

TPUG Newsletter

Views and News of Toronto Pet Users Group

c/o John Easton, 258 Lake Promenade, Etobicoke, Ontario, M8W 1B3 phone (416) 251-1511

Fall — 2014

From your President

Greetings.

For those that do not know me, my name is Ian Colquhoun and I was elected by the TPUG Board of Directors back in the late spring to be the club's next president.

Before I introduce myself though, I would like to thank Greg Van Laere for his leadership and hard work as club president since he took that post in 2007. Greg helped TPUG to remain a stable and viable club. Greg was instrumental in the preparation and release of the TPUG Library CD, spent countless hours helping out with donations and operation of the TPUG store, helped organize and run the World of Commodore shows and most recently has been working on getting the missing pieces of the Archives section on our website identified and scanned. Thank you very much Greg! Greg is continuing on as a TPUG board member.

Now a little about me. I joined TPUG back in late 2006 for the first time and very quickly was talked into joining the board. I have been a Commodore user since 1983 and was aware of TPUG back in the 80's but at that time I was more interested in games and calling pirate BBS's and things like that that did not necessarily jive with the intention of TPUG as I understood it. Oh, and I was also under 16, didn't have a car, nor parents that cared about shuttling me into Toronto for such things.

I started with a VIC-20 and a C1530 datasette. I learned quite a bit about BASIC programming, or at least what I could from the VIC-20 User Guide. I found a couple of friends at school that also had VIC-20's so I built up a small library of games all on cassettes. I had

not had my VIC for very long though when a friend of mine got a C64. It took years of prodding my parents but I finally got a C64C for Christmas 1987. Extremely late in the scheme of things, but I was happy. A 1541-II arrived 6 months later for my birthday. I was set!

I ran a BBS on my 64 (running Dark-Star v3.1) from mid 1988 until early 1994 when college was more important than trying to keep my board up for the few people that still called regularly. Shortly after that the 64 was put away until late 2004. I had also become an Amiga user (a 600HD) in 1992, but taking computer science at college meant that I was on PCs all day at school and pretty soon the Amiga was also shelved.

In the intervening years I had graduated from computer science and started working as a system administrator at Sheridan College. I worked there for several years and then in early 2000 got side tracked and moved to Phoenix, Arizona to work for an oil company at their headquarters. Eighteen months later I was missing Ontario and moved back and took up my old position (more or less) back at Sheridan.

We always have a co-op student working for us in my group and in 2004 our co-op and I got chatting about our early computing experiences and it got me thinking about my 64 and my BBS days. I happened to hit Google and found that, lo and behold, in about two weeks that there was going to be a World of Commodore show! Awesome! Josh (the co-op) and I attended that first TPUG-run WoC and had a fun time. It wasn't quite like the old International Centre days, but I was stoked that anyone still cared let alone the

number of people that turned up that day.

So here we are in 2014, ten years later. I am pleased to be given the opportunity to lead such a great group of people. Already in 2014 we have made some great progress for TPUG's future. At the end of June we were able to close the TPUG locker where we had been storing our "inventory". Leif Bloomquist and a small team went through everything in the locker, identified the actual garbage, and either sold off or arranged a small group of other volunteers to store the rest. This has lifted the financial burden of the locker that was beginning to become a serious problem since we have not been able to operate the store for over a year. Many thanks to Leif and the rest of the team! We are also hoping to get the TPUG store back off the ground in some capacity in the coming months.

I would also like to invite you all to the 11th edition of TPUG's World of Commodore show on Saturday December 6th at the Admiral Inn in Mississauga. It is a fun day filled with demonstrations, exhibits and lots of chance to mingle with friends that share a love of everything Commodore. Please check the website:

<http://worldofcommodore.ca> for the latest details. Plan to stay all day. We usually gather for a dinner out and then back to the hotel to hang out until the wee hours. Contact Leif or myself if you are just dying to demo something this year!

See you at meetings!

Ian C.

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Website: www.tpug.ca
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Membership Rates

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 else, with e-mailed Newsletter,
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Newsletter

Editor John Easton (416) 251-1511
jeaston@rogers.com

Meeting Schedule

Westside and Amiga West: Third Thursday of the month (except summer) at Alderwood United Church, 44 Delma Drive. Delma Drive is just west of and parallel to Browns Line, south of the Queen Elizabeth Highway, north of Horner Avenue. From the west, exit QEW at Evans Avenue, east on Evans to next stoplight, south on Gair to Delma Drive. From the north or east, follow signs from QEW or Hwy. 427 to Browns Line, exit right to Evans Avenue, turn south on Gair (first stoplight) to Delma.

Contact - **Leif Bloomquist** (416) 737-2328 leif@schemafactor.com
 or **Ernie Chorny** (905) 279-2730 chorny@bell.net

From your Editor ...

We've had lots of publicity and fun over the re-enactment of a Starbucks Flash Mob occurrence a year ago celebrating the 30 year anniversary of the introduction of the Commodore SX-64 (Portable/Luggable?). It seems as if Starbucks heard of us, and in an effort to re-construct what happened, they recently flew in a film crew from New York for a weekend of frenzied activity and interviews. Offhand I'm of the opinion that these seasoned professionals got an eye-full of enthusiasm. Guess I'll have to report this next issue. But remember, if you noticed my reply to "How many members do we have now?" - that was actually the answer to "How many members now attend the average meeting". Editorial license?

In the meanwhile, just go to the following link for a peek:

<http://www.youtube.com/watch?v=dPM9oA72iQw>

In the meanwhile, I've managed to condense a historic overview of Commodore and TPUG by Jim Butterfield into a one-issue presentation for the edification of our readers (8-point type to the rescue). This was sourced from the British on-line publication *Commodore Free*. Though their disclaimer indicates inadequate knowledge of it's origin, local TPUG members attest to it's authenticity. Hmmm, a separate version of this report might be of interest to historians in the future.



Of course, that means that I've had to eliminate other reports of activity, like ComVex, Chicago, and perhaps Maker Faire. Next issue ...thanks Leif, it's on file.

And, just in case you missed it, we're looking for you at World of Commodore, December 6th. And, by means of early-warning, be aware that our Annual General Meeting is scheduled for February 19, 2015

John

TPUG Newsletter is meant to be published somewhat twice yearly by the Toronto Pet Users Group (TPUG). TPUG is a volunteer non-profit club dedicated to the service and support of owners and users of Commodore computers.

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Articles, letters, tips, questions, art, etc. are welcome. Send hardcopy or disks "Attn: TPUG Newsletter", or use Internet e-mail.

Advertisements are also welcome. Member's small ads are free. Commercial ads are \$100 per page with a \$10 minimum.

Notice to new owners of SuperPet and CBM 8296 machines

TPUG has copies of the Waterloo LANGUAGE DISKS (3 in 4040 format) as supplied with the SuperPet on original purchase.

TPUG has the EXECUDESK disk (8050 format) as supplied with the CBM 8296 on original purchase.

These disks are an integral part of the operating systems of the above machines and since Commodore insisted on referring owners of these machines to TPUG for service, we have added these somewhat proprietary (and also virtually unobtainable) disks to our library - all part of the TPUG mandate of service to our members.

We also will attempt to search out copies of original program disks to replace corrupted disks. In this category you will find such programs as VISICALC, WordPro, and PaperClip.



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Joe's World 27 ...Top-Line Running Text:

This program asks for text that will be shown on the top line, and its colour. After typing it in, and before running it, save the program because it erases itself, enabling you to enter some other program, with the top line of text continuously running. That other program may, however, interfere with the top line, including its colour. The running speed is optional; it is set here to 5 in byte 40096; increase the number for slower running.

The operating system's interrupt (maybe it should be called priority?) routinely runs 60 times every second via 788/9 directly into 59953, but, as in this program, it can be diverted to first operate a user's optional program.

Line 10 protects 40000+ against overwriting by BASIC, even after the NEW, but it does not protect the top line.

```
0 rem" running top-line text by Joe Quittner
10 poke 55,64: poke 56,156:clr:rem protect 40000+
11 print CH(14)CH(144):rem black, upper/lower case
optional
100 for i=40000 to i+199:read a: if a>255 then 102
101 poke i,a:next stop
102 print" Enter text to run at the top line; end
with the f1 key."
110 i=41299
111 i=i+1:if i=40957 then print" NO MORE!":goto 131
112 gosub 997:if g$=CH(133) then 131: rem end of
text?
113 g=asc(g$)
120 if g<31 then 112
121 if g<64 then 130
122 if g<91 then g=g-64:goto 130
123 if g<193 then 112
124 if g<219 then g=g-128:goto 130
125 goto 112
130 poke i,g:print g$:goto 111
131 poke i,32:poke i+1,32:poke i+2,111:print:print"
COLOUR NUMBERS":
```

```
40000 inc 195
40002 bne 40006
40004 inc 196
40006 rts
oooooooooooooooooooo
40007 lda # 7
40009 sta 195
40011 lda # 157
40013 sta 196
40015 rts
oooooooooooooooooooo
40016 ldx # 255
40018 ldy # 0
40020 inx
40021 jsr 40000
40024 lda (195),y
40026 cmp # 111
40028 bne 40033
40030 jmp -->40046
oooooooooooooooooooo
40033 cpx # 40 Right edge?
40035 bne 40040
40037 jmp --->40046
oooooooooooooooooooo
40040 sta 1024,x
40043 clc
40044 bcc 40020 End of loop
oooooooooooooooooooo
```

```
40046 jsr 40007 Restart text
40049 jsr 40000
40052 lda (195),y
41154 cmp # 111
40056 beq 40046
40058 inx
40059 cpx # 40 End of line?
40061 bne 40066
40063 jmp --->40072
oooooooooooooooooooo
40066 sta 1024,x
40069 clc
40070 bcc 40049 End of loop
oooooooooooooooooooo
40072 sei Divert interrupt
40073 lda # 149
40075 sta 788
40078 lda # 156
40080 sta 789
40083 cli
40084 rts
oooooooooooooooooooo
40085 php Save .P
40086 ldy 40199
40089 dey
40090 sty 40199
40093 bne 40103
40095 ldy # 5 Speed optional
```

```
132 print "Black=0; White=1; Red=2; Cyan=3; Purple=4;
Green=5; Blue=6; Yellow=7;";
133 print " Orange=8; Brown=9; Light Red=10; Dark
Gray=11; Medium Gray=12;";
134 print " Light Green=13; Light Blue=14; Light
Gray=15
140 print :cn=peek(646):input" Enter colour number or
RETURN";cn
141 sys 40007:poke 40199,1:sys 40016:print CH(147)
142 for i=55295 to i+40:poke i,cn:next:new
997 poke 204,0:get g$:if g$="" then 997:rem " Cursor
blinking
998 if peek(207) then 998
999 poke 204,1:return
1000 data 230,195, 208,2 230,196, 96:rem"Increment
195/6
1010 data 169,7, 133,195, 169,157, 133,196, 96:rem
40199 into 195/6
1011 data 162,255, 160,0, 232, 32,64,156, 177,195,
201,111, 203,3, 76,110,156
1012 data 224,40, 208,3, 76,110,156,:rem "End of
line?
1013 data 157,0,4, 24, 144,230:rem "End of loop
1020 data 32,71,156, 32,64,156, 177,195, 201,111,
240,244
1021 data 232, 224,40, 208,3, 76,136,156, 157,0,4,
24, 144,233:rem "End of loop
1030 data 120, 169,49, 141,20,3, 169,156, 141,21,3,
88, 96
1031 data 8, 172,7,157, 136, 140,7,157, 208,8
1032 data 160,5, 140,7,157, 24, 144,4
1033 data 40, 76,49,234
1040 data 162,0, 160,1, 185,0,4, 157,0,4, 232, 200,
192,40, 208,244
1041 data 160,0, 177,195, 201,111, 208,8, 32,71,156,
32,64,156, 177,195
1042 data 141,39,4, 32,64,156, 76,167,156
1099 data 999
```

Disassembling of the above machine language portion provides this:

```
40097 sty 40199
40100 clc
40101 bcc 40107
oooooooooooooooooooo
40103 plp Restore .P
40104 jmp --->59953 To interrupt
oooooooooooooooooooo
40107 ldx # 0
40109 ldy # 1
40111 lda 1024,y Move to left
40114 sta 1024,x
40117 inx
40118 iny
40119 cpy # 40 Right edge?
40121 bne 40111
40123 ldy # 0
40125 lda (195),yNext onto right
40127 cmp # 111
40129 bne 40139
40131 jsr 40007 Restart text
40134 jsr 40000
40137 lda (195),y
40139 sta 1063
40142 jsr 40000
40145 jmp --->40103
oooooooooooooooooooo
```

by Joe Quittner, TPUG, January 2010

Speaking Notes for a Presentation

Jim Butterfield

Commodore Free: Whilst working on some D81 images for Leonard Roach I came across this text, Leonard doesn't seem to know the origin and although its credited with Roberts name as well as Jim's, Robert says he doesn't know anything about the text, I am reprinting this as it's a little slice of history that could otherwise be lost

The following material is speaking notes for a presentation I made at York University on Friday, March 18th, 2005. Since they are speaking notes, they are not exactly in publication form: and, at the presentation, I might well have omitted some material and added other stuff (especially in response to questions.)

I. A LITTLE ABOUT MYSELF -

I'm Jim Butterfield. My first encounters with computers took place back in 1963. My background was math and electronics, working mostly in the field of telecommunications. My first machine was a computer nobody had heard of: The Collins C8401, programmed in assembly language.

So when microcomputers started to arrive in 1976, I had an advantage over most hobbyists: I'd worked with computers for a dozen years or more. I was in a good position to write about these devices, which were unfamiliar to most readers, and I did so.

Most of my experience was with Commodore computers. What follows will be from that viewpoint, and I'll talk almost exclusively about the 8-bit world. It was a fun time.

I should mention that I have never been an employee of Commodore, or owned stock in the company. My viewpoint is that of an outsider, although Commodore personnel have always been open and frank in responding to the many questions I have asked over the years.

II. INDUSTRY PROLOGUE -

By 1963, transistors had replaced vacuum tubes, and the industry had settled into a form of stability. Although there were a number of computer manufacturers, IBM enjoyed over two thirds of the market. Industry watchers often referred to "IBM and the Seven Dwarfs."

Why did IBM dominate? In part, it was because they had been in the data processing business long before the arrival of computers. Using Hollerith punched cards, IBM had an array of "unit record" equipment such as keypunch devices, tabulators, and sorters; they had decades of experience in handling data.

A second reason for IBM's strength was that they leased their equipment rather than selling it. And with the lease came support, with system engineers on site or on call.

Industry people talked about being sheltered by the "IBM umbrella." And, as a general rule, software was free. Assemblers, compilers, generators ... phone your IBM rep. and he'd send over a copy. Need personnel training? IBM would do it free. Or, at least, at no extra charge.

III. UNDERGROUND FUN -

Even in those days, computer programmers and operators would have secret amusements. Secret, because senior management would

have misgivings about 'horsing around' on a multi-million dollar computer. Pictures were drawn on the line printer, patterns generated on punched card or paper tape, games were created and played, jokes were being played on co-workers, and music was being played on these computers. Note how the word PLAY seems to be repeated.

The seemingly impossible job of playing music on computers that had no speakers was accomplished in several ways. The hammers of line printers could be carefully timed to produce sounds of a selected pitch; the paper advance chain could be declutched and made to furnish drum rhythms, and a transistor radio placed adjacent to the CPU, where it would pick up the electromagnetic emissions, and would play a selection of popular numbers.

IV. TRANSITIONS -

In the time frame between 1963 and 1971, there were a number of changes that helped shape the nature of microcomputers to come.

Minicomputers started to gain acceptance in 1965 with the Digital Equipment Corporation PDP-8. These "minis" were stripped down computers, designed to sell for a paltry \$10,000 or so. In the early days, magnetic core memory was a major cost impediment, and attempts were made to circumvent it with other resources. I recall that the PDP-8 used a serial memory (a mercury column delay line). It was said that if you stamped the floor, you could change its memory contents. Minicomputer technology didn't have much effect on future microcomputers, but it's interesting

To note that a powerful user group, DECUS, grew around the PDP series, and may have been a precursor to microcomputer users groups that appeared much later.

In 1965, General Electric introduced "Time Sharing" service, where users could concurrently make use of a central computer. The terminal device was usually a Teletype (TM) machine. The major impact of time-sharing on the future microcomputers was its choice of language: Basic, both adored and vilified.

By 1971, the expensive and labour-intensive magnetic core memory that had been the heart of computers started to be replaced by semiconductor memory. This set the stage for on-going price reductions, which we still see today.

This, in turn, spawned another product that was to become important in the future microcomputer world:

The Floppy Disk. Magnetic core memory had been non-volatile. Once loaded, it kept its contents even when power was off. Semiconductor memory needed to be reloaded, and the 8-inch floppy disk was created by IBM for this purpose. Initially, it was a read-only device, whose contents would be created at the IBM production facility

V. EMERGENCE OF LSI: VIATRON (1970), THEN INTEL (1971) -

As fabrication techniques were advanced, more and more elements could be packed onto an integrated circuit chip. The first chips were flip-flops and gates. Then came larger assemblies such as shift registers and ALUs (arithmetic/logic units). Inevitably, a complete CPU (Central Processing Unit) would be placed onto a single chip. With a collection of chips such as CPU, memory, input/output, and some

sort of control logic in a ROM (Read Only Memory), a complete computer system could be put together.

The first microcomputer that I know of was made in 1970 by an almost forgotten company called Viatron. Viatron's main marketing thrust was terminal devices as inexpensive substitutes for Teletype, N machines, which were priced in the \$1,000 to \$1,500 region. Viatron's concept and design was good, and they advertised massively in Datamation magazine. But their fabrication plant had poor chip yields, and eventually they disappeared from the scene. The Viatron era called for some technical innovation. CRT display devices were rare and generally costly; modestly priced printers were virtually unknown. Viatron's use of converted television displays and "printing robots" seems quaint today.

Intel entered the microcomputer field in 1971 with the 4004. It seems almost as if Intel wasn't planning this as a product; they needed to find a quick way to fulfill their contract to build a calculator for a Japanese firm, and devising and programming a microcomputer seemed to be the quickest method, but once the 4004 had been devised, the electronics industry accepted it quickly as a general purpose component which replaced wiring with code. Motorola announced their 6800 chip very quickly.

VI. THE EMERGENCE OF "HOBBY" MICROS; EARLY USERS GROUPS -

There was a rush to build. Even before computers were offered in kit form, hobbyists were salvaging parts and building logic devices. A friend of mine, Juilen Dube, salvaged some magnetic core memory from a telecommunications relay device, and restructuring the little ferromagnetic doughnuts into a working memory, with a view to creating a small computer of his own design.

Kits came on the market from various small entrepreneurs. Electronic houses produced their own versions, which consisted of a circuit board and a bunch of chips loose in a plastic bag. Sometimes the supplied circuit boards had printed circuit connections; other time you were expected to make the connections yourself using wire wrap techniques (rarely soldering). Sometimes the parts worked, sometimes they were defective, and sometimes incorrect wiring would wreck the chip. A saying of the times was, "All computer chips are powered by smoke; if the smoke gets out, the chip will fail."

When the December of 1975 issue of Popular Electronics described the Altair 8800 computer, available in kit form for about \$500, the computer hobbyist world took off.

The Apple I was also a kit that you needed to assemble yourself. The founders of Apple - Wozniak and Jobs - liked the new, inexpensive 6502 chip, and designed their system around it.

Users started to get together and swap notes. In the Toronto area, TRACE (Toronto Regional Association Of Computer Enthusiasts) was under way in early 1976. An amazing assortment of machines was under construction. Some like the Intel 4004 or 8008, some the Motorola 6800. Memory was whatever came to hand, seldom more than 256 bytes. And input/output ... paper tape, toggle switches, home-brew keyboards, LED or LCD character or numeric displays, arrays of LED lights. Whatever you could get your hands on, or afford. There was little commonality between one home brew machine and the next.

Oddly, few of the builders had any idea of what to do with the computer once it was complete. This may have been due, in part, to the shortage of programming skills: and lack of standardization across the assortment of machines also posed difficulties in conceptualization. In 1977 and 1978, the Ontario Science Centre invited TRACE members to display their home computers to the public. One mem-

ber's computer controlled a model train set; another played simple logic games; one played simple music tunes. And I believe a couple just sat there, perhaps blinked lights, and looked pretty.

VII. THE STRUGGLE FOR STANDARDS -

There was an attempt to introduce some standards into this tower of Bit Babel. Two areas of concern seemed to be: A standard wiring concept, to connect several boards; secondly, a way to exchange data.

The S-100 bus was conceived as a standardized way to pass information between the various units of the computer. It included schemes for pin numbering and for power distribution. It was in use for a number of years until the IBM PC juggernaut took over.

A form of standardization existed for paper tape input and output, carried over from teleprinter days. An attempt was made to generate an audio data standard, mostly for data storage on cassette tapes, called the Kansas City Standard. It didn't take hold.

The Basic language was starting to creep into the scene. Hot debates were taking place between users on the west coast of the USA as to how a simple Basic interpreter could be constructed in a small amount of memory storage: 8K, 4K, or even 2K. "Tiny Basic" was produced as a free program; to publish it, the authors started a publication which they called "Dr. Dobbs Journal of Computer Calisthenics and Orthodontia." At that time, Dr. Dobbs was conceived as a public domain vehicle; all material in it was free from copyright. The publication still exists, but the whimsical name has been truncated to "Dr. Dobbs Journal." ... and its contents are now copyright.

A side comment on whimsical names:

When Gary Kildall developed a standard operating system, he called his distribution company, "Intergalactic Digital Research." A few years later, as IBM entered the field, the "Intergalactic" was dropped. In a similar vein, Commodore called their first home computer "PET", perhaps after the "Pet Rock" fad; but later regretted the name as they tried to convince the marketplace that their products were serious business machines. I'm sure they were not influenced by the fact the "PET" means flatulence in French.

VIII. THE KIM-1 -

My first microcomputer - other than a logic device powered by rubber bands that I had constructed years before - was the MOS Technology KIM-1. KIM stands for "Keyboard Input Monitor", which was the operating system of this tiny single board machine.

The "engine" of the KIM-1 is a 6502 microprocessor. This chip was designed by a group of ex-Motorola employees, who took the design of the Motorola 6800 and introduced new concepts and improvements. Leading the team was Chuck Peddle, a name you'll hear again in this presentation.

The 6502 was a late arrival into the early microcomputer world. Motorola and Intel chips had already gained acceptance; and even though the 6502 would outperform them, its merits were not immediately recognised. So MOS Technology priced the chip well below the competition: the 6502 was \$25 in single unit quantities; competitive chips were around \$150 and had to be ordered in batches of 100.

After the 6502 was completed, and legal disputes settled, MOS Technology decided that they should produce an "engineering sampler" board, which would show what the chip could do. They populated the board not only with microprocessor, RAM, and input/output; they also added a teletype interface, and LED display, a 20-key keypad, a facility for audio output and input (to save programs), and an operating system called KIM. And the board was factory assembled; all you

had to do was to add a power supply and you had a complete system.

Here's the important part: Because the board came pre-assembled, everyone had exactly the same system. For the first time, you could swap programs with other users and be confident that they would work without being "touched up" to fit the system.

I wrote a few programs – games, amusements, utilities - and wrote MOS Technology to see if anyone wanted them. They wanted them for themselves in order to demonstrate the KIM-1, and had also heard from a fellow in the Cleveland area who was starting a newsletter. And thus began "Kim User Notes", edited by Eric Rehnke.

The newsletter acquired hundreds of subscribers. MOS Technology must have been amazed to see this intended engineering prototype become a popular home gizmo. In time, it also became widely used as a training device.

About that time, I heard from a young fellow who worked at Honeywell who said he was working on a program for the KIM-1. His name was Peter Jennings, and his project was to write a chess-playing program in the KIM's tiny 1K of RAM. He did it, too. In these days of gigabyte memory, it's sometimes refreshing to think that Peter could play chess with only a little over 1K ... even if it didn't play at a grandmaster level. Peter later went on to be one of the creators of code for VisiCalc, the first microcomputer spreadsheet program.

IX. PUBLICATIONS, AND THE FIRST BOOK OF KIM -

Meanwhile, there had been a few personal computer publications. During his time with a minicomputer firm, David Ahl had gathered together various games that users had contributed, and published "101 Basic Games." On the west coast, Bob Albrecht had formed a group called "People's Computer" and had produced a similar volume entitled "What To Do After You Hit Return." In both books, the programs were supplied in the language Basic. They could be played on time-sharing systems, or Basic could be fitted to those computers that had enough memory - not very many of them in the early days.

Meanwhile, we KIM-1 users were contributing lots of programs to be printed in KIM User Notes. I suggested to another user, Stan Ockers, that perhaps we should bundle them together and put them into a book. The editor of the Notes, Eric Rehnke joined us in the enterprise and we privately printed The First Book of KIM.

As best I recall, we estimated our market at about 600 copies. We printed 2,000, sold about 1,000, and the remaining copies burned up in a garage fire. There was still demand for the book; people got mad at us when we said we had no more copies. So a publisher picked up the demand, and many thousands more were sold. There were also two editions printed in Germany, one authorized and one pirated. The authorized publisher never sent any royalties; the pirate publisher sent us secret payments. Go figure.

X. COMMODORE STUMBLES INTO THE COMPUTER MARKET -

In late 1976, we heard that MOS Technology had been acquired by a firm called Commodore, which was known for making office furniture and calculators. There was to be a new microcomputer system called the PET.

The KIM-1 thus became a Commodore product, which is why I sometimes say that I programmed Commodore computers before they made computers. Jack Tramiel was the founder of Commodore Business Machines. A former inmate of Auschwitz, Tramiel had started

out with a part-time typewriter repair shop in the Bronx, supplemented by driving a taxi. In 1962, he moved to Toronto and set up a typewriter manufacturing business. He soon switched to calculators, and these devices soon made the transition from mechanical devices to electronics.

In October 1976, Tramiel took over MOS Technologies, which he perceived as a manufacturer of display devices and semiconductors. He got more than he bargained for. He also got Chuck Peddle, the designer of the 6502 chip. And Peddle was determined to build a home computer.

Peddle had taken a look at a prototype version of the Apple II, and had wondered if Commodore should buy the company. He eventually decided that Commodore should build a home computer of their own design, and quickly talked Tramiel into it. An early model of the PET was shown to Radio Shack, in the hopes that they would sell the unit; but Radio Shack, in turn, opted to build their own home computer.

Commodore had undergone some trauma in its organization and financing. As part of a new corporate financing deal, corporate headquarters was moved to the Bahamas, and administrative office were set up in the Philadelphia area. But Tramiel's heart apparently remained in Toronto. The corporate airplane - the PET jet - was often to be seen in a hangar at Pearson airport during the many years that followed.

XI. APPLE, COMMODORE, TANDY -

Three companies - Apple, Commodore, and Radio Shack - seemed to announce their models of a home computer simultaneously. The question of "who was first?" will never be solved. Commodore displayed the PET at the Consumer Electronics show in January 1977, Apple sold their first unit at March West Coast Computer Faire. Radio Shack didn't enter the field with the TRS-80 until August, but they were able to sell units right away.

Here in Toronto, we first saw Commodore computers in quantity at the Canadian National Exhibition. One of the themes for that year was "chess". Commodore furnished dozens of PET computers, furnished with Peter Jennings's Microchess program, at a site in the Coliseum area; visitors were invited to sit down and play chess.

With little access to a dealer network, Commodore had a curious method of achieving sales. Buyers would send Commodore money - about \$600 US - and Commodore expected that they would ship the PET within three months! A lot of PET deliveries in the area took place immediately after the CNE closed.

XII. COMMODORE DESIGN EXCELLENCE -

The Commodore PET was a remarkable machine in many ways, with features you did not find on its competitors of the time. Many might be considered ahead of their time.

The PET, and all following 8-bit products, had "screen editing." Instead of receiving information from the keyboard, the operating system transferred the received keystrokes to the computer screen. When a RETURN key was pressed, the system then read from the current line of the screen, and took the data from there. This made screen editing simple and truly WYSIWYG ("what you see is what you get"), and later allowed some elegant programming tricks. This was far from intuitive back in the days when much computing was based on teleprinter input.

Associated with this was the concept of keyboard interrupt handling. Since most keystrokes were collected into a buffer for subsequent delivery to the screen, the main system could ignore them and go on

with whatever job it was doing, allowing an interrupt service to take care of this. The result was a "type-ahead" feature, not seen on other contemporary computers; for those, the keyboard was dead until a program specifically asked for input.

Computer input was thought of in those days as a teleprinter device or equivalent. As such, input and output was upper case only; a full ASCII capability was unheard of. Commodore added an upper/lower case facility to PET. However, the fixation of upper case was such that lower case was "inverted" - that is, you had to shift to get lower case letters. The Radio Shack TRS-80 had no lower case; the Apple II had "slots" or board plug-in positions, where upper/lower case could be added at a later time.

The Commodore PET was introduced without peripherals such as a printer or floppy disk; it took almost a year for these devices to appear. But the interface was already in place, and it was an interesting one: The Hewlett-Packard GPIB ("General Purpose Interface Bus"), also known as the IEEE-488 bus. It was possible right from the start to connect to specialized devices, such as sensors, which had already been devised for this bus. When the Commodore disk drive and printers appeared, they string together off this bus. It was decades before the introduction of the USB ("Universal Serial Bus") would use a similar scheme.

The use of such a bus called for intelligent peripherals. When the Commodore devices finally appeared, they had their own micro controllers and logic; in the case of disk drives, that included a sophisticated DOS, which wrote data to disk in a more sophisticated way than other drives of that generation. Although "back end computers" were known in the mainframe environment, their use in the micro world was, to put it mildly, innovative. Meanwhile, competing machines of the era had to have DOS loaded into the main computer.

Commodore somehow had a deal with Microsoft for a perpetual license for Microsoft Basic. I don't know of any other manufacturer who obtained a license, and it gave Commodore a major competitive edge for the entire life of its eight-bit products. Microsoft had not at the time achieved major sales, and Bill Gates was complaining loudly and publicly about software piracy. Perhaps Tramiel and Peddle offered a deal that appeared attractive for the time. Microsoft later regretted the deal, and internal memos within Commodore urged employees not to disclose information about Basic, for fear of litigation.

In contrast, Apple initially had only "integer Basic" whose arithmetic was based on 16-bit integers. This gave speed, but limited the usage. The Radio Shack TRS-80 had "tiny Basic", as published in Doctor Dobbs Journal. Eventually, both of them migrated to Microsoft Basic; but royalty payments to Microsoft became a factor in their product pricing.

Even when the competition joined the Microsoft bandwagon, the Commodore version still had an advantage. "Commodore Basic" as it was called, had a 32-bit mantissa, which computer techs will tell me produces about 10 decimal digits of numeric accuracy. Other versions had only a 24-bit mantissa, perhaps to enhance speed; but this will give an accuracy of only about 7 digits, which is not enough for financial work.

XIII. THE GROWTH OF PUBLICATIONS:

NEWSLETTERS TO NEWSSTANDS -

A proliferation of magazines and newsletters came with the advance in microcomputer technology.

Like Doctor Dobbs, BYTE magazine arrived early. Its first year contained articles such as how to build your own wire-wrap tool out of a ballpoint refill, and how to punch paper tape so that humans could hold it up to the light and read actual text.

The Commodore world hosted many newsletters. "The PET Paper" was told by Commodore to remove the PET reference, which they viewed as a trademark; it became "The XXX Paper" a title which might raise some eyebrows in this day and age.

Len Lindsay published "The PET Gazette." He became overwhelmed by the volume of material arriving, and public begged for someone to take over the job on his behalf. Robert Lock of Greensboro, North Carolina, did this in autumn of 1979. COMPUTE magazine developed into a major publication; in the late 1960s, it became the largest selling micro-computer publication of them all. It ceased publication in the late 90s.

"The Transactor" began as a single sheet newsletter issued by Commodore Canada. After a couple of issues, a young fellow called Karl Hildon was hired to keep it going as a customer information vehicle. Hildon built it into a respectable technical journal. When Commodore tired of it, Hildon found another company in the Toronto area willing to continue publication. The Transactor folded in the late 90s, but was considered a major technical source during its lifetime.

XIV. THE TORONTO PET USERS GROUP (TPUG) -

Shortly after the arrival of the first few PET computers in Toronto, I received a call from Lyman Duggan, who worked for Marconi. He wanted to know why nobody was organizing a user group; I gave him the usual answer. so sometime in 1979, about sixteen interested users gathered in the rec. room of Lyman's apartment block, and TPUG - at that time, called Club 2001, after the PET 2001 - was born.

Duggan ran TPUG as a private enterprise. He arranged program and location, charged five dollars for attendance, and served coffee and doughnuts. His wife, Cherie, has cassette tapes containing contributed programs which sold for a dollar or two.

Attendance grew rapidly, and Duggan had to seek out ever larger sites for the meetings. Then, with little warning, his employee posted him to Florida. Duggan quickly nominated a board of directors to replace him, and TPUG became a member's club.

The Toronto area had quite a few talented people who could be called upon to make presentations, offer opinions, or disseminate news. Apart from myself, we had Karl Hildon, editor of The Transactor; Brad Templeton, who later went on to

become the publisher of Clarion online service; Steve Punter, who wrote the first major word processor package for Commodore, and numerous others. And I have a special affection for the antics of Brett Butler, one of the first PET owners in the Toronto area, who wrote a tiny program for his wife who was in the late stages of pregnancy: tap any key, and the PET would show time elapsed since the previous contraction.

Computer enthusiasts were regarded as mavericks. Few of those who worked in the field of data processing would have any association with microcomputers. I suspect the reasons for this are varied. Perhaps there would be a loss of corporate prestige to admit that those little thousand dollar machines were capable of taking on some tasks, when DP personnel had a million dollar machines as their private domain. It seemed that some users would believe only what IBM told them; and, at that time, IBM had no interest in giving any credibility to these pesky little machines.

There were rebels. A Vice President of Air Canada used a Commodore PET to plan fuel needs at various airports; but he had to hide his machine from the DP mavens, who didn't approve. A regional education officer in northern Ontario supported microcomputers in schools, and helped assemble a body of educational software; all the while, the Department of Education wanted all educational flow to be centralized.

TPUG prospered, and its influence went far beyond Ontario's boundaries, or even those of North America. Today, it may be difficult to comprehend the difficulty in distributing free programs across the country or around the world. We use the Internet. Back then, you put cassette tapes in the mail, or, later, floppy disks. And a central clearing point produced better organization. TPUG was it, for many years; most Commodore clubs across North America became associate TPUG members. Membership reached a peak in 1984 of about 17,000 members. TPUG now had a full time staff for handling memberships and mailing requested programs, and another full time staff to publish the TPUG magazine. There was a lot of money flowing into TPUG, and it seemed to be that this caused dissension between members of the executive and the staff.

An early online service, "The Source" opened for business in 1979, and was soon followed by another, CompuServe. A service specific to the Commodore 64, Quantum, became available in 1985. There started to be other ways to distribute programs. And the Internet was coming. Online services, and a shift to other manufacturers' computers, caused a further decline in membership. And this caused disputes to become more pronounced. It's easy to bring in new equipment and new staff in prosperous times; it's not so easy to start cutting back. Many old-timers dropped out of the TPUG picture. But TPUG survived, and is still active today. I'm told that the next World Of Commodore gathering will take place this December.

XV. PRODUCT PROLIFERATION -

The original PET 2001 was soon followed by bigger models, with more memory or 80 column screens. Commodore did its best to drop the name PET in favour of CBM, so as to establish a business image. At one time, it even tried to disenfranchise one of its major retail outlets because it thought the name was too frivolous: Batteries Included. The outlet set up a subsidiary with a "sensible" name and continued to handle Commodore machines.

Commodore technicians built prototypes of many imaginative machines. One of these, called the TOI, had a colour screen, graphics and sound capability; it eventually became the VIC-20. The 22-column screen of the VIC-20 made it of little utility with text applications, but it worked well with graphics, and became popular as a game machine. The VIC-20 was still a full-feature computer, com-

plete with the Commodore Basic language, and many people used it to learn computer programming.

There's a believable story that, long before, the chip manufacturer Texas Instruments had cost Commodore and Jack Tramiel a great deal of money on plans he had made for a calculator. The story continues that Tramiel swore revenge; and when Texas Instruments came out with a computer of their own, the TI-99, he launched an economic war. Whatever the truth of the story, it's true that Tramiel was very good at pruning prices, pressing suppliers to drop costs in order to allow him to pitch extremely competitive retail prices. And with his next product, the Commodore 64, trashed most of the competition - including Texas Instruments.

At one point, Commodore was offering \$100 as a trade-in for any make or model of computer. Since the Sinclair/Timex Spectrum was selling for about \$60 at that time, Commodore received a considerable number of these units, still in their shrink wrap packaging. The local user group told me that Commodore had no use for these trade-ins, and they went directly to the trash bin. At night, members of the club would pick these back out of the trash and turn them back in the next day for another discount.

Doctor Wesley Graham, of the Computer Science department of Waterloo University, thought that the CBM computers could be expanded and modified so as to allow students to take language training on them. Waterloo was already noted for its "training" languages, such as WatFor, a training dialogue of Fortran. Together with hardware assistance from BMB Compuscience, a retailer and hardware designer in the Milton area, they devised "The SuperPET" a machine with dual processors. One "side" was a standard CBM computer; the other was a Motorola 6809-based system fitted with several languages. Perhaps the most startling of these was APL ("A Programming Language"), developed by Ken Iverson, which used a completely different character set to undertake its computations.

The SuperPET was well respected and used in training environments, but never became a mainstream machine. I often wondered if adding language compilers - in addition to the interpreters that Waterloo had furnished - might make it world-beating commercial machine.

XVI. FUN COMPUTERS HIT THEIR ZENITH -

Following the success of the 64, Commodore tackled the objective of making a set of scaled down computers: the Commodore Plus/4 and its smaller cousin, the Commodore 16. I had some involvement in this product: I was invited to introduce it at the Consumer Electronics Show in Las Vegas, 1984.

Inside the Plus/4 and Commodore 16 was ... almost ... nothing. The various support chips that had been needed to make things work had been telescoped into a single interface chip called TED. So there was TED, the processor, and on the Plus/4, an ACIA chip (similar to a UART) for higher speed communications. Manufacturing costs must have been remarkable low for a computer with so few parts. But before the show, the marketing mavens told me they planned to set the price so high that it wouldn't impact sales of the Commodore 64. They succeeded beyond their wildest dreams; the Plus/4 and its smaller cousin bombed in the market.

They gave up on this new line, reasoning that the marketplace required compatibility. Their next product was the Commodore 128, which was highly compatible - a switch converted it into a 64 clone - but could be switched into CP/M mode for anyone who wanted that style of compatibility. On the "business computer" side, Commodore meddled with expanded memory. In Europe, they tried new case stylings, and at one point almost introduced "The Porsche PET" whose case had been designed by the Porsche team.

Then they tried another approach to higher speed and more memory. The 256 computers were built, but Commodore couldn't get them going on schedule. eventually, they were made to work, but it was too late for the marketplace, and Commodore blew them out their back door using a clearinghouse. It worked well, and many users loved them; but it was a Commodore ex-product, and Commodore didn't make them anymore.

It was becoming clear that Commodore was reaching a dead end in the 8-bit world. Commodore acquired the Amiga, originally planned as a game machine, and reconfigured it for a business/entertainment market. But that's another story, and this presentation is following the fate of Commodore 8-bit world.

XVII. ARRIVAL OF THE IBM PC -

When the IBM PC was announced in August 1981, Commodore users couldn't believe that anyone would try to sell a machine that was so underpowered and overpriced. \$3,000 for a little machine with 16K of RAM, expandable to 32K, black-and-white only, disk drive extra? And their first floppy disk drives could store only 160K of data, where Commodore drives ranged up to 1.2 megabytes in capacity. And powered by an Intel 8088, it wasn't exactly a 16-bit machine; just part 16 and part 8.

But the name IBM had credibility, and it sold well, beyond IBM's expectation. At one point, I told Commodore that their mistake was in picking the wrong first letter for their initials; change the "C" to an "I" and they'd be in business. IBM made frequent upgrades to their product line - from PC to XT to AT. The machines became truly 16-bit were fitted with formidable memory and improved disk drives. At each new product announcement, to IBM's astonishment, the new unit quickly sold its initial production, and then sales dropped off radically. If it was off the shelf, users didn't want it; they always wanted the next generation.

All other brands of small computer were seriously impacted. To our surprise, people would buy these expensive machines, borrow software from their place of business, and set up these machines in their homes. PC users groups expanded at a startling rate. And when, in 1983, Compaq and others broke the IBM stranglehold on the PC design, prices dropped and sales exploded. By that time, the PC architecture clearly outperformed the 8-bit computers in raw computer power, although they still performed poorly in the graphics and games area.

Commodore introduced its own line of PC-compatibles in 1987. These sold well in Europe and reasonably well in Canada. The US market was never penetrated to any significant extent, and the ceased production in 1993 ... Oh, and just to prove that IBM isn't perfect; their scaled-down PC Junior failed miserably.

XVIII. THE COMMODORE EMPIRE DISINTEGRATES -

Commodore had run out of steam on the 8-bit track and were concentrating all their efforts on the Amiga. It wasn't

enough, and Commodore as we knew it broke up in April of 1994. Commodore was gone, but the name stayed. It was sold and resold to a number of organizations, most of whom were in Europe where the name was viewed favourably by consumers.

XIX. FOLLOW ON: LOYALTIES REMAIN-

Magazines scaled down and ceased publication. Users groups dwindled. But loyalties remain. Many users haunt thrift stores for old Commodore computers and spare parts. There are continuing rumours that both the Commodore computers and the Amiga will be reborn in some form or other.

Meanwhile, "64 emulators" can be run on a PC which closely match the behaviour of the original machine. It's not the same, of course; part of the joy was the things you could hook up to the machine.

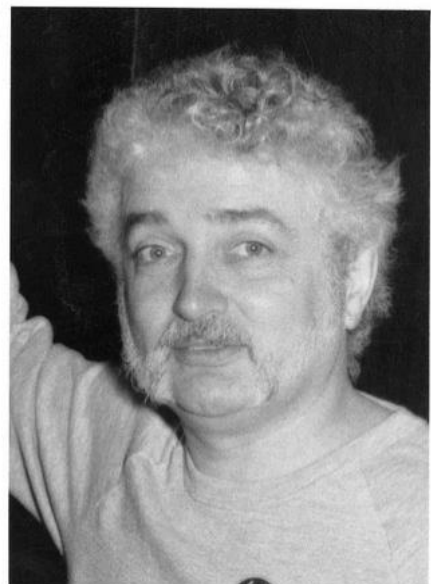
Small users groups still gather in Canada and the USA. In mid-May, there will be a gathering in Louisville, Kentucky. In September, I expect that there will be something in the Chicago area. There has been talk of something in Las Vegas this year. And TPUG tells me that the World Of Commodore will take place once again in Toronto sometime in early December.

Here's a story of dedication and loyalty. Back in the Commodore heyday, a young girl loved her Commodore 64 so much and was so curious about its inner workings, that she destroyed quite a few of them in trying to find out how it works. She was determined that someday, she would construct a Commodore 64.

Her name is Jeri Ellsworth, and she did it. She built a complete Commodore 64 on a chip: processor, video, sound, operating system ... the whole works. Her most recent creation is the 64DTV, a Commodore 64 on a tiny chip buried inside a joystick, including about 30 games of the era.

Without a keyboard, it's hard to program, but it can be done. Without a disk interface, it's hard to store or load other programs - but a good hardware hacker can construct one, and some have done so. It's quite a feat. And it makes me think that perhaps the Commodore 64 will live forever.

Jim



Excerpt from "Until Now" - the autobiography of William Shatner 2008/2009

"So it was quite natural that, for example, when home computers first became available to the public, I would be hired as the spokesperson. At that time I was one of the very few people in the world who had any practical knowledge about computers, having worked with the plywood and cardboard props aboard the Enterprise for three seasons. "Why buy just a video game from Atari?" I asked viewers in what may be the first TV commercial ever done for a computer. "Invest in the wonderful computer of the 80s for only three hundred dollars. The Commodore Vic-20. Unlike games it has a real computer keyboard. With the Commodore Vic-20 the whole family can learn computing at home—plays great games too! Under three hundred dollars, the wonder computer of the 1980s. The Commodore Vic-20!"

Honestly, I knew nothing about computers. I had seen the huge mainframes at NASA, but I'd certainly never used a computer at home. I didn't even know how to turn one on. This was long before the Internet existed, so computers were basically glorified calculators and word processors. Mostly people used them to play video games like Pong. Legally, though, anyone endorsing a product is supposed to have some experience using it. So Commodore shipped two Vic-20s to my home, where they remained untouched in their boxes. My attorney insisted I take them out of the boxes and plug them in. That way no one could claim I didn't even know how to plug one in. So that was the entire range of my knowledge of computers: I knew how to plug one in."

Gleanings from the net ...

From Leif ...

How did I not know about this site before?
Screenshots of several common C64 faults
sorted by the likely faulty chip.

<http://derbian.webs.com/c64diag/index.htm>

From Rob Adlers

Well, I've been running my C64 with the SD card drive, JiffyDOS and 2 amp power supply for a few months now. It's sitting next to a N64 game unit. We've had ups and downs with usage, but someone always uses it every day in the lunchroom.

Choosing games to play is fun, because you want walk up and play games that won't suck a lot of time up.

Flappy Bird, C64Anabalt and 2048 have been big hits.

Hoping to get a Vic20 back up and running as well. For now my C64 is a fixed piece in one of the lunchrooms for people to have fun with.

New uses for old machines

Rob

And for a look-behind-the-scenes at Commodore's operations in Hong Kong:

<http://dustlayer.com/blog/2014/8/16/lost-treasures-the-commodore-production-line-in-hong-kong>

New Asteroids emulator

<http://members.aon.at/nkehrer/astc64.html>

More on the Starbucks T.P.U.G video on YouTube:

Behind the scenes photos are now up on <http://www.tpug.ca>

From Mike Stein:

Got a little discussion and publicity going on VCF; might even get one or two new members out of it

<http://www.vintage-computer.com/vcforum/showthread.php?44633-Are-there-many-ANY-SX-64-owners-here/page3>



**World of Commodore
Saturday, December 6th,
2014**

Admiral Inn, Mississauga

(Queen Elizabeth Way and Erin Mills Parkway)

**TORONTO PET USERS GROUP
C/O JOHN EASTON
258 LAKE PROMENADE
ETOBICOKE, ONTARIO M8W 1B3**

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