VIC forbids Commodore from dropping this little gem. That's why they have to redesign the board, possibly use 64K dynamic RAMs which are at least 1/2 good (Radio Shack did it!), and still support the VIC. This would be a perfect excuse to introduce the "32K Super-VIC" or VIC emulator for the C-64 (only if the 64 drops below $200!)...or should I say WHEN?

History seems to want to repeat itself, even when the mud on the trail behind us hasn't even dried. Let's see what happens and ride out a most enjoyable storm.

HACKING, my lifestyle, widens one's viewpoint to allow tackling problems from many different angles. One such problem is the expense of a lousy $20 tape deck selling for $75! Retailers are strapped into this price by Commodore's low mark-up price policy. It's a shame that the Datasette cannot be used for any other purpose than what it had been designed for..data storage and retrieval. Other folks had commented on that very same point to me and had also said that was holding them back from investing in a home computer too. Pitiful excuse but a valid point!

reprint from CHUG

CLUB ACTIVITIES

TPUG Central Meeting June 1983

by Ian A. Wright

Toronto, Ont.

The last meeting for the Central Group of TPUG for this year started with a greeting to ..."the GREEN SCREEN AFICIONADOS". Mike Bonnycastle welcomed the newcomers and explained the monthly disk process which was well underway at the front of the auditorium. We now have over 200 disks in the club library, which comes out to more than one program per member. In the two days of the May Conference over 8,000 disks copies were made! The Conference organizers under Gord Campbell did an outstanding job.

The date for the C-64 meeting is June 14, a Tuesday, and there will be a series of meetings in July and August primarily for new users of VICs and C-64s. These meetings will be by pre-registration and more data is to be available in the TORPET.

TRACE is one of the oldest (1976) computer clubs in the Toronto area and they will be presenting "Computerfest '83" at Harbourtront from July 8-10. Seminars, workshops, demonstrations, and exhibits will appeal to a wide variety of people. 19 Toronto area clubs (including TPUG) will be participating along with other Canadian clubs and those from MACC (the Midwest Affiliation of Computer Clubs). This sounds like a major event in summertime computing for only $3.00 at the gate ... for more information call Paul Swift at 626-0115/621-9941.

The 8000'th TPUG member is a Canadian woman!

The first annual TPUG programming contest has been judged, and Mike explained that the process was very difficult. The disk of program entries was released at the May Conference, and is available from the library. There were a large number of cassette programs and over 20 disks submitted. Many of these submissions had more than one program on them. In deciding the winners, Mike said that the judges found that there were a number of problem areas and made the following suggestions:

1. Lack of documentation was a major failing of some of the programs. Listing would produce the author's name, but no explanation of the program. Mike suggested that rem statements be added to the start (or end) for this purpose. If written material was submitted, the paper was easily mislaid, and this did not provide a reliable source of documentation. One good program could not be used until it was discovered that a joystick was needed.

2. Several "business-type" programs did not work on all their functions. Updating, revising, rewriting files must all work reliably in an application and it is the responsibility of the programmer to be sure that this is the case.

3. Some games lacked a clear objective to aim for. Adventure games, for example need to start out easy, and get progressively harder. One game had an impossible first move!

4. Load errors on tape, and drive errors on disk can be avoided by sending two verified copies of each program. A program that cannot be loaded is very difficult to assess.

5. Some programs were expansions of existing programs, or were judged to be re-doing material that is already available. This is an area that is very subjective, but originality is important.

6. Programs were submitted that could have used a machine-language subroutine to speed up slow actions. One was disqualified for crediting Jim Butterfield with part of the program.

7. Many excellent programs were submitted, and the difficulty came in picking the winners from among these.

CLUB ACTIVITIES

Mike then demonstrated the outstanding features of Graphic Aid 4.0 which is designed to provide a series of 18 extensions to BASIC. The program is on this month's disk along with its instructions. Following the presentation, Richard Bradley suggested that since the program was entirely in machine code, it did not fit the contest requirements. Mike countered that the program had been so well conceived and presented that it was worthy of its prize.

Just before break there were a series of announcements. The first business meeting is to be on October 6th. There is information on a variety of computer camps available at the TPUG office (782-9252). Submissions to the various hints, helps, and answers columns in the TORPET should be sent c/o Ms. Bradley, P.O. Box 100 Station S, Toronto M5M 4L6.

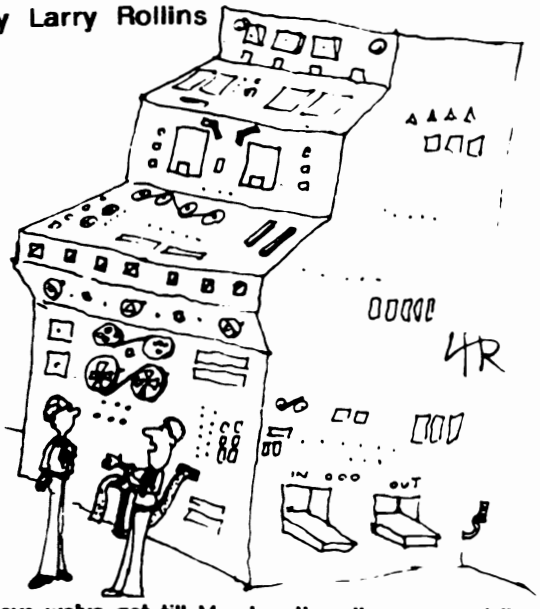
There was food left after the break! For those that remember the Central meetings of last year, this may come as a shock.

Gord Campbell made a presentation on how to add hardware to the PET. Although many found this topic beyond them, Gord made it sound easy! Did you know that of the 100 pins in a PET, 54 are ground? If you want to add a 6850 UART you will need to know this and a great deal more. This information is found in the program called "Expansion Pres" along with a listing of the functions of the various pinouts.

Chris Bennett had just (at break!) arrived back from three days at C.E.S. the huge computer show in the 'States. Although he gave lots of specific information on new products and prices, that is to be covered in a separate article. Some general statements, however, were that the Cdn. prices of many Commodore products have been cut by a third (e.g. 8032 & 4040) and the U.S. prices by a half. Commodore has set itself the aim to be #1 in software in the coming year, and there have been more changes to the B-series. We're looking foreward to a complete report from Chris soon.

Mike Bonnycastle ended the meeting with thanks to the various executive members for a very productive and enjoyable year. See you in September.

by Larry Rollins



"It says we've got till Monday, then it goes on strike!"

a Ylimaki

One has to be a sailor of the I.C.'s to fathom the VIC-64. It's even named after a navy man, a COMMODORE. He's in charge of a whole fleet of CHIPS.

- the 6510 CHIP is sort of a c.p.U--Boat. Its maneuvers are called SUBroutines.

- the 6566 Video Chip carries the fleet's colours. It's a SPRITE for sore eyes!

- watch out for waves around the SID CHIP. Listen to its beautiful sounds but don't get lost in tne high C's.

- follow a CURRENT back to PORT. Don't collide with any FLOATING numbers.

THE TORPET

pays

$20.00

per page

We also pay for pictures

Now that The Torpet is twice the size we need twice as many articles.

Horning's Mills, Ontario L0N 1J0
Canada
(519) 925-5376

CARTOONISTS

We are especially looking for a cartoonist

to draw a regular monthly strip.

TPUG
(Toronto PET Users Group Inc.)
1912A Avenue Rd.Suite 1, Toronto, Ont. M5M 4A1

Information and August/83 Library List

Membership Fees

The membership fees for 12 months have been set as follows:
Regular member (attends meetings) $30 Can.
Student member (full-time, " ") $20 Can.
Associate (Canada) $20 Can.
Associate (U.S.A.) $20 U.S.
Associate (Overseas) $30 U.S.

A regular member attends monthly meetings in the Toronto area and is the only type of member with voting privileges at the annual meeting. A student member by definition is a full-time student at a public or high school, a community college or a university and attends the regular meetings around Toronto.

Associate members, because of distance and/or time restrictions, are not able to attend regular meetings. Fees are in U.S. funds, except in Canada, where they are in Canadian funds.

The fees for visitors attending a regular meeting are $5 for adults and $2 for students. Family members accompanying a regular or student member to a meeting pay $2 each.

All members receive 10 issues of the TORPET annually. The TORPET (an independent Commodore magazine published by The Publisher) is the official magazine of the Toronto PET Users Group.

Also, members have access to the club library of programs on disk or tape. There are several ways of obtaining these disks or tapes:

1. Take a blank disk to the club meetings and have that night's programs copied onto it.

2. Attend the annual conference where most club disks are available.

3. Find a friend or dealer etc. and copy their disks.

4. Order disks or tapes through the mail from the club office (see p.76).

CLUB CHAPTERS

In response to the many requests from other users groups, we now have two ways in which other Commodore clubs can associate with TPUG.

The first is to take out an associate membership for the club at $20 per year. In this case, the club will receive 1 issue of the TORPET each month and the club will have access to TPUG's library of over 3,000 programs.

The second way is to have a number of your members join TPUG at one time (covered by one cheque). The associate membership fee in this case is only $15 per person. Then a copy of TORPET will be mailed to each individual member who will also have individual access to the library. If 25 or more people join at one time, then we will supply the club with one free monthly disk each month. This can be either the VIC-20, the Commodore-64 or the PET/CBM disk. If 45 or more people join at the same time, then 2 free disks are sent out. If 60 or more members are enrolled, then all 3 monthly disks are supplied. All disks are sent Air Mail for speedy service.

We hope that this group rate will enable other clubs to serve their members better. Many clubs are putting out their own newsletters. Each of these may have only one very good article written by a local

member. If, on the other hand, these articles are also sent to the TORPET all clubs who contribute will benefit by providing a wider variety of high quality articles. TORPET policy is that articles in the magazine are in the public domain and can be used by any other club for reprinting in their own publication.

Another advantage of TPUG is the centralized pooling of programs for all the Commodore machines. This will result in a much larger program library since many good programs are only distributed locally whereas the TPUG library is distributed all over the world.

More than 350 members of the Windsor PET Educators Group, London Commodore Users Club, Genesee County Area Pet Users Group (Michigan), Indian Affairs Teachers Using Computers, Michigan Commodore 64 Users Group, Sacramento Commodore Computer Club and the Edmonton Commodore Users Group are currently taking advantage of the group rate.

History of Commodore

Commodore currently offers a highly diversified range of microcomputers. This was not always the case. In 1977, Commodore came out with a home computer called the **PET 2001**. PET stood for Personal Electronic Transactor and consisted of a very small calculator keyboard, a 9-inch screen and a built-in cassette drive--all in one package. Also included were 8K of RAM and a 16K BASIC in ROM. This BASIC is now known as BASIC 1.0 or original ROM.

Commodore then released a large keyboard PET with an external cassette. Some small changes were made to the BASIC to fix bugs and allow a disk drive to be added. This BASIC is now known as upgrade ROM or BASIC 2.0 (BASIC 3.0 in some parts of the world).

The next Commodore was the **CBM 8032**, an 80-column business computer with BASIC 4.0 in 20K of ROM. This improved version had some extra disk commands added and an improved string collection routine (garbage collect). Along with the CBM 8032 came the **CBM 4032** computer, a 40-column PET with BASIC 4.0 and a 9-inch screen. A little later, the 4032 arrived with a 12-inch screen (this is now called the FAT 40). There are subtle differences between the two versions of the 4032, mostly with programs that use machine language. The final release of this series is the **SuperPET**, an 8032 with an additional 6809 processor, 96K and five programming languages.

The **VIC 20** was Commodore's entry into the mass marketing of home computers. With a 22-column screen and only 5K of memory, many of us did not take it seriously. However, now it is the largest selling computer in the world with over one million sold in 1982 and two million to be sold in 1983. This machine comes with BASIC 2.0 similar to the old 'upgrade' ROM PETs. This means no built-in disk commands and the return of slow 'garbage collection'.

In 1982, Commodore introduced the **Commodore 64** which, like the VIC 20, has BASIC 2.0, but comes with a full 64K of RAM. Also new is the "B" series which is Commodore's latest generation of computers. These machines contain either 128K or 256K of RAM and an extended BASIC 4.0.

Programs that run on one machine do not necessarily run on another. Because of this fact, our library has been divided into 5 sub-libraries:

"C" Commodore 64 "V" VIC-20
"P" PET/CBM "S" SuperPET
"O" Old TPUG prior to March/83

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

DISK IDENTIFICATION

The disks within a library are organized according to a two-character code. The first character is the CATEGORY code (B for business, U for utility, etc.) The second character is a sequence number to separate all the disks in the same group. For example, E1 is Education disk number one, G9 is Games disk nine and GA is Games disk ten. The LIBRARY to which a disk belongs is indicated by a library code in brackets. For example (C)B3 would be the 3rd Business disk in the Commodore-64 library.

The **Category Codes** are:

A Assembler/Machine language
B Business
C Communications
D Misc. Commodore 64
E Education
G Games
L Language
N Mathematics/Science
S Music
T TPUG Monthly Releases
U Utilities
X Best of Series
Z Miscellaneous

To further document programs on disk or tape, there are PROGRAM CODES on all the releases since February 1983. A period plus the program code is appended to the end of each program name on the disk or tape.

The **Program Codes** are:

.Z All Commodore machines or unspecified
.P All PET/CBM machines
.4 40-column PET/CBM, 9" screen
.F Fat Forty, 40-column PET/CBM 12" screen
.8 80-column CBM
.S SuperPET/S9000

.V VIC-20 program
.C C-64 program
.B B series (available soon)

.D Data or Sequential files
.L List-Me file (one-line documentation)
.W Word processing files

All disks described in this catalogue follow these conventions except for the Commodore Educational disks/tapes (see p. 87).

Format of Commodore disks

Over the last few years, Commodore has released a number of disk drives for their wide variety of computers. These include the 2040, 4040, 2031, 8050, 1540, 1541, 8250 and 2031SL.

These drives can be divided into two major groups. One is the 35-track, 170K disk drive found in the 2040, 4040, 2031, 1540 and 1541. The second is the 77-track, 500K disk drive found in the 8050 and 8250.

The 8250 is a double-sided version of the 8050 and the 8250 can read an 8050 disk. Since the 8250 disk takes twice as long as the 8050 disk to format, WE ONLY DISTRIBUTE 8050 DISKS IN THE 77-TRACK FORMAT.

The 2040 disk drive is the original version available for the PET. It contained DOS version 1.0. The 4040 came out next with DOS 2.0 and uses 6 less sectors than the 2040. THIS 4040 FORMAT IS NOW THE STANDARD WHICH WE USE IN COPYING DISKS AND CAN BE READ BY THE 2031, 1540, 1541 AND 2031SL. However, it is possible that some of these single disk drives MAY not be able to WRITE programs onto one of our disks because of a difference in timing. They should all be read-compatible.

TAPE/DISK OF THE MONTH CLUB

There are now three libraries which have monthly additions: VIC-20, Commodore-64, PET/CBM
(The SuperPET library often has a monthly release as well.)

At each club meeting there is a copy session for 4040 disks so that members may acquire the programs demonstrated that evening. Also included on that disk is a selection of programs submitted by members from all around the world. (At the VIC-20 meeting a taped version is available for $5.00.)

These tapes and disks of the month may be obtained individually by members from the club office. To save the necessity of constantly having to order the current monthly disk/tape, members can order any number of months in advance and the disks or tapes will be sent automatically.

The request must include:
1. Whether tape or disk is desired (format of disk)
2. Which library is desired.
3. Sufficient payment for the # of disks or tapes ordered.

These monthly disks/tapes are coded with a "T". The series from T1 through TJ covered meetings up to May 1982 and have now been retired and their contents merged into the appropriate category disks.

HOW TO SUBMIT PROGRAMS

Programs for the PET, CBM, VIC and Commodore 64 can be sent to us either on disk or tape. If you submit a disk, it will be returned to you containing "the disk of your choice" from the TPUG library. If you submit a tape, "the tape of your choice" will be sent. It is a good idea to put your membership number directly on the tape or disk you submit just in case it gets separated from its letter or envelope.

Send all submissions to:
TORONTO PET USERS GROUP
1912A Avenue Road, Suite #1
Toronto, Ontario, Canada
M5M 4A1

ORDERING INFORMATION

Disks

To order club disks by mail, send $10 for each 4040 / 2031 / 1540 / 1541 disk and $12 for each 8050/8250 disk (payable in advance). This includes the price of the diskette, the labour involved in copying it, and all postage and packaging charges. Do not send us diskettes.

Tapes

To order VIC-20 or C-64 library tapes, send $6.00 for each tape. Do not send us tapes.

To order PET/CBM, SuperPET or Commodore Educational Series tapes, check first with the disk/tape listings. TWO tapes are required for each listing unless the listing indicates "(one tape)". Send $6.00 per tape required.

Send all orders to:

TORONTO PET USERS GROUP
1912A Avenue Road, Suite #1
Toronto, Ontario, Canada
M5M 4A1

Include:
1. Membership number.
2. Return address.
3. Computer (disk drive).
4. Payment by cheque or money order.

TORPET BACK ISSUES

Back issues of the TORPET are available for $2.00 each from the club office (except for issues #1,#2, and #3 which are $1.00 and issues #7, #12 and #14 which are $3.50). Our first issues were relatively small: #1,#2 and #3 - 4 pages; #4 - 8 pages; #5 - 16 pages. All the rest include 24 or more pages.

As of July 1983, there have been 21 issues of the TORPET. New issues are mailed out about the 15th of the previous month. The September 1983 issue (#23) will be sent approximately August 15th.

PET/CBM Libraries "O" and "P"

Librarian - Mike Donegan, 416/632-0392

Programs for the PET

The majority of the programs currently in the "O" and "P" libraries will run on a 40-column PET. If you read the HISTORY OF COMMODORE in this catalogue, you will note that there are the following four different versions of the PET:

1. PET 2001 - BASIC 1.0 original ROM. This is the version of BASIC that came with the small keyboard PET in 1977.

2. PET 2001 - BASIC 2.0 upgrade ROM. The first large keyboard PET had BASIC 2.0 inside. The original PET could be upgraded to BASIC 2.0 by changing the ROM set.

3. CBM 4032 - BASIC 4.0. This version of the PET had a 9-inch screen with BASIC 4.0. Previous large keyboard machines can be upgraded to BASIC 4.0 from BASIC 2.0. The original small keyboard PET can not be upgraded to BASIC 4.0.

4. CBM 4032 - FAT 40, BASIC 4.0. This version of the PET has a 12-inch screen and a slightly different version of BASIC 4.0. This machine also has the same screen controller as the 8032.

Most of the programs in the "O" PET library will work on all of the above machines. However, programs written in machine language or programs with PEEKs and POKEs to the operating system, will only run on the machine for which they are written. These special programs are divided into three groups. These are: BASIC 2.0, BASIC 4.0 and BASIC 4.0 (FAT 40). MOST DISKS CONTAIN VERSIONS FOR EACH TYPE OF COMPUTER. The one exception is the DEST OF TPUG series for the PET (X). X3 is only for BASIC 2 machines, X4 is only for BASIC 4 machines, X7 is only for BASIC 4, FAT 40 machines.

Programs on disks and tapes in the "P" library (released since February 1983) have a Program Code. A period plus the Program Code is appended to the end of each program name on the disk. See page 75 to complete list.

Also, please note that the "K" series of Commodore Education programs will all run on all BASIC 2.0 and 4.0 PETs.

Programs for the CBM 8032

Many of the programs in the TPUG library will run on the CBM 8032. Some of the machine language programs, for example, are available in an 8032 version. These include Basic Aid (BAID480A & BAID480P) on disk X1 and Adventure on X5. Many of the games written for the 40-column PET can run on the 8032 but will require the 40-column simulator found on X1 (CBM 4032 v2.1). Just load in CBM 4032 v2.1 and RUN. You now will have a 40-column screen on your 8032.

Programs that will **NOT** run on the CBM 8032 include the following:
1. Many of the programs written in machine language.
2. Most VIC and Commodore-64 programs.

Some **good choices** of disks for the 8032 include: B2,C1,C2,G7,N1,N2,N3,X1,X2,X5,X6 or Z1.

Also, please note that the "K" series of Commodore Educational programs will all run on the 8032 (CBM 4032 v2.1 is included with each disk).

Assembler

(O)A1 - ASSEMBLER 1
2 tapes
UNIVERSAL WEDGE
COPY ALL
MAE/DOS
EXTRAMON.EXE9.0B
EXTRAMON.EXE9.0G
DOS.ASM
MAE/DOS.ASM
MLMACROS.MLIB
PET.LIB
IEEE.LIB
KEYSORT.ASM
SECTOR.CTL
SECTOR.PGM
SECTOR.EXE
L.C.LISTER.ASM
PET16.ASM
PET16.MAC
UART.CT
UART.M01
LEARNING.AID1
LEARNING.AID2
LEARNING.AID3
LEARNING.AID4
LEARNING.AID5
LEARNING.AID6
LEARNING.AID7
UNASSEMBLER/CBM
UNASSEMBLER/MAE
CBM.TO.MAE
MAE.TO.CBM
EPROM.PRGM.ASM
EPROM.PRGM.EXE
EPROM.PRGM.INS
3D.PLOT.ASM
FREQ.CTR.ASM
UART.M02
UART.M03
EXMON.CT
EXMON.M01
EXMON.M02
EXMON.M03
EXMON.M04
EXMON.M05
EXMON.M06
EXMON.M07
EXMON.M08
EXMON.M09
EXMON.M0A
MAE.PAT.ASM

(O)A2 - ASSEMBLER 2
1 tape
UNIVERSAL WEDGE
COPY ALL
MAE/DOS
BASIC.AID.EXE
AID.CT
AID.M01
AID.M02
AID.M03
USERS.LETTER
EXTRAMON9.3B
EXTRAMON9.3G
APPEND.ASM
APPLE.LOADER.ASM
BASIC.AID.INS
PGMR.UNIV.ASM
PGMR4.0.EXE
SCREENPRINT.ASM
SCREENPRINT.EXE
UN-NEW.ASM
UNASS.EXE60C
UNASS.INS.WP
MINI-COMPILER
TINY.PILOT.ASM
TINY.PILOT.EXE
TINY.PILOT.INS
V40.2.S
V40.4.S
V80.4.S
V40.2.O
V40.4.O
V80.4.O
SC1.S I/O FIX
SC1.S - OLD
BMBSTRINGTHING

(O)A3 - ASSEMBLER 3
1 tape
UNIVERSAL WEDGE
COPY ALL
BASIC AID 4
AID INSTRUCTIONS
BAID4.CT
BAID4.M1
BAID4.M2
BAID4.M3
BAID4.M3+
BAID4.DOS
BAID4.M4
ERIC ASSM
LITTLEMON.ASM
LITTLEMON+.CT
LITTLEMON.M01
MUSIC.ASM
INSTRUCTIONS
UNASSEMBLER
UNASSEMBLER/C
UNASSEMBLER.MAE
UNASSEMBLER.CBM

(O)A4 - ASSEMBLER 4
2 tapes
UNIVERSAL WEDGE
COPY ALL
FORMS.M1
FORMS.M2
FORMS.CT
REAL.CT
REAL1
REAL2
JUMPTABLE
JUMP2
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
LITTLEMON.ASM
WEDGE/BASIC4.ASM
PGMR.UNIV.ASM
PRINT TIME.ASM
TIM.CTL
TIM.M01
TIM.M02
USEIZE.ASM
AID4.ASM
KEY.PRINT3&4.ASM
L.C.LISTER.ASM
MEAN 14/PET.ASM
SET.KEY.ASM
SRC.EX HELLO.ASM
MXCL.SRCE
NECCL.SRCE
ASM CONV MOS
COM
APP LOAD SOURCE

(O)A5 - TPUG-
ASSEMBLER 5
1 tape
UNIVERSAL WEDGE
MICROMON.CTC
MICROMON.M01
MICROMON.M02B
MICROMON.M03
MICROMON.M04
MICROMON.M05B
MICROMON.M06
MICROMON.M07A
MICROMON.M08A
MICROMON.M09.5
MICROMON.M09B
MICROMON.M10B
MICROMON.M11B
MICROMON.CT+
MICROMON.M01+
MICROMON.M02+
MICROMON.M03+
MICROMON.M04+
BASIC-AID.CT
BASIC-AID.M1A
BASIC-AID.M1B
BASIC-AID.M2A
BASIC-AID.M2B
BASIC-AID.M3A
BASIC-AID.M3B
BASIC-AID.M3C
BASIC-AID.DOS
BASIC-AID.ROLLA
BASIC-AID.ROLLB
BASIC-AID.M4
BASIC-AID.ASM
TOKEN ML SOURCE
WP LISTER.SRC
ADDCOMS.PAL

Business

(O)B1 - BUSINESS 1
2 tapes

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

(O)B2 - BUSINESS 2
1 tape

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

(O)B3 - BUSINESS 3
1 tape

UNIVERSAL WEDGE
MORTGAGE
MORT SCHED
MORT CALC
TAX 81 ONT V1.0
CRITICAL PATH
LUMP-SUM INV 82
BKEEPING.ALT
FINANCE
INTEREST
INVENTORY CONTRO
WORD PROCESSOR
MINIWORDPRO

Communication

(O)C1 - COMMUNIC 1
1 tape

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

(O)C2 - COMMUNIC 2
1 tape

UNIVERSAL WEDGE
BRASS POUNDER 2!
TERMINAL.IEEE
TERMINAL.RS232
TERM.IEEE
TERM.RS232
INTELCOM4
INTELCOM3
STP 488
TOKEN - 32K
TOKEN - SUPERPET
PET PONET
300 ANS
CORESEND
TELE DIALER
PETCOM
ED-TERM
UTP RS232
TERMINAL.I12
TERMINAL.R12
TERM.I12
TERM.R12

(P)C3 - DATA COMMUN.P
1 tape

AUTODIAL TERM
AUTODIAL ML
INTELCOM3/40
INTELCOM3
INTELCOM4
TERM.R12
RS232 DOC
AUTOTERM/16
TERM.R12A/16
TERMINAL.R12
TERMINAL.S12
SUPERCOM
FREQ GENERATOR!
VT52.BIN
VT52.BASIC
CBM 8010
COMM PRIMER
8010 MODEM DRIVR
LOGGER
TERM INST.WP 1
TERM INST.WP 2
MORSE TUTOR
MORSE-BTTRFLD
TERMINAL DOC
INTELCOM
LIST-ME.C3.L.V0
TERMINAL.I12
TERM.I12
LIST-ME.C3.L.V1
LIST-ME.C3.L.V2

TPUG Education

(O)E1 - EDUCATION 1
2 tapes

UNIVERSAL WEDGE
AFRICA & ASIA
EASY ADD & SUBTR
20 QUESTIONS
SPEED.READING
ADDITION GAME
ASK
BIG MATH 1.1
CASH REGISTER
CRYPTOGRAM
DONUTS
ELIZA
EUROPE
FRACTIONS
FRENCH VERBS
GRAMMAR
HAIKU 5
HANGMAN
HANGMAN(HJS)
MATH DICE
MATH TUTOR
MISSING NUMBER
NO
PETS
SPELLING BEE+FIL
STATES&CAPITALS
TACHISTOSCOPE
US PRESIDENT QUI
WORLD CAPITAL QU
TYPING DRILL
VOCAB 1
HIDDEN.WORDS
ANIMAL
READER
STORY.PROBLEMS
MATH.QUIZ
ANIMAL.DATA
NOT.SO.EASY
SPELLING.TEST
Q'S & Z'S
DISPLAY
HISTOGRAM
EDU-TILITIES
EUROPEAN CAPITOL
FISHERY
FLASH CARDS
FRENCH
GLOBAL
ICE CREAM PAR
MATH IQ
HANGMAN 2

(O)E2 - CEAB 1
2 tapes

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

(O)E3 - CEAB 2/3
2 tapes

UNIVERSAL WEDGE
TICTACPET!
HICALC
POINTS
TICTACARITH!
PROBABILITY MACH
HURKLE!
POP
POLUT
YELLOW LIGHT
WATER
POLICY
USPOP
T-SPELL
S-SPELL

T-HYPHEN
S-HYPHEN
T-PUNC
S-PUNC
PROJ-PLOT
POLAR
CURVE-FIT 2
NUMINT
MULTIPLOT
QUEUE
Z-SCORE
WORLD 2
CURVE-FIT
GEOGRAPHY
CALENDAR
HAMMURABI
HANGMAN
LISSAJOUS
CLOSED-3
SMOG SIMULATION
RESULTANT
BEADS
HIST
DRUNKARD
METCONV
EXPECTANCY
TRACE.REL

(O)E4 - CEAB 4
2 tapes
UNIVERSAL WEDGE
COPY DISK FILES
A STORY
BAIRSTOW NTH EQS
BASIC STATISTICS
BEST FIT(LEAST)
COMBINATION WARS
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
QUADRATIC
LIFE EXPECTANCY
LIFESTYLE
LIN-PRO
LISTENER
LONG DIVISION
MARBLESTAT
MARKS(GRADING AI
METRIC CONVER'N
MORSE CODE
MORSE DECODER
MORTGAGE PRINTER
OPTICAL ILLUSION
POLIFIY
PROGRAMMER RPN
SIMPLE PENDULUM
READABILTY
REG'D PWR SUP DE
ROOT FINDER
SIMEQ SOLVER
WEIGHT WATCH 4.0
SPEED READ
WEIGH
PRIMES
SCROLL
80 COLUMN DEMO
SIM INVENTORY

(O)E5 - CEAB 5
1 tape
UNIVERSAL WEDGE
DDR
INTRO. TO PERCEN
PERCENT
LETTER SEQUENCES
SYLLABLES
INTRO. SYLLABLES
INTRO. JACQUES
JACQUES A
JACQUES B
BALANCING EQU
GENERAL ANOVA
MICROSCOPY
EARTHQUAKE
AMORTIZATION HEL
BONDS
EASY EDIT
BIG BINARY
HEX DEMO
AUTO FILE WRITER
LOCKEY
DEPRECIATE
PHOSYN
ENZYMC
DIET
FIFO

(O)E6 - CEAB 6
1 tape
UNIVERSAL WEDGE
FWCI INTEGER TTT
CHEM NOMINCLATUR
FRENCH VERBS FWC
ADD&SUB
PALKO'S AUDIT
STOCK TICKER
FUNCTION GRAPH
RELATION SKETCH
RELATION GRAPH
DYNALOGIC
STRUCTURE-BASIC
FACTORS
FACTOR RACE
LIFE TABLES
DATES
ALPHA-LIST
CBM 8010
8010 MODEM DRIVR
TAX 80 ONT V2.0
AID4
AID2
SUPERMON 4.REL
SUPERMON 2.REL
SUPERMON2/4 INS
COMPOSE

(O)E7 - CEAB 7
2 tapes
UNIVERSAL WEDGE
INSTRUCTIONS
VECTORS
FRACTIONS DRILL
WHOLE NUMBERS
DIVISION
SPELLING DRILL
FLASHER
INTEGERS
FACTORING WHOLES
POWERS & ROOTS
NICE TRIG RATIOS
FACTORING DRILL
'PERCENT' DRILL
MAT 250 MLA
DECIMALS
MLA--ARITHMETIC
CAPITAL CITIES
SKELETON DRILL
WHOLES
LINEAR SYSTEMS
C-C'S CAN & EUR
U.S. CAPITALS
ASIAN CAPITALS
AFRICAN CAPITALS
C-C'S AUST & AME
MECHANICS
PLANES
STRAIGHT LINE
CENTRAL CONICS

(O)E8 - EDUCATION 2
2 tapes
UNIVERSAL WEDGE
SCARDIAC V7
POGO V7
POGO.INS.WP
SCARDIAC 7A.INS
DOC-SCARDIAC 7B
TURTLE
ANTONYMS!
PUZZLE.ENTER
PUZZLE.BOX
TRACE.A.WORD
MARTIAN.HUNT
LIMERICKS
RATIONAL
PI.CALCULATOR
HANGMATH/O'H
WORD.SEARCH+
BASE CONV.ALT
BALANCING EQU
CHEMISTRY CALC
ENGLISH GRAMMAR
MATH IQ
MULT DRILL
SOLAR SYSTEM
CHICK RESULTS
CHICK
PICTURES
WORD LADDER
MELODY CHANGES

(O)E9 - EDUCATION 9

UNIVERSAL WEDGE
WORD INVADERS
WORD INVADERS2
N1 COINS EXERCIS
C2 WATER/ZEBRA L
S1 COIN LOGIC PU
STRUCTURE BASIC
MPAK
SCHOOL-MARM
LEMONADE!
MARKET NEW
ELEMENT QZ 80COL
ELEMENT QUIZZER
CHEMIST
DOG BITE
NICHE NEW
TAX COLLECTOR NE
MATH QUIZ V2
VOLCANO INSTR
VOLCANO SIM V2
PAK JANA
QUAL INORG ANALY
OPERATIONS
COMBINATION WAR!
ENCHANTED HOUSE!

Games

(O)G1 - SIMULATION 1
2 tapes
ADVBOOT
ADVF 0
ADVF 1
ADVF 2
ADVF 3
ADVF 4
ADVF 5
ADVF 6
ADVF 7
ADVF 8
ADVF 9
ADVF 10
ADVF 11
ADVF 12
ADVF 13
ADVF 20
ADVF 21
ADVF 22
ADVF 23
ADVF 24
ADVF 25
ADVF 26
ADVF 27
ADVF 28
ADVF 29
ADVF 31
ADVKEYS
ADVSHOR
ADVMAP
ADVITM
ADVENTURE
HAMURABI
TOMBS A-BNNYCSTL
TOMBS B-BNNYCSTL
EXPLORE-BTTRFLD
LIFE
ADV30 INTRO
ADV30 GAME
QUEST 3.0
HAMMURABI
ADVENTURE-M.B.
ADVENTURE GAME
FISHERY
POLUT
POWER INSTRUCT
POWER SIMULATION
KINGDOM/PICS
DOG.STAR.ADVEN
DUNGEON 1.4
DUNGEON.ALT3

(O)G2 - SPACE GAME 1
2 tapes
UNIVERSAL WEDGE
OSC LUNAR
STAR WARS!
STAR TREK
LUNAR LANDER 1
LUNAR LANDER-BFD
STARTREK V18 #
SUPER STAR TREK
ELIZA
STAR WARS
KLINGON CAPTURE
STARTREK.ALT4
EASY.DUNGEON!
PLANET.PROBE
C.C.STARWAR.INS
C.C.STARWAR
SUPERLANDER
SPACESHOOTER.ALT
HUNTER.SATELLITE
STARBASE&UFO!
DEEPSPACE 1.0
STAR WAR TRANINE
AFO WITH SOUND
ATARI II

(O)G3 - WORD/NUM 1

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

(O)G4 - GAMES 1
2 tapes
UNIVERSAL WEDGE
HORSE RACE
ARROW-BTTRFLD
POKER-PUNTER
DEFLECTION
BATTLESHIPS
BREAKOUT
PETALS ARND ROSE
OTHELLO
SOLITAIRE-PUNTER
BL JACK-PUNTER
ROBOT CHASE!
CHASE/ROBOT
SNAKES!
TARGET-BUTTRFLD
GO-MOKU
CHECKERS 1
ROULETTE
MOTORCYCLE
CHECKERS 2
AWARI
BOWLING
LIFE WAR
FLIGHT SIMULATOR
BLACK BOX!
INSP. CLEW-SO
BOMBER
BLACK JACK 4.1
RACETRACK
PRO FOOTBALL
AIRPLANE
SKI
DAMBUSTERS
TOKER
KENTUCKY DERBY
LABYRINTH
PINBALL
DUCKSHOOT
BLACKJACK!!

(O)G5 - GAMES 2
2 tapes
UNIVERSAL WEDGE
KILLER BUNNIES
FAWLTY
OTHELLO
CARD SNAP
DEPTH CHARGE
MOVMAZE1
MOVMAZE2
ARROW
CARDS UTILITY
GRUNGY TOWERS
BREAKOUT
CONCENTRATION
GUNNER
OSERO
SNAKE 2
SUBMARINE!
TARGET
QUBIC.ALT
MOUSEMAZE
QUANDRY
CLOUZOT!
SNAKE.ALT
SPADE.INSTRUCTS
SPADES
ANTI-AIR/BUS
BATTLESHIP.ALT2
BILLIARDS!
CLUE
DOMINOES
DRAW.POKER
M.B.INSTRUCTIONS
MILLE BOURNE
DRAGON.MAZE!
MADMAN.RACE
DICE.PIG
FIND.COLOR

(O)G6 - GAMES 3
2 tapes
SIMON
UNIVERSAL WEDGE
TANK.WAR.ALT
HORSERACE
SNOWFLAKE
WUMPUS.ALT
BOWLING
TREES
SUBMARINE
BILLIARDS
CHECKERS.ALT
TORPEDO.BOMBER
AWARI
BLACKJACK.ALT
BOMBER.ALT
TANK.BATTLE
KNIGHT.TOUR.SOL
TAG
WEIGH
MUGWUMP
IAN'S RACE (N)
BREAKOUT 3.1
BRIDGE BID TRAIN
GOLF
QUBIC
REFLECTIONS
SINNERS
ARTILLERY TRAP
BOXING
DOT RACER
HORSES
HURKLE
PONG
POP SHOT
ROAD RALLY
SLOTS/JACKPOT
YAHTZEE
BLACKBOX
BASKETBALL
SOLITAIRE POKER
T.TENNIS
BOGGLE

(O)G7 - SIMULATION 2
2 tapes
ADVENTURE80
ADV9 0
ADV9 1
ADV9 2
ADV9 3
ADV9 4
ADV9 5
ADV9 6
ADV9 7
ADV9 8
ADV9 9
ADV9 10
ADV9 11
ADV9 12
ADV9 13
ADV9 20
ADV9 21
ADV9 22
ADV9 23
ADV9 24
ADV9 25
ADV9 26
ADV9 27
ADV9 28
ADV9 29
ADV9 31
ADVSH9
ADVSH8
ADVKEYS
ADVMAP
ADVITM
UNIVERSAL WEDGE
SWORDS & SORCERY
BABY CARE
NICHE
NEW WATER
NEW ROM WARLORDS
NEW WARLORDS INS
OLD WARLORDS INS
OLD ROM WARLORDS
LOST DUTCH GOLD
SPELUNKER
AFRICAN ADV-32K
HS.OF.7.GABLES

(O)G8 - GAMES 4
1 tape
UNIVERSAL WEDGE
MISSION IMP
CAR RACE 4.0
BREAKOUT
BREAK80
STOCK
STOCK 80 COL
ROULETTE
MONOPOLY
CRAZY 8'S

(O)G9 - SIMULATION 3
1 tape
OHARE'S #1
OHARE'S #2
OHARE'S #3
WIZARD'S.CASTLE
TRIP TO ATLANTIS
KING.TUT
SORCERERS.CASTLE

(O)GA - GAMES 5
2 tapes
UNIVERSAL WEDGE
BLACKJACK 80 COL
SLOT MACH 80 COL
CYCLE JMP 80 COL
DRAG RACE 80 COL
ASTEROIDS
BLOCKADE
SEABATTLE INST
SEABATTLE
PIRATE ADVENTURE
PINBALL
WILL O' WISP
PET NUC PWR PLNT
PETMAN 5
BASEBALL 7.3
MONOPOLY
SUPERTREK/16KNR
CONNECT 4
PI HUNT

(O)GB - GAMES 6
2 tapes
UNIVERSAL WEDGE
STOCK MARKET!
WUMPUS II
RAGING ROBOTS 4
BIG LETTER BOGGL
HANGMAN 7
CONCORD LANDER
JUMBO JET LANDER
QUBIC 4
SUPER 9X9
YAHTZEE IV
SLEUTH
YOTE
BATTLESHIP
DRAGSTER
CROSS WORD

PET Language

(O)L1 - LANGUAGE 1
2 tapes
UNIVERSAL WEDGE
COMAL80+
COMAL80
GENERRORS-E
GENERRORS-D
ENROLL
KEYS
PRINTOUT
ENTERMARKS
WINDOW
CORRECTIONS
DELETE
OLSENMAIN
DELREC
AUNTIE
OTHELLO
STARTOTHELLO
OTHELINSTR
MAX01
SQRT
HANNIBAL
QUICKSORT
FIXPERMUT
TEXTSTAT02
TEXTSTAT01
EUCLID
GROWSTRING
FORWARD
QUEENS
DOUBLE
DISK
LOCAL VAR
COMALERRORS
STRIPVAR
NYKLUB
NYOPRET
NYRETTE
NYVISMEDL
NYLISTMEDL
NYSLETMEDL
BINSEARCH
VDU
PGR05
COMAL EXPLAIN
IFTEST

(O)L3 - LANGUAGE 3
1 tape
LOADER FORTH
FORTH DISK0
FORTH H75.6

Math/Science

(O)N1 - MATH/SCI 1
2 tapes
UNIVERSAL WEDGE
CURFIT-BTTRFLD
TRIANGLE-BTTRFLD
METRIC-BTTRFLD
TREND-BTTRFLD
FACTORS-BTTRFLD
MATH TEST-BTTRFL
METRIC TEACHER
SORT
DEMO SORT
HEAPSORT DEMO
EDU-TILITIES
GLOBAL
WEATHERMAN
LISTENER
ELECTRONICS.CALC
LAT+LON.DISTANCE
FUNCTION.MACHINE
ROULETTE.THEORY
CROUT ALGORITHM
DERIVATIVE
NEWTONS ZERO
QUADRATIC
INTERMOD
QUARTIC
RANK CORRELATE
REDUCTION
3D PLOT
PRESSURE CURVE
PROGRAMMER RPN
GRAPHICS.DEMOS-G
METRIC CONVER'N
REG'D PWR SUP DE
ROOT FINDER
OHMS LAW
CRITICAL PATH 2A
PLOTTING
PLANET POSITION3
SORTING DEMO
NATAL CHART
BIOPRINTER 6.3
BIORHYTHM 1.5
LEAST SQUARES
POLIFIY
SQUARE ROOT TEST
SIMEQ SOLVER
CHI SQUARE
LIFE EXPECTANCY
WEIGHT WATCH 4.0

(O)N2 - MATH/SCI 2
1 tape
UNIVERSAL WEDGE
BAR GRAPH 2.4
FREQ GENERATOR!
CRYPTARITHMETIC
COMPLEX NUMBERS
AUDIO DESIGNER
FILTER
POWER SUPPLY
NET1
BONE TUMOR DIAGN
PHYSIOLOGIC WT
PLEURAL EFFUSION

(O)N3 - MATH/SCI 3
1 tape
UNIVERSAL WEDGE
CONVERSIONS A
CONVERSIONS B
PLANETS
WEATHERCAST
FAMILY GENES
SUNRISE/SUNSET
TANK VOLUME
TRAVERSE

PET Music

(O)S1 - MUSIC 1

UNIVERSAL WEDGE
COPY ALL
NEW ROM MUSIC
OLD ROM MUSIC
76 TROMBONES
1950'S MEDLEY
ALLELUJAH
BAMBOO TREE
BARCAROLLE
BAROQUE FANFARE
BLACKBIRD
BUMBLE BEE
CANDY FAIRY
COME SW DEATH
DANSE CAPRICE
DUELIN BANJOS
EASY WINNERS
ELEANOR RIGBY
ELEPHANT
ENDLESS SCALE
ESPANA
FIDDLER
FUGHETTA
FUR ELISE
GAVOTTE&MUSETTE
INVENTION #4
INVENTION #5
INVENTION #8
INVENTION #11
INVENTION #14
JESU/JOY
JET PLANE
JINGLE BELLS
LE TAMBOURIN
LOVE STORY
MAPLE LEAF
MARCHE MILITAIRE
MIN.IN D
MINUTE WALTZ
MNT.GREENERY
MUSETTE
MUSIC BOX DANCER
OB-LA-DI
OCTOPUS
ORGAN FUGUE
PALINDROME
POLONAISE IN BFL
PRELUDE&FUGUE
PRISCILLA
PROMENADE
REED FLUTES
REEL
RICH MAN
SILENCE
SINFONIA
SINFONIA #1
SINFONIA #2
SINFONIA #3
SINFONIA #10
SINFONIA B FL
SKELETON DNCE
SONATA L.82
SONATA RONDO
SONATINA
SPINNING SONG
SPRING SONG
STAIRWAY
STARSPGL BANNER
SYNC. CLOCK
TARENTELLA
TEN XMAS SNGS
THE ENTERTAINER
THREE TUNES
TWO GUITARS
VALSE TRISTE
WATER MUSIC
WEE MAN
WELL TEMPERED
WELLS FARGO
WHEN I'M 64
WONDERLAND
YAKKITY SAX
YELLOW SUB
YESTERDAY

TPUG Monthly Releases

(O)TJ - JUNE 82

COPY/ALL
FILE RETRIEVER
5TH SCOTTE.INST
5TH SCOTTE
TEDDY-APRIL82
DAISY-APRIL82
TEDDY.INSTR
DAISY.INSTR
TINY FORTH NOTES
TINY 4TH TCHR4.0
TINY.PILOT.INSTR
TINY.PILOT.OBJ
TEDDY.RENUM
-DAVE WILLIAMS--
DOUBLEPROG REL
ML STOPKEY
SEQ->PRG/MERGE
DYNALOGIC
FUNCTION GRAPH
EQUATION SOLVER
COMPUDATE
STRUCTURE BASIC
RELATION SKETCH
RELATION GRAPH
LISTER (SUPERPET)
PHONE NUMBERS
TAPE PHONO-PHILE
DISK PHONO-PHILE
TABLE MATH
DATA GENERATOR
DISKLIST.APL (SUPER PET)

(O)TK - SEPT 82

-BASIC 4.0 F40-
INVADERS 4.0
FAST INVADRS 4.0
ACROBAT F40
CAR RACE F40
MISSION IMP F40
NIGHT DRIVER F40
BACKGAMMON F40
--- SEPT 82 ---
DISK MASTER V2
5TH SCOTTE.INST
5TH SCOTTE
STRING THING
TAPE PHONO-PHILE
DISK PHONO-PHILE
PHONE NUMBERS
VIC TAPE INDEX
MASTER TAPE LIBR
WWV
WWVI
WWVII
WWVIII
WWIX
WW WORD LIST
CMPR MOSER SRCE
STRING THING 64
SUPERSPEED SORT
MARKSCALER
FIXFILE
POINTER SORT
FILE
ML DATA MAKER
WWI
WWII
WWIII
WWIV
SUPERMON64.V1
COMM64

(O)TL - OCT 82

COPY-ALL
HOLYHALTER 2
TERMINAL.SERIAL
TERM.SERIAL
VIC KEYSORT
VIC SORT.DEMO1
VIC SORT.DEMO2
RELREAD
SOUP
SPACEWAR 1
SPACEWAR 2
VIC JASPER
VIC COLOR ROOS
VIC POOKY
VIC GARFIELD
DEMONSTRATIE.HI
VIC TRSHY PIC
VIC DESIGN
VIC DESIGN 2
VIC DESIGN 3
VIC DESIGN 4
VIC VIC
DIGICLOCK
HIRESFOURIER
USA SONG
SWAP 16/32K
SWAP 8K
MOCKINGBIRD HILL
FINANCE 1.4
GASSER
TIMETABLE(8032)
BUTTERFIELD
MUSIC LESSON
MUSIC LESSON 2
40 ELEMENT QUIZZ
80 ELEMENT QUIZZ
VIC AID4.REL
VICMUSIC$1201
V 76TROMBONES
V ENTERTAINER
V WONDERLAND
STRING THING 64
BRKOUT.PADL
64 MEMORY CHART
COPY-ALL64
NOS TRANSLATOR3
PACMAN
MULTI-INVADERS!
C-64 VICDISKFIX
C-64 GRAPHER
64 H-R PLOT M/L
BAS&ML COMBINER

(O)TM - NOV 82 PET

COPY-ALL
INSTRUCTIONS
PILOT TRANSLATOR
WATERMELON
FOOD
MAGIC SQUARE
SPREAD SHEET 40T
PRINT USING

PRINT USING&TEST
WATCHMAN-40
SPREAD SHEET80DT
PRNT USING ML
SCREEN ROUTINES
BAS&ML COMBINER
QUIET AFTERNOON
Q-BACK CHALLENGE
PIZZA
CLASS ORGANIZER
CM-CSP403
CN-CSP403
CH-CSP403
CHEMDRILL2
CHEMDRILL1
BACKUPDRILL2
BACKUPDRILL1
MULTI-INVADERS!

(O)TP - DEC 82

COPY-ALL
COSMIC FIGHTER
MUSIC INSTR
FRERE JACQUES
YANKEE DOODLE
CHRISTMAS
CHRISTMASMUSIC
CHRISTMASCODE
CHRISTMASROOT
KEYBOARD RECORD
NEW ROM MUSIC
OLD ROM MUSIC
76 TROMBONES
JINGLE BELLS
TEN XMAS SNGS
JINGLE2
BOOT
CHG LD ADDR V1.2
HEX DUMPER 80
FACE INSTRUC
FACE LOADER
FACE OBJ
FACE DRIVER
PEDIGREE CHARTS
MOVABLE FEASTS
DRAGON
DRAGON DRUGGIN
VECTORS
BIT MAP PLOT 64
BUGS 64
SPRITE MAKER 64
PI HUNT 64
PI HUNT 64.2
MULTI-DICE
FIZZBIN
FIZZBIN 8K RULES
FIZZBIN 8K GAME
SPET 8050-2031
BANK SELECT 6502
PPORT COMMUN.

(O)TQ - JAN 83

PUKMAN
STAR SYSTEM
N.Z.QUIZ
WARLORDS INSTR
WARLORDS GAME
BLOCKADE
ALIEN BLASTER
OUTPOST-ML3
OUTPOST
TOLL BRIDGES
EAR
EYE
REACTION
HIGH Q
MINEFIELD 2
STAR LANES
WORD-SEARCH
TV SATELLITES
BILLBOARD
V JIM IN COLOUR
VIC LOTTARIO
VIC REL WRITE
VIC PRG CHARS
V CHARS@$1C00
VIC FUNCTION KEY
VIC ZIG ZAG
V ADDITION PRACT
V MULTIPLY PRACT
V SUBTRACT PRACT
V ADDRESS FILE
VIC GRAPH PLOT
VIC UXB 1
VIC UXB 2
V BACKGAMMON
VIC-POLY-TURTL
V ZAP
VIC CHECKBOOK
V MAILING EDITOR
V COMPLEX MATRIX
V 555 TIMER
VIC FINANCE
V LO PASS FILTER
VIC FREE-FALL
C64 PET SCREEN
COL.PICT.BOOT
DIANE.C64
DIANE.CDATA
VISIBLE PET
VISIBLE VIC
VISIBLE C64
FACTORS.PET
FACTORS.VIC64
CONTEXT INDEXER
COLOR TEST

(O)TR - FEB 83

GERMAN(64)BOMBER
LONE(64)RANGER
DOCTOR 8032
DOCTOR.INS
REVIVE
BUDGET
VIC.BUDGET
BOWLING
BALANCE ADD/SUB
CUBE
PGMABLE CHARSET
CHAR DISPLAY C64
DRAW POKER C64
REVERSE C64
ENTERPRISE C64
WEAVE
CHARACTER GEN 64
PETALS ARND ROSE
DOMINOES
M.B.INSTRUCTIONS
MILLE BOURNE
SPADE.INSTRUCTS
SPADES
LABYRINTH
TOMBS C64
COPY-ALL
TAX 82 ONT V1.0
INVOICER
BAS-PATCH.GEN
IRQ-PATCH.GEN
CONSTRICTOR.4
EXPANDER.4
COLOUR.PICT
DIANE.C64
DIANE.CDATA
PETLOAD 64 PRGM
EASY DLOADER

(P)TS - MARCH 83.P

AUTODISK BOOT.Z
WARLORDS INSTR.4
WARLORDS GAME.4
CUBE.4
LIST-ME.L
GRADEBK-NAMES.Z
GRADEBK-GRADES.Z
DP106-3.Z
SIMCAL INSTR.W
SIMCAL.Z
LOAN AMORT.8
LIST-ME2.W
HIBYTE DEMO.G
SCOPY5.8
SCOPY INSTR.8
80 COLUMN TAX.8
40 COLUMN TAX.4
COPY-ALL+.G
LIST-ME-LIST-ME
FUNCTION GRAPH.G

(P)TT - APRIL 83.P

FAST INVADERS.8
CRYPTOGRAMS.P
TURTLE.8
CBM 4032 V2.P
COPY-ALL.P
WP BUSTER/PET.P
LIST-ME APR83.W
LIST-ME-LIST-ME
DISK LOGGER.P
SUPERMON INST.P
SUPERMON1.REL.4
SUPERMON4.REL.P
SUPERMON2.REL.P
INITIALIZER
SCREEN TO WORK
CBM8010.Z
LST TRUE ASCII.Z
PRINT USING.Z
IEEE WATCH 2.Z
MORTGAGE.Z
DISASSEMBLER.P
STRING THING.Z
PROG CONVERTER.Z
LIST-ME PTT.L
WORK AREA - CRT
STORY WRITER/V10
K
MANPLOT
MACTABLE
MUSS
BOOTKONG
80KONGTUCK/POTT
SCREEN1 SAVER

(P)TV - JUNE 83.P

LIST-ME PTU.L
BOGGLE A.P
BOGGLEML B.P
G O L F.P
TRAIN - CHIEF.P
KING.P
POGO V7.8
EPIDEMIC.4
NAMING CMPDS.4
SCHOOLMARM255.P
255QUEST MAKER.P
PET AGENDA.4
SKI 4.F
TURTLE.8
SCROLL MESSAGE.P
ANY WINDOW SIZ.P
AUTO DATA HEX.P
STORYWRITERV11.P
GALACTIC GT.4
EXPANSION PRES.P
GRAPHIC AID 4.P
G.AID 4.P
GRAPH AID INST.P
STARS BAS PR.8
POWER SPECTRUM.P

PET Utilities

(O)U1 - UTILITIES 1

UNIVERSAL WEDGE
COPY ALL
AID 2.1
SUPERMON2.REL
SUPERMON4.REL
SUPERMON1.REL
SUPERMON1/2/4INS
EXTRAMON9G@$1000
EXTRAMON9B@$1000
EXTRAMON INST
APPEND/RENUM.REL
ROM TEST--BTFLD
TRACE.REL(BASIC)
RAM TEST@$500
SCREEN PRINT
UN-NEW/SYS826
KEYSORT2$7454
KEYSORT2-2DEMO
KEYSORT2-1DEMO
KEYSORT2$1C54
LOW CASE LIST
DISK APPEND
DISK MOD/V1
DISK ID CORRCTOR
DISK PEEK
VIEW BAM
BLOCK GET 1.0
BL GET @$033A
KEYPRINT/826
DISK NAME (R)
COPYPROG
KEYMAKE
COPYDISK/SYS973
TAPE TEST #
TAPE WRITE (#)
COPYCAT!SYS934
COPYCAT'SYS934
AID INSTR7.6
(32K)BASIC-AID
DISK LOGGER
CATALOG
SEARCH
UTINSEL.REL
AID4
COMPACTOR
CASSETTE.TO.DISK
DATAMAKER
KEYSORT.EXE16/32
KEYSORT.DEMO1
KEYSORT.DEMO2
KEYSORT.EXE8K
CROSS-REF
BASIC.AID.EXE
DISK APPEND-M.B.
PRINT USING
DISK VIEW
READ.LINK
READ-WRITE.S/R'S
DIR.ACCESS.S/R'S
PORT.DISPLAY
DESCENDERS/2022
FLOPPY.DISPLAY
JOYSTICK.CTLR.
JOYSTICK.CRSRS
EXTRAMON.4.0B
EXTRAMON.4.0G
MAE/DOS FOR 4.0
USER.COOKBOOK

GRAFDOS NOW AVAILABLE FOR CBM-64

After a year of development, GRAFDOS, an enhanced new disk operating system will make life easier for thousands of disk owners. No longer do you have to use the cumbersome wedge. GRAFDOS provides over 40 new commands for both DOS and BASIC. Below is a list of new commands:

DOS COMMANDS

LOAD"file name"	CATalog
SAVE"filename"	INIT
RUN"filename"	WATCH
BLOAD"filename"	OFF
BSAVE"filename"	STAT
RENAME	CHAIN
DELETE	

BASIC COMMANDS - HIRES

PLOT	FLIP
HGR	WCHAR
SCREEN	DRAW
ALT	COPY
NORM	PIC
	PSAVE

LORES

LGR	HLIN
LCOL	VLIN
LPLOT	

MISC. COMMANDS

KEY	VTAB
SOUND	HTAB
HOME	HIMEM
TRAP	SPEED
TEXT	EXIT
BASIC	CTRL-G

As an added bonus, GRAFDOS includes the MINI-MON, a powerful machine language monitor and mini-assembler with 20 commands! (See description below.)

The disk also comes with sample programs and demos including a music generator!

This is a DOS that every CBM-64 owner should have on every disk!

ORDER NOW! ONLY $39.95

MINI-MONITOR NOT SO MINI!

A powerful machine code monitor which is not so mini has 20 commands to:

Disassemble 6502 code
Examine memory
Text dump
Move memory
Hunt memory for a string
Fill memory with any byte
HEX - DEC conversion
Edit code
Mini-assembler
Switch kernal to RAM
Switch BASIC to RAM

The only thing mini in this monitor is the price! VIC-20 version requires 8K expansion.

Cassette $15.95
Disk $19.95

PROTECT YOUR INVESTMENT WITH ATTRACTIVE DUST COVERS!

After investing several hundred dollars in a computer or disk drive, protect it from harmful dust or liquid spills. Dust covers are made of durable, water resistant, brown canvas.

For computer or disk $7.95
Old style datasette $5.95
New style datasette $5.95

MORE BOOKS BECOME AVAILABLE FOR VIC-20

Our selection of books is becoming larger with special discounts for our customers!

	LIST	OUR PRICE
KIDS AND THE VIC	19.95	15.95
VIC 20 USERS GUIDE	15.95	11.95
VIC GRAPHICS	12.95	9.95
VIC REVEALED	12.95	9.95
STIMULATING SIMULATIONS	6.50	4.95
I SPEAK BASIC TO MY VIC	8.45	6.75

SUPER FAST GAMES FOR THE VIC 20

New aliens have been found invading thousands of VIC's. They come in all shapes and sizes terrorizing VIC owners everywhere. Now, you too, can shoot it out with these menaces!

		LIST	OUR PRICE
SCORPION	cart	39.95	29.95
DEADLY SKIES	cart	39.95	29.95
GOLD FEVER	cart	39.95	29.95
CRATER RAIDER	cart	34.95	26.95
CYCLON	cart	34.95	26.95
SIDEWINDER 8K	cass	29.95	19.95
SWARM	cass	29.95	19.95
GALACTIC BLITZ	cass	24.95	16.95
QUACKERS	cass	15.95	11.95

PEN P.A.L. HELPS PROGRAMMERS

P.A.L., which stands for Programmers Aids and Logs, is a perfect complement with the Users and Reference manuals. It provides 95 pages of color coded tear-out worksheets including:

REFERENCE charts
CHARACTER worksheets
SCREEN layouts
EZ GRAPH graphic aids
FLOW CHARTING aids
TRICKS AND HINTS
TAPE CASSETTE log book
BASIC dictionary

This is sure to become a MUST item for every programmer. Regularly $9.95, our price is only $7.95.

STELLAR TRIUMPH

A great new, all machine code game is now available for your CBM-64. Features exciting hires color graphics and spectacular sound effects. A two player game with many variations such as reverse gravity, bounce back, speed control, and more. Prepare yourself into an all-out space battle.

From H.A.L. Labs
tape or disk $24.95

INTERESTING SOFTWARE
21101 S. Harvard Blvd.
Torrance, CA 90501
(213) 328-9422

Visa/MC/Check/Money Order - Add $2.00
CA residents add 6½% sales tax.
Dealer inquiries invited.

Friendly DUO

The CP Numeric Keypad is the best friendly companion of your Commodore 64 and VIC-20. It lets you enter the numeric data comfortably, quickly and more correctly than ever before. Now you can zip through your numeric work sheet faster and more easily than ever at only

$69.95

The CP VIC-20 Expander is the one you have been waiting for. It incorporates all the features you've ever asked for. For **$54.95** , the CP VIC-20 Expander gives you: Four high quality connector slots with keys; Gold plated contact fingers for positive and long-lasting connection; On board master reset button; Four convenient ON-OFF individual slot control switches; External power supply hook-up provision with two-way power switch and overload fuse block.

Computer Place (213) 325-4754
23914 Crenshaw Blvd., Torrance, CA 90505

Dealer inquiries welcome.
Prices in U.S. dollars

Commodore 64 and VIC-20 are trademarks of Commodore Business Machines, Inc.

UTILITY 2.0
UTILITY 4.0
DEMO
LIST LT2
LIST LT2X
LIST GP2
LIST LP2
LIST LP2X
LIST LP4
INS/DEL DEMO
V40.2.B
V40.4.B
V80.4.B
TAPE.TO.DISK
RELREAD
DUMP SEQ FILE
WP TO UPPER

(O)U2 - UTILITIES 2

UNIVERSAL WEDGE
COPY ALL
MINI-COMPILER
TINY.PILOT.EXE
TINY.PILOT.INS
SUPERMON2.REL
SUPERMON4.REL
SUPERMON1.REL
SUPERMON1/2/4INS
LISTER
SCREEN DUMP
TAPE GRAPH 21S
UNLIST
TAPE GRAPH# ROM
BAM MAP CBMDSK
TINY FORTH TCHR
DISC MERGE/BASIC
TINY FORTH NOTES
LOWER CASE LIST
SHIFT UP-LOW CAS
GRAPHIX INSTR
GRAPHICS-LOADER
GRAPHICS-DEMO
ERIC ASSM
8K
MICROMON.INS
BAID.X$9000@2000
BAID4.INS
MICROMON@4096
BAID4B@$7000
MICMON4B@4096
MICMON4B9@1
BASIC AID 4
AID INSTRUCTIONS
CBM 4032
RELREAD
DISK LOGGER
UNASSEMBLER.MAE
UNASSEMBLER.CBM
KEYPRINT2
KEYPRINT4@826
DUMP2
DUMP4
LOCKSMITH

(O)U3 - UTILITIES 3

UNIVERSAL WEDGE
COPY ALL
EASY EDIT/TAPE
EASY EDIT/DISK
EASY EDIT/C
PAGE1 EZE EDIT
PAGE2 EZE EDIT
PAGE3 EZE EDIT
PAGE4 EZE EDIT
PAGE5 EZE EDIT
PAGE6 EZE EDIT
FAST SKIP 2022
STRINGTHING.BIN
CONTENTS
SIGNON
EXEC HELLO
HELLO
BUILD HELLO
NECCL
MXCL
CROSS REF
CRUNCH
APPLESOFT LOADER
ERIC ASSM
8K
CATALOG+6
DISK DOCUMENTER
LIST DUPLICATES
MASTER+6
MASTER+6D
SEARCH+6
STACK SNIFFER
WPRO BUSTER
AX-REF/SYS24576
EXTRA INSTR.
EXTRAMON9B(4)
EXTRAMON9G(4)
EXTRAMON9G(2)
EXTRAMON9B(2)
USEIZE.WP
LITTLEMON.INS.WP
CHANGE/LADR.BAS
SYMBOLIC.DISASS
INSIDE.DOS1&2
MICROMONB@$1
MICROMONB.INS+
BAID4.EXE9@4
BAID4.INS
CRUNCH2
CRUNCH4.0
TINY MUSIC
DEC->FLOATING PT
QUADRA-PET
DEFINE PTR. CHAR
JEM.INS
JEM SYS4111%
DISK DOCTOR
LC LISTER INST

(O)U4 - UTILITIES 4

UNIVERSAL WEDGE
COPY ALL
VIA SCANNER
CASS.LABELER
VARIABLE RANDOM
KUSTOM KEY

(O)U5 - UTILITIES 5

UNIVERSAL WEDGE
COPY ALL
COPY/ALL
BASIC-AID.INST1
BASIC-AID.INST2
BAID4F40C
BAID4F40A
BAID440C
BAID440A
BAID240C
BAID240A
BAID480C
BAID480A
EP4 SYS32000/1
EP4XSYS32000/1
DELETE ALL
EXTRA INSTR.
EXTRAMON9B(4)
EXTRAMON9G(4)
EXTRAMON9G(2)
EXTRAMON9B(2)
CBM 4032 V2
DIR LOADER 2.0
DIR LOADER 4.0
DIR CATALOG
DIR UPDATE
DIR PRINT
DIR MERGE
POWER MOD
TAPE-DISK/REL
MERGE 4.0 INST
MERGE 4.0
SET/RESET.REL
SET/RESET DEMO
WORD PRO TH2058
READ WP2040
HI MEMORY106
INSTRUCTIONS#7
WORD P DEMO
WP TAPE2058
READ WP TAPE2040
WORD COUNT 9.0
WORD COUNT BASIC
IEEE VIEW
MICROMON@$1000
MICROMON@$7000
MICROMON80@$1000
MICROMON80@$7000
BACKUP 2031 1.0

(O)U6 - UTILITIES 6

UNIVERSAL WEDGE
MICROMON.INS1
MICROMON.INS2
MICROMON.ADD
MICROMONC@$1000
MICROMONC@$7000
MICROMON++@$5B00
MEMSEE.DEMO
WORD PRO PRINTER
CHANGE DISK
DISK CHECK
DISK VIEW
DISK MOD
DATABASE2.0/4.0
UNDLOAD EASIER
DLOAD EASIER
WP LIST/SCREEN
SUPERCAT@32000
SHL-MTZ LIB V2
SHL-MTZ LIB 2.0
LIBRARY INST
SUPER1 V1.1
SHOW TOKENS
CHEEP PRINT
CHAR.SET.DEFN
STUFFIT
UNCOMPACTOR
EASY EDIT/MX-80
EASY.EDIT.MX-82
MX-82.CHAR.DEFN
MX82.PET.PRNT
VICLOAD4.REL
VICLOAD2.REL
SET-UP
MARCH6
GRAPHIC EDITOR
PRINT EDIT INFO
AUTO DISK BOOT
CBM 4032 V2.1
DATA WRITER
LOCKDISK
FLOADER
MLOADER
INS WATAID 4
F32 WATAID 4
F16 WATAID 4
S32 WATAID 4
S16 WATAID 4
8032 WATAID 4
POWAID4.RUN
POWAID2.RUN

(O)U7 - UTILITIES 7

COPY-ALL
PROCEP.EDITOR
PROCEP.EXAMPLE
PROCEP.INS1.WP
PROCEP.INS2.WP
RELREAD
SOUP
KEYWORD
BASIC-AID.INST1
BASIC-AID.INST2
CBM EDITOR.INST
E-ROM.MON.I1
E-ROM.MON.I2
POWER-AID.INST
TEDDY-APRIL82
TEDDY.INSTR
DAISY-APRIL82
DAISY.INSTR
5TH SCOTTE.INST
5TH SCOTTE
ML STOPKEY
TAPE PHONO-PHILE
DISK PHONO-PHILE
PHONE NUMBERS
MASTER TAPE LIBR
DATABANK.31!
SUPERSPEED SORT
FIXFILE
POINTER SORT
FILE
STRING THING
SUPERMON64.V1
STRING THING 64
NOS TRANSLATOR3

TPUG Best of PET/CBM

(O)X1 - BEST UTILITIES 1

UNIVERSAL WEDGE
COPY ALL
COPY/ALL
BAID4F40C
BAID4F40A
BAID440C
BAID440A
BAID240C
BAID240A
BAID480C
BAID480A
BASIC-AID.INST1
BASIC-AID.INST2
AID4
AID2
CHANGE DISK
DISK MOD
DISK CHECK
DISK VIEW
DISK NAME (R)
DISK ID CORRCTOR
DISK PEEK
BAM MAP
APP/REN24.REL
CASS.LABELER
DISK FILE RECVRY
KEYPRINT2@826
KEYPRINT4@826

TAPE.TO.DISK
X-REF 24576.ML
WORD COUNT 9
DISK MASTER V2
DELETE ALL
CP4 SYS32000/1
CP4XSYS32000/1
VICLOAD4.REL
VICLOAD2.REL
VIC WEDGE
BACKUP 2031 1.0
SET-UP
AUTO DISK BOOT
CBM 4032 V2.1
WORD PRO PRINTER
WP LIST/SCREEN
DATA WRITER
LOCKDISK
LOWCASE LIST V3
UN-NEW/SYS826
COPYCAT!SYS934
COPYCAT'SYS934
COMPACTOR
UNCOMPACTOR
CROSS-REF
DISK APPEND-M.B.
DUMP2/SYS826
DUMP4/SYS826
STRINGTHING.BIN
WPRO BUSTER
UTILITY 2.0
UTILITY 4.0
DEMO

(O)X2 - BEST UTILITIES 2

SUPERMON4.REL
SUPERMON2.REL
SUPERMON1.REL
SUPERMON1/2/4INS
EXTRAMON4@$7000
EXTRAMON4@$1000
EXTRAMON2@$7000
EXTRAMON2@$1000
EXTRAMON.INS9.3
MICROMONC@$1000
MICROMONC@$7000
MICROMON++@$5B00
MICROMON.INS1
MICROMON.INS2
MICROMON.ADD
TINYMON1 FOR VIC
TINYMON INST
SUPER VICMON2
8K
ERIC ASSM
UNASSEMBLER.MAE
UNASSEMBLER.CBM3
DATA WRITER
WP LIST/SCREEN

(O)X3 - BEST GAMES 1

-- BASIC 2.0 --
INVADERS 2.0
FAST INVADRS 2.0
ACROBAT 2.0
CAR RACE 2.0
MISSION IMP 2.0
NIGHT DRIVER 2.0
BACKGAMMON 2.0
OTHELLO
BREAKOUT
ASTEROIDS
PINBALL
PETMAN 5
JOYSTICK INV 2.0
BLOCKADE
BASEBALL 7.3
OSC LUNAR
SUPER STARTREK
STAR WARS
MASTERMIND
REVERSE-PUNTER
ARROW
BLACK BOX!
BLACK JACK
BOMBER
ROBOT CHASE!
SNAKE 2
YAHTZEE
MOVMAZE2

(O)X4 - BEST GAMES 2

-- BASIC 4.0 --
INVADERS 4.0
FAST INVADRS 4.0
ACROBAT 4.0
CAR RACE 4.0
MISSION IMP 4.0
NIGHT DRIVER 4.0
BACKGAMMON 4.0
OTHELLO
BREAKOUT
ASTEROIDS
PINBALL
PETMAN 5
JOYSTICK INV 4.0
BLOCKADE
BASEBALL 7.3
OSC LUNAR
SUPER STARTREK
STAR WARS
MASTERMIND
REVERSE-PUNTER
ARROW
BLACK BOX!
BLACK JACK
BOMBER
ROBOT CHASE!
SNAKE 2
YAHTZEE
MOVMAZE2

(O)X5 - BEST GAMES 3

disk only

ADVBOOT
ADVF 0
ADVF 1
ADVF 2
ADVF 3
ADVF 4
ADVF 5
ADVF 6
ADVF 7
ADVF 8
ADVF 9
ADVF 10
ADVF 11
ADVF 12
ADVF 13
ADVF 20
ADVF 21
ADVF 22
ADVF 23
ADVF 24
ADVF 25
ADVF 26
ADVF 27
ADVF 28
ADVF 29
ADVF 31
ADV9 0
ADV9 1
ADV9 2
ADV9 3
ADV9 4
ADV9 5
ADV9 6
ADV9 7
ADV9 8
ADV9 9
ADV9 10
ADV9 11
ADV9 12
ADV9 13
ADV9 20
ADV9 21
ADV9 22
ADV9 23
ADV9 24
ADV9 25
ADV9 26
ADV9 27
ADV9 28
ADV9 29
ADV9 31
ADVKEYS
ADVSHOR
ADVSH8
ADVMAP
ADVITM
ADVENTURE
ADVENTURE80
QUEST 3.0
OHARE'S #3

(O)X6 - BEST MISC 1

EASY EDIT/TAPE
EASY EDIT/DISK
EASY EDIT/C
EASY EDIT/MX-80
EASY.EDIT.MX-82
PAGE1 EZE EDIT
PAGE2 EZE EDIT
PAGE3 EZE EDIT
PAGE4 EZE EDIT
PAGE5 EZE EDIT
PAGE6 EZE EDIT
WORD PRO TH2058
READ WP2040
HI MEMORY106
INSTRUCTIONS#7
WORD P DEMO
WP TAPE2058
READ WP TAPE2040
TAX 81 ONT V1.0
GRAPH.PRINTER
GRAPHIX INSTR
GRAPHICS-LOADER
GRAPHICS-DEMO
MAIL LIST 4040
4040 UPDATE
4040 FORMAT
4040 PRINT
4040 MENU
MAIL LIST 8050
8050 FORMAT
8050 UPDATE
8050 MENU
8050 PRINT
V40.2.B
V40.4.B
V80.4.B
E.G SET-UP 80COL
WP3/4 INST1
WP3/4 INST2

(O)X7 - BEST GAMES 4

-BASIC 4.0 F40-
INVADERS 4.0
FAST INVADRS 4.0
ACROBAT F40
CAR RACE F40
MISSION IMP F40
NIGHT DRIVER F40
BACKGAMMON F40
OTHELLO
BREAKOUT
ASTEROIDS
PINBALL
PETMAN 5
JOYSTICK INV 4.0
BLOCKADE
BASEBALL 7.3
OSC LUNAR
SUPER STARTREK
STAR WARS
MASTERMIND
REVERSE-PUNTER
ARROW
BLACK BOX!
BLACK JACK
BOMBER
ROBOT CHASE!
SNAKE 2
YAHTZEE
MOVMAZE2

(P)X8 - BEST MISC.P

INVADERS 4.4
FAST INVADRS 4.4
ACROBAT.F
CAR RACE.F
MISSION IMP.F
NIGHT DRIVER.F
BACKGAMMON.F
DISK MASTER V2.P
5TH SCOTTE-INST.
5TH SCOTTE.P
ML STOPKEY.P
TAPE PHONPHILE.P
DISK PHONPHILE.P
PHONE NUMBERS.P
WWV.8
WWVI.8
WWVII.8
WWVIII.8
WWIX.8
WW WORD LIST.D
WWI.4
WWII.4
WWIII.4
WWIV.4
SUPERSPEED SORT.
LIST-ME PX8.L
NOS TRANSLATOR3
FINANCE 1.4
MUSIC LESSON
MUSIC LESSON 2

(P)X9 - BEST MISC.P

COPY-ALL
MULTI-INVADERS!
WATERMELON
SPREAD SHEET 40T
SPREAD SHEET80DT
PRINT USING
PRINT USING&TEST
PRNT USING ML
SCREEN ROUTINES
BAS&ML COMBINER
QUIET AFTERNOON
Q-BACK CHALLENGE
COSMIC FIGHTER
HEX DUMPER 80
FIZZBIN
FIZZBIN 8K RULES
FIZZBIN 8K GAME
PUKMAN
STAR SYSTEM
WARLORDS INSTR
WARLORDS GAME
BLOCKADE
ALIEN BLASTER
OUTPOST-ML3
OUTPOST
LIST-ME PX9.L
MINEFIELD 2

(P)XA - BEST MISC.P

VISIBLE PET
TOLL BRIDGES
STAR LANES
TV SATELLITES
BILLBOARD
DOCTOR 8032
DOCTOR.INS
BOWLING
SIMCAL INSTR.W
SIMCAL.Z
LOAN AMORT.8
SCOPY5.8
SCOPY INSTR.8
FAST INVADERS.8
CRYPTOGRAMS.P
TURTLE.8
CBM 4032 V2.P
WP BUSTER/PET.P
DISK LOGGER.P
SUPERMON INST.P
SUPERMON1.REL.4
SUPERMON4.REL.P
SUPERMON2.REL.P
MORTGAGE.Z
DISASSEMBLER.P
PROG CONVERTER.Z
STORYWRITR/V10.P
LIST-ME PXA.L

(P)XB - BEST EDUC.P

SCREEN PRINT
FILE MAKER
A
B
C
D
E
F
H
I
J
K
L
M
N
C
P
Q
R
S
T

U
V
W
X
Y
Z
SCREEN
HOME ROW
ALL ROWS
G
FLASH

FILE MAKER II
HIGH WRIST
LOW WRIST
SHIFT LOCK
SIGN
$ SIGN
% SIGN
NUMBERS 1-5
NUMBERS 6-0
EACH NUMERAL
ALPHA PROGRESS

DUM 3.4
KEYBOARDING
COVER
LIST-ME PXB.L

Miscellaneous

(O)Z1 - MISC PROG 1

UNIVERSAL WEDGE
KALEIDOSCOPE
SCRAMBLE-BTTRFLD
PATTERN MAKER
MYSTERY-BUTTRFLD
PEOPLE
MAZE
PET CHARACTERS
NIGHTMARE
SCAN
PHUZZY & WHUZZY
DISPLAY LETTERS
DRAGON
LOVE

HALLOWE'EN
ABACUS
CANARY
FORMAT
CALENDAR-LOWNDES
HALLOWE'EN2
CARTOON!
HEART DRIVER
MELODY CHANGES
BAR.GRAPH.ALT
CALENDAR.ALT
SNOOPY.DANCING
DARTH.VADER.PIC
ETCH-A-SKETCH
SCRAMBLED.MSG
JULIAN CALENDER

GRAPH.PRINTER
PATTERNS
CASCADE
BIG LETTER ADS
GRAPHIX INSTR
GRAPHICS-LOADER
GRAPHICS-DEMO
ONELINE SQUIGGLE
MEMORY CALENDAR2
CANNATA
MEMO CALENDAR
CANBAL&MISSY.SOL
MEMORY MONITOR
TIMES SQUARE
BASIC.HUMOROUS

(O)Z2 - MISC 2

UNIVERSAL WEDGE
GRAPHICS
GRAPH SUBS
E-ROM DEMO
TWENTY QUESTIONS
WOTAG
RECIPE
SAUCE
INSULTER
GRAPHIX SORT
PEARL HARBOR
CLOCK
CLOCK 8032
PHONE SOUNDS

PI DEMO 8032
SCROLL DEMO
FINE-PLOT DEMO
BANNER/R
NEW LOTTARIO
ESP
WORLD CLOCK
SCUBA ADVENTRUE
MEMOCAL 2.2

Contest

(P) CONTEST

GRAPHIC AID 4.0
G.AID 4.0
DOS HEX DUMPER
DOS DISSASSEM.
DISK HEX DUMPER

CHANGE LOAD ADD.
HEADER CHANGER
G.AID PROG#1.PAL
G.AID PROG#2.PAL
GRAPHIC AID.INST
I WRIGHT-------
PITS!

SCOTT ALLAN----
SAFARI
QUEST
MAZE MAN
TRIPLE YAHTZEE
INTERCEPTOR
MISSILE COMMAND
CENTURION

ULTRA ZAP
ESCAPE
W LEWANIAK-----
LIBRARY OVERDUE
LIB TEACH EDIT
LIBTCH 82/S2
LIB MARCH 16
R GERRARD------

PIRATE ADVENTURE
STOCK TICKER
G SCHWARTZ-----
SEMI
SEMI DOCUMENT.
F ROSENTHAL---
CYCLE!

Commodore Educational Software (works on PET and C-64)

In September of 1982, TPUG received from Commodore Canada, a series of 642 educational programs. These programs are stored on 50 diskettes and are identified, in our library by a three-character ID starting with the letter K.

These programs are a subset of those worked on by the school boards in the Metro Toronto area. Many of them are updated versions of programs already in our library. ALL these programs have been modified to work on the following computers:

PET 2001 (BASIC 2.0), PET 4000 (BASIC 2.0 OR 4.0, 9 and 12-inch screens) CBM 8032 (use CBM 4032 v2) and the Commodore 64. The documentation for all of these programs is in TORPET #14 ($3.50 from the office).

By the Fall, Commodore Canada will have upgraded and enlarged the series by one third, so unless you are in a hurry to get a specific disk, it might be advantageous to wait until then.

KAA - ADMINISTRATION

CBM 4032 V2.1
ANALYSIS 1.C2
ANALYSIS 2.C2
ANSWER BOX.C2
BONDS.C2
DOG.C2

EXAM 2.C2
FIGHT.C2
GRADES.C2
LETTER.C2
MARKS.C2
MRK STATS.C2
NOTES.C2
SEX ED.C2

KBA - BUSINESS

CBM 4032 V2.1
ACCOUNTING.C2
AMORT'N TABLE.C2
BONDS.C2
BUDGETACCOUNT.C2
CALENDAR.C2

CREDIT UNION.C2
DATES.C2
DEPRECIATION.C2
FIFO.C2
GROSS PAY.C2
HISTORY QUIZ.C2
ICE CREAM.C2
INVESTMENTS.C2

LEMONADE.C2
LIFE TABLES.C2

KBB - BUSINESS
1 tape
CBM 4032 V2.1
MARKET.C2
MONEY FLOW.C2

MORTGAGE.C2
OBJECTIVE1.1.C2
PORTFOLIO.C2
SCHOOL-MARM.C2
SIMULATION.C2
STOCK MARKET2.C2
TAX ONT81V1.C2

KCA - COMPUTER SCIENCE

CBM 4032 V2.1
BIG BINARY.C2
COMMANDS.C2
COMP. CONCEPT.C2
COMPUTING.C2
DISK CMD.C2
DISK LISTER.C2
FEATURES QUIZ.C2
GRAPH SUBROUT.C2
HEX DEC.C2
HEX DEMO.C2
HISTORY QUIZ.C2
HYPO. AUTO.C2
KEYBOARD.C2
PLOTTING.C2
PRGM. LISTER.C2

KCB - COMPUTER SCIENCE
1 tape

CBM 4032 V2.1
RND GENERATOR.C2
SIMULATION.C2
SOUND SUB.C2
STRINGS.C2
TURTLE 1.C2
TURTLE 2.C2

KEA - ENGLISH
1 tape

CBM 4032 V2.1
A OR AN.C2
A STORY.C2
ALPHA BETTER.C2
ALPHABETIZING.C2
ANTONYMS.C2
APHORISMS.C2
B'BALL MADLIB.C2
COMP. POETRY.C2
CONC. WORDS.C2
CONCENTRATION.C2
DEFMATCH.C2
ENG. MONSTER.C2
FLASHER.C2
GRAMMAR 1.C2
HAIKU.C2

KEB - ENGLISH

CBM 4032 V2.1
HANGMAN 2.C2
HANGMAN 1.C2
HANGMAN 3.C2
HOMOCONC.C2
INIT DIGRAPH.C2
JOTTO.C2
LETTER SQUARE.C2
LETTER.C2
MACBETH QUIZ.C2
MADLIB.C2
MATCHING.C2
MEDIAL VOWELS.C2
MISSPELLING 5.C2
MISSPELLING 6.C2
MM 2LADVF.C2

KEC - ENGLISH

CBM 4032 V2.1
MM ADVBFORMS2.C2
MM CRCOMP.C2
MM DARK WOOD.C2
MM HOMONYMS.C2
MM LADVF.C2
MM MUGS 2WM.C2
MM MUGS WM.C2
MM PUNCTUAT'N.C2
MM SADSTORY 2.C2
MM SHARE TIME.C2
MM VB FORMS 1.C2
MM VB FORMS 2.C2
MM VB FORMS 3.C2
MM VB FORMS 4.C2
MM VB FORMS 5.C2

KED - ENGLISH

CBM 4032 V2.1
MM VB FORMS 6.C2
MM VB FORMS 7.C2
MM VB FORMS 8.C2
MM VB FORMS 9.C2
MM WORD MEANS.C2
NEW TACHISTO.C2
NOUNS.C2
P'BLEM P'NOUN.C2
PARTS SPEECH.C2
PETPITPATPOT.C2
PLURALS.C2
PRGM. LISTER.C2
READ LEV&EVAL.C2
READER.C2
REMEMBERING.C2

KEE - ENGLISH

CBM 4032 V2.1
RHYMECONC.C2
RHYMING.C2
ROMEO&JULIET.C2
S'PG ERRORS 4.C2
S'PG ERRORS 5.C2
S'PG ERRORS 6.C2
S'PG ERRORS 8.C2
S-HYPHEN.C2
S-SPELL.C2
SCHOOL-MARM.C2
SCRAMBLE 4.C2
SCRAMBLE 5.C2
SCRAMBLE 6.C2
SCRAMBLE 7.C2
SCRAMBLE 8.C2

KEF - ENGLISH

CBM 4032 V2.1
SHAKESPEARE Q.C2
SNOWYDAYNOUNS.C2
SPD SPELLING2.C2
SPD SPELLING3.C2
SPD SPELLING4.C2
SPD SPELLING5.C2
SPD SPELLING6.C2
SPD SPELLING7.C2
SPD SPELLING8.C2
SPEED READ 2.C2
SPELL MEAN 5.C2
SPELL MEAN 6.C2

KEG - ENGLISH

CBM 4032 V2.1
SPELL MEAN 7.C2
SPELLING BEE2.C2
SPELLINGTUTOR.C2
SWAP NEW ROM.C2
SYLLABLE.C2
SYNONYMS.C2
T-HYPHEN.C2
T-SPELL.C2
THEWORDMARKET.C2
TWENTY QUEST.C2
TWO TO TOO.C2
UNSCRAMBLE.C2
VOCAB.C2
VOCABULARY 3.C2

KEH - ENGLISH
1 tape

CBM 4032 V2.1
VOCABULARY 4.C2
VOWEL MAGIC.C2
WORD GAME.C2
WORD HUNT.C2
WORD LADDER.C2
WORD POWER.C2
WORD SEARCH 1.C2

KFA - FRANCAIS

CBM 4032 V2.1
DATES.C2
FR. SENTENCES.C2
FRENCH AID #1.C2
FRENCH AID #2.C2
FRENCH DRILL.C2
FRENCH FWC.C2
FRENCH QUIZ.C2
FRENCH TEST.C2
FRENCH VERBS.C2
FRENCH VERBS .C2
MELI-MELO.C2
SERIE 1.C2
SCHOOL-MARM.C2

KGA - GAMES

CBM 4032 V2.1
A BLOCK.C2
A-MAZING.C2
ABSTRACT.C2
ACCELERATION.C2
AFO.C2
APPAREIL JET.C2
ARROW!.C2
ARTILLERY.C2
ATARI II.C2
BAGEL.C2
BATTLESHIP.C2
BIORHYTHM.C2
BLACK BOX.C2
BLACKJACKE.C2
BREAKOUT.C2

KGB - GAMES

CBM 4032 V2.1
CHASE.C2
CIVIL BATTLES.C2
CRAPS.C2
CRAZY BALLOON.C2
CYLON BATTLE.C2
DAM BUSTERS.C2
DUCK SHOOT.C2
ENGGAME2.C2
FLECHE.C2
FOX AND HOUND.C2
FROG RACE.C2
GAME 4.C2
GOLIWOG.C2
GUNNER 2.C2
HAMLET.C2

KGC - GAMES

CBM 4032 V2.1
HAMURABI.C2
HANGMAN 1.C2
HANGMAN 3.C2
HANGMAN 2.C2
HANGMATH 1.C2
HANGMATH 2.C2
HELLO.C2
HI-Q.C2
IN ORDER.C2
JOTTO.C2
LAKES-ENG.C2
LE PERDU.C2
LOGIBLOCKS.C2
MAGIC SQUARE.C2
MASTER MIND1.C2

KGD - GAMES

CBM 4032 V2.1
MASTERMIND2.C2
MASTERMIND3.C2
MATCHES.C2
METEOR.C2
MISSION IMPOS.C2
MOUSE MAZE.C2
MUGWUMPS.C2
PETALS & ROSE.C2
PICTURES.C2
PIZZA.C2
PLANET PROBE.C2
PONG.C2
PUB SILLINESS.C2
PUZZLE.C2

KGE - GAMES

CBM 4032 V2.1
RAGING ROBOTS.C2
ROAD TRACK.C2
ROTATE 1.C2
SNAKES.C2
SNARK.C2
SNERD.C2
SNOOPY.C2
SPACE PILOT.C2
SPACE WEIGHTS.C2
STARTREK 2.C2
STARWARS.C2
STARTREK.C2
STARTREK IV.C2
SUPERDRAW!.C2

KGF - GAMES
1 tape

CBM 4032 V2.1
TIC-TAC-PRO.C2
TORP BOMBER.C2
TOWER.C2
TURTLE 1.C2
TURTLE 2.C2
TWENTY QUEST.C2
UP THE LADDER.C2
WAREHOUSE.C2
WESTWARD HO.C2
YELLOW LIGHT.C2

KHA - HISTORY
1 tape

CBM 4032 V2.1
ANCIENT HIST.C2
ELECTION.C2
FAMOUS PEOPLE.C2
HISTORY QUIZ.C2
MEDIEVAL HIST.C2
MODERN HISTOR.C2
PRESIDENT QUIZ.C2
TREND LINE.C2
WORLD WAR II.C2
WORLD WARS.C2

KMA - MATHEMATICS

CBM 4032 V2.1
ADD DRILL.C2
ADD & SUB.C2
ADDITION RACE.C2
ADDITION.C2
ADDS AND SUBS.C2
AGENT BLOTTO.C2
ALG. VECTORS.C2
AMORT'N TABLE.C2
ANALYSIS 1.C2
ANALYSIS 2.C2
ANKOVA.C2
ANOVA.C2
ARITHMETIC.C2
ARTILLERTY.C2
ASTERIOD ADD.C2

KMB - MATHEMATICS

CBM 4032 V2.1
AUTO ADD TCHR.C2
B.T.C. ADD.C2
B.T.C. DECIML.C2
B.T.C. DIVIDE.C2
B.T.C. FRAC.C2
B.T.C. MULT.C2
B.T.C. PERCNT.C2
BAIRSTOW NTH.C2
BALANCE.C2
BASE CHANGE.C2
BASIC STATIST.C2
BATTLESHIP.C2
BEADS IN A JA.C2
BIG ADD.C2
BIG BINARY.C2
BIG DIVIDE.C2

KMC - MATHEMATICS

CBM 4032 V2.1
BIG MULTIPLY.C2
BIG SUBTRACT.C2
BIGTIME.C2
BINOMIAL DRIL.C2
BODMAS.C2
BOMB ADD.C2
BONDS.C2
BRAIN CRANE X.C2
BRAIN CRANE +.C2
BRAIN CRANE -.C2
BRAIN CRANE /.C2
CAR RACE MULT.C2
CHANGEMAKER.C2
CHOICES.C2

KMD - MATHEMATICS

CBM 4032 V2.1
CLOCK.C2
CO-ORDINATES .C2
COLLECTERM 1.C2
COLLECTERM 2.C2
COUNT 1 TO 10.C2
COUNT TEN.C2
COUNT-FIVE.C2
CURVE FIT 2.C2
DART.C2
DATES.C2
DECOMPOSITION.C2
DEPRECIATION.C2
DERIV POLY.C2

KME - MATHEMATICS

CBM 4032 V2.1
DICE THROW.C2
DIVISION DRIL.C2
DRILL SI.C2
DRILL.C2
DRILLS.C2
ELLIPSE-TRANS.C2
ENGGAME.C2
EQN MANIPULAT.C2
EQUAIONS 1.C2
EQUATIONS 2.C2
EXPONENT MULT.C2
EXPONENTS.C2
FACTEUR.C2
FACTOR TRINO .C2
FACTOR TRINOM.C2

KMF - MATHEMATICS

CBM 4032 V2.1
FACTOR WHOLES.C2
FACTORS.C2
FAST MATH.C2
FLIP PROBLEM.C2
FOIL PRACTICE
FRAC EST/SOUN.C2
FRACTION GAME
FUN MACHINE.C2
FUNC PLOT.C2
FUNCTION PLOT.C2
GAUSS REDUCT.C2
GEOMETRY.C2
GEOMETRYTERMS.C2
GRAPH PLOT.C2
GRAPHIQUE1.C2

KMG - MATHEMATICS

CBM 4032 V2.1
GUNNER.C2
HANGMATH.C2
HANGMATH 2.C2
HEXDEC.C2
HI-CALC.C2
HI-LO.C2
HOW LONG.C2
HOW MANY.C2
HURKLE.C2
HYPERBOLA.C2
INT. ADD FAST.C2
INTEGER & DEC.C2
INTEGER ADD.C2
INTEGER ARITH.C2
INTEGER LINES.C2

KMH - MATHEMATICS

CBM 4032 V2.1
INTEGERS.C2
INTEGRATION.C2
INTERSECT LIN.C2
IQ TEST.C2
LADDER MULT.C2
LAST BOTTLE.C2
LAZER MATH.C2
LIMIT CIRCLE.C2
LIMITS.C2
LINE GRAPH.C2
LINE OF BEST.C2
LINEAR EQUA.C2
LINEAR SYS.C2
LONG DIVISION.C2

KMI - MATHEMATICS

CBM - 4032 V2.1
MAGIC SQUARE.C2
MAKING CHANGE.C2
MATH DICE.C2
MATH DRILL.C2
MATHPACK.C2
MATH QUIZ.C2
MATH TUTOR.C2
MATRIX.C2
METER READING.C2
METRIC(ECCO).C2
METRIC CON.C2
METRIC.C2

KMJ - MATHEMATICS

CBM 4032 V2.1
MICROMATH +-.C2
MICROMATH.C2
MISSING NUMBR.C2
MIXED NUMBERS.C2
MLA ARITH.C2
MONOMIAL MULT.C2
MONSTER MULT.C2
MORTAGE.C2
MUNCHKIN MULT.C2
NUM RECOGNTN.C2
NUMBER GUESS.C2
OPERATIONS.C2
ORDERED PAIR.C2
PARABOLA.C2

KMK - MATHEMATICS

CBM 4032 V2.1
PERCENT DRILL.C2
PERCENT.C2
PERIMETERS.C2
PI CALCULATOR.C2
PIZZA.C2
PLACE VALUE#4.C2
PLANES.C2
PLOT.C2
PLOTTING.C2
POINTS.C2
POLAR COOR.C2
POLICE SUBT.C2
POLY PLOT BAS.C2
POLYGON SECT.C2
POWER-FACT.C2

KML - MATHEMATICS

CBM 4032 V2.1
PRIME-FACT.C2
PRIME NUMBER.C2
PROBABILITY.C2
PROJ-PLOT.C2
QUIZ ADD.C2
QUIZ MULT.C2
R-PLOT.C2
RATE 4.C2
REDUCING FRAC.C2
RESULTANTS.C2
ROLLS TIL ONE.C2
ROMAN NUMERAL.C2
ROOT FINDER.C2
ROOTS QUIZ.C2
SAUCER MULT.C2
SC-NOTATION.C2

KMM - MATHEMATICS

CBM 4032 V2.1
SHAPES.C2
SIEVE.C2
SIG-DIGITS.C2
SIGNIFCNT DIG.C2
SIMEQ. SOLVER.C2
SIMPLE SUBST.C2
SINE GRAPH.C2
SKIER.C2
SLOPE AND INT.C2
SLOPE/INTERCT.C2
SMALL MATH.C2
SNOOPY.C2
ST LINE PLOT.C2
STATISTICS.C2
SUBTRACTION.C2

KMN - MATHEMATICS

CBM 4032 V2.1
TABLES.C2
TIC TAC PET.C2
TIMES TABLE.C2
TIMES.C2
TRANSLATION.C2
TREASURE ADD.C2
TRI. SOLVING.C2
TRI.CLASS-ANG.C2
TRIANGLES.C2
TRINOMIAL FAC.C2
UP THE LADDER.C2
VECTOR.C2
VERNIER SCALE.C2
ZERO IN.C2

KMS - MISCELLANEOUS

CBM 4032 V2.1
A OR AN.C2
BILINGUALSPEL.C2
FINGERSPELL.C2
LATIN 123.C2
SWAP NEW ROM.C2
SWEDISH QUIZ.C2
COMPOSE.C2
MUSIC THEORY.C2
PETUNIA INST.C2
EXPECTANCY.C2
HAMURABI.C2
CHILD ABUSE.C2
HOCKEY QUIZ.C2

KMT - MISCELLANEOUS
1 tape

CBM 4032 V2.1
LIFESTYLES.C2
METEOR.C2
REFLEX TIMER.C2
STADIUM QUIZ.C2
MM ADVBFORMS1.C2

KRA - GEOGRAPHY

CBM 4032 V2.1
AFRICA & ASIA.C2
CANADA QUIZ.C2
CANADA.C2
CAPITALS.C2
CO-ORD DIST.C2
ENGLAND MAP.C2
FRENCH TOPICS.C2
GEOG TEST.C2
GEOG.C2
GEOGRAPH QUIZ.C2
GEOGRAPHY.C2
ITALIAN QUIZ.C2

KRB - GEOGRAPHY
1 tape

CBM 4032 V2.1
KOPPEN.C2
LAKES-ENG.C2
MILEAGE.C2
MILEAGE .C2
NORTH EAST.C2
OCEAN QUIZ.C2
SLOPE(GEOG).C2
STATES & CAP.C2
STATES & REG.C2
WORLD CAPTALS.C2

KSA - SCIENCE

CBM 4032 V2.1
ACCELERATION.C2
ACTINIUM DECA.C2
AVORM.C2
AZIMUTH & ALT.C2
BALANCE CHEM.C2
BALLISTICS.C2
BERNIE TOWER.C2
BOHR ATOM.C2
BOYLE'S LAW.C2
BUOYANCY.C2
CAI MOMENTUM.C2
CASCADE.C2
CHARGE.C2

KSB - SCIENCE

CBM 4032 V2.1
CHEM 12.C2
CHEM EQUA.C2
CHEMIST QUIZ.C2
CHEMIST.C2
CIRCUITS.C2
COMPOUNDS 1.C2
COMPOUNDS 2.C2
CYLINDERS.C2
DEFECT.C2
E.M.T.C2
ELECTRICAL PR.C2
ELECTRO MAG 2.C2

KSC - SCIENCE

CBM 4032 V2.1
ELEMENT.C2
ELEMENTS.C2
ENERGY.C2
ENV. PROFILE.C2
ENZYME.C2
EQUATIONS.C2
EQUIVALENTS.C2
FAMILY.C2
FISHERY.C2
FORCE CONV.C2
FOURIER PLOT.C2
FUSE.C2
GAS EQUATIONS.C2
GEIGERCOUNTER.C2

KSD - SCIENCE

CBM 4032 V2.1
GRAVITY QUIZ.C2
HALF LIFE.C2
HARMONICDSPLY.C2
HEAT SOLVER.C2
INORG CHEM.C2
INTERFERENCE.C2
ION.C2
KINEMATICS.C2
LOCKEY.C2
MALARIA.C2
MARBLE STAT.C2
METER READING.C2
METER READ.C2
METRIC VOLUME.C2

KSE - SCIENCE

CBM 4032 V2.1
MICROSCOPY.C2
MITOSIS.C2
MOLAR.C2
MOLECULE RACE.C2
MOLECULES 2.C2
MOLECULES.C2
MOMENTUM II.C2
MOTION PROB.C2
MOTORCYJUMP.C2
MULTIMICRO.C2
MUTANT.C2

KSF - SCIENCE

CBM 4032 V2.1
NICHE.C2
NOMENCLATURE.C2
OHM2.C2
PEND 1.C2
PEND 2.C2
PERCENT.C2
PERIODIC PROB.C2
PERIODIC TABL.C2
PET NCL REACT.C2
PH PROBLEMS.C2
PHOTEL.C2
PHOTOSYNTHES.C2

KSG - SCIENCE

CBM 4032 V2.1
POLLUTION.C2
RATE 4.C2
REFLEX TIMER.C2
REG PWR SUP.C2
REMDL NOMENCL.C2
RESISTORS.C2
RESOLV'N TIME.C2
RESONANCE.C2
RUTHERFORD.C2
SC-NOTATION.C2
SHEILD EXPT.C2

KSH - SCIENCE

CBM 4032 V2.1
S.I. CONV.C2
SIG-DIGITS.C2
SMPLEPENDULUM.C2
SPECIFIC HEAT.C2
STOICH .C2
TEMP. CONVERT.C2
TITRATION.C2
TWENTY QUEST.C2
USPOP.C2
VERNIER SCALE.C2
WATER II.C2
WAVES 3.C2
WEATHER MAN.C2
YOUNG.C2

KTA - TECHNOLOGY

CBM 4032 V2.1
BIG OHM'S LAW.C2
CIRCUIT 1.C2
CIRCUIT 3.C2
CIRCUIT 4.C2
CIRCUITS.C2
DFW RESIST.C2
DRIVER EDUCAT.C2
ELECTRICAL PR.C2
FUSE.C2
METER READ.C2
MORSE CODE.C2
MORSE.C2
OHM2.C2
PHOTO LOG.C2

KTB - TECHNOLOGY 1 tape

CBM 4032 V2.1
RESIST TEST V.C2
RESISTORS.C2
SIMULATION.C2

KUA - UTILITIES

CBM 4032 V2.1
ANALYSIS 1.C2
ANALYSIS 2.C2
BAIRSTOW NTH.C2
CHECK DISK.C2
COPY D FILES.C2
DISK LISTER.C2
DUM 5.0.C2
FEATURES QUIZ.C2
GRAPH PRINT.C2
GRAPH SUBRTN.C2
HOME ENERGY.C2
PLOT.C2
PRGM. LISTER.C2

Commodore 64 Library

Librarians - David & Richard Bradley, 782-8900, 782-7320

The following disks and tapes are specifically for the C-64. In March, 1983, we started releasing a monthly C-64 disk and tape to coincide with our monthly C-64 meetings. Though the C-64 has been available for only a short time, the program library is building quickly. See p.75 for the complete list of disk and program codes.

NOTE: Only ONE TAPE is required for each C-64 listing.

All 50 disks of the K-series (see Commodore Educational disks and tapes p. 87) work on the C-64. Also the Best of TPUG disk X5 will run on a C-64 equipped with a disk drive. **NOTE:** The K-series is being upgraded and expanded this summer-- more details in September.

Contest

(C) CONTEST

D CAMPBELL-----
LIGHT CYCLES 64!

D FRANCIS------
VOYAGER VI
40 RADIUS
60 RADIUS

SPHERE.1
10 DEGREES
20 DEGREES
30 DEGREES
45 DEGREES
60 DEGREES
70 DEGREES
80 DEGREES
90 DEGREES

120 RADIUS
150 RADIUS
180 RADIUS
ET.PLOT
GLOBE

Dealer/Demos

(C)D1 - C64 DEALER DISK

C64 CDN DEMO
BOUNCE
SPRITEDATA
SOUND11.1
SOUND/RING MOD.1
SOUND/PHASE.1
COLOUR TEST
DEMO.BOOT
DEMO.C000
DEMO13
DEMO.GUTS1
C64-8023P.BAS
C64-8023P.B
KAREN
SUPERMON64.V1

(C)D2 - COMMODORE 64

SPRITE BOOT
SPRITE EDITOR
SCROLL.DATA
SAMPLE SPRITES
SPRITE INSTR.
CHAR BOOT
CHAR EDITOR
ROTATE.DATA
STANDARD.SET
CHAR INSTR.
COMPUTER.SET 5
NUCLEAR DEMO
DEMO.C000
BYTS AND BITES
BYTSPRITES
C64/REV3
BOUNCE
SPRITE.DATA
SOUND11
SOUND/RING MOD
COLOUR TEST
C64.MENU
DISK BACKUP

(C)D3 - 64 DEMOES

C64.MENU
BOOT.UK1
BOOT.UK2
DOS BOOT
COPY/64
1541 BACKUP
DIRECTORY
JACK
DEMO.GUTS1
DEMO13
DEMO.C000
DOS 5.1
BAR CHART
DEMO FIN
BOOT2
SPRITES
SCROL
KEY
HUFO
MUSIC2
MUSIC
MATH
LAND
DEMO
BOOT.CLYDE
MONOPOLE
MAZE

(C)D4 C 64 PROGRAMS

LIST-ME D4.L
STRING THING.C
COPY-ALL.C
BIT MAP PLOT.C
BUGS.C
SPRITE MAKER.C
PI HUNT.C
VISIBLE.C
FACTORS.C
GERMAN BOMBER.C
LONE RANGER.C
CHAR DISPLAY.C
DRAW POKER.C
REVERSE.C
ENTERPRISE.C
DOMINOES.C
MILLE BOURNE.C
SPADE.INSTRUCT.C
SPADES.C
LABYRINTH.C
TOMBS.C
TAX 82 ONT V1.0.C
INVOICER.C
CONSTRICTOR.C
EXPANDER.C

Education

(C)E1 - TUTORIALS.C

LIST ME (C)E1.L
PONZO TUTOR-1.C
PONZO TUTOR-2.C
PONZO TUTOR-3.C
PONZO TUTOR-4.C
PONZO TUTOR-5.C
PONZO TUTOR-6.C
PONZO TUTOR-7.C

(C)E2 - TUTORIALS.C

LIST ME (C)E2.L
SPRITES TUT-1.C
SPRITES TUT-2.C
GRAPHIC TUT-1.C
GRAPHIC TUT-2.C

Games

(C)G1 - PICTURES 1.C

LIST-ME CG1.L
CONT.LDR.ML
HI RES LOADER
SCREEN
CONT.LDR.PAL
SPIRAL.1
SUE
KAREN
SNOOPY
ALBERT
DOLLAR
DIP
SNAIL
DES.1
7-3HILL
MUSIC
MAP
DIANE
WILLY
RACCOON
SINCOS1
WATCH
WINSTON
MICROMETER
NUDE

(C)G2 - PICTURES 2.C

LIST-ME CG2.L
CONT.LDR.ML
HI RES LOADER
SCREEN
CONT.LDR.PAL
SQUEEZE
TEX
HOPALONG
GUY
FIG1
FIG2
4HILL5
XMAS. CARD.1
FIG3
MOUND2
EYES
FRIENDS
SINCOS2
SATELLITE
DONALD.DUCK
VM.THINGS
SESAME.ST
NUDE.REV
VIS.ROSETTE

(C)G3 - EMULATOR GAMES 1
1 tape

PET EMULATC
LIST-ME.L
OSC LUNAR
STAR WARS
STAR TREK
LUNAR LANDER 1
LUNAR LANDER 2
SUPER STAR TREK
ELIZA
KLINGON CAPTURE
EASY DUNGEON
PLANET PROBE
AFO WITH SOUND
ATARI II
STAR WARS TRANIN
DEEPSPACE

(C)G4 - EMULATOR GAMES 2

PET EMULATOR
LIST-ME
HUNTER SATELLITE
STARBASE&UFO
SPACESHOOTER
SUPERLANDER
C.C.STARWARS INS
C.C.STARWAR
HANGMAN 1
HANGMAN 2
HANGMATH
MATH IQ
ANDROID NIM
REVERSE
3D TIC-TAC-TOE
NIM
BAGELS
REVERSE #S
BINGO
BAGELSX2
STARS
MASTERMIND
CRYPTO
KENO
MAGIC SQUARE

(C)G5 - EMULATOR GAMES 3

PET EMULATOR
LIST-ME.L
BRAIN STRAIN
PIGS
CRAPS ODDS
LETTER 15
CONCENTRATION
FAMOUS PHRASES
GUESS IT
TIC-TAC-TOE
JOTTO
HORSE RACE
ARROW
POKER
DEFLECTION
BATTLESHIPS
BREAKOUT
ROBOT CHASE
DAMBUSTERS
LABYRINTH
BOWLING
BLACK JACK 1
BLACK JACK 2
BLACK JACK 3
SOLITAIRE

(C)G6 - EMULATOR GAMES 4

OTHELLO
TOKER
KENTUCKY DERBY
RACETRACK
CHECKERS 1
CHECKERS 2
MOTORCYCLE
PETALS ARND ROSE
CHASE ROBOT
SNAKES
TARGET
GO-MOKU
ROULETTE
AWARI
LIFE WAR
FLIGHT SIMULATOR
BLACK BOX
BOMBER
PRO FOOTBALL
SKI
PINBALL
DUCKSHOOT

(C)G7 - EMULATOR GAMES 5

PET EMULATOR
LIST ME.L
STOCK
CRAZY 8'S
KILLER BUNNIES
FAWLTY
CARD SNAP
DEPTH CHARGE
CARDS UTILITY
GRUNGY TOWERS
BREAKOUT
DRAW.POKER
SUBMARINE!
BILLIARDS!
CLUE
DRAGON.MAZE!
GUNNER
DICE.PIG
OSERC

(C)G8 - EMULATOR GAMES 6

PET EMULATOR
LIST ME.L
YAHTZEE
BOWLING
BLACKJACK.ALT
HORSES
BRIDGE BID TRAIN
SOLITAIRE POKER
WUMPUS.ALT
SLOTS/JACKPOT
TREES
KNIGHT.TOUR.SOL
ARTILLERY TRAP
CHECKERS.ALT
BASKETBALL
MUGWUMP
SINNERS
GOLF

Music

(C)S1 - MUSIC/SOUND 1.C

LIST-ME CS1.L
THE KANON.C
BACH FUGUE
ENTERTAINER.C
YESTERDAY.C
BACH DUET.C
ORGAN.C
DIXIE.C
TWINKLE.C
YANKEE.C
GUNFIRE.C
PONG.C
RAYGUN.C
SIREN.C
ALIEN.C
BELL.C
BOMB.C
CLAP.C
PIANO.C

Monthly Releases

(C)TS - TPUG MARCH 83.C

LIST-ME CTS.L
MONTANA.C
MONOPOLE.C
LABYRINTH.C
PIANO.C
DISKVIEW.C
SPRITE-BOOT.C
+SCROLL.C
+SPRITE ED.C
DOS.BOOT.C
+DOS 5.1.C
+DOS.INST.L
COPY-ALL.C
1541 BACKUP.C
SUPERMONV1.1.C
SPRITE MANIP.C
TERMINAL.C
TERM.C

(C)TT - TPUG APRIL '83

LIST ME CTT.L
PONZO TUTOR-1.C
PONZO TUTOR-2.C
PONZO TUTOR-3.C
PONZO TUTOR-4.C
PROG CONVERT.C
PADDL TEST.C
PRNT PADDLES.C
TERMINAL DOC.C
LISTER.C
1525 CHAR.EDIT.C
KAT $ MOUSE.C
CLIFFY.C
MIN2.INS.C
MINOTON 2.C
TIME VEN INST.C
TIM VEN SETUP.C
TIME ADVENTURE.C

(C)TU - TPUG MAY '83.C

LIST ME CTU.L
PONZO TUTOR-5.C
PONZO TUTOR-6.C
PONZO TUTOR-7.C
BACH FUGUE.C
ENTERTAINER.C
TERMINAL.64.2.C
TERM.64.C
NIGHTMARE PARK.C
WHEEL FORTUNE.C
YESTERDAY.C
C-64 GRAPHER.C
64 H-R PLOT M/L
BLACKJACK.C
BIRTHDAY.C
TWIN BAGELS.C
SUBMARINES.C

(C)TV - TPUG JUNE 83.C

LIST-ME (C)TV.L
SLIDESHOW.C
HRSUPP.D
HRSUPP/BASIC.C
HRSUPP.SRC.C
HRTEST.C
DRAGON.D
TANK.D
POLISH.D
BLITHER.D
UNCLE.D
GLOCKENFLUTE.D
RATRUN.C
SPACE NIM.C
BIO-COMPAT.C
BIO-PLOTER.C
BIO-PRINTER.C
HANGMAN.C

A STORY.C
SUPERMON.C
SUPERMON INST.C
SOUND HELPER.C

VIC 20 Library

Librarian - Craig Bonner, 416/663-4025

The following disks and tapes are specifically for the VIC 20. Please see p.75 for complete list of codes.

NOTE: Some VIC programs require an 8K/16K/3K memory expander (as indicated). Others require the Super Expander (coded SX) for the music and graphic commands. Only ONE TAPE is required for each VIC listing.

Contest

(V) CONTEST

FALLING STAR
THE HELICOPTER
HELI. PART 2
FORT. HUNT.INST.
FORTUNE HUNTER
UXB PART 1

UXB PART 2
MINESLIDE
SUB-SINK.INST
SUB-SINK.MAIN
INDEX
VIC TEXT EDITOR
VIC-DATA BASE
VIC SPIRAL

MINER-8K-INTRO
MINER-8K-GAME
SKI MEET
CANADIAN MORTGAG
STAR DESTROYER
VIC ARTIST
MATHOFF
POKER! INSTRNS

ZARZON BASE
SNAKES & LADDERS
PLOW BY NUMBER
DIANE'S NUMBERS
TYPING TUTOR
MARSTON CITY
LUNAR LANDER
MUSIC

MUSIC - J.B.
POKER - VIC
VIC ALARM CLOCK
LABEL MAKER V3

Demos

V3 - VIC DEMOS 1

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 DEM03
COMMODORE SYMBOL
LOG & LOGO
HI-RES CLOCK
CALCULART
VIC CLOCK
VIC LISSAJOUS

CANADIAN FLAG
KINETIC ART
TRIG PLOT
BAR GRAPH

V6 - VIC DEMO 2

VIC JASPER
VIC COLOR ROOS
VIC POOKY
VIC GARFIELD
DEMONSTRATIE.HI
VIC TRSHY PIC
VIC DESIGN

VIC DESIGN 2
VIC DESIGN 3
VIC DESIGN 4
VIC VIC
DIGICLOCK
HIRESFOURIER
USA SONG

Education

(V)E1 - EDUCATION.V

-LIST-ME (V) E1-
VICAB1 8K.V
VICAB2 8K.V

VICAB3 8K.V
VICAB4 8K.V
VICAB5 8K.V
ARITH CHALLENG.V
MATH SKILLS.V

GLOBE QUIZ.V
VIC HANGMAN.V
ALPHA. COMMAND.V

Games

V1 - VIC GAMES 1

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
VIC FREIGHTER
VICBREAK/PADL
MOONLANDER

V4 - VIC GAMES 2

BRKOUT.PADL
MINIATURE GOLF
TANK VS UFO JOY
SPACEWAR 1
SPACEWAR 2
TANK VS UFO KEY
SHOOTER JOY
VIC CHASE JOY
VIC CHASE KEY
BREAKOUT KEY
STEAL MONEY
PING-PONG
SUPEREVERSE VIC
VIC 3 OF KIND
WALL DESTROY VIC
CHUCKALUCK VIC
LETTERSQUARES
VIC SQUIGGLE
SLO VICMAN KEYB
MASTERMIND
CRAZY BALLOON
ALIEN WASTER
ASTEROIDS
OUTPOST

Monthly Releases

(V)TN - NOV/82 VIC

COPY-ALL
MINIATURE GOLF
TANK VS UFO JOY
TANK VS UFO KEY
SHOOTER JOY
VIC CHASE JOY
VIC CHASE KEY
BREAKOUT KEY
STEAL MONEY
PING-PONG
SUPEREVERSE VIC
VIC 3 OF KIND
WALL DESTROY VIC
CHUCKALUCK VIC
LETTERSQUARES
VIC SQUIGGLE
SLO VICMAN KEYB
MASTERMIND
CRAZY BALLOON
ALIEN WASTER
ASTEROIDS
VIC MAIL
OUTPOST
BUDGET
SEPT 30 RANDOM
WORDPRO 2
VICTERM
CAT
WIZZACALC
DISKMEM B-RR1
DISKMEM INSTR.
VICWORD
VIC CONTROL KYBD
VIC TRIANGULATOR
JOYSTICK TEST

V7 - VIC DEC/82

GUESSING GAME
WORD HUNT 8K
VIC TAPE INDEX
VIC KEYSORT
VIC SORT.DEMO1
VIC SORT.DEMO2
VIC JASPER SX
VIC COLOR ROOS S
VIC POOKY SX
VIC GARFIELD SX
DEMO.HI SX
VIC TRSHY PIC SX
VIC DESIGN SX
VIC DESIGN 2 SX
VIC DESIGN 3 SX
VIC DESIGN 4 SX
VIC VIC
DIGICLOCK
VIC AID4.REL
VICMUSIC$1201
V 76TROMBONES
V ENTERTAINER
V WONDERLAND
OUTPOST-LOAD
OUTPOST

V8 - VIC FEB/83

VIC DT
ZAPEM
MAZE-CHASE
GUESS THE NUMBER
HIRES INSTR.
HIRES HARDCOPY1
HIRES HARDCOPY2
HIRES H/C DEMO
CUSTOM CARDS
V JIM IN COLOUR
VIC LOTTARIO
TURTLE BOOT DISK
TURTLE BOOT TAPE
PLOT ML
TURTLE PROTO
TL]FOTT
TL]STAR
VIC FUNCTION KEY
V-TERM 5K INST
V-TERM 5K

(V)TS TPUG MAR 83.V

VIC SLOTS
V TAX 82 ON V1.0
V TAX PART 2
V TAX PART 3
V 8K TAX 82
V RHINO
V 8K-LOAD
V 8K VICAB1
V 8K VICAB3
V 8K VICAB4
V 8K VICAB5
V BOMBER PILOT
V PAINT BY PEN
V CHINESE C'BOOK
V THUNDERBIRD
V ARITH CHALLENG
V NOTONE
V DRUM MANIA
V VICAB2
V BUSINESS DEMO
----LIST ME----

(V)TT -TPUG APR 83.V

2 JOYSTICK VIC.V
AIR GUNNERS.V
??????QQQQ
SCROLLING INST.V
SCROLLING.V
LABEL MAKER 8K.V
VIC DT
MAKE-A-SKETCH.V
HIDDENMAZE JOY.V
SNAKE.V
AUTO LINE#.V
MATH SKILLS.V
LOAN PROJECT.V
LOTTO.V
CAR COSTS.V
CALENDER.V
NIM.V

(V)TU TPUG MAY/83.V

LIST-ME VTU.V
DR DEMENTIA IN.V
DR DEMENTIA.V
MORTGAGE.Z
PRINT USING.Z
ASTRO WARS.V
DYNAMITE!.V
BRAIN WARP.V
GLOBE QUIZ.V
VIC HANGMAN.V
VIC X/O'S 8K.V
VIC EDITYPE 8K.V
TINY PLAN 8K.V
R.B. SPEEDWAY.V
VIC G.I.R. INS.V
VIC G.I.R.V
CAR RACE(T)3K.V
ALPHA. COMMAND.V
VIC PILOT 3K.V
OVER THE R'BOW.V
GREENSLEEVES.V
ZIPPITYDOO-DA.V
VIC ORGAN.V
GRUNGY TOWERS 8K
GOLDRUSH.V

(V)TV -TPUG JUNE 83.V

LIST-ME VTV.L
DRIVE DISM
CROWN 3D
CALCULATE BASE.V
ALPHA. SORTER.V
METRIC CONVERT.V
DATE FORMATER.V
SPEED READING.V
ENROL LIST 8K.V
VISION TEST.V
LONG DIVISION.V
ONE ARM BANDIT.V
TARGET SHOT.V
STARSHIP 3K.V
PING/PONG(T).V
STATE CAPITAL.V
USA SONG.V

TPUG Best of VIC 20

(V)X1 - BEST UTIL.V

-LIST-ME (V) X1-
VIC AID4.REL.V
HIRES INSTR.V
HIRES HRDCOPY1.V
HIRES HRDCOPY2.V
HIRES H/C DEMO.V
CUSTOM CARDS.V
TURTLE BOOT DISK
TURTLE BOOT TAPE
PLOT ML
TURTLE PROTO
TL]FOTT
TL]STAR
FUNCTION KEY.V
TERM 5K INST.V
TERMINAL 5K.V
VIC DT
CATALOG.V
VICWORD
JOYSTICK TEST.V
LABEL MAKER 8K.V
TINYMON1 FOR VIC
TINYMON INST
VIC DIS1
VIC DIS2
VIC DIS3
DISASM
SUPER VICMON2

(V)X2 - BEST MUSIC.V

-LIST-ME (V) X2-
OVER THE R'BOW.V
GREENSLEEVES.V
ZIPPITYDOO-DA.V

VIC ORGAN.V
V DRUM MANIA
VICMUSIC31201
V 76TROMBONES
V ENTERTAINER
V WONDERLAND

MERRY VIC-MAS
FRERE JACQUES
VIC KEY
VIC SIL. NITE
BUMBLEBEE
PIANO

USA SONG

Utilities

V2 - VIC UTILITIES 1

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
VIC WEDGE
SUPER VICMON2

V5 - VIC UTIL 2

TERMINAL.SERIAL
TERM.SERIAL
VIC KEYSORT
VIC SORT.DEMO1
VIC SORT.DEMO2

VICWORD
VIC CONTROL KYBD
VIC TRIANGULATOR
JOYSTICK TEST
VIC AID4.REL
VIC MAIL
VIC TAPE INDEX
BUDGET
SEPT 30 RANDOM
VICTERM
CAT
WIZZACALC

DISKMEM B-RR1
DISKMEM INSTR.

SuperPet Library

Librarian - Gerry Gold, 416/225-8760

If you own a CBM 8096 or a SuperPet, you can use the disks designed for the CBM 8032 in the "O" and "P" libraries, (see p. 77) as well as those listed below. When using programs for the 40-column PET in conjunction with program CBM 4032 v2.1, you will have difficulty with the programs activated by the number pad. On the SuperPet and CBM 8096, the equivalent keys may be anywhere on the keyboard.

NOTE: The following listings are not available on tape.

(S)T1 - SP-APL.S

BYTEAPR81PAL94
SCANS
ETIMAR79PAGE24
HELP
TUTORIAL
PUBLICATIONS
BYTEOCT80PAL92
BYTEJUL81PA331
APL.INDEX
APL.EXAMPLES1
APL.EXAMPLES2
APL.EXAMPLES3
APL.FILES
APL.DOS
APL.MASTERMIND
WSCREATE
WSCONV.APLOLD
DFCONV.APLOLD
SEP27
PRINT
PERT
MATRIX
APL.PLOT

(S)T2 - SP.ASM/BAS/FTN.S

FILES-WATERLOO
MNEMONICS
DIRECTIVES
DEVELOPMENT
DISAS.ASM
DISAS.CMD
CRT.ASM
CRT.B09
DISAS.B09
CRT.LIST
DISAS.LST
DISAP.MAP
DISAS.MOD
DISAS.EXP
SCREEN DUMP
GET-KEYBOARD
SCREEN-DUMP
PLOT-8300P.WP
PLOT-8300P
CHECKSUMS
CHECKSUM-RESULTS
SMOOTH.DAT
PRINT.FILE

RESAMPLE.FTN
PERIODIC.FTN
REGRESSION.FTN
PERIODOGRAM.FTN
SPECTRUM.FTN
INTEGRATION.FTN

(S)T3 - SP.EDS4.P

APLSORT
MASTERAPL
UTILITYAPL
STATSAPL
PRIMESAPL
TELECOMMAPL
APLCOPY
RAPL
SPETRS232
APL-ARTICLE-E
TOTALCOBOL
FORTRANPLOT
PRIMEFORTRAN
REALDIRECT
IMAGDIRECT

(S)T4 - SP 3/83.S

ASTRO
DRIVER
SCRAMBLE
START
BAID9
EDIT9
MENU9
MMON9
BAID INSTRUCTION
MICROMON INS
APL CHARS
LISTER.BAS
QUICKSORT.BAS
KNIGHTS-TOUR.BAS
CONCENTRATE.BAS
BLACK-JACK
TIC-TAC-TOE
FIB.ASM
FIB.CMD
FIIIB.B09
FIB.MOD
TREESORT.PAS

HANOI.PAS
FIB.PAS
FACT.PAS
DIRECTORY.ASM
DIRECTORY.CMD
DIRECTORY.LST
DIRECTORY.B09
DIRECTORY.MAP
DIRECTORY
DIRECTORY.EXP
DIRECTORY.INS.WP
SUPERCAT@32000
DIRECTORY.MOD
INSANE

CLASSIFIED ADS

5 Cents per word, with $1.00 Minimum.
Payment in advance to:
TORPET CLASSIFIED
P.O. Box 100
Station "S" Toronto, Ontario
Canada M5M 4L6

FOR SALE

PET 4032 (32K w/FAT 40 and Sound Interface), 4040 Dual Disk Drive, 4022 P Dot Matrix printer, plus all cables manuals. All in excellent condition. $2700. Call Neil, (416)789-4511,days; 636-8927, evenings.

1525 VIC GRAPHIC PRINTER for VIC or C-64. Like new, $375. or best offer. 'Phone Bob Scott, (519) 756-9362 or (519) 471-3328.

VIC-20/64 DIGITIZER and GRAPHICS TABLET with 16"X20" drawing board. Connect THE HELPING HAND to the game port and use it to draw or to trace from paper directly onto your screen. A friendly alternative to the keyboard, the Helping Hand is more versatile than a joystick or paddles, and is a powerful mate for the VIC Super Expander cartridge. Two programmable function keys are mounted directly on the drawing board, so you can carry out additional operations like clearing the screen without using the keyboard. Includes demonstration programs, and is shipped in eay-to-assemble form (no soldering). $39.95 plus $6.00 shipping and handling from Persimmon Peripherals, Route 2, Box 2306A-TO,Clayton, GA 30525.

CBM 8032 with Waterloo BASIC Chip. Next to brand new.Will not sell separately. Asking $2100.or any reasonable price. 'Phone (in Toronto (416)686-1868 between 9 - 5)) or write Todd Wright, RR#1, ASHBURN, Ontario, CANADA L0B 1A0.

Commodore Business System CBM 8032, CBM 8050, CBM 4022, BPI General Ledger, Paperclip WordProcessor. Excellent condition with cables and manuals. David Fitkin 1428-29th. St.,N.E. CEDAR RAPIDS, IA 52402, (319)363-1298. Complete system $2995.

I HAVE A NEW BABY, AND GOTTA SELL THIS STUFF! McTerm software, ROM, and PET to modem cable: $125.(cost me $195.). BPI General Ledger and Accounts Receivable:$400.(cost me $600.). Interlink Mail-Er mailing list software: $50.(cost me $95.). Edco Soft-Rom (save roms to disk and then be able to use more than one rom in A000 or 9000): $25.(cost me $35.). All software is on the original disk, used only to make a working back-up. Call me at home (616) 471-5759, and use your VISA or MASTERCARD, or write to; Ric Bermele, 714 Cherry St., BERRIEN SPRINGS, MI 49103, U.S.A. and enclose a money order. Canadian funds are ok.

2 DOUBLE MUPETS - OLD MUPET system - $100.each. Sieg Deleu, President, Kobetek Systems Limited, 1113 Commercial St., NEW MINAS, N.S., CANADA B4N 3E6, (902)678-9800.

Commodore 8032 computer with 2031 single disk drive, Manuals, including "Programming the PET/Com", cable and dust cover included. $1700. Call Roy at (416)247-9791.

PET 2001 Series 8K, plus 16K Expanded. Skyles 24 Pin updated BASIC, # signs Skyles big Keyboard. BASIC Programmers' Tool kit (PLL0 Alto IC'S) Number 2 cassette recorder. 2022 Tractor Feed Printer and 1/2 box paper $1500. U. S. Will ship to border town; you get from there. Call (714)683-7027, RIVERSIDE, CA.

VIC 20 and Commodore 64 educational software designed by teachers and tested by kids. Send for FREE CATALOG. One example is ALGEBRA. The program teaches a method of solving AXB=C for X, and then gives a quiz. 5K VIC $6.95, 64 $8.95, Shipping $1.50. ATHENA SOFTWARE, 727 Swarthmore Dr., Dept. T, NEWARK, DE 19711 U.S.A.

SuperPET.List from APL on the 8023p printer APL functions complete with all the special APL symbols, print APL results, secondary addresses, printer commands for enhanced inverse, etc. Send $29.95 for 8050 disk to J. Bos, 187 Dufferin Ave., Brantford, Ont., CANADA N3T 4R4.

"Commodore 8032 CBM - 90 days old and Commodore 4040 90 days old disk drive for sale - $3000 for both - some software available at extra cost. TELEPHONE CHUCK (514)683-8440 or 683-2291 day or night."

WANTED

Software: Inventory Control System with "point of sale: format" for a retail store. The system is required for a PET 4032 with 4040 Disk and 4022 Printer. Contact Jim Clefstad, Box 154, Mackenzie, B.C. V0J 2C0

Has anyone seen or heard from Dr. Daley? Has anyone experienced and solved problems with Dr. Daley's Mail List version A.4 or newer? We invite correspondence in an effort to retain the utility of this versatile software. Call collect (201) 658-3133 or write L. K. Shick, Stampsoft, P.O. Box 125, Pluckemin, NJ 07978.(1)

CREATIVE PROGRAMMERS! Original VIC 20 and Commodore 64 programs required by new software company. Programs of all kinds may be submitted on tape or 1541 disk with documentation and stamped, self-addressed mailer to: The Cintechs Company, P.O. Box 2220, Station A, LONDON, Ontario CANADA N6A 4C3. All submissions will be answered.

Learn the power of your C-64 Sid Chip! "Sounder" gives a menu-driven, easily used control of all functions. $11.95 Tape, $12.95 Disc from: Superior Shores Software, Inc.,P.O. Box 323, Grand Marais, MI 49839

One Word Pro 4 Plus complete package, hardly used, $320. Call John Irvine or Joe Di Trapani at Bishop Ryan High School 166 Queenston Road, Hamilton, Ont. 547-2125. After 6P.M. call 388-5020."

"FOR SALE": COMMODORE 8032 microcomputer and 8050 dual disk drive (one megabyte capacity). like new. $2500.00 for the pair. Will not sell separately. Write CS Design Inc. Box 602, Waterloo, Ontario, N2J 4B8."(1)

Are you a C-64 owner in need of AID? Well, we've got one for you. The C-64 programmers aid package adds 6 DOS wedge commands. (>@ / \ ) A simple extended M.L. monitor (:;RMGXLSFTHDP,A) plus 27 other additional programs and system management commands (Find, Change, PET, SETUP, COLOR SCREEN, DUMP, CONVERT, APPEND) to name only a few. RTC Link compatible. If you are interested in learning more about this program, send $1.00 (refundable on purchase) to G.R. Walter, General Delivery, Proton Station, Ontario, Canada, N0C 1L0. if from outside Canada, send U.S. funds. Or if you want to get AID right away, send $40.00 check or money order.

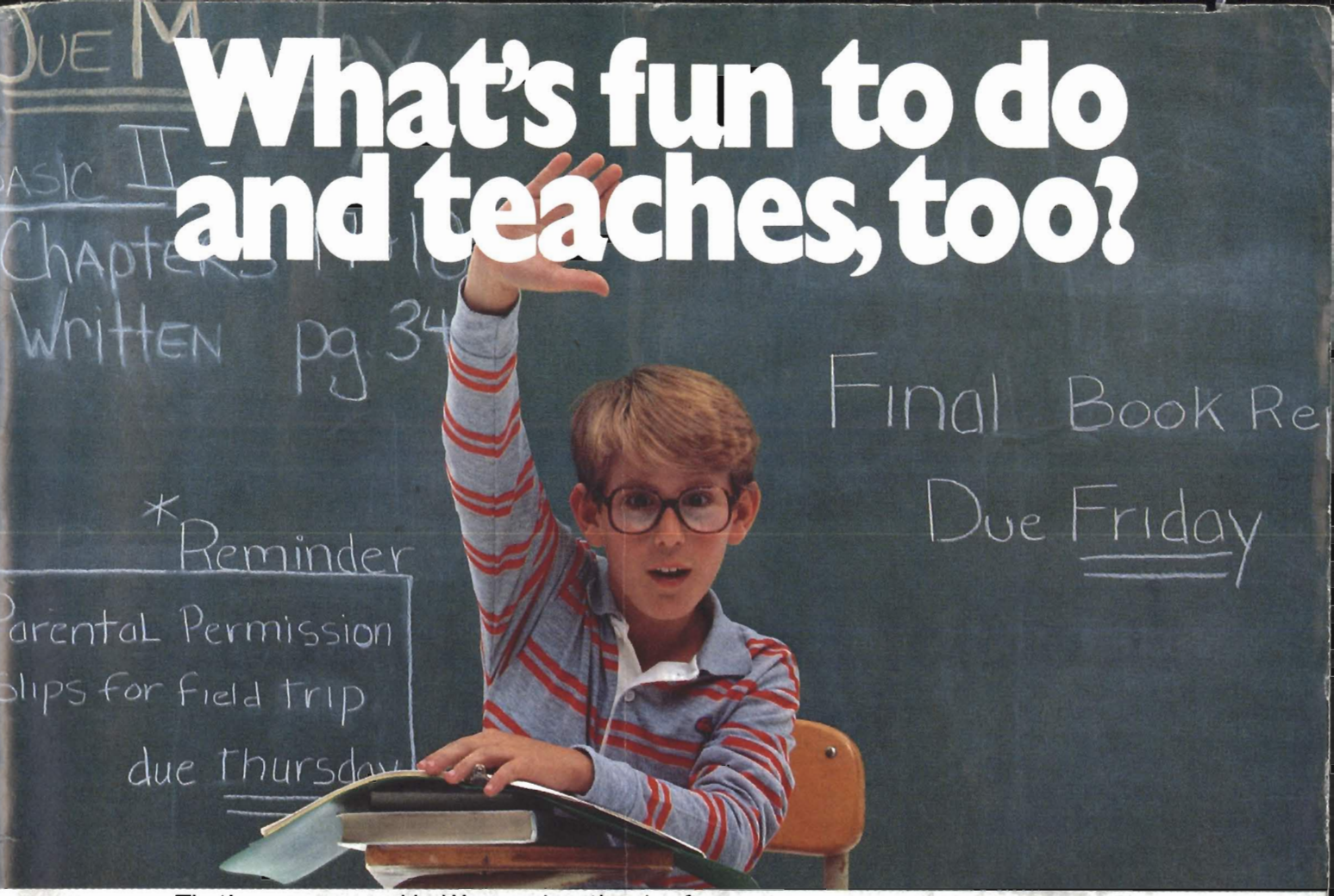
CATALOGS

PET/CBM ADDS-ON FREE CATALOG. ECX COMPUTER COMPANY has over 20 new add on circuits and software for your PET/CBM computer and peripherals. For a FREE CATALOG, send a self-addressed stamped envelope to ECX COMPUTER COMPANY, 2678 North Main Str., Walnut Creek, California, 94596

Advertisers Index

Accolade Computer Products 24
Apropos Technology 12
Beacon Software 62
Cintechs 50
Compu Sense 19,23,26,38,47,59
Compusound 71
Computer Barn 71
Computer Place 84
Computerville 61
ComStar 19
Connecticut microComputer 83
CURSOR 50
Des-Soft 6
Education Circuit 43
Electronics 2001 37
French Silk 24,25,47
George Brown College 26
Guardian 61
Hewitt's National Wholesale 6
Hytec Systems 83
IDS 50
Interesting Software 84
Jini Micro Systems 14
King Microwre 36
Memorex 30
Micro World Electronix 61
Mirage Concepts 11
Performance Micro Products 62
ProLine 26,38,45,47,62
Quality Computer 23
RTC 47,48,49
Sectore's 38
SIM 96
Skyles Electric Works 35
Smith-Corona 60
Southwest Micro Systems 13
TORPET 72
TOTL 23
TPUG 25,52
Tycor 38

What's fun to do and teaches, too?



That's an easy one: HesWare™ educational software.

The children with the most answers in school are usually the children who enjoy learning. HesWare helps develop your child's interest in learning by making it fun. And along the way, develop familiarity and proficiency with computers—a skill that is becoming more and more essential to success.

HesWare educational software combines enjoyment with a creative learning experience. Unlike video games, HesWare educational programs involve your child—and that keeps their interest. Whether it's creating colorful and artistic pictures with Turtle Graphics, making up funny faces with Facemaker,™ or helping America's favorite canine, Benji, save kidnapped scientists (and learn about the solar system in the process,) or any of the programs in our education library, HesWare gives your children a positive attitude toward learning and technology.

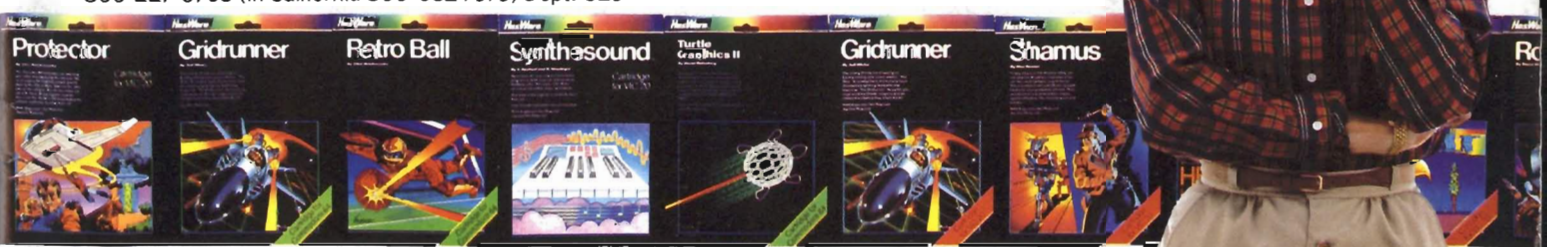
It's not expensive to give your child a headstart on the future. HesWare programs are available for most popular home computers, including the Commodore VIC 20,™ Commodore 64,™ Atari,® and IBM.®

HesWare educational software. Just one of the ways HesWare is expanding the computer experience. And expanding your child's horizons. Look for them at your favorite software retailer.

Pleases the tough customer.

HesWare™

Human Engineered Software, 150 North Hill Drive, Brisbane, CA 94005
800-227-6703 (in California 800-632-7979) Dept. C20

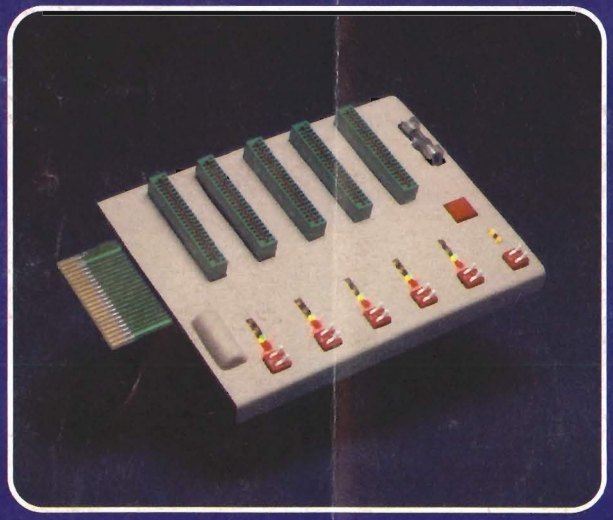


New From Cardco

Five Slot Expansion Interface for the C-64

The CARDBOARD/5 (CB/5) is an enclosed five slot, fully switch selectable, expansion interface for the Commodore 64™. This quality product allows the user to switch select any cartridge slot or combination of cartridge slots. Twenty-two color coded light emitting diodes give status indication. Each slot has four LEDs and two toggle switches for indication and control. Two master toggle switches allow the user to manually override any situation.

All Cardco products are individually tested to insure quality and reliability.



Some of the features of the CARDBOARD/5 are:

- high quality glass/epoxy circuit board
- gold plated contacts
- logic lines are switched by solid state IC switches
- full LED status indication
- convenient toggle switches
- full support under the board to prevent flexing
- full plastic enclosure to insure safety
- fused to protect your computer
- convenient reset button
- CARDCO, Inc.'s exclusive Lifetime Guarantee

See a complete line of American made Cardco Products at a computer store near you, today.

313 Mathewson • Wichita, Kansas 67214 • (316) 267-6525

cardco, inc.