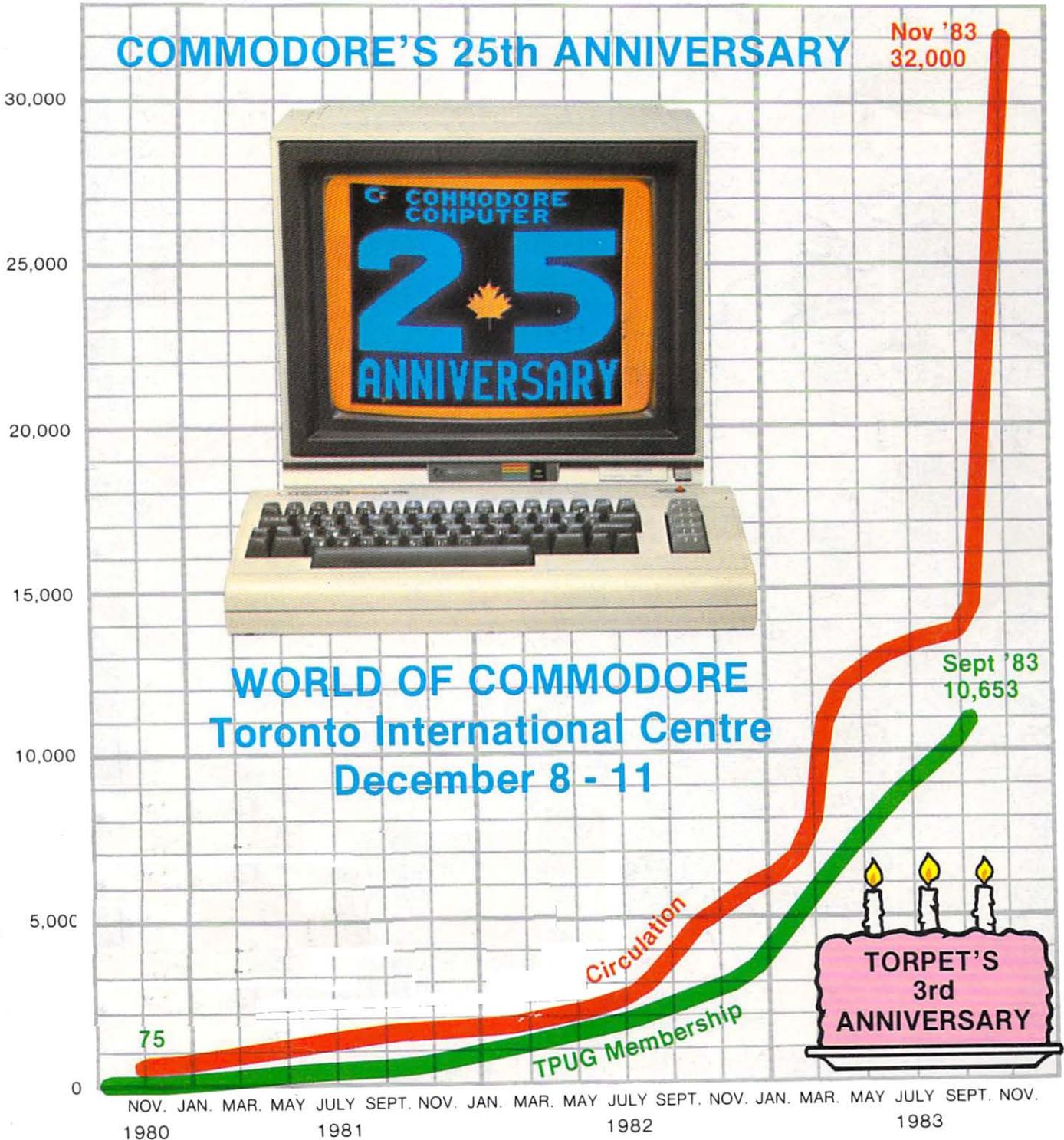


THE TORPET

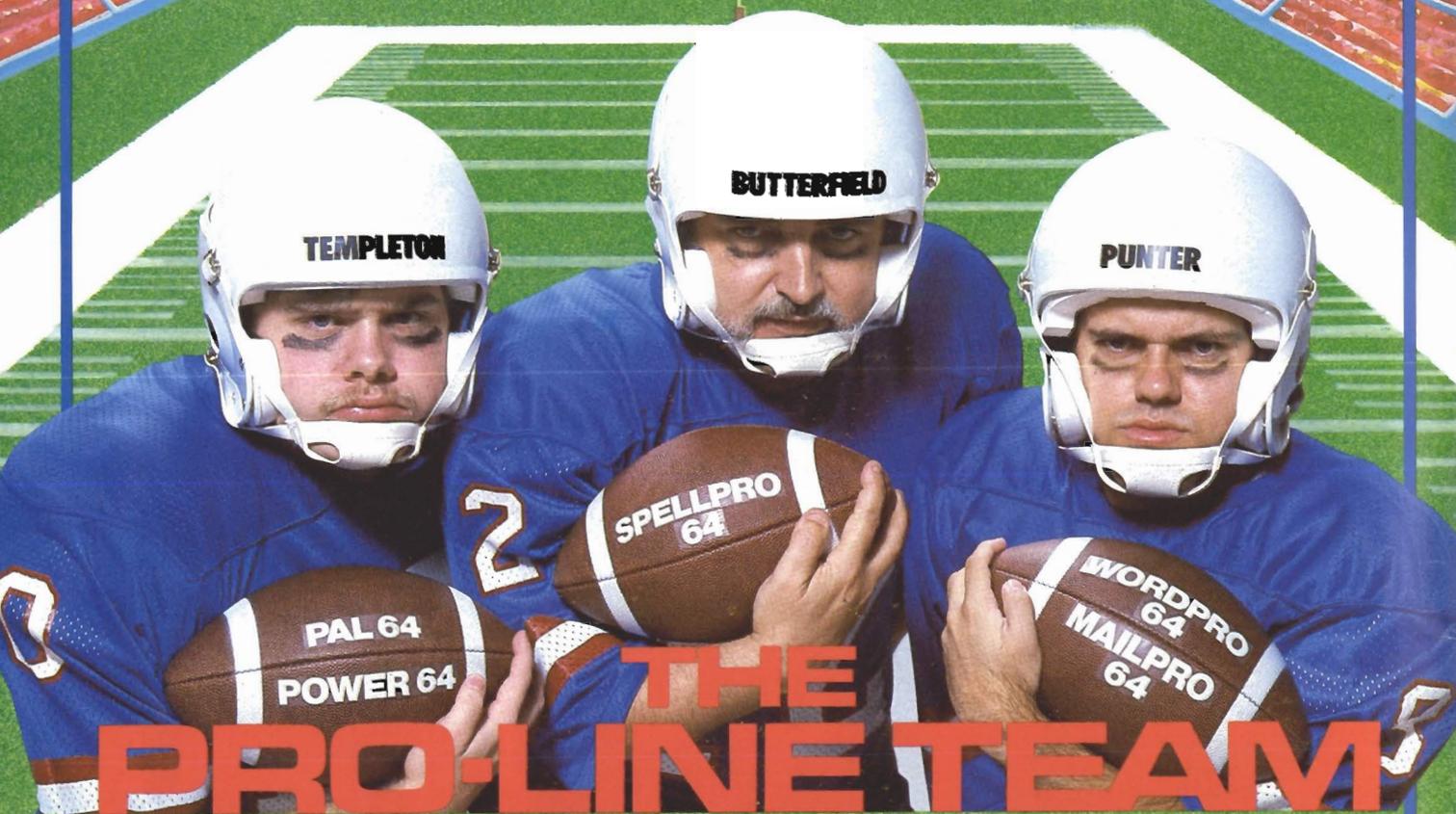
The INDEPENDENT Commodore User's Magazine

No. 25 Nov/Dec 1983

Commodore 64, VIC-20 and PET Information \$2.00



INTRODUCING



PAL 64
 The fastest and easiest to use assembler for the Commodore 64+ Pal 64 enables the user to perform assembly language programming using the standard MOS mnemonics. **\$49.95***

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PAGE

TABLE OF CONTENTS

2	Calendar of Events	
3	History of TORPET	Bruce Beach
6	History of Commodore	Leslie Wood
15	Butterfield Box (Hard Times)	Jim Butterfield
16	Canadian Copyright	Ken Cox
18	ICCE Policy Statement	
19	CHIPP!	Mike Richardson
20	Stick to VIC	Terry Herckenrath
21	VIC-A-THON	
27	TPUG Central Meeting Oct. 1983	Ian Wright
30	Computing in the Schools	Colin A. Haig
32	Cyclons for C-64	G. P. Walter
34	Hardware Hacker	Hank Mroczkowski
39	Say Goodnight Lance Leventhal	Terry Taller
42	Reading Between the Lines	Dave Williams
43	Treading the Error Channel in Direct Mode	Elizabeth Deal
44	Using the 1541 Backup	David Bradley
45	VIC Pack Home Office Package	A. C. Pendleton
46	Farquharson Features	Al Farquharson
51	Take A Load Off Your VIC	Tony Davidson
55	40/80 Column All Canadian PET	Ian Wright
56	More BASIC Computer Games	Kit Snyder
57	Buying Through The Mail	Neil Salkind & John Seitz
63	Wedge 64	Darcy Mason & Alan Wunsche
66	Programmable Characters	Steven Darnold
68	"Painting"	Efraim Halfron
75	Never Talk To Strangers	Larry Goldstein
77	Disk Merge Converters	Steve Snell
79	Planetfall	William R. Frenchu
80	TPUG's This and That	Doris Bradley
81	HELP	Doris Bradley
88	TPUG HAM Operators	
89	Additions to TPUG Library	
93	Classified	
96	INDEX OF ADVERTISERS	

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TPUG ASSOCIATE CLUB CHAPTER MEETINGS

PET Educators Group (Windsor)

- meets at Windsor Separate School Board Media Centre, 1485 Janette Ave. on the 3rd Wednesday of each month (not July & August) at 7:00 p.m.

Contact John Moore 519-253-8658

London Commodore Users Club

- meets at Althouse College of Education on the last Monday of each month at 7:00 p.m.

Contact Dennis Frankner 519-681-5059

Genesee County Area Pet Users Group (Michigan)

- meets at Bentley High School on Belsay Rd. on the 3rd Thursday of each month at 7:00 p.m.

Contact Gordon Hale 313-239-1369

Sacramento Commodore Computer Club (California)

- meets at SMUD Building Auditorium 6201 S St. on the 4th Monday of each month at 7:00 p.m.

Contact Geoff Worstell 916-961-8699

Michigan's Commodore 64 Users Group

- meets at Warren Woods High School in Warren on the 3rd Tuesday of each month at 7:00 p.m.

Contact Chuck Ciesliga 313-773-6302

Edmonton Commodore Users Group

-meets at St. Gabriel School on the 1st Friday of each month at 7:00 p.m.

Contact Bob Kadylo 403-465-3523

Guelph Computer Club

- meets at Co-operators Insurance Assoc. on the 2nd Tuesday of each month at 7:30 p.m.

Contact Brian Grime 519-822-4992

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Gerry Gold	416-225-8760
Mike Hyszka	416-884-5193
John Shepherd	416-244-1487
Carol Shevlin	416-423-0074

CALENDAR OF TPUG EVENTS

Fall & Winter Schedule

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

Wed. Nov. 9	Wed. Feb. 8
Wed. Dec. 14	Wed. Mar. 21
Wed. Jan. 11	Wed. Apr. 11

VIC 20 CHAPTER - York Public library, 1745 Eglinton Ave. W., (just east of Dufferin) at 7:30 p.m. in the auditorium

Tue. Nov. 1	Tue. Feb. 7
Tue. Dec. 6	Tue. Mar. 6
Tue. Jan. 3	Tue. Apr. 3

Commodore 64 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

Wed. Nov. 30
*Wed. Dec. 14

*(joint Dec. meeting with Central at Leaside)

Mon. Jan. 9
Mon. Feb. 27
Mar ?
Tue. Apr. 10

WESTSIDE CHAPTER - Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd. (south of the CEW) at 7:30 p.m. in the Little Theatre for **PET/CM/VIC 20/Commodore 64**

Tue. Nov. 15	Tue. Feb. 21
Thu. Dec. 15	Thu. Mar. 22
Tue. Jan. 17	Thu. Apr. 19

SuperPET CHAPTER - York University, Petrie Science Building, enter campus from Steeles Ave.—park in Lot D. Meet at 7:30 p.m. in front of Room 340.

Wed. Nov. 16	Wed. Feb. 15
Wed. Dec. 21	Wed. Mar. 21
Wed. Jan. 18	Wed. Apr. 18

MACHINE LANGUAGE CHAPTER (6502) - Call Jim Carswell at 416/531-9909 for additional information.

VIC 20/Commodore 64 Assembly Language and Communications Group - York Public Library 1745 Eglinton Ave. W. (just east of Dufferin) at 7:30 in the Story Hour Room (adjacent to the auditorium).

Wed. Nov. 2	Wed. Feb. 1
Wed. Dec. 7	Wed. Mar. 7
Wed. Jan. 4	Wed. Apr. 4

TPUG

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EDITORIAL

THE HISTORY OF THE TORPET

The TORPET has reached its third anniversary with this issue, and we are now printing 32,000 copies. For the next three months the TORPET will be distributed through all the independent (non-chain store) Commodore dealers in Canada.

The TORPET continues to support new publication efforts on the part of clubs throughout the world. We only ask that those making reprints from the TORPET to send us copies of their magazines and if they have a policy of paying their contributors to send the remuneration made out to the author in care of the TORPET so that we may forward it to the author.

Each month we receive a number of new magazines who are using TORPET reprints and we are often amazed by the growth and size exhibited by them. It may interest you to know the stages that the TORPET has gone through in its growth and for this reason we are publishing the following history.

The TORPET is continuing to grow and expand. In this world none of us are completely sure of our future. Those of you who have followed the history of The TORPET know that about a year ago it became an entity separate from TPUG although TPUG members continued to receive it as a part of their membership. This too will very probably change. Next year TPUG will begin publishing a club magazine and the TORPET may continue on its separate way.

When the TORPET began three years ago as a Commodore 'only' magazine there had been only one predecessor of note and there were two contemporary publications. The predecessor was called The Paper and it has merged with The Midnite Gazette which began the same month as The TORPET. The other contemporary publication was The Transactor published by Commodore Computers and now published by a private company in Canada.

Today there are dozens of club magazines that are larger than The TORPET was during its first year and there are six Commodore 'only' publications that are larger in circulation than the present TORPET. The larger circulation magazines (or planned magazines) are Compute's Gazette, Commander, RUN and POKE (first issues of the latter two to be published in November), Commodore Magazine, and Power Play (these last two are published by Commodore itself).

The TORPET doesn't expect to ever become a large circulation slick magazine like the last six mentioned. It intends to keep its own unimitable style. We will never be as technical as The Transactor nor as free form as the Midnite Gazette. We will continue to address the new audience of computer users who are wanting to move away from the games-only aspect of their machines and onto a beginning understanding of the operation of the computer and its capabilities. We will probably move away from parochial types of club information that we have published in the past but we will continue to try to innovate and improve.

We hope that you have enjoyed The TORPET in the past and that you will enjoy it even more in the future, and if you are publishing your own magazine we still want to help you in every way we can to distribute information about The World of Commodore microcomputers.

Issue No. 1, Nov. 1980

The first TORPET was issued in November 1980. It was called the TPUG News and consisted of four pages run on a sheetfed offset press. It included Issue No. 1 of the Midnite Software Gazette, and a machine language checklist form Jim Butterfield's machine language course.

Issue No. 2, Jan. 1981

Carried The TORPET name for the first time. Had first calendar of TPUG events.

EDITORIAL

Issue No. 3, Feb. 1981

Had first graphics, first ad (from 2001) and first ad rate schedule (\$85 for a full page).

Issue No. 4, Mar. 1981

First appearance of stylized masthead. First use of letterspacing in the typesetting. Over 300 subscribers. Increase to 8 pages. Changed from 4 column to three column format.

Issue No. 5, Apr. 1981

The big jump to web offset. 16 pages. Now had 403 subscribers. Better stylized heads. First boxes for calendar, executive list, Bennett Box, etc. Change from 3 column to 2 column format. Contained first TPUG club membership directory. First listing of TPUG monthly disk release. First assistant editor (Barbara Bennett). Established policy of twenty-five percent or less of advertising.

Issue No. 6, July 1981

First cover photo. First half-tones. First color. 32 pages. First table of contents. First Butterfield Box. First listing of executive's phone numbers. First cover price of \$1 for computer store stands. First classified ads (5 cents per word \$1 minimum).

Issue No. 7, Oct. 1981

First web issue on bond paper. First 48 page issue. First complete library disk listings. First double page spread ad (RTC). included first extensive program documentation.

Issue No. 8, Jan. 1982

First man of the year issue (Chris Bennett). First use of hyphenation in typesetting. First of the dealer of the month series (Electronics 2001).

Issue No. 9, April 1982

First issue of regular monthly schedule. First schematics published. First insert section (BMB Compuscience). First advertising manager (Michael Hyszka). \$1.50 cover price.

Issue No. 10, May 1982

First two color issue. First maps. First cover scoops. (CBM II and PET II). First \$2.00 cover price.

Issue No. 11, June 1982

First Reader's corner. First registered overprinting (RTC ad). First extensive photo story (by John Easton).

Issue No. 12, Aug. 1982

First alphabetic listing of library (by David Hook). First sustaining member listings. First extensive artwork (Butterfield's

PET family tree). First three side trim.

Issue No. 13, Sept. 1982

First pasted cover. First issue without major outside editorial content.

Issue No. 14, Oct. 1982

First horizontal printing of listings. (Had to reprint run to accomplish it.)

Issue No. 15, Dec. 1982

First full time editorial effort. First separate cover. First publication by separate publisher. First 96 page issue. First inside front table of contents.

Issue No. 16, Jan. 1983

The big jump to first four color cover (Man of the Year - Michael Bonnycastle). First Canadian mailing under second class registration pending. First ad for writers.

Issue No. 17, Feb. 1983

First collage cover. First insertion of return card. First front cover ear titles. First ad for cartoonists. First Hardware Hacker box. First magazine rather than newspaper press scheduling. First use of premium 70 paper.

Issue No. 18, Mar.-Apr. 1983

First professional photo cover. First use of bipad. First inside cover 4 color. First cover credits. First newsstand distribution. First cartoons. First strip. First page top borders. First theme issue. First blue inserts.

Issue No. 19, May. 1983

First Canadian mailing on second class permit. First full page regular strip. First paid series. First editorial board listing. First associate editor. First This and That column.

Issue No. 20, June 1983

First U.S. mailing on second class pending. First listing of ISSN number.

Issue No. 21, July 1983

First use of separate bindery. First full time advertising manager. First Canadian mailing without envelopes.

Issue No. 22, Aug. 1983

The big jump to first regular 96 page issue. First printing in two sections. First use of filled reverse printing (Mirage Concepts ad). First mailing on U.S. second class mailing permit. First insertion of editorial address. First advertiser's index. First printing of List Me files. First U.S. mailing without envelopes. First inside cover advertising printing with bleed.

EDITORIAL

Issue No. 23, Sept. 1983

First 96 page issue with full editorial content. First use of end of story indicators. First use of in-house headliner. Most extensive use of story dividers. First issue with all registration numbers inside. First use of composite half-tones in advertising.

Issue No. 24, Oct. 1983

First commissioned comic strip.

Issue No. 25, Nov.-Dec. 1983

Third anniversary issue with first internal four color sheets (Richvale Telecommunications). First complete distribution to Canadian Commodore independent dealers.

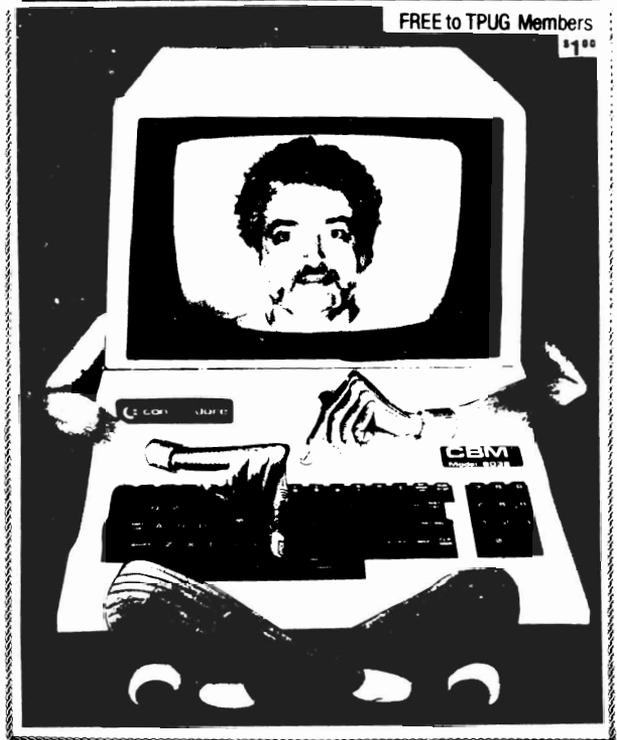
First TORPET cover (July 1981) to have a picture. The subject, of course, was Jim Butterfield.

THE TORPET

BULLETIN OF THE TORONTO PET USERS GROUP ISSUE No. 6 JULY 1981

FREE to TPUG Members

\$1.00



Butterfield: "You see Beach, BASIC is a much older language than you may have thought."

FEATURE

THE COMMODORE QUARTER CENTURY

FROM RETAIL SHOP

TO

GLOBAL GIANT

In just 25 years, a small typewriter sales and repair shop tucked away in downtown Toronto, Canada has been transformed into one of the hottest personal computer companies in the world -- Commodore International Limited.

Shipping more units world-wide than any other computer company, Commodore has grown from sales of \$46 million (U.S.) in 1977 to over \$680 million (U.S.) million in fiscal 1983 (year ended June 30). And much of that success is due to the entrepreneurial instincts of Commodore's founder and present vice-chairman, Jack Tramiel.

The Polish-born Tramiel survived Nazi concentration camps to immigrate to North America and, in 1958, open his own typewriter shop in Toronto. Tramiel has always had a gift for anticipating future home and business electronic needs -- and the ability to move quickly to fill them. Commodore's progress is a testimonial to that trait.

Over the past quarter-century, Tramiel has led Commodore on a heady ride through adding machines, electronic calculators, digital watches and the introduc-

tion of the personal computer age. Together with his skilled management team around the world, he is still considering: what's next? Commodore in fact, is widely acknowledged as a company that puts into action a smart but simple rule -- hold onto the old for as long as it is good and change to the new the moment it becomes better.

During those early years, Commodore grew from typewriter repairs and sales to typewriter manufacturing, with the acquisition of a factory in Berlin, West Germany. Early in the 1960s, Tramiel began selling and servicing a wide range of office equipment, and distributing nationally for an office furniture company.

In 1965 Commodore acquired the furniture manufacturer, and moved his operation to what is now Commodore's present Canadian headquarters. Commodore still manufactures office furniture (mainly filing cabinets and desks, plus metal housings for the CBM 8032 and SuperPET) at this plant in Scarborough, Ontario, and has expanded operations to three offices and two manufacturing plants in the Toronto vicinity.

Also in 1965, Tramiel met Canadian lawyer and financier Irving Gould, who later

FEATURE

became Commodore's chairman. These two formed the head of the team that built the Commodore we know today. One of the first things this team did was to sell Commodore's adding machine plant and find a company in Japan to make adding machines for Commodore to distribute. While in Japan, Tramiel got his first look at an electronic calculator, and he quickly deduced that this product would mean the death of the mechanical adding machine. With the Commodore philosophy that "if we are not our own competition, then someone else will be", Tramiel moved quickly and found manufacturers to produce electronic calculators under the Commodore name. Thus, the company was right there in the market when it began to take off.

The company began manufacturing its own electronic calculators in 1969 using Texas Instruments chips. In fact, Commodore was the first company to bring out a "hand-held" calculator - the C108 - an example of what has become a long history of Commodore "industry firsts" in marketing value, innovation and performance in new products. It is interesting to note that this product was sold at much the same price, through similar distribution channels and to similar customers, as is the popular VIC-20 today.

Up to 1974 Commodore expanded its line of calculators from simple four-function machines to memory machines, scientific machines and keyboard programmable models. Commodore was largely dependent on third parties for the chips and displays that went into the products it was making.

In 1975, Texas Instruments decided to go into business against its own customers by manufacturing calculators. At the same time, chip prices dropped to \$1. from \$12. and Commodore was caught with a big inventory of chips and calculators while market prices plunged. It was this incident which led to Tramiel's decision that Commodore would be a company that controlled its own destiny, and not be at the mercy of other manufacturers.

Commodore purchased MOS Technology, one of its semiconductor chip suppliers, in

1976, and worked its way to become vertically integrated. This vertical integration allows Commodore to supply its own needs, and it gives the company significant lead time in new product development which means manufacturing cost advantages - and that in turn translates into price/performance benefits for consumers.

The acquisition of MOS Technology was followed in the next 18 months by two further key investments: the purchase of Frontier, a Los Angeles chip manufacturer complementary to those produced by MOS, and the acquisition of Dallas-based Micro Display Systems Inc., a manufacturer of liquid crystal displays. As a result of these acquisitions, Commodore had in-house expertise and production in more key technologies than most electronics companies several times its size.

Also in 1976, Commodore reorganized its corporate structure as Commodore International Ltd. and moved its financial headquarters to the Bahamas and the operations headquarters to Wayne, Pennsylvania (it has since re-established in West Chester, Pa.).

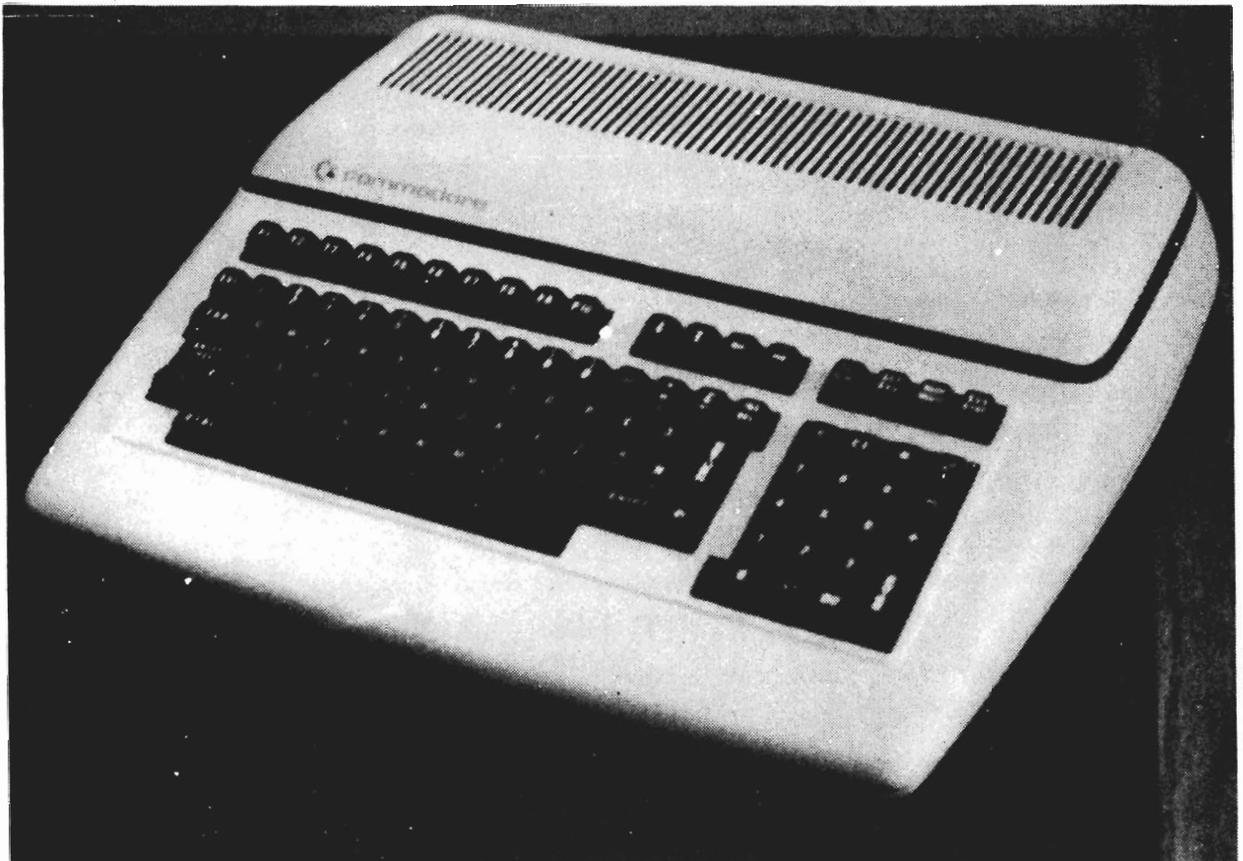
The next year was the watershed for Commodore when in 1977 -- still anticipating the future in true Commodore style -- the company introduced its first personal computer: the PET.

The PET (Personal Electronic Transactor) uses the MOS-designed 6502 microprocessor which is also used by some of the competition. It was the original machine, launched at the Hanover Fair in Germany and the Consumer Electronics Show in the U.S.A., that helped give birth to the personal computer market of today.

The PET sparked another period of rapid growth which is still underway today. It was marketed world-wide and really took hold in the European market because of the widespread, loyal dealer network Commodore had developed in its distribution of calculators. Commodore dominates the personal computer market in Europe today with more than 50 percent of the market in many countries. In fiscal 1983 (year ended June 30) European sales reached \$155.6



To the left: The Commodore portable Executive 64 weighing 27.6 pounds, travels easily. It has 64K RAM, a built in five inch monitor and floppy disk drives with 170K capacity.



Below: The advanced Commodore "B" series business micro computer with a minimum RAM of 128K expandable to 896K.

FEATURE

million.(U.S.) almost 23 percent of Commodore's total sales.

After the PET line was completed with the 4000 and later the CBM 8000 series micros, the next major product from Commodore was the very popular VIC-20. The prototype of the VIC-20 was previewed at the National Computer Convention in Chicago in 1980, and it was first launched in the Seibu Department Store in Tokyo, Japan because, as Jack Tramiel said about the threat of competition from Japan, the Japanese are coming, therefore we must become the Japanese."

Commodore sold 800,000 VIC-20s world-wide in 1982, reached the 1 million mark early in 1983, and they are now being shipped at the rate of 100,000 units per month.

Commodore didn't stop with that success either, but continued research and development and in August, 1982 shipped the first Commodore 64. By the end of that year, aided by the single biggest advertising campaign in Commodore's history, The 64 had already passed the Apple II in monthly unit sales. And by March, 1983 The 64 was being shipped at the rate of 25,000 machines a month.

Both the VIC-20 and The 64 are sold through mass merchandise retail outlets, as well as computer dealers and selected electronics stores, a successful marketing technique that has since been emulated by other companies.

Commodore has now become the largest unit seller of microcomputers in the world. And, according to a Dataquest study published in Electronic News recently, Commodore is No. 1 in computers priced under \$1,000, with an estimated 43% dollar share in the U.S. Maybe this is one reason why the "Commodore 64 Programs Reference Guide" is currently the top-selling computer book in the U.S.

As well as the obvious success the company has achieved in the home market, the Commodore name is familiar in both the business and education markets for

personal computers. Commodore is one of the leaders in small business computers with its SuperPET and CBM lines, and The 64 is also being used for a number of functions in small business.

The education market is another area in which Commodore is a frontrunner. In Canada, for instance, Commodore holds about 65 percent of the national market for computers in education. Penetration is also significant in U.S., British and European schools and universities.

Commodore has become an international company, with manufacturing facilities in Japan, Hong Kong, West Germany, the U.K., Pennsylvania and California in the United States and Scarborough, a city within Metropolitan Toronto, Canada. In fiscal 1983 world-wide sales increased 44.7 percent over 1982's \$304.5 million (U.S.) to reach over \$680 million (U.S.) By the end of fiscal 1984, Commodore will be a billion-dollar-plus company.

Wall Street financial analysts who follow Commodore (shares have been traded on the New York Stock Exchange for three years, and on the American Exchange several years prior to that) state that much of the company's success is due to its flexibility and willingness to adapt quickly to - and even lead - changes in technology and in the marketplace. Jack Tramiel puts it more simply: "The minute you're through changing, you're through."

Commodore International has the most complete line of products of any microcomputer manufacturer, with models and software specifically geared to the education, business and home markets. The company's track record of tradition and steady growth have resulted in an organization whose sophistication in research and development and in product engineering are second to none.

This commitment and dedication to research and development - over \$37 million was invested in R & D last year - will lead to advances in technology and product application from Commodore in the years ahead. The company is driven by

FEATURE

technology, and prides itself not only on giving its customers the products they want, but on introducing products the public didn't even know were available.

Commodore has programmers, systems designers and engineers working full-time to develop improved microprocessors, more efficient manufacturing techniques, enhanced quality control procedures, improved product design and engineering and, perhaps most importantly, an accelerated software development program.

Commodore is further expanding its software development in the United States and Canada with both in-house and external programming teams. The results of this program will certainly be evident to users of Commodore computers late in 1983 and throughout 1984.

Commodore remains a firm believer in the adage that if you just stand and watch the world go by, it will. So, the company continues to advance with a planned series of new proprietary systems, including a family of advanced microprocessors and peripheral integrated circuits for high-speed, low-power battery-operated computer systems, and improved video graphics. In addition, investigation into advanced microprocessor architecture is well underway that could lead to even lower-cost 16-bit Commodore computers.

The most recent results of Commodore's high-level quality and value approach are the advanced "B" series business microcomputer and the portable Executive 64. The "B" series has a minimum RAM configuration of 128K, expandable to 896K. It is ideal for variable work situations, especially where high output levels are demanded. The Exec 64, weighing only 27.6 pounds, can go anywhere with no difficulty. It has 64K RAM, a built-in five-inch monitor and floppy disk drive with 170K capacity.

Another recent step has been the development of a sophisticated new voice synthesizer for the Commodore 64. The Commodore speech module plugs directly into the Commodore 64, and at present

has a vocabulary of 235 words. This is the first voice I/O product to be developed at the company's Speech Technology Division in Dallas, Texas.

Also, Commodore's first consumer robot will soon be announced. Robotics is a challenging field of consumer electronics which has not yet been fully explored, and the company is excited about the potential in this area.

Commodore is celebrating its 25th year with an international extravaganza being held in Toronto, Canada early in December. The "World of Commodore" Show is the first truly international computer show to be orchestrated by a single microcomputer company.

This is the first all-Commodore show to be held in North America. There will be 65,000 sq. ft. of exhibits by suppliers of Commodore computers, software, peripherals and accessories, and by Commodore users clubs, special interest groups and microcomputer and business publications. Exhibitors are coming from several countries, including Canada, Turkey, the United Kingdom, Sweden, France and the U.S.A. to participate. Commodore operations from around the world will also be represented.

A series of seminars by some of Canada's best-known experts in the field will take the mystery out of micros for novices, and give valuable information to more experienced users.

A 10,000 sq. ft. hall will hold a major exhibit outlining Commodore's 25 years of history, its present hardware and software and the future of the company and its products. All who attend will see that the next 25 years will be as exciting as were the first 25.

In fact, looking at the history of Commodore at the close of its first quarter century, it is easy to see that the company has consistently been a leader in recognizing change and leading the electronics industry into the changes. But, more than studying history, Commodore is a company that creates the history. Just watch.



world of commodore

INTERNATIONAL CENTRE, TORONTO
DEC. 8-11, 1983

To commemorate their 25th anniversary, Commodore presents The World of Commodore, the first all-Commodore computer show ever held in Canada. The World of Commodore offers users an opportunity to examine a tremendous variety of software, peripherals and accessories for Commodore computers, and to preview Commodore's newest product offerings.

Over 70 exhibitors from Canada, the U.S., Britain, and Europe will be displaying hundreds of different brands of business software, educational software, home software, personal use software and peripherals approved by Commodore for use on their computers. Many of these products will be shown for the first time in Canada at The World of Commodore and products will be available for sale at very attractive prices.

A special feature of The World of Commodore will be an exhibit documenting Commodore's 25-year history, and previewing some of the company's plans for the future. As an added bonus, your World of Commodore pass is also good for The Home Entertainment Fair, being held at the same time in an adjoining facility.

If you use a Commodore computer, or simply want to find out what the computer revolution is all about, you won't want to miss The World of Commodore, the largest exhibition ever held in Canada of Commodore computers and products designed for use with Commodore computers.

The World of Commodore and Home Entertainment Fair are being held December 8 to 11 at the International Centre, 6900 Airport Rd., Mississauga. Parking is free, and VIA Rail runs right to the Centre.

For further information, contact Hunter Nichols Inc., 721 Progress Ave., Scarborough, Ont. M1H 2W7. Phone: (416) 439-4140.

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InfoWorld

Software Report Card

Time Accountant

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Hardware Requirements:

Commodore 8032 with 4040 drive or CBM 9060
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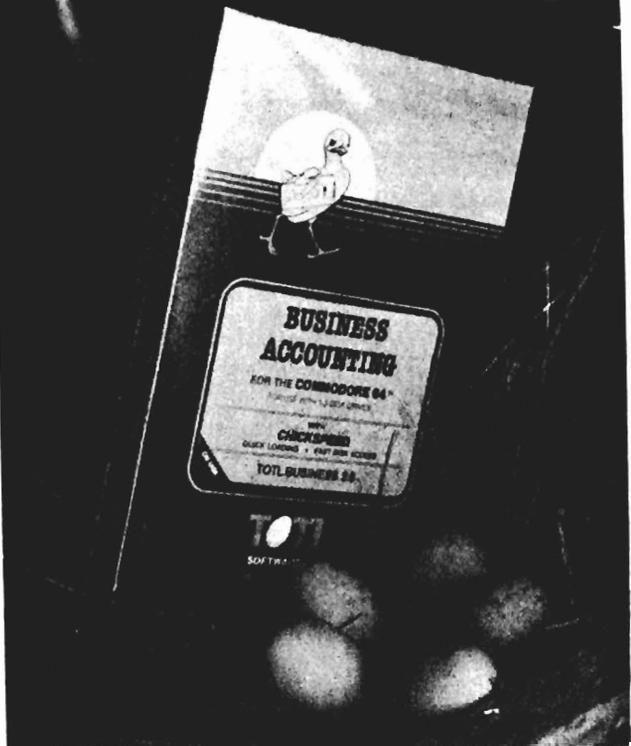
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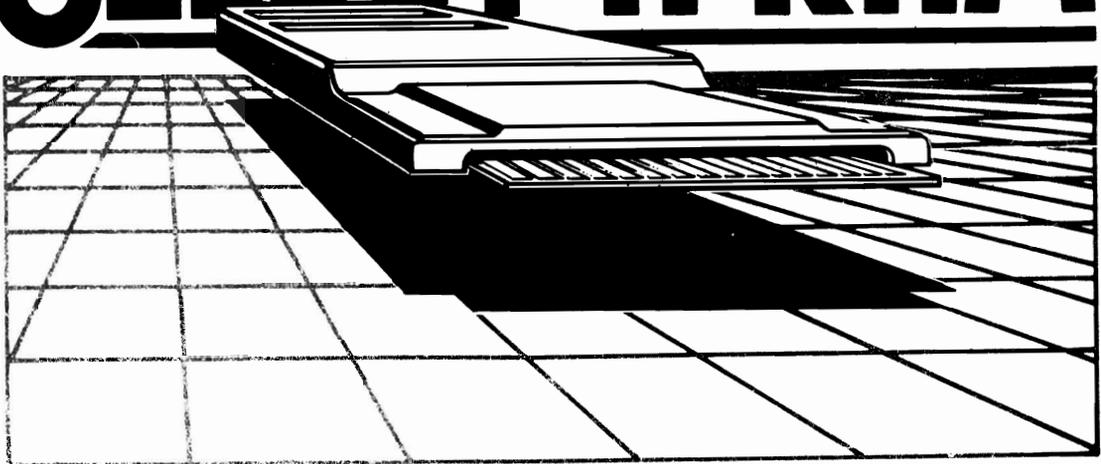
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by Jim Butterfield

HARD TIMES

Toronto, ON.

The financial news has been gloomy for some time. For stock market pundits, it seems that some of the glitter has been lost from the micromputer industry.

Video games are starting to sag. Arcades are closing. We should have expected it: game playing is always a phase that we work through and eventually tire of. Yes, games are imagination and challenge; but we all tend to saturate and settle into a "sensible" amount of game playing. Besides: as computer people, we know that games were never where the real action was. With games, you may only react; with computers you interact. We all had the expectation that games would fade, but computers would show lasting strength. They are not a fad: they do real things. Their challenge is more durable. And yet: today, even some computer companies are showing signs of economic trouble.

Texas Instruments has quit making micros and Atari is reporting heavy losses. And from Osborne, ominous news: filing under chapter 11 of the U.S. bankruptcy act.

The Osborne news is particularly sudden. A year ago, the company seemed to be on top of the heap. Now, retrenchment has been followed by massive furloughs (which turn out to be almost the same as layoffs), and finally the chapter 11 filing.

Let's define our terms. Chapter 11 is an application for protection from creditors, during which time the company will file a new business plan. It's not necessarily the end of the line; but it does signal serious problems. Osborne is said to be obtaining new sources of financing and may go back to production. But it's not a reassuring occurrence.

Further: in Canada, Osborne computers are not made by Osborne. Lanpar has manufacturing rights, and in principle might not be affected by Osborne troubles elsewhere in the world.

But why should all this bother us? We bought from a company that's still thriving. We can pat ourselves on the back and tell each other how smart we are. If other companies start to fail they will help our situation, right?

Wrong. Regardless of the fierce loyalties we have towards our own computer brands, we benefit from healthy rivalry. We have more to gain from competition than we have to lose. And a financially troubled company within the industry can cast a shadow on all of us.

It's hard to resist a nasty dig or two against our rivals. It was only two years ago that Adam Osborne wrote that the major manufacturers had lost their way, and unless they followed his lead, they would be doomed. Today, we can smile wisely when we think back on those words...but the Osborne did briefly cause the whole industry to take stock of itself.

So shed a tear for any companies that are having problems. We are all joined in the great adventure, and should be sympathetic for those that lag behind. The industry is still sound: I wish that it were sound enough to assure economic health to all participants.

An English writer may have put it best. He said something along the following lines:

"No computer system is an island, complete within itself; but each is a piece of the industry, a part of the mainstream. If a small software house gets wiped out, the whole industry is lessened by that much, just as much as if it were to happen to a big distributor or even to a major manufacturer. Each financial failure harms me, for I'm involved in the business of computers. So don't read the financial pages to see exactly who's in trouble this time ... no matter who it is, the one who's in trouble is: you."

Canadian Copyright

IS SOFTWARE PROTECTED?

by Ken Cox

Toronto, ON.

This article is by Ken Cox, a reporter specializing in courts and the law for CFRB and CKFM radio in Toronto. In addition to his CFRB work, he is a frequent freelance reporter for NBC Radio, United Press Audio, and United Press Canada. He is a member of the International Commodore Owners Association (TPUG) and owns a Commodore 64.

As you get older you have trouble keeping up with the times, and Canada's copyright law is no exception. It was passed in 1921 and has been in force since 1924. The old timer could not foresee our electronic age, but thanks to court interpretations it has struggled through the years guarding intellectual property rights. Now it's time for judges to put new life into the yellowing old law.

There are currently some copyright infringement cases before the Federal Court of Canada which could seriously affect the rights of computer programmers. These lawsuits pit the coin-operated video arcade machines against many "pirated" versions. Small firms (said to be fly-by-nighters) put look-alike copies of such popular games as Pac-Man, Galaga, and Donkey Kong in bars and arcades across the country, and the copyright owners don't like it at all.

One of the most zealous defenders of copyright is Bally Midway, famous for Pac-Man and family. It complains that bootleg ROMs imported from the Orient are being installed into coin-operated games here. The "pirate" versions are almost identical to the real thing, with imitation names such as "Hungryman." Naturally Bally doesn't get a share of those quarters which pile up in the coin boxes of imitators.

Clearly, the video arcade companies have a lot to lose if they can't stop others from lifting the coding and making an easy

profit on games which cost hundreds of thousands of dollars to develop. Alfred Schorr, the lawyer who represents Bally Midway, wants to avoid the situation which has developed in Europe where there are many legal jurisdictions in a small area. "Very little was done to sue anybody, and accordingly, there is no market at all. You can't sell legitimate games in Europe because, price-wise, you can't compete with the copies. It's virtually all copy games."

Bally claims that the cartoons presented on the screen are literary, dramatic, artistic, and musical works for copyright purposes. Pac-Man and his ghostly tormentors (Inky, Blinky, Pinky and Clyde) are now popular characters on TV, T-shirts, and in magazine articles.

While it is fairly clear that the characters themselves are copyright, the legal question to be resolved is whether there is copyright in those silicon chips which contain the machine language instructions. Schorr is adamant that "the computer programs, to the extent that they perform or display what are otherwise literary, dramatic or artistic works, are protected by copyright." So far the judges have been going along with that view in granting orders for the seizure of circuit boards and ROMs, and making the screens go blank.

But as you might expect, there's another side to story. Robert MacFarlane, who represents most of the video arcade

GENERAL

game "pirates" (he prefers entrepreneurs), is challenging the game makers' copyright on the grounds that the programs are simply machine processes. As a document filed in court says, "The subject matter of said works merely constitutes known mathematical algorithms and computer instructions in machine language, not readable or understandable by humans or fixed in any material form." MacFarlane says "what is represented on a ROM is nothing more than a series of electrical circuits and positive and negative charges which operate to condition a microprocessor. There is no literary or artistic work embedded or fixed in a material form in the ROM itself."

This is no desperation argument thrown out by copiers who have been caught with their hands in someone else's coin return. During a recent ruling in which Atari was trying to stop a copier, Mr. Justice James Jerome of the Federal Court said, "there's a serious issue to be tried here...this is not a frivolous defence...the issue of whether the protection of the Canadian Copyright law does extend to these machines or pieces of equipment, EPROMS, source code or object code...is...a question of major importance in copyright law, and one which is here being tested for the first time in this court." Rulings in these lawsuits will spill over and affect computer software in many forms other than ROMs.

To comply with copyright, the work must fit in with the rules. Those requirements include being in a permanent form, in a manner readily visible to the naked eye, and readable. Lawyers, when grappling with something new, like to look at the old. On the issue of whether machine code is readable by humans, Schorr notes that "Sheet music is only readable by somebody who knows how to read music. Likewise Morse code. The courts have held that the Morse code and sheet music are indeed protected by copyright." He points out that more and more people can read machine code when it is printed out. MacFarlane counters that "a piano scroll which produces music automatically on a piano when it is played is not the proper subject matter for a copyright in a musical work

because the piano scroll cannot be read by a human being."

What if a businessman borrows a program and keeps it running in his computer's memory without making a printout or disk copy? Is it then "fixed in a material form" while running? The cases suggest there would not be an infringement.

Canadian copyright law protects the owner of an "original" work. However, many subroutines such as "search" functions are borrowed from other programs. Who is the real author when several people, including some unknown, have had a part in its creation?

Scott Jolliffe, a Toronto lawyer who specializes in copyright, patents and trademarks, feels the courts will eventually rule in favour of copyright for computer programs and ROMs. "In Canada, I'm not able to say that piracy is running rampant in the computer software area. We have seen quite a few cases involving infringement of firmware in the video arcade field.

"I'm hoping that there will be a strong case before too long that decides finally that there is in fact copyright in computer programs which will serve to dissuade people who might otherwise decide they want to copy someone else's program."

Alfred Schorr predicts that once a definitive ruling comes down "you will see the criminal law enforcement agencies laying a lot of criminal charges." The morality of making a profit by using or selling another person's intellectual property doesn't really enter the picture. For Robert MacFarlane, representing the video arcade "pirates", "It all depends on the statute, then you're not entitled to protection no matter how vigorously you may feel that this (work) should be yours and yours alone."

While there has been talk of amending the law to make it clear that computer programs can be protected by copyright, there is nothing concrete so far. The Canadian law closely follows British statutes. In that country a committee recommended including works "not visible to

GENERAL

or readable by the human eye, or directly understandable by the human brain." At last report there had been no change and the legal rights of software writers remained uncertain.

Unless the Canadian law is altered, court judgements will be the only way to settle the controversy. So the next time you drop a coin into a video arcade machine

you could be contributing to a legal fund which will help decide whether anyone can own the instructions which make up a computer program.

This has implications for educators, programmers, businessmen and hobbyists which go well beyond the initial concern of whether a "Barracuda" is just a Pac-Man ghost in disguise.

ICCE POLICY STATEMENT ON NETWORK and MULTIPLE MACHINE SOFTWARE

The educational software market must overcome two critical problems: allowing educators access to quality software in usable, cost-effective forms while at the same time realizing vendors are suffering from unauthorized copying of software and documentation. In an effort to help solve these problems, The International Council for Computers in Education has adopted a policy developed by a group of vendors, publishers and educators for network and multiple machine software.

The **ICCE POLICY STATEMENT ON NETWORK AND MULTIPLE MACHINE SOFTWARE** states that educational organizations should structure a clear policy of conforming to software agreements and to copyright laws. It urges vendors to provide network-compatible versions of software and multiple-copy discounts at reasonable costs.

Attachments to the policy statement include:

1. Suggested District Policy on Software Copyright
2. Sample Software Policy of a Community College with Large Microcomputer Lab
3. Suggested Format of Software Licenses
4. Some Technical Notes on Software Encryption for Software/Hardware Vendors

The **ICCE POLICY STATEMENT ON NETWORK AND MULTIPLE MACHINE SOFTWARE** and attachments will appear in the September, 1983 issue of *The Computing Teacher*, journal of the ICCE. Each of the 39 ICCE Organization Members has been asked to endorse and actively promote the policy statement. Organization Members outside the United States may need to modify the policy to conform to laws within their country and/or province.

ICCE believes that problems associated with software copying and pricing demand your attention and consideration. The **ICCE POLICY STATEMENT ON NETWORK AND MULTIPLE MACHINE SOFTWARE** urges awareness of and responsibility for the legal and ethical issues in computer education today.

For additional information contact:

**International Council for
Computers in Education**

**University of Oregon
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Eugene, OR 97403
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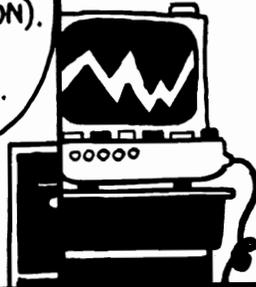


Read + RESTORE

WITH CHIP?

HI THERE! IT'S ME AGAIN!
YOU ALREADY UNDERSTAND
HOW DATA AND READ WORK
TOGETHER (PREVIOUS LESSON).
NOW WE'RE GOING TO
LEARN ABOUT RESTORE.

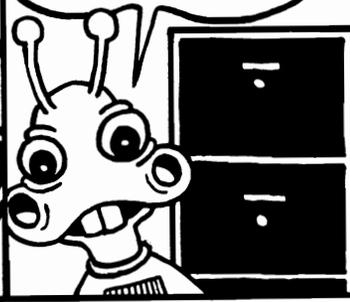
LET ME EXPLAIN WHAT
RESTORE DOES FIRST:



RESTORE BASICALLY DOES
WHAT IT SAYS: IT RESTORES
THE POINTER BACK TO THE
BEGINNING OF DATA. IT
CLEANS THE SLATE, SO TO
SPEAK!

THIS IS THE PURPOSE
OF RESTORE: TO USE
DATA OVER AGAIN.

FOR EXAMPLE, TRY THIS
PROGRAM:



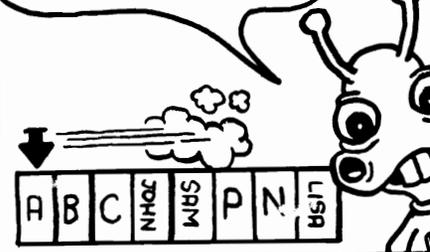
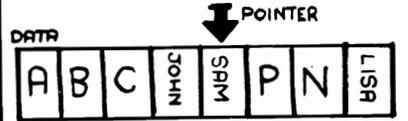
```
5 FOR A=1 TO 3
6 READ N$: ?N$
7 NEXT A
8 RESTORE
9 FOR A=1 TO 5
10 READ P$: ?P$
11 NEXT A
12 DATA A,B,C,JOHN,SAM,
   P,N,LISA
```



YOU SHOULD GET THE
FOLLOWING:

NOTE: AS EACH PIECE OF
DATA IS READ, A "POINTER"
MOVES TO THE NEXT PIECE.
IF A READ IS ATTEMPTED
WHEN POINTER IS AT END
OF DATA, AN "OUT OF
DATA" ERROR WILL RESULT.

THAT IS WHY WE USE
RESTORE: SO WE CAN START
OUR POINTER AT THE
BEGINNING AGAIN.



RESTORE IS ALSO USEFUL
IF YOU WANT TO READ A
CERTAIN PIECE OF DATA.
FOR EXAMPLE, IF YOU WANT
TO READ THE 15TH PIECE,
YOU RESTORE YOUR POINTER
TO THE BEGINNING AND
USE A FOR/NEXT LOOP
TO GET YOU TO THE
15TH SECTION

TRY THIS PROGRAM:

```
6 READ N$
8 RESTORE
9 FOR A=1 TO 14
10 READ N$
11 NEXT A
12 READ N$
13 ?N$
14 DATA A,B,C,D,E,F,G,H,I,J,K
   L,M,N,O,P,Q,R
```

POINTER IS AT
POSITION 15.

DON'T FRET TOO MUCH ABOUT
THE FOR/NEXT LOOP. IT WILL
BE EXPLAINED IN A FUTURE
LESSON. I'LL SEE YA
LATER, EVERYBODY!



MIKE RICHARDSON

STICK TO VIC

by TERRY HERCKENRATH

TORONTO ONT

QUESTION...

Dennis Smith from Marshall, Michigan wants to know how he can disable and enable the CURSOR CONTROL keys.

REPLY...

I assume that Dennis uses the INPUT statement to get some information from the 'user', but he doesn't want him/her to wander all over the screen with the cursor. I also assume that Dennis wants the cursor to show when input is required.

There is no convenient 'switch' that can be set if one wants to ignore certain keys. The only way you can ignore certain keys is by using the GET statement to get the input one character at a time, examine the characters, ignore the ones you don't want and print the rest to the screen and collect them in another string variable. The GET statement however doesn't provide us with a visible cursor, so we will have to look after the cursor ourselves.

The VIC always has a cursor somewhere on the screen, but it makes it visible only when specifically told to. (The cursor is positioned on the screen by the PRINT statement). There are a number of memory locations in the VIC that tell the VIC whether the cursor should be visible and that keep track of what the cursor is doing and where it is at any given time. The ones we will be concerned with are:

204 - CURSOR ENABLE (0=ENABLED)
207 CURSOR IN BLINK PHASE
(0=OFF,1=ON)

To make the cursor appear on the screen we poke a zero in location 204. We will have to do this quite often, because the PRINT statement has a tendency to turn it off for us. We'll enable the cursor each time we GET a character. To keep the cursor visible while characters are printed on the screen, we force the VIC to flash

the cursor each time we print a character, by poking a zero in location 207. To make sure we don't leave a 'ghost' cursor behind when we print the CARRIAGE RETURN character, we will have to make sure that the cursor is OFF when we print the carriage return. We do this by WAITing until location 207 has a zero in it's low order bit position (BIT 0). In order to save some processing time when we execute this input routine, we'll use an INFINITE LOOP to avoid GOTO statements. (If a routine is located near the end of a program, and you keep going back to a line near the beginning of the routine using the GOTO statement until some condition is met, BASIC will search for that line number right from the beginning of the program. Depending on the size of the program, that can introduce a noticeable delay.)

Whenever you want input from the 'user' and you want to disable the cursor control keys, GOSUB to this routine and it will return the inputted string in variable C\$.

■■■■■■■■

```

10000 c$=""for i=1 to l:=0:poke 204,0:get a$=""then next
10001 rem"clear variable: start infinite loop:make sure
      cursor stays enabled: get a char
10010 if a$="(CR)"or a$="(CL)"or a$="(CD)"or a$="(CU)"
      ora$="(HM)" or a$="(SC)"or a$="(ID)" then next
10011 rem"weed out all CURSOR CONTROL keys plus the
      INSERT key
10020 if a$=chr$(20)and c$<>""then c$=left$(c$,len(c$)-1)
      :print a$:next
10021 rem"if DELETE then also delete character from
      string, only if string is not null
10030 if a$=chr$(13)then i=1:wait 207,1,1
10031 rem"if RETURN end loop and wait until character
      is not in blink phase
10040 c$=c$+a$:poke 207,0:print a$:next: poke 204,1:return
10041 rem"build string variable:force cursor to blink:print
      the character
10042 rem"when loop is finished, turn off cursor. ready
  
```

■■■■■■■■

JOIN IN THE VIC-A-THON

Sun. Nov. 20th



HELP THE HANDICAPPED

TORONTO - Susan Johnston, 13, of Owen Sound, a student at the Ontario Crippled Children's Center here, is happy to learn that youngsters in Metro will compete in the Variety VIC-A-THON. Proceeds going to Variety Village.

Tear out or photocopy entry form on next page.

Toronto- The biggest computer game competition ever held in Canada will raise money for handicapped children and Toronto area youth will be the key to its success.

The Variety Club of Ontario Tent 28 and Commodore Computer are co-ordinating the First Annual Variety VIC-A-THON playoffs which will be held Sunday November 20, 1983 at The Sheraton Centre 10AM-6PM. High scorers will compete in the Grand Finals Sunday December 11, 1983 at High Noon.

More than 100 VIC-20 computers will be in play simultaneously during playoffs, providing exciting sights and sounds as the game skills of contestants decide who will go for top gun in December. Competitor Age categories will be 11 and under, 12 to 15 years old, 16 to 17, and 18 years and over.

There will be a host of prizes for players with winning ways in various age groups and VIC-20 computers for those crowned champion in the Grand Finals.

Participants will raise money by filling their pledge sheets with sponsors, similar to a bike-a-thon or walk-a-thon. The amount of money raised will be based on the participant's score playing the popular game "GORF". For example a sponsor might pledge 10 cents per 100 points scored to a maximum of \$25 or whatever limit they desire.

"Everyone participating in the VIC-A-THON will share the rewarding experience of being part of an important community event designed to help disabled children at Variety Village," said Arthur Goodall, President of Commodore Computer, sponsor of Variety VIC-A-THON.

Commodore Locations at which the participants can practice are:

Canadian Tire, Ava Electronics, Six Poits T.V. & Video, Scitron, Mr. Software, Questar International, Electronics 2001, Video Warehouse, House of Computers, The Computer Forum, Toronto Hi-Fi, Comspec Computers, Video Variables, Richvale Telecommunications, Batteries Included.



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Each age group champion will win a Commodore VIC-20 computer and in addition the Grand Champion will go home with a colour monitor, datasette and Vicesories bonus pack.

All of the finalists will be awarded a satin bomber jacket, T-shirt, sports bag, specially commissioned binder, and movie passes. In addition everyone gets that good feeling that goes along with helping handicapped kids.

VIC-A-THON SCORE

WITNESSED BY _____
 (VARIETY CLUB MEMBER)

PLEDGE
 PER 100
 POINTS

TOTAL
 PLEDGE

CHECK
 WHEN
 PAID

CHECK
 IF
 RECEIPT
 REQUIRED
 (\$10. OR
 MORE)

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VIC-A-THON DAY NOVEMBER 20, 1983
10 A.M.-6 P.M.

SHERATON CENTRE
123 QUEEN WEST, TORONTO

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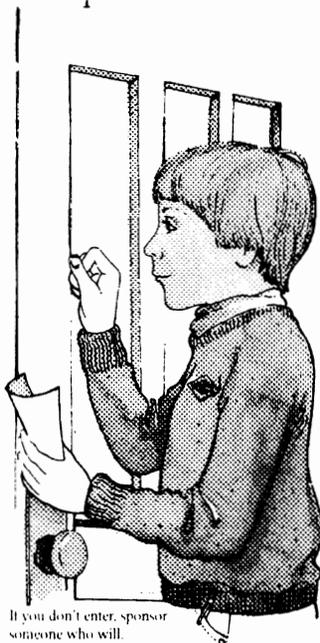
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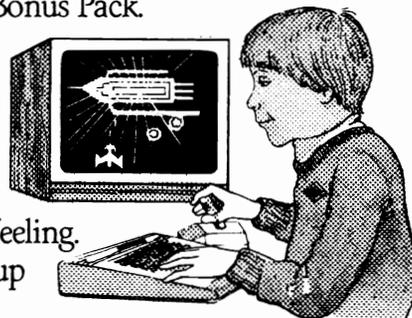
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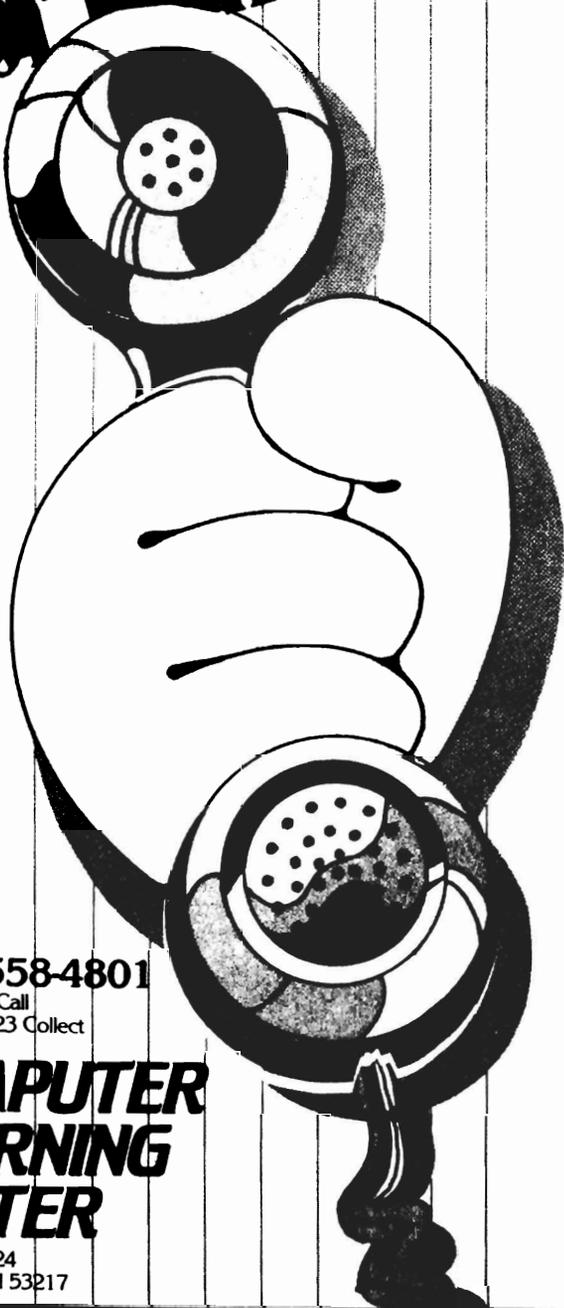


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CLUB ACTIVITIES

TPUG CENTRAL MEETING OCT. 1983

by Ian Wright

Toronto ON

The October meeting of the "Green Screen" group got underway at 8:42 on a miserable drizzly evening. The attendance was lighter than usual so I got a parking spot and a front row seat - both without a struggle!

Mike Bonnycastle opened the proceedings with a report on the Business meeting, and gave a special thanks to those who attended on October 6th and also to those who sent in their proxies. The revised slate of directors was introduced, and this included three new people - Carol Shevlin, Mike Donnegan, and John Shepherd have joined the new executive. A major change is that The TORPET will be brought "in house" because it had not been a part of the club, nor under its control. This bombshell prompted a number of questions and Mike said that there were still some decisions to be finalized but gave these responses:

- the new magazine will be The TPUG Magazine, and will be under the direct control of the executive.
- the new magazine will have a slightly different emphasis with less editorial material and more "how to do it"-type articles.
- the circulation is now 11,000 being mailed to TPUG members with more distributed through Commodore dealers, newstands, and other outlets.
- all current members will continue to receive The TPUG Magazine as part of their dues.

Gord Campbell took the microphone to explain that the plans for the 1984 Conference were getting underway. The dates are the 26th and 27th of May and the new location will be the Constellation Hotel. There is TTC access, lots of parking, demo rooms and lecture halls in one area (so

that locating a presentation doesn't take forever!), and it will cost less. The preliminary survey suggests that there will be 200+ delegates, and since this is the U.S. Memorial day weekend it may allow more non-resident TPUG members to attend. Speakers are being concerned, and a new idea is an "Answer" room where you can get 10 minutes to show an expert your problem and get one-on-one help. There will be a significant increase in the cost since non-participants were previously subsidizing this event. The final fee has not been determined as yet, but Gord said that it will be under \$30.00 Canadian.

Gord Campbell then gave a demonstration and explanation of "BASIC AID". This utility expands the BASIC commands so that you can do many additional things in immediate mode. For those that do not have it, the program is on TPUG disk X-1 from June 1982. BASIC AID includes a program called "the Wedge" which is well known to C-64 users, and the more mature owners of PETs. The Wedge provides one or two keypress disk operating commands such as >\$ to directory a disk. This command can be used to do "wild-card" searches using "?" and "*" to select certain files or file types. The program BASIC AID", however, is much more than this. You can "Spool" a file to the printer directly from your drive, "Flist" a file to examine it without erasing the current program in memory, and display an ASCII file by writing the command "Read" on the directory line beside the file name. Other disk-based utilities include "Merge" which is a true merge and will overwrite lines (use the renumber utility before you merge). Start gives the starting address of a program from the directory (this is useful when saving from the monitor), and "Size" gives the number of bytes of a program; either the one in memory by typing SIZE, or one from the directory.

CLUB ACTIVITIES

This program does a lot, but we have only looked at the disk-based utilities that BASIC AID offers, there are 19 more commands! "Trace" allows you to step through your program and see where it goes by watching the keywords and line numbers on the screen. "Help" will follow the program to where it stops and display the error. The "Find" utility lets you select keywords such as - FIND <or<, and select words such as - FIND <"or"<. Obviously, one reason to find things is to change them, and BASIC AID has a CHANGE command that lets you do this in one step. Other commands include AUTO, CRT, DELETE, ESCAPE, HEX, NEW & UN+NEW, OFF, PACK, RENUMBER, SCROLL, UPPER/LOWER, and even BREAK. When Gord typed "Break" - it did - and he had to reset his machine. The final command is "Kill" which turns off BASIC AID. For a complete description and explanation, get the disk and print out BAID INSTRUCTIONS.

Just before break time Gerry Gold made an announcement about the SuperPET meetings, which are now to be held at York University. Any S-PET users should be sure to send their name and address to Gerry c/o The TPUG office. Doris Bradley said that there will be a supper meeting and COMAL demonstration with Jens Erik Jensen on October 26th. Commodore is setting up a "Vicathon" contest to aid Variety Village whereby players of the game GORF will gather pledges for points gained playing the game. Playoffs will be at Sheridan College, and the finals will be held at the "World of Commodore Show" at the International Centre in December. There are various age groups and pledge sheets will be available by November 4th.

After the break Mike Donnegan went through the LIST-ME program of this month's disk. There are HAM radio programs and some that give more information about Nova Scotia than you probably every wanted to know.

Gord Campbell then returned to show a program that will be available on next month's disk that turns the PET + Basic--Aid into a medium capability wordprocessor. There is no justification or word wrap, but

the price is right. A program that is written as:

```
100 " June 23
110 "Dear Sir:
120 " I am sorry to ....
140 "
```

will be turned into a screen or printer dump without the line numbers or quotes by pressing "S". What you write is what you get, so there are no margins other than those you leave inside the quotes. A paragraph is indicated by line 140 and to leave a blank line use two lines like 140. The program depends on a simple poke that strips off the line numbers and should work on both VICs and C-64s.

The final session was devoted to a question and answer session to talk about "things". Chris Bennett, Mike Bonnycastle, Gord Campbell and Gerry Gold were on the firing line although some members also got in on the responses.

- on the presentation of commercial software, Mike said that we could have independent reviews but none by authors with vested interest.

- magazine articles can not be typed in since they are copywritten by the publisher. It was suggested, however, that the club magazine could be a place for reviews of these programs since some are excellent but others ...

- "is the PET dying?" was answered differently by different people. It is becoming obsolete over time because the creative people are writing for the newer machines, since more people own VIC 20s and C-64s than PETs. From the conference statistics, many of the PET owners have two or more machines - the majority have C-64s. Mike and Chris were dissenting voices since the PET/CBM series are still the best business machines at their price.

- members can get each month's disk by attending one meeting because the C-64, VIC, and PET disks are now being done early.

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GENERAL

COMPUTING IN THE SCHOOLS

Collective Thoughts

by Colin A. Haig

Mississauga Ont

What is REALLY going on in Computer Education out there ?

The purpose of this article is to clear up a few points and to present a different perspective on the school situation, from that presented by David Bradley, in the September issue of The TORPET.

I am quite heavily involved with Computer Education on many levels, both in the Peel Board as a student and part-time employee, and at the Ontario Institute for Studies in Education, where I have been involved in a project directly relating to the Canadian Educational Microcomputer (unofficially known as "The Bionic Beaver").

I've been a member of TPUG for quite some time now - (I joined as #1320 but I believe we have almost 10,000 members now). I've seen a lot of changes in the computer world and I feel it's about time I made some comment.

When I started with computers, just over five years ago, video games were basically unheard of, except for that most fascinating game --YAWN-- known as PONG. Of course, at this time, there weren't any ***VIDEO GAME FANATICS*** as they are currently known. BUT there WERE a few hackers (or is "Techno-Computer Enthusiast" more appropriate ?). The most interesting fact was that most of this bunch didn't spend too much time playing games. Instead, they involved themselves with actually learning to use the computer, by writing useful programs, instead of wasting their valuable computer time on keyboard-smashing games.

Presently, we see all kinds of people who go to the local computer shop to buy a VIC or a C-64, with the main purpose being to play games. Only after the games have lost their novelty, do most of these people realize that they can actually

PROGRAM the computer! In a lot of cases, however, the machine just sits, unused. (I hope that I have not offended any VIC or C-64 owners out there, but you have to admit that it does happen.)

As a result of this great increase in the number of students who have or use computers, we find that there are several different categories of users. There are **USERS**, the sort of person who simply uses the computer to get a job done; the **GAMERS**, the kind who spend much of their time twiddling joysticks and bashing buttons; the **HACKERS** or **WHIZ KIDS**, who do all kinds of stuff with their machines, ranging from practical to plain dumb; and then the **BRAT KIDS**, (referred to as B/K's) who own all kinds of goodies, and generally don't make much good use of their stuff.

I personally prefer to be known as a HACKER, but I have been called a B/K from time to time.

These same groups of students can usually be found in ANY computer classroom.

The **USERS** generally get their assignments done, and they tend to consider the computer to be another piece of junk for them to either learn to use or learn to hate.

The **GAMERS** are usually the ones who sit at the far back corner of the class playing Space Invaders, while the teacher drones on about the advantages of the FOREIGN X loop (or was it the FOR NEXT loop ?). You can usually spot the Gamers, because they are the ones leaning all over the monitor screaming about the new high score.

The **HACKERS** are normally busy planning new ways of disabling their neighbour's stop key by remote control, or they

GENERAL

are working on a new way to sort matrices backwards. A casual observer would note that the hackers are unable to type in a standard fashion, but that they know where all the keys are on 13 different keyboards. Those that try to learn how to type usually give up out of frustration as soon as Commodore puts out a different model with a different keyboard. (You will have noticed this if you have ever tried pushing the stop key on a 4032 and then tried to find it on an 8032! Usually you get an '@' symbol.)

The B/K's are usually the ones who think they know it all, until it comes time to do any real work, when of course they turn to the Hackers and Users for help. These folks generally have a Superiority Complex, until they find that their latest computer has the power of a wrist-watch and the speed of a 110 Baud TeleType. The B/K's are also the ones who pride themselves on the fact that they can actually type, but as soon as the keyboard changes, they are doomed.

One of the problems with a lot of the B/K's and some of the Hackers is that they hold the belief that they know everything that is to be learned from a resource. I'm sure that a large number of people would agree that there is always SOMETHING to be learned, whether it is a new command, a new technique or just some general pointers on programming style.

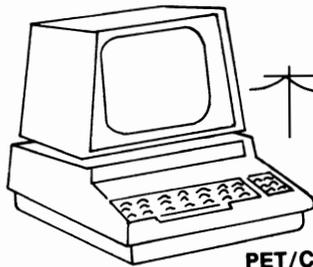
Another area of interest is the different approach of various teachers, schools and school boards to the way that computers are maintained, student access is controlled, and the way that the courses are presented. At Lorne Park Secondary, the school that I attend in Mississauga, the computer courses are presented in fairly effective ways. Instead of having the students copy the program out of the textbook or some other source, the students are presented with a new command, structure, or technique, and then they are presented with a challenge - they must come up with a program that will accomplish a task. Examples include card games, a banking simulation, generating report cards, a driving test, a slot machine. When the program is finished, the student is usually quite pleased with what he/she has produced.

The main advantage of this approach is that learning can actually be FUN !!! However, it isn't quite this easy; the students are also required to DESIGN the programs on paper, using flowcharting, pseudocode, and related techniques prior to actually using the computer. In many cases, teamwork is required, and this tends to improve the quality of the final program, and it helps the students to understand the necessities of working together. No more than 30% of the final exam at Lorne Park is written on paper. The remainder of the marks are given for creating and debugging a program and for documenting it. In some cases, the students are provided with a partially complete program, which they must complete and expand upon. One exam required that the students work on a system to keep track of bet and payoffs at the Queen's Plate. Another required the students to complete a mark-keeping program. All it takes is a few teachers with a little time and a little creativity.

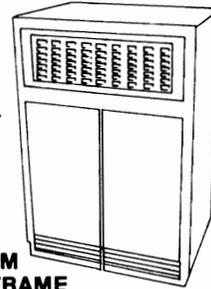
One of the difficulties encountered at the present time is that a large number of teachers in the schools have very little experience with computers. The Peel Board offers a course called Computers and Educators, which the teachers are encouraged to take. The course has an introduction to computers and terminology, and it leads up to small scale programming in BASIC. This, and the few other activities are helping to make staff more comfortable to the computer. One attitude that I strongly disagree with, is the belief that teachers should be given a year off, and a computer to work with. first of all, this is VERY expensive, and secondly, how many of the teachers would actually spend their time with a computer?

With respect to computer maintenance, we have never had a piece of equipment out of service for longer than three days. The main reason for the good service record is the fact that there are people who actually care about the equipment. Myself, and two fellow hackers try to make sure that all of the teachers know how to check the power cord, the fuse, and the power switch. We also make sure that they know how to get keys unstuck and other

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- VI. First 6502 Programs: Life in the Fast Lane

The instructor for the course is Kem Luther, Ph.D., a teacher in the Computer Studies Program at Sheridan College. In addition to teaching programming at Sheridan, he has several years' experience in writing and publishing commercial programs for the major micro-computing systems.

The two workshops will be held at the Brampton Campus on January 5-6 and March 12-13, 1984. The fee is \$150 for the two days (including lunch). Further information and reservations may be obtained by calling the Sheridan College Conference Centre at :

416 845-9430

416 823-9730

416 632-7081 ext. 336

HARDWARE HACKER

by Hank Mroczkowski Houston, Texas

CHEAP? For any data base program and by any standards...sure! I'm talking about using the operating system of any PET/CBM/VIC/64 Microsoft BASIC as a "free form" data base (management) system. The full screen editing in our beloved Commodore BASIC lets us put full screen editing in memory provided we follow a few minor restrictions:

1. **Line numbers.** Every record must be preceded by a line number recognized by BASIC.

2. **First character.** The first character of a record cannot be a number.

3. **Length.** Any record cannot be longer than 80 characters (88 in the VIC).

Now, you will need some form of programmer's aid, either BUTI or Commodore's **Programmers' Aid** cartridge (for the VIC) to manipulate your data. It is a data base (management) system only in that YOU are the manager with help, or should I say FIND. That's the secret.

I have been using this system on the PET 4032 for about four years with cassettes and with disks and have had no problems entering or retrieving information. The FIND command will bring out the information, searching through up to 32K in less time than the PET could print to the screen. I had used the Programmers Toolkit and SM-KIT on the PET until BASIC AID became available (available from CHUG on chips for PETS-ED). All three gave excellent results. About a year after using this system to hold a list of telephone numbers of people scattered about the country, someone had an article published explaining this same system. The name of the article may have been The Poormans Data Base, but I can't find the proper reference. If anyone remembers where it is, I would appreciate some feedback to credit the written source.

BASIC AID is the most complete package of expanded keywords for BASIC but has one small bug when using it for the DB(M)S. When printing a list of records to the printer, it will close the file. This causes some strange problems on the IEEE-488 buss when a CMD command is given and some form of PRINT # command isn't issued prior to closing. The screen goes nuts.

Now that I'm using the VIC 20, more and more, I use the same style of DB(M)S on it, too. The only real limitation which has caused any problems in all the machines is the memory size of that machine. With 32K on the PET, I am limited to about 450 records or line numbers. On the VIC 20 with a 16K Expander and Programmers' Aid, the limit is about 185 entries. Each of those records is at least 60 characters long. No absolute figures can be given to let you know if your data fits the machine because of the method the PET/VIC stores your data.

For example, if you save:

```
10 JOHN DOE:1234 S. MAIN:ERIE:PA: :16501:814-454-5278
11 JOHN REMBAR:1234 SPRINT LN:ERIE:PA:16500:814-555-1212:REM & (PRINT)=TOKENS
```

You'll note that line number 11 has two groups of characters which are not enclosed with quotation marks and will be stored into memory by the interpreter as BASIC tokens...single byte characters which

will always print it back to you just as you typed it in. Line 11 LOOKS like it's six bytes longer than line 10, but, in fact, it is exactly the same size in memory. Use this to help conserve memory. Be careful to avoid using question marks...they will be printed back as PRINT.

A helpful hint, use quotation marks sparingly. They use extra bytes and make finding anything inside their brace very difficult with any prog aid program. You tell the prog aid to find either a string or sequence of characters in memory. If you quote a sequence of characters, you have defined that sequence as a string and the prog aid may not find that string if you didn't tell it to find a string.

In other words, you can only search for either a string or a sequence of characters (which are stored as BASIC) at any one time. If you store your data both ways, you will have to FIND in the manner in which you have stored it. This may make retrieval cumbersome. On the other hand, it can be used to separate similar data, and, with tricky techniques sub-grouping data is possible.

For example, you may want to describe a part on inventory. By putting the part number and the description inside a brace of quotes, it won't be normally listed in a FIND of that part number. However, when the same part number is quoted during a FIND it will list its description. Neat, huh?

About a year ago, I had implemented this system where I work to keep track of the radios we repair and store. It has been very successful in saving from one half to two man-hours per day of both the service department secretary's and technicians' time whenever any customer called on the status of his unit. An added plus is the professional timeliness and attitude that the customer sees.

This same system has been used by several other people who had seen how easy it was to set-up and maintain and I had trained our parts manager and our secretary on the basics of using it in about two hours broken into short 10 to 20 minute sessions. The biggest area of concern to me is keeping the data format consistent. We identified one style of radio as WHAT CL for a White, Classic, GE Mark V radio-telephone. If the entry is made as CLASS, obviously, a match to FIND all WHT CL would miss that one. No matter how the data is entered, it must be consistent. Remember, no error checking is involved.

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I might mention an extra benefit with the system. We would keep the data on the radio long after it had been returned to our customer. This started a service history of all units which had gone through our shop. This allowed us to identify lost radios by serial number and, also, to give the customer a printed list of his units which had gone through the service department. Since the invoice number is part of the record, we can easily pull together a file to cross check for any units which are failing often. ■

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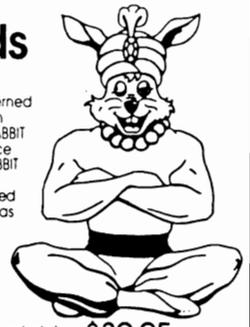
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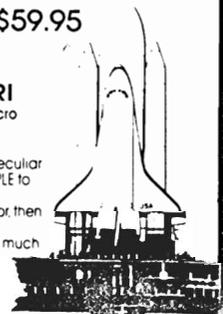
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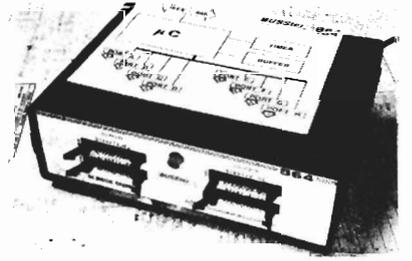
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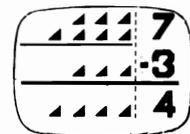
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MACHINE LANGUAGE

SAY GOODNIGHT LANCE LEVENTHAL

Review by Terry Taller

Kanata, ON.

A BOOK REVIEW of 6502 ASSEMBLY
LANGUAGE PROGRAMMING
By Ashley, Fernandez, Taber
John Wiley and Sons (Canada) Ltd.
Self-Teaching Guide Series \$12.95 (US)

After one has learned to program in BASIC several things happen. First you sit down and try to write all those neat programs you knew you could--if only you understood BASIC. Having achieved all of that knowledge you realize that all of the best programs have been written and are available commercially or can be obtained from TPUG; what's more if you add up all of the hours and aggravation it is much less expensive to purchase the program or get it from TPUG.

Next you begin to read articles by Farquason, Williams, Strasna, Butterfield, Mansfield --and they speak in hieroglyphics like STA, LDA, ROR, ASL, CPX, LDX. You decide you are going to write the ultimate computer game (if it follows current trends you will be able to, on your screen, simultaneously destroy New York, Miami, and Toronto with an option to devour dots) and somebody tells you that no game is worth its weight unless written in machine language. (It doesn't take long before you find out that for all intents and purposes machine language = assembly language.)

Once you've spoken to all of those incredibly knowledgeable people (they've owned computers at least one year more than you have) you find you have to buy an assembler (and you thought you were going to get away cheap!) Now what? Well, face the fact that when getting into assembly language you might as well make it easy on yourself and buy a good product (either Moser's MAE or Templeton's PAL will do). To put it bluntly, and as I learned the hard way, there is no point in getting into assembly language without a top-quality assembler.

As you discovered when learning BASIC there is no way to learn assembly language except by jumping in with both feet. That means it is time to start shopping around for a book. As you venture into your favourite computer bookstore you will find the pickings pretty slim compared to books on BASIC: in a previous article I advised that you stick with Margaret McRitchie's book on BASIC programming. The only problem with assembly language is that you bump up against your first jargon--microprocessor; you'll see books called Z80, 8080, 68000, Z8000, 6809, 6502, 65C02 all followed by the words Assembly Language Programming or words to that effect. You want 6502 books and, as you'll see in a moment, you'll only want one book to start.

In the 6502 section you'll find books by two of the big guns in assembly language writing--Lance Leventhal and Rodney Zaks. Both of their books on 6502 assembly language programming are BIG and expensive and neither one is terribly useful for the novice entering beginning assembly language programming. You'll find that Leventhal's book looks the most impressive--at least it did to me. When you start into it he refers to the fact that he assumes you understand Book 1 in the series; so out you go and buy Book 1; when you start that you find that it assumes that you understand Book 0 (honest!) so you buy Book 0. Don't do it! You are wasting your time and your money (at this point). Believe me, nobody packages a book more attractively for sale than McGraw-Hill, the publisher of Leventhal's books; I know because they package and sell the two textbooks I wrote

MACHINE LANGUAGE

for secondary school Marketing--C. course you should buy them.

To get started there is only one book you will need--6502 Assembly Language Programming by Donna Taber, Ruth Ashley and Judi Fernandez. It is published by John Wiley and Sons Ltd. in the Self-Teaching Guide series. It costs \$12.95 (US) and about \$15.95 (Cdn). It is available at any bookstore (I got my copy at Arkon Electronics in Toronto). If not available I know they can get it for you. Quite simply these three people have discovered how to make novices feel like experienced programmers both quickly and easily. (I own three other books they have written and the same holds true for all of them!)

The book is written as a disposable product; i.e., you have to write in it and that may not make it useful to anybody to whom you might wish to give/sell the book. As long as you know the Commodore kernel routines (easily found out) you can work your way through this book and be thoroughly competent with the basics of 6502 assembly language programming by the end of the book.

Some points about any of the series written by these people are included in this book. Don't write the answers in the book--and not to save money be reselling the book. They tend to put the answers to the problems on the same page as the problems making it too tempting to look at the answer; they should have put the answers at the back. Cover up the answers with a piece of paper and work out the problems on a separate pad, and then look at the answers. After that put the exercise into the computer, assemble it, and then run it. You will feel very rewarded very quickly.

If there is any fault with the text it is that the authors rushed through binary coded decimal. BCD will, after you have worked your way through this book (which took me about a month), become very important if you want to do some really razzle dazzle stuff. You will have to go to another source to get a handle on BCD.

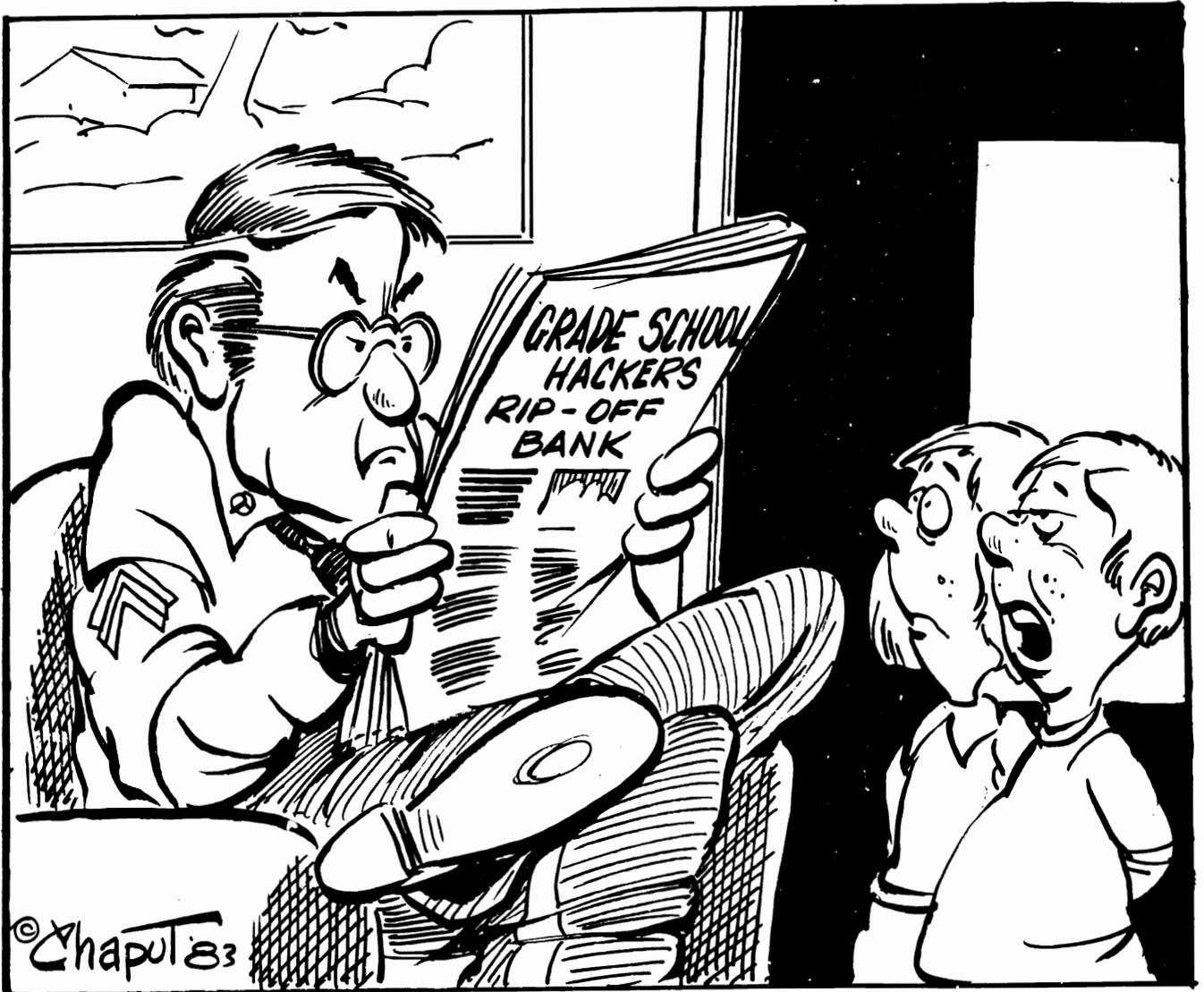
The authors wrote a general text for the 6502 book. That means that they had to

work around the fact that 6502's are found in CBM, PET, APPLE, ATARI, VIC. They don't go into I/O programming as well they couldn't because of the various roms among the different machines. After you have finished this book the only other text you will need (at least in the case of those among us who own CBM's) is CBM Professional Computer Guide by Jim and Ellen Strasma (McGraw-Hill) and the ubiquitous Adam Osborne; make sure that you get the book by these authors. At the end of the book you will find the information you need on Commodore's rom routines and the kernel. If you own a C-64 or a VIC or a PET get Mansfield's Machine Language For Beginners (COMPUTE! Books) for the same information.

As you progress, and you will, you will only need back copies of COMPUTE!, TORPET, and The Transactor. Any article on assembly/machine language will now make absolute sense. And you wondered why you were keeping all of those back copies that the wife thinks could make vast sums of money in a garage sale!

In summary stay away from the large and expensive when going into assembly language (except for the assembler). Get the book highly recommended in this article and follow the accumulator-loaded brick road. ●





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SOMETHING TELLS ME WE SHOULD WAIT A FEW DAYS BEFORE WE ASK ABOUT GETTING A COMPUTER.



"I'm glad we've found something that keeps him off the streets."

READING BETWEEN THE LINES

by David Williams

Toronto ON

The BASIC words DATA and READ provide a powerful tool for programmers of Commodore computers. Information which the program will need as it runs can be conveniently written into the program itself, instead of having to be stored in separate files. For example, suppose the program is going to need the names of the months of the year in the course of its operation. The simplest way to store these names is in the form of a string array. If there were no DATA or READ statements in BASIC, two methods would be available to the programmer to set up this array. One would be to specify each array element separately, something like this:

```
DIM M$(12)
M$(1)="JANUARY"
M$(2)="FEBRUARY"
M$(3)="MARCH"
and so on.
```

The other method would be to make a separate file on disk or tape and to access it during the program run with coding such as:

```
DIM M$(12)
OPEN I,8,5,"MONTHS"
FOR N=1 TO 12
INPUT#1,M$(N)
NEXT
CLOSE 1
```

This method uses six lines of code, which is obviously more economical than the thirteen lines which the first method needs. However, the need to have a separate disk file is a definite drawback.

The DATA and READ words in BASIC allow the task to be carried out like this:

```
DIM M$(12)
For N=1 TO 12
READ M$(N)
NEXT
```

```
DATA JANUARY, FEBRUARY, MARCH, APRIL
DATA MAY, JUNE, JULY, AUGUST
DATA SEPTEMBER, OCTOBER, NOVEMBER,
DECEMBER
```

That's all there is to it. No separate disk file is needed, yet the similarity to the coding for the separate-file method is clear.

The READ command causes the computer to take the next item of DATA and to place it into a variable in much the same way as an INPUT or INPUT# command. The first READ statement in a program reads the first DATA statement in the program, and this is true even if they are widely separated. For example, some programmers like to put all their DATA at the end of the program, but the READ commands are usually near the beginning. It is also perfectly acceptable for the DATA to be earlier in the program than the READ commands.

After the first READ command, the next one takes the next item of DATA, and so on. Thus the DATA is read strictly in the order in which it appears in the program.

For many purposes this arrangement is perfectly satisfactory. However, there are other situations in which a programmer may want the DATA to be read in some different order. This is likely to be true if the program contains several subroutines which make use of READ and DATA statements. The order in which the subroutines are executed may be different from the order in which they appear in the program. Indeed the execution order may not be fixed. It may depend on what the program's user decides to do with it. In situations like this, a method has to be devised to allow the DATA to be in a different order than that in which it is to be read.

There is one more command which is associated with DATA. This is RESTORE. When this command is executed in Comm-

GENERAL

odore BASIC (the versions which are used by other computer manufacturers sometimes differ from this) the effect is to set the READ command to start from the beginning of the program again. No matter how many READs have already been carried out, if the program says RESTORE, the next READ will take the first item of DATA in the program.

The RESTORE command can be used with a little bit of cunning to make the computer start READING DATA from anywhere in the program. For example, look at the following piece of coding:

```
1000 DIM N$(3)
1010 RESTORE
1020 READ X$: IF X$ <> "NAMES" THEN 1020
1030 FOR N=1 TO 3
1040 READ N$(N)
1050 NEXT
1060 DATA NAMES,JOHN,SUE,MARY
```

Lines 1010 and 1020 have the effect of finding an item of DATA consisting of the word "NAMES", and they will find this item no matter where in the program it occurs

and however many READ statements have already been executed. Line 1010 re-starts the READING process from the beginning of the program, then line 1020 goes through the items of DATA until it finds one consisting of the word "NAMES". It doesn't matter if there are a lot of items of DATA in the program before line 1000, or if a previous READ statement was looking at DATA in line 5000. Providing there is only one "NAMES" in the program, the above piece of coding will put "JOHN", "SUE" and "MARY" into the string array.

If a programmer uses this technique, he can have his DATA in any order which is convenient for himself, and he can arrange for it to be read in some totally different order. Modular programs in which the different routines each contain their own DATA and READ statements are thus perfectly possible. All that is necessary is for each module to have a recognizable keyword at the start of its DATA, and for it to execute a couple of lines of code such as lines 1010 and 1020 in the routine above. ●

READING THE ERROR CHANNEL IN DIRECT MODE

it can be done

by ELIZABETH DEAL

MALVERN PA

Commodore-64 and Upgrade PET computers normally can't look at the disk error channel the same way as Basic 4 systems since we cannot use GET or INPUT in direct mode. So we patch what we can with the DOS-wedge or POWER, POWAID, MOREPOWER, whatever we got. But sometimes those utilities get clobbered, especially the wedge since a lot of people put their code in fixed places. The alternative is to enter program lines, but that clobbers the program all too often. So it's one trouble chasing another.

We are in luck now. Howard Harrison of Philadelphia passed this gem to me: if we enter the GET# routine several instructions past it's beginning to avoid the check for direct mode we can, in fact, use GET

to read the error channel. It will not work with INPUT#, as the direct mode check is burried inside the routine. So we type, all on one line, if you wish:

```
CLOSE15:OPEN15,8,15
FORI=0TO30:SYS(51844)#15.A$:PRINTA$::
IFST=0THENNEXTI
```

This is for the PET. For Commodore-64 use SYS(43906).

It's not exactly as easy as Basic4 PRINT DS:DS\$, but it does the job.

The parenthesis around the address are not needed. You can even stick in spaces between the address and the number sign. And if you keep one and the same file open to channel 15, you can skip the open/close typing. ●

GENERAL

Using The 1541 BACKUP

By David Bradley

Toronto, ON

First of all, if you don't have the 1541 BACKUP program and you want to copy disks using your 1541, get it. (It is currently on 3 TPUG disks. D2, D3 and (C)TS.)

Once you have the program loaded into your Commodore 64, type in RUN and press RETURN. There will be a slight pause before anything appears to be happening so don't worry if it doesn't jump into action immediately. When the program is finished setting up there should be several "boxes" displayed on the screen.

The first thing the program will instruct you to do is to ENTER THE PROGRAM OPERATION CODE. What the program is asking you is to decide is whether you want to do a BAM SELECT BACKUP or a DIRECT BACKUP. You choose this by typing in either a B or a D and pressing RETURN. If you are not sure which to choose, I will try and explain what the difference between the two are.

The BAM SELECT BACKUP will only copy the areas of the disk that have information on them while the DIRECT BACKUP will copy every track and sector whether it be empty or full. The DIRECT BACKUP should always take the same amount of time whereas the BAM SELECT BACKUP will vary depending on how full or empty the disk is.

Now it is time to get your DESTINATION disk formatted. The program will ask you to ENTER DISK NAME. The name of the disk is what you see displayed in reverse field characters when you list the directory of a disk.

After you have named the disk, the program will tell you to ENTER ID NUMBER. The ID is a two character code that is also displayed in reverse field characters when you list the directory. You have to be careful, when using this program, to make the ID of the DESTINATION DISK different from the ID of the SOURCE disk.

Now you will be instructed to ENTER DESTINATION DISK INTO DRIVE. Before you go on, get it very straight in your mind which disk is which. The DESTINATION disk

is the disk that you are COPYING TO and the SOURCE disk is the disk that you are COPYING FROM. So put the disk that you are COPYING TO in the drive and press RETURN. If all is well the program should display FORMATTING DESTINATION DISK and the disk drive should be working.

Once the DESTINATION disk has been FORMATTED the program will tell you to INSERT SOURCE DISK INTO DRIVE. Before trying to do this be sure that you have removed the DESTINATION disk. Once the SOURCE disk is in the drive press RETURN. This tells the computer that you have done your part and it is time for it to proceed with its duties.

There should once again be disk activity and the program will display READING BAM FROM SOURCE DISK. After about 5 seconds the computer will request that you VERIFY SOURCE DISK FOR BACKUP. All you have to do is press RETURN and the computer will check the BAM it has stored in memory against the BAM on the disk. This is done to ensure that no errors have occurred.

Then the program will inform you that it is READING DATA INTO BUFFER. Notice the "BAR" near the top of the screen. If all is well that "BAR" should be getting longer.

When the BUFFER is full the program will tell you to INSERT DESTINATION DISK INTO DRIVE. Put the DESTINATION disk into the drive and press RETURN. The program should tell you that it is WRITING DATA FROM BUFFER. Now the "BAR" should progressively get smaller.

When the BUFFER has been drained the program will tell you to INSERT SOURCE DISK INTO DRIVE. Once again put the SOURCE disk into the drive and press RETURN.

From here on all you have to do is continue switching the disks when the program prompts you to until the program says BACKUP FINISHED. When that happens if you did everything correctly you should find that all of the programs from the SOURCE disk are now on your DESTINATION disk as well.

Good luck... ●

VIC

VIC PACK

Home Office Package

by A. C. Pendleton

Saint John, N.B

Vic Pack is a cassette based system for the VIC 20. As the name indicates, it is designed for the home or small office.

Vicpro, the word processor, is on one side of the cassette with Vicdata, a data base program on side two.

Both programs are written in BASIC and require a minimum of 8K expansion.

The total package comes nicely boxed, and the documentation while brief, is very understandable.

With the low price one would not expect all the sophisticated features of a higher priced professional package. This expectation is true to a degree, but both programs have some very attractive features that would be especially appealing to an experienced or low volume user.

Both systems are menu driven and are extremely easy to use, even as noted, for an inexperienced user.

Vicpro has some standard and desirable features such as variable line length, tabs (3 maximum), append, automatic line end and start, and automatic hyphen if a word is broken at the end of a line.

In the input mode the normal cursor controls are disabled with the exception of the delete key, which can be used in the normal fashion, but only on the line being typed.

The documentation does not mention a text buffer, but it does note that you can type as fast as you like and the system will remember and follow. At my typing speed, this did not present a problem.

The edit mode provides for insert, delete or change on any line. All lines are

numbered and can be advanced with the space bar.

The edit controls are also easy to use, but no cursor controls are available, and the only method of changing a line is to re-type the entire line.

Line editing becomes a bit of a pain if you have a lot of errors, so you tend to watch the original much closer. Lines can be inserted, but they must be typed in anew and a block move feature is not available.

The program also provides for printing to screen or printer and right margin justification is available. The print program is designed specifically for the Vic printer and options are not provided for other printers. Since the program is written in BASIC, enterprising programmers should be able to modify the print routine to accommodate other types of printers.

Save and load features are available for both tape and disk and provide for saving all or specified lines of the text.

A clear memory function allows for clearing all text in memory but requires a system reset to re-start. An audible signal serves as a reminder to save text before clearing memory.

Although the program would be more desirable with features such as block move, headers, page numbering, pagination and printer options, it is good value for the price and very easy and relatively foolproof to use.

The Vicdata database program is basically a computerized filing system to provide storage and fast information retrieval for the home or small office.

According to the manual, Vicdata with a
TORPET November/December 83 page 45

VIC

16K memory expansion will store 150 entries of 100 characters each. With a smaller number of characters per entry, the number of possible entries increases several times.

As with Vicpro, Vicdata is menu driven and is also very easy to use. It is so easy in fact that by using the menu it is hardly necessary to use the manual, even to begin.

In addition to the input option, an alphabetical sort routine is also provided.

The search update option uses key letter or key word search and allows almost instantaneous retrieval of information, since all data is stored directly in core memory.

This option also provides for a hard copy printout of the requested data, while another option provides for a printout of the entire file.

Save and load options are provided for both disk and tape but as noted, the entire file is saved or loaded and all searches are done directly in memory.

A test option is provided to verify that data is in memory. Pressing this option will scroll all information up the screen. The CTRL key will slow down the scroll and allow easier reading. The hard copy options are similar to Vicpro and are designed specifically for the Vic printer.

Both Vicpro and Vicdata, while admittedly having limitations in terms of high volume professional programs, are extremely user friendly, produce good results and are very reasonably priced.

Vicpro was used to prepare this article and saved many hours of revisions that would have been required on a typewriter.■

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Farquharson Features....

by Al Farquharson

GIVE ME THE TAB, PLEASE

Restaurant fare always includes the TAB and sometimes there is SPACE to enjoy. Two items on the computer screen which are useful involve both TAB and SPACE.

I always used great gobs of cursor controls to set up a menu on the screen. This gets tedious and a substitute is to use the TAB function. If you want to start your menu or other screen at the eighth position, try a line like this:

```
PRINT TAB(7)"MESSAGE HERE"
```

The print begins at the next position after the TAB () chosen, always counting from the beginning of the screen on the left. Remember how typewriters move from left to write as the carriage jogs across? Each tab set may be chosen by pressing a TAB key as the carriage moves across. Don't try to TAB backwards! It won't work on the computer or the typewriter.

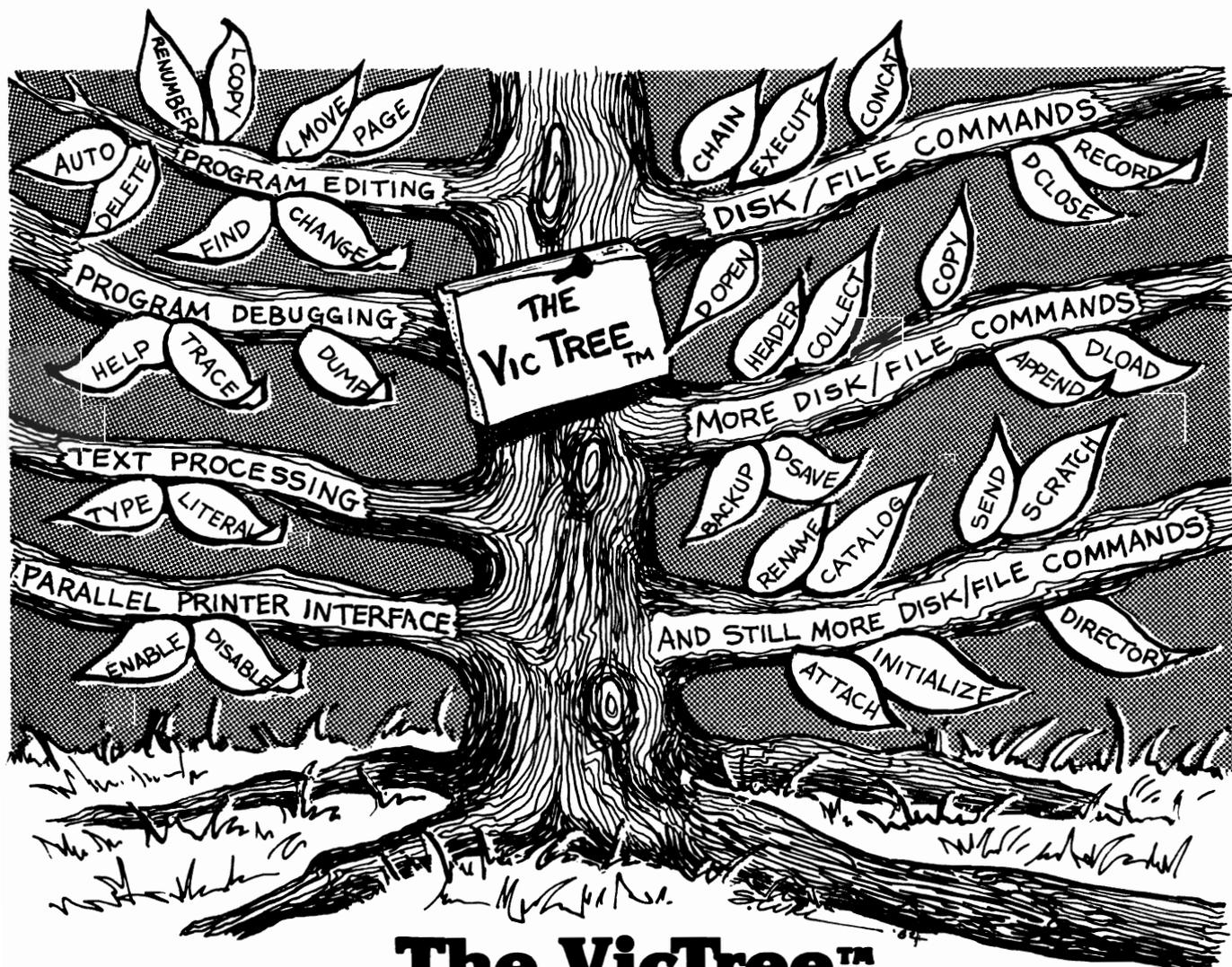
What does the SPACE . command is SPC (), do? Unlike the TAB () command, SPC() counts from where the cursor is now to the number of spaces chosen ahead in the brackets. The count does not begin from the left border but from where you are now:

```
PRINT "HELLO DOLLY"SPC (10)"HOW  
ARE YOU?"
```

This places ten spaces between the text. Sometimes this saves a pile of cursor rights!

One final comment. This works great on the screen but will leave you cut to lunch on your computer's printer! I remember my dismay when I had a beautiful screen layout and the printer mangled it completely. Keep SPACED out! More next time on printer layouts.●

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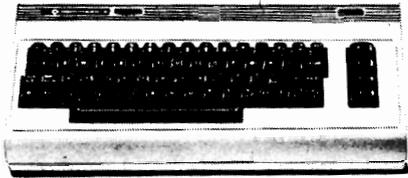
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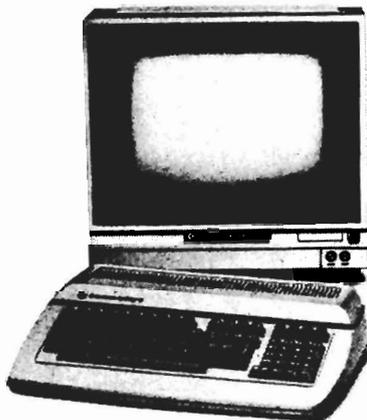
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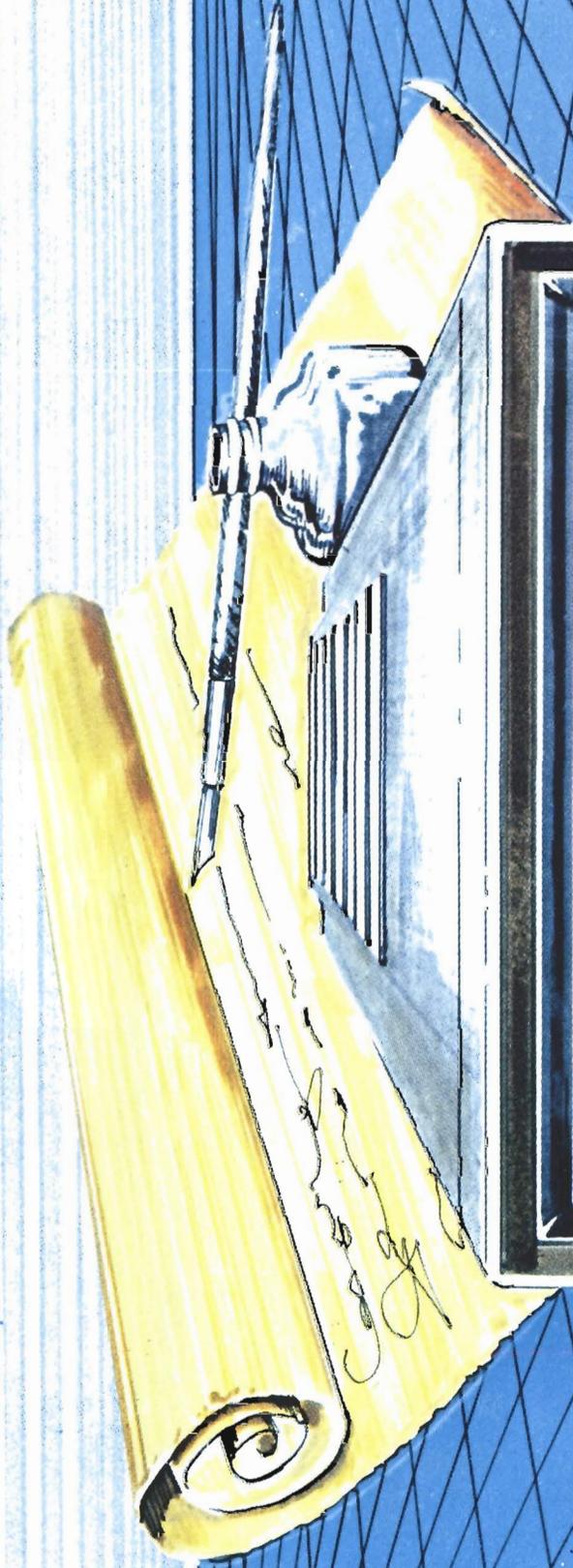
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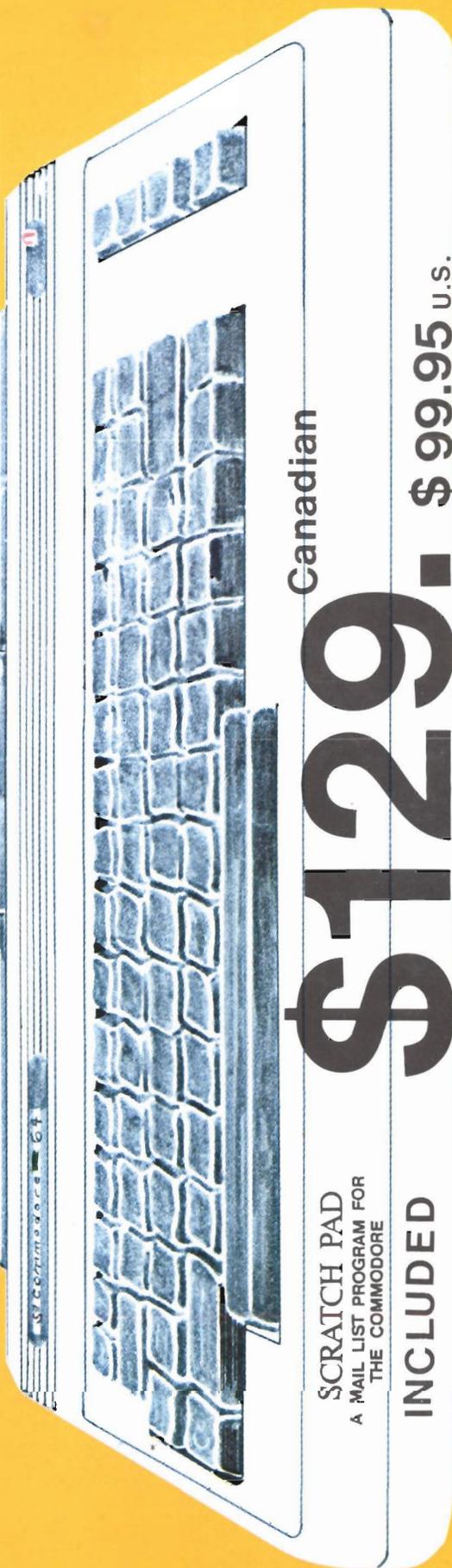
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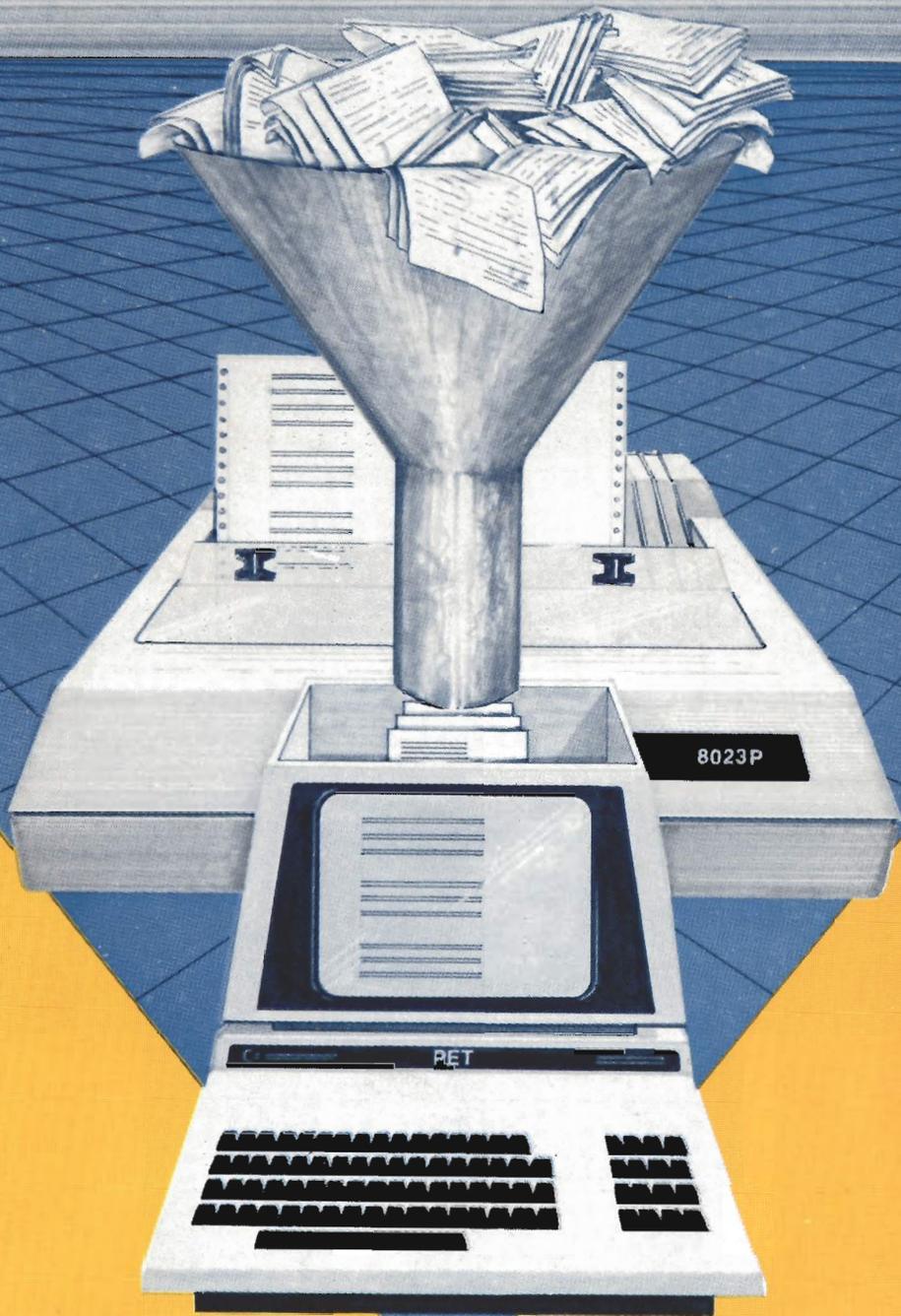
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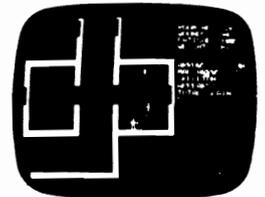
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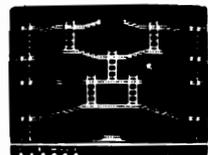
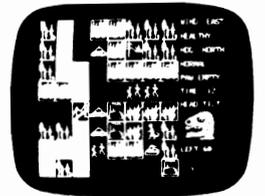
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TAKE A LOAD OFF YOUR VIC

by Tony Davidson

Gananoque, ON

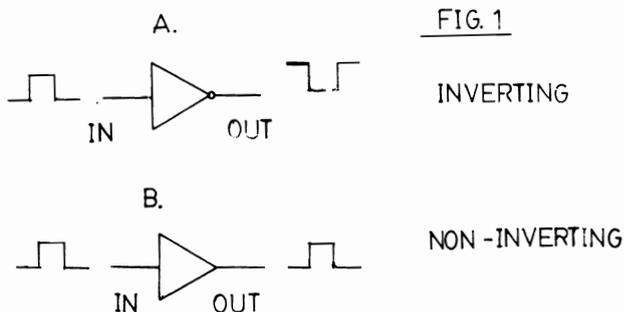
The address and data bus buffers on the 6502 microprocessor are capable of driving at least 130 picofarad of capacitance and 1 standard TTL Load. What does this mean? It means you can only have 1 TTL device input connected to each of these bus lines, otherwise you will overload the outputs. Overloading causes the internal buffers to sink too much current; this causes output voltage level problems such as the low logic level voltage being too high. If the internal bus buffers are forced to drive too much capacitance, due to long lines, external off board connections, etc., the rise and fall times of the output signals become too long. So exceeding the drive of the internal bus buffers generally means things will not work too well.

The address and data bus lines on the VIC 20 computer's expansion port connector come directly from the 6502 microprocessor, and are therefore subject to the above drive limitations. To overcome these drive limitations external bus buffers, usually TTL devices should be added to any expansion board that requires increased drive.

Low power Schottky (LS) TTL devices are preferable for 2 main reasons. First, LS devices require less drive than standard TTL devices, typically 50 per cent less, and, second, they consume less power. As the address and data lines on the 6502 microprocessor are already connected to I.C.'s inside the VIC, their drive capability is lower than 1 standard TTL load. Therefore, the use of a buffer which requires low drive on an expansion board prevents overloading. As the VIC 20 has a limited amount of current available (500 mA MAX) to use on the expansion port, the low power consumption of LS devices makes them even more desirable. CMOS buffers could also be used as they require even less drive, and consume far less power than LS devices. However, CMOS devices do have problems driving capacitive loads, so whenever long lines must be driven it often pays to use an LS buffer. The LS

buffer will drive any TTL or CMOS I.C.'s on your expansion board.

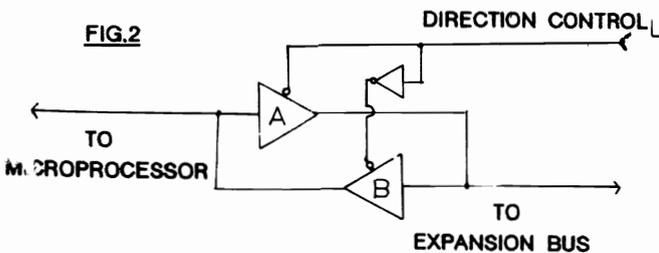
The type of buffers to use depends upon the application. Buffers are available in many different forms; the most common are the simple inverting and non-inverting 1 Input Gates (Fig. 1.). The non-inverting buffer would normally be used for most applications, as the output signal's logic state is the same as the input's. The drive capability of a digital logic I.C., such as a buffer, is called its fan out. The fan out of a typical TTL buffer is 30. This means it can drive 30 standard TTL inputs. It should be noted that some TTL inputs require more drive than others. The amount of drive required is called the fan in of a device. A typical TTL input has a fan in of 1. Therefore if your buffer gate has a fan out of 30, and the devices connected to the output of the buffer gate all have a fan in of 1. You can connect up to 30 devices without overloading the buffer gate's output.



These simple non-inverting buffers work well for the address bus, however, the data bus is slightly more complicated. The data bus is bidirectional, which means it is both an input and an output to the microprocessor, and all other devices connected to the data bus. Therefore, to buffer a data line you require 2 buffer gates, one to allow data to be inputted from your expansion board to the microprocessor (Read), and one to allow data to be outputted from the microprocessor to your expansion board (Write). Special I.C.'s have been designed for this purpose; they are called bus

transceivers. Most bus transceivers use Tri-State logic. The third state in Tri-State logic is a high impedance state. The other 2 states are the usually high and low logic conditions. All Tri-State devices have an enable control. When the enable control is active the Tri-State device behaves like an ordinary gate. When the enable control is inactive the output goes to a high impedance state which essentially disconnects the output from the bus. In this state there is virtually no loading on the bus from the Tri-State device.

On bus transceivers, the enable control is called the direction control. This is used to tell the transceiver which set of buffers will be active. Figure 2 shows one pair of buffers connected as they would be in a bus transceiver. If a low level signal is applied to the Direction Control, Buffer A is enabled allowing data to be sent from the microprocessor to the data bus. This low level signal is inverted to a high level signal before being applied to Buffer B, therefore, Buffer B is inactive and in a high impedance state. If a high level signal is applied to the Direction Control then Buffer B is active and Buffer A is in a high impedance state. In this mode data is transferred from the data bus to the microprocessor.



Internally in the VIC 20, Commodore uses a 74LS245 OCTAL TTL bus transceiver (Fig.3) to buffer the data lines going to the internal 2114 RAM memory devices. This particular transceiver has both a Direction Control (Pin 1) and an Enable Control (Pin 19). The Enable Control is active low, which means a low logic level signal must be applied to the device in order to turn it on. Once enabled a low logic level signal applied to the Direction Control allows data to travel from bus B to bus A. A high

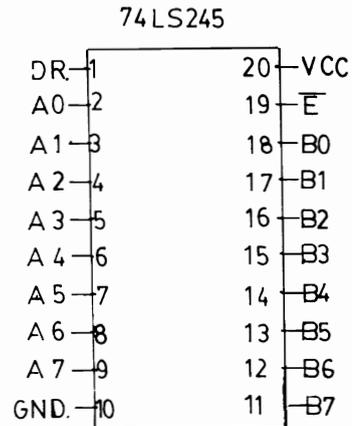


FIG. 3

level logic signal applied to the direction control allows data to travel from bus A to bus B. If the Enable Control is held high the device goes into a high impedance state.

To use this device on an A Expansion Board connect bus B to the data lines on the expansion port connector of the VIC, D0 TO B0, D1 To B1 etc. Join bus A to the Data bus on your expansion board, D0 To A0, D1 To A1 etc. Then connect the VR/W line (Read/Write) to the Direction Control. When the VR/W line is high the microprocessor is reading data, bus A TO bus B, when low the microprocessor is writing data, bus B TO bus A.

The Enable Line could be grounded if you wished. This would mean the transceiver would always be active. To overcome this you could use a select line to turn the transceiver on and off. The expansion port connector on the VIC 20 has 4 fully decoded select lines, one for each unused block of VIC memory. All of these select lines are active low (Table 1).

PIN *	SIGNAL	ADDRESS
10	BLK 1	2000 - 3FFF
11	BLK 2	4000 - 5FFF
12	BLK 3	6000 - 7FFF
13	BLK 5	A000 - BFFF

TABLE 1

VIC

Suppose that you are building a PROM programmer and you have decided to locate it a ADDRESS A000 hex. If you connect Select Line BLK 5 to the Enable Control, the transceiver will only be enabled during a Read or Write to an Address contained Block 5. Therefore, the transceiver will be in a high impedance state at any other time.

The 74LS245 can also be used to buffer the address lines by connecting bus B to the address lines on the VIC expansion connector, and bus A to the address lines on your expansion board. If you then ground the direction control the transceiver would operate as a buffer transmitter only. This may seem to be a waste of half of the device, however, the 74LS245 is relatively inexpensive and it also has the advantage of keeping all the buffer I.C.'s on your expansion board the same. This allows for easier construction and trouble-shooting of the board.

As there are 14 Address Lines on the expansion port connector, you will need 2 74LS245's to buffer them all. This will leave 2 buffer gates unused. I suggest they should be used for buffering any control lines you may require on your expansion board, such as the S02 Clock. The Enable Control can be connected in the same manner as the data bus transceivers enable control.

You may note that Commodore does not buffer the expansion bus on their 8K and 16K RAM expansion cartridges. This is because they use CMOS memory devices which require far less drive than TTL devices.

If you are planning on building some kind of expansion board for your VIC, check to see if it will overload the microprocessor. If so, install bus buffers and take a load off your VIC. ●

BIBLIOGRAPHY

Tony Davidson is a graduate of St. Lawrence College of Applied Arts And Technology in Kingston, Ontario. He is presently employed at Kingston General Hospital as an ultrasound technician, where he is assisting in the design and development of a computer assisted ultrasonic blood flow measuring device, for use on the human arteries. He has worked in the electronics field for the past 7 years. He is married with 1 child, a 3 year old daughter. He would be happy to hear any suggestions regarding this paper or for any other papers you may wish me to write, reviews, etc.

Garbyte

by Dan Sloan



CAD/CAM SOFTWARE FOR CBM

TAPEPREP: This program runs on Commodore microcomputers and allows preparation editing and punching of N/C program tapes. With this program, users can prepare a new N/C program; edit or add to an existing program; store a program on disk; recall a program; punch a program onto paper tape (ISO or EIA); recall a program from paper tape; print a program for checking; verify a paper tape and more. Options are chosen from a screen menu, selectable by single keystroke.

TOOLPATH: This program is the safe way to verify CNC lathe programs. Students see on a high-resolution CRT exactly how tools move and shape metal as their programs step through. At any point in the program, a section through the billet can be printed in high resolution for further study. Any errors can be observed quickly and corrected, without risking machine damage.

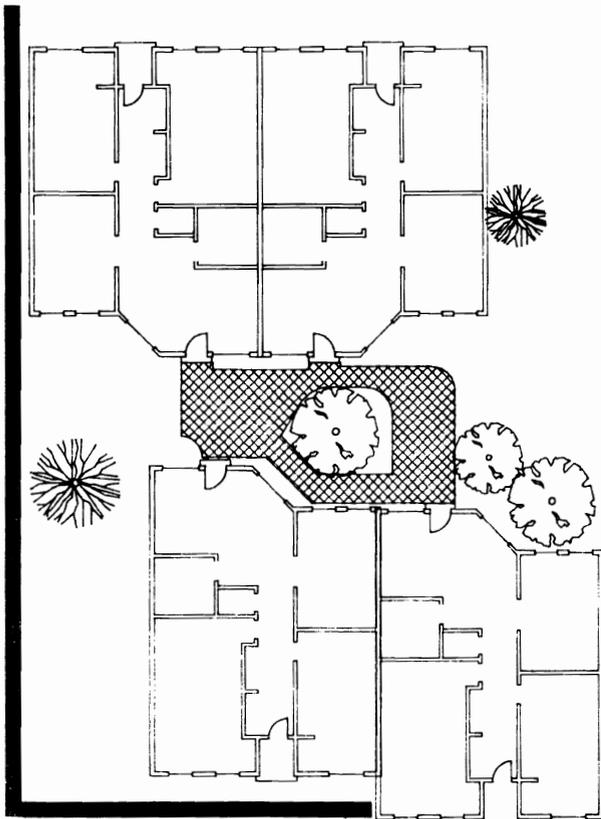
MILLPATH: This program provides a near three-dimensional simulation on an X-Y plotter of how a milling machine will execute CNC programs. Different-colored pens indicate varying depths of cut, working at high speed to any scale. The program asks for the number and diameter of tools to be used, the drawing scale and other parameters. It then reads the part program from paper tape or direct from disk, and steps through the program block by block. Instructions are interpreted just as an actual machine would on the shop floor.



FOR MORE INFORMATION ON MILLPATH,
TOOLPATH, TAPEPREP, PLEASE CONTACT:

ADG Distributors, Inc.
214 Derby Street
Salem, MA 01970
[617] 741-1724

AUTOPLAN:



This program is a versatile and powerful computer-aided drafting system designed to run on the Commodore 8032. It provides intelligent drafting eliminating repetitive work. Details, plan overlays, title blocks, logos and dimensions are stored on file. Drawings or parts of drawings can be stretched, sheared or rotated about a point or axis. They can be edited by the addition or deletion of lines or dimensions. The text can be at any size, automatically centred or italicized.

It can automatically produce drawings combining up to 10 colours and nine line types. It provides fast new drawings because standard parts can be repeated into new configurations. The hatching feature includes hatching of separate or nested shapes. Smooth curves can be fitted through any point and joined tangentially to lines. Automatic scale changing makes it possible to combine metric scales with English equivalents.

No previous knowledge of CAD is necessary. The manual is thorough and provides easy-to-follow tutorials which make computer-aided drafting understandable and easy to use.

FOR MORE INFORMATION ON AUTOPLAN,
PLEASE CONTACT:

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P.O. Box 507
Valley Forge, PA 19481
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40/80 COLUMN All Canadian PET -A REVIEW OF COMSPEC'S CONVERSION-

by Ian Wright

Toronto, ON.

A hardware conversion from a "Fat 40" to a 4032 or 8032 PET by COMSPEC Ltd., 865 Wilson Avenue, Downsview Ontario (phone 416-633-5605). This under \$200.00 (Cdn) conversion uses a single external switch to change the machine from 40 to 80 columns and back to 40 again.

It was interesting to read the review of the EXECOM-80 conversion board for the PET 2001 that was presented in the August issue of The TORPET by T. Tremmel because I have just had a similar conversion done to my machine. I have known for some time that there were operating systems that used switches and boards to change an 40-column PET into an 80-column machine. The change would be permanent, I assumed, but was told that by opening the PET and moving leads and jumpers inside I could return the system to its original state. Early this summer Al Teliatnik showed me a single switch mounted on the PET that changed it to a 40/80 system that he had used for some time in his work with The Toronto Board of Education. I immediately saw the many uses of such a machine and was determined to find someone to convert mine to a 40/80. The answer was COMSPEC's 40/80 V2.0.

Before going into details of the board and its acquisition. I should explain why there is a need for a machine that will provide an 8032 and a 4032 in one box. If you are designing programs, then 80-column lines are much easier to read. If you are using wordprocessing programs, the video output on 80-columns allows much easier screen editing and proof reading. Visiclone programs and data-bases like The Manager are best run (or only run) on 80-column machines. Most local school boards, however, have bought 40-column machines and there is also a great deal of useful software that is designed for the

4032 PETs. A friend of mine who develops commercial software for use in Ontario schools has to have 3 PETs plus a VIC and a Commodore 64 - his study is a wiring nightmare! I have almost 2500 programs for the 4032 PET, yet I like using 80-columns for preparing written material. This new conversion board means that my Fat 4032 will continue to earn its keep.

The COMSPEC conversion is a PC-board that is attached vertically inside the PET between the rows of RAM and ROM chips. Five I-C's, some capacitors and resistors are carefully wired into the main PET board and some of the existing traces are cut, this can usually be done within two days in the shop. This is not a job for an amateur - even with all the parts. If you live far from Toronto you will need to make special arrangements with COMSPEC because the installation is tricky and when it's in place the entire PET is tested using special equipment. The board was designed by Domenic DeFrancesco (hardware) and Rico Mariani (software) who are proud of their work, and rightfully so. The system is totally transparent to the user once the 40 or 80 decision has been made and this means that ALL programs run without fault. I am using PaperClip in 80-column mode right now, and this file originated using 40-column formatting commands. Visicalc works in either 40 or 80-column versions, as does Flexfile 11. I have further tested the 80-column version using Scopy 5 which is 75 blocks of machine language instruction which works fine. The 40-column version will still run

PET

Dragon's Eye, Cosmic Fighter, and even Multi-Invaders just like before! You cannot change screen formats after a program is running because part of the changeover process is a cold start routine but it is really nice to just flick a switch to change formats before you start. There are at least 50 COMSPEC converted PETs around, many of which are owned by the East York Board of Education. The switching system has had LOTS of use by students who repeatedly wiggle the switch with no ill effects! The board comes with a 90-day guarantee and if there are upgrades made to the system, COMSPEC will trade ROMs for no charge within one month of your notification.

Because there was extra room on the 40/80 ROM the designers added some extra screen editing commands that are effective in both formats. I now have an escape for those annoying times when I'm trapped inside quotes, along with other commands

which are invoked by pressing both shift keys together then the selection key.

1. ESCAPE - 'l'
2. TAB - 'i'
3. SHIFTED TAB - 'shifted i'
4. ERASE TO END - 'v'
5. ERASE TO CURSOR - 'shifted V'
6. SCROLL DOWN - 'y'
7. SCROLL UP - 'shifted Y'
8. DELETE LINE - 'u'
9. INSERT LINE - 'shifted U'
10. TOP LEFT WINDOW - 'o'
11. BOTTOM RIGHT WINDOW - 'o'
12. LOWER CASE/EXPANDED - 'n'
13. GRAPHICS/COMPACT - shifted N'
14. RING BELL - 'g'

This board is a very useful addition to any Fat 4032 since it now gives the equivalent of two machines for less than the price of one 8032. ■

"More BASIC Computer Games"

by Kit Snyder

Revenna, Ohio

More BASIC Computer Games, published
by Workman Publishing of New York or
Saunders of Toronto.

This is a book of program listings of computer games in BASIC. There are 84 games altogether, for less than one game on a cassette would cost. If you are willing to spend the time punching in the programs and making your own tapes, you can save quite a lot of money. However, it does take time. This is a universal book for all BASIC computers.

A big disadvantage with it is that it doesn't say how much memory is required for each program. I spent 3 evenings punching in the Candot program only to discover when I tried to run it on my VIC 20 that the computer did not have enough memory for it. The second time on the Chuck-A-Luck program I was more suc-

cessful; it worked fine. The print in the book is very small. It is hard when you're copying line after line to read it.

This book is good for anyone interested in programming and for children. It familiarizes you with the keyboard on the computer, computer programming terms and lets you see how programs are constructed, not just how to play them. I am a total novice with computers and I was easily able to punch in the programs. You don't need to know how to program to do it.

For the person willing to spend some time to save some money, this book could be a good investment. ■

GENERAL

Buying Through The Mail:

MY DEALER, MAIL ORDER, & ME

by Neil Salkind & John Seitz

Lawrence, Ka.

Customer: I really like some of the features of that new computer. What did you say the cost was?

Dealer: \$695.00

Customer: Hmm. That's not a bad price. Let me see how I do this month, and I'll get back to you.

A few weeks later:

Customer: Listen, how do I program my word processor so that I can get correspondence quality output on that printer you're selling? I just couldn't resist the mail order price of \$499.00.

Dealer: Hmm.....

This kind of interaction between computer dealers and customers represents a dilemma that more and more dealers are facing. What do I do about customers who seek advice about equipment that they purchased from someone else? Do I charge them for assistance by the hour? By the question? Can I afford to ignore them at the cost of losing further business? Should I spend time with them rather than devote it to the retail end of my business and other customers?

The question we would like to explore here is what buying through the mail can mean to you, your dealer, and the quality of your experience with your computer system after your purchases have arrived.

While mail order firms sell computers, printers, disk drives, software and practically anything else at a great savings to the buyer, the local dealer usually has available a smaller selection plus (we hope) knowledge, experience, and maintenance service.

This knowledge and experience doesn't come as a "software package", but needs to be developed.

When a dealer sells a line of computers or peripherals, a great deal more time and money goes into the retailing of those products than just inventory and overhead costs.

They usually have the following kinds of costs and time commitments associated with any line of hardware or software.

First, most dealers attend national conventions such as COMDEX incurring various types of expenses, to maintain a level of expertise their customers should expect.

A second major "hidden" cost, is the payment of consultants to help modify new hardware or software to fit a particular system that is already established and running and has a large consumer following. People like to have new things modified to existing systems rather than have to relearn a new system.

When local people cannot be of assistance long distance calls to the service department of the manufacturer or their suppliers become necessary for answers to technical questions about the operation and capabilities of equipment. One dealer we know regularly has phone costs of over \$200./month just to cover inquiries on one system.

Fourth, usually there is sales training required by the vendor or manufacturer of the line before the dealer can sell the product. Although this training is not at the cost of the individual dealer, the time away from the store and travel expenses represent additional cost.

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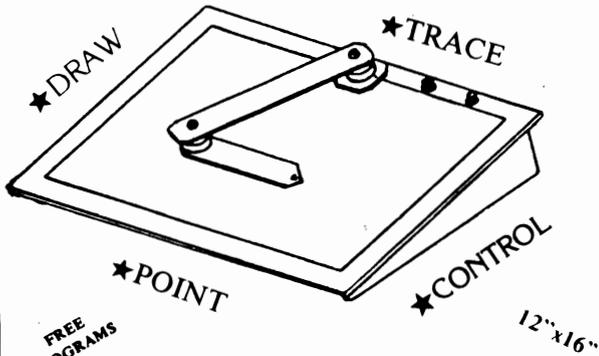
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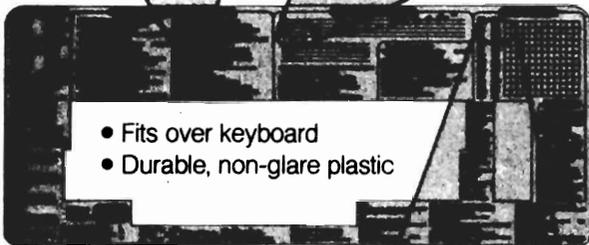
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DIM var(n,...n), [var(m,...m),...]
FOR var=init TO limit [STEP increment] variable

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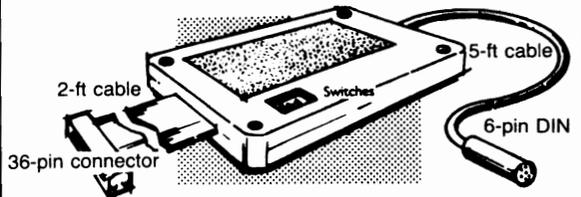


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COMMODORE-64

Wedge-64

by Darcy Mason & Alan Wunsche

Oshawa, ON.

History of Wedge-64

The **Wedge-64** was developed in the summer of 1983 during the Summer Canada '83 project sponsored by the Durham Board of Education. The '**Wedge**' actually started out as a machine language merge utility for Commodore 64 users. After the merge was completed, we realized that the C-64 was lacking in good catalog routines. At about the time that the catalog and disk status routine was done, we decided to add a few more commands. **Hex**, **look**, and **hunt** followed and we soon began thinking that our program could evolve into an aid that would help the C-64 programmer create BASIC programs more easily and efficiently. Below is the result of our efforts. As with most programs, there may be some bugs that weren't spotted in the debugging process. We would be interested in hearing about any questions, problems, or comments about the **Wedge**, as we would like to make this program as good as possible.

Summary of Commands

- >**adjust** displays all colours for adjustment of monitor.
- >**auto** prints out next line number in given increment.
- >**cold** resets computer.
- >**colour** sets border, screen, and cursor colours.
- >**del** deletes a given range of lines.
- >**ds** displays disk status.
- >**help** lists all commands of the **Wedge** summarized here.
- >**hex** gives decimal of hex number or vice versa.
- >**hunt** searches through program for given string.
- >**look** displays values in variables currently in use.
- >**mem** memory dump in hex with Ascii on right hand side.

- >**merge** merges program from disk with one in memory.
- >**n** displays last filename used in **Wedge**.
- >**off** disables **Wedge**.
- >**renum** renumbers program or line range.
- >**save** saves program to disk.
- >**start** displays load address of file on disk in hex and decimal.
- >**send** sends command string to disk via command channel.
- >**\$** displays directory of programs on disk.
- >/ loads program from disk.

Individual Descriptions

>**adjust**
This command takes no parameters. Bars of each of the sixteen colours are displayed, allowing for easy colour adjustment of the video monitor being used.

>**auto (inc)**
If **AUTO** is called with no increment, then **AUTO** mode is cancelled. When **AUTO** mode is in effect and the user has just typed in a BASIC program line, the **Wedge** will automatically print the next line number to be entered. The next line number is given by the line just entered plus the increment. The increment must range from one to 255.

Example:
>**auto 10** - sets auto mode with increment of ten.

>**cold**
This command takes no parameters. The computer is reset, similar to when it is first turned on. Any BASIC program will be erased. If the **Wedge** is in memory at \$C000, then it may be re-enabled with **SYS 12*4096**. A **Wedge** located at \$9000 is re-enabled with **SYS 9*4096**.

>**colour (border), (background), (cursor)**
The colour command sets the colour of the screen border, background, and cursor, as shown above. The colour numbers may range from zero to 255, anything not within

COMMODORE-64

this range will result in an **ILLEGAL QUANTITY** error.

Example:

>colour 0,2,1 - sets black border, red background, and white cursor.

>del (line range)

This function will erase all BASIC program lines within the given line range. Line ranges are the same as that of the LIST command in BASIC. If no line range is given, then no lines will be deleted.

Examples:

>del 10- - deletes from line 10 on.

>del 10-100 - deletes lines 10 to 100 inclusive.

>del -100 - deletes lines up to and including line 100.

>ds

This command will display the disk status. This routine is called by all other disk-based routines to report the status after every disk access.

>help

Upon calling this routine, a command summary will be printed as a help screen to remind the user of all the commands of the **Wedge**.

>hex (\$) number

This function will give the decimal equivalent of a hex number and vice versa. A hex symbol (\$) must precede the hex number to be converted. The hex number must have four digits (e.g. \$003e). The decimal number may be an expression (e.g. 9*4096) but must be less than 65535.

Examples:

>hex \$fd16 - gives decimal equivalent (64790).

>hex 59468 - gives hex equivalent(\$E84C).

>hunt 'search string'. (line range)

This function will search through a BASIC program for a string and list all lines which contain the string. The delimiter may be any character although it should be noted that any delimiters other than quotes (") will tokenize the string. e.g. >hunt "end" will find the lines with the word end within quotation marks. To find lines with the tokenized END use >hunt 'end'. The line range (same format as LIST) is optional and, if not found, the search will

take place through the entire program. Note that hunt changes the string displayed by >n.

Examples:

>hunt 'print' - searches entire program for token PRINT.

>hunt "the",10- - displays all occurrences of "the" from line 10 on.

>look

This command will display all variables currently in use and their values. Dimensioned variables are not displayed. The program must already have been RUN for this command to work.

>mem start hex address, end hex address

This function will display the hex value of the specified memory locations in groups of eight bytes. The ASCII equivalent of the bytes displayed is also given in reverse field at the right hand side of the screen.

Example:

>mem 1000,2000 - displays the contents of memory locations \$1000-\$2000.

>mem 0300 - displays memory from \$0300 on, until stop key pressed.

>merge "filename"

This command will merge the specified BASIC program from the disk with the one in memory. Any lines in memory that coincide with ones from the disk will be replaced by the lines from disk.

Example:

>merge "file2merge" - merges program called "file2merge" from disk with program in memory.

>n ("filename")

When no filename is specified, the last **Wedge** filename or hunt string used will be displayed. If a filename is given then the filename is set. In the first case, the cursor will be kept on the line of the last file displayed.

Example:

>n - displays last filename used.

>n "newfile" - sets filename to "newfile".

Note that this command may be used when a file on disk is accessed repeatedly. This command eliminates the need to retype the filename. Also note that >hunt changes the string displayed by this command.

COMMODORE-64

>off

This command disables the **Wedge**. To re-enable the **Wedge** at \$C000, type SYS 12*4096.

>renum (start line #, inc, (line range))

This function will renumber a BASIC program beginning with the start line #, increasing the line numbers by the increment. If a line range is given then the renumber takes place only within the line range. If no parameters are entered then the whole program is renumbered starting from line 100, in increments of 10. The increment must range from one to 255.

Examples:

>renum - renumbers entire program 100,10.

>renum 200,5 - renumbers entire program 200,5.

>renum 100,10,100- - renumbers lines 100 on, by 100,10.

>save "filename" (start hex address, end hex address+1)

This save command will default to disk. If no parameters are given the BASIC program in memory is saved. If parameters are supplied then memory is saved within the given range. This command is useful in saving machine code to disk.

Examples:

>save "filename" - saves BASIC program to disk.

>save "filename",2000,3001 - saves memory from \$2000-\$3000.

>send "disk command"

This function sends a disk command to the disk drive through the command channel. The disk command is in BASIC 2.0 form.

Example:

>send "10" - sends an initialize command to drive 0.

>start "filename"

This function will fetch the load address of a program on disk and display it in hex and decimal.

>\$

This command will display a directory of programs on the disk. Pattern matching is supported. The program in memory is not destroyed by a directory.

Examples:

>\$0 - displays directory of drive 0.

>\$:st* - displays directory of all files beginning with the letters "st".

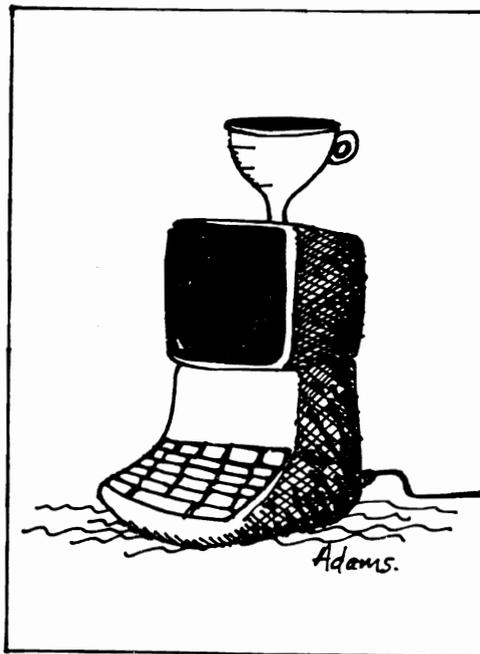
>\$:*=seq - displays all sequential files.

>/"filename"

This command will load the specified file from disk without relocating it. This is identical to the format : load "filename",8,1.

Additional Information

- None of the **Wedge** commands have abbreviations as BASIC commands do. (i.e. the whole word must be entered)
- Any disk commands will cause the computer to 'hang up' if the disk drive is not connected. If any problem with disk access occurs, then press RUN/STOP and RESTORE simultaneously to regain control.
- All disk commands operate on disk device 8.
- The commands >hunt, >look, and >mem, commands may be frozen by pressing the shift or shift lock keys. Release the shift key to continue.
- The **Wedge** is CHRGD-driven and may therefore co-exist with an interrupt-driven machine language routine at another location. ■



"Expandable Memory"

COMMODORE-64

PROGRAMMABLE CHARACTERS

by STEVEN DARNOLD

ALEXANDRA NEW ZEALAND

The Commodore 64 has a wide variety of graphics modes. You can use PET graphics, sprites, multi-colour sprites, a bit map, a multi-colour bit map, programmable characters, multi-colour programmable characters or extended background colours. You can also use combinations of these modes. This rich selection of modes permits the 64 to produce extremely sophisticated graphics. However, there is a lot to learn before you can fully utilize the 64's capabilities. Programmable character definition is a good place to start.

When I am writing a program, I often find that I need a character which does not appear on the keyboard. For example, I was once working on an educational program to teach angles and I needed a degree sign. However, since I was using a PET, I had no way of producing one. The Commodore 64, on the other hand, is quite capable of producing a degree sign, or any other character which can be defined in an 8 X 8 block of dots.

The key to programmable characters on the Commodore 64 lies in the fact that any of its 256 characters can be redesigned. This means that you can change the spade sign (for example) into a degree sign. Then every time you hit shifted-A, you get a degree sign on the screen. PRINTs and POKEs will also produce the degree sign. However, before you can redesign characters, you have to put your 64 into the right frame of mind.

First reset your 64 and remove any cartridges. Then PRINT CHR\$(142); CHR\$(8). This locks the computer into the upper-case/graphics character set. The lower-case/upper-case character set can also be redesigned, but it makes this discussion easier if we avoid switching character sets. Push the shift key and the Commodore key

simultaneously, and you'll see that no switching occurs.

Now POKE 792,116 : POKE 793,164. This alters the RESTORE routine to keep it from destroying the new characters we are going to build. Press RUN-STOP/RESTORE a few times. You should get a READY without the screen being cleared.

Now POKE 56,127 : CLR. This lowers the top of memory to give us some RAM to use. Enter PRINT FRE(0) and the result should be 30461. If it isn't, then you probably forgot to enter CLR.

The next bit is the most difficult, so be careful. At present the character set is stored in ROM. In order to redesign the characters, we have to shift them to RAM. There are five steps: disable the interrupt, connect the ROM, transfer the characters, disconnect the ROM, and re-enable the interrupt. This must be done as one operation. Enter all of the following before pressing RETURN. In order to squeeze it it will be necessary to leave out the spaces and abbreviate POKE by P shift-O. POKE 56334,0 : POKE 1,51 : FOR I=0 TO 2047 : POKE 40960+I, PEEK(53248+I) : NEXT : POKE 1,55 : POKE 56334,1. This will take about 30 seconds to execute.

You now have a copy of the character set in RAM, but the computer is still using the set in ROM. The final step is to tell the computer to use the new character set. POKE 56576,149 : POKE 53272,8 : POKE 648, 128. Since the screen must be in the same block of memory as the character set, it shifts at the same time. The screen now starts at 32768 (just like the PET) and the character set starts at 40960.

Clear the screen and type ABC. The characters should look normal (if not, you

COMMODORE-64

have a problem). Now enter POKE 40971,0. Look at the A in ABC, look at the A in READY. The zero you put in 40971 wiped out the fourth line of the A. Try putting zeros in 40972 and 40973. What happens? See if you can make all of the A disappear. Now POKE 40976,0. Can you make all of the B disappear? Can you make the C disappear, too?

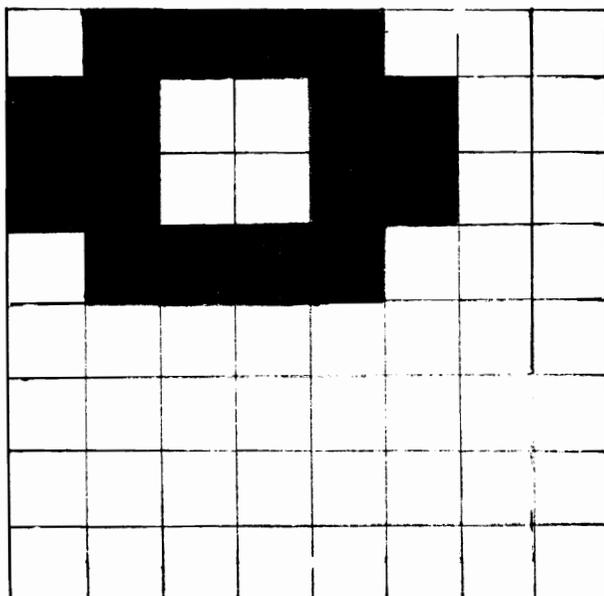
Each character is made up of eight lines. Each line is stored in a separate memory location. If the contents of a memory location is zero, then the corresponding line is blank. If the contents is 255, then the line is solid (try putting 255 into 40968). Different numbers between 0 and 255 give different types of lines. This is based on the binary representation of the number. A value of 255 gives a solid line because in binary it is 11111111. Similarly, a value of 0 is represented as 00000000. Each binary digit corresponds to a dot on the line. If the digit is 1, the dot is lit; if the digit is 0, the dot is off. Thus, if you want the left half of a line to be lit, the number to poke is 240 (=11110000). Experiment with different numbers. See pages 77-78 in the 64 User Manual for details.

The character images are arranged in order, with each character taking 8 bytes. If you want to know where a particular character starts, use this formula: screen display code times 8 plus 40960. The screen display codes are listed on pages 132-134 of the User Manual. Codes for the reverse field letters run from 128 to 255. Thus, although we have mangled A, B, C (codes 1, 2, 3), we have not touched their reverse field representations (codes 129, 130, 131). Check this by pressing CTRL/RVS-ON and typing ABC.

Now we are ready to turn the spade sign into a degree sign. Look up the code for spade (=65), multiply it by 8 (=520); add 40960 (=41480). This gives us the first line of the spade. POKE 120 (=01111000) into 41480 and 41483. POKE 204 (=11001100) into 41481 and 41482. POKE 0 into the bottom three lines (41484-41486). Now press shifted-A for a lovely degree sign -- (see figure).

That's all there is to it. Now you can design your own characters. You'll have to spend a bit of time with an 8 X 8 grid working out the numbers, but once you get used to it, it isn't too difficult. ●

figure



41480=120

41481=204

41482=204

41483=120

41484=0

41485=0

41486=0

41487=0

COMMODORE-64

"PAINTING"

CIRCLES IN HIGH RESOLUTION MULTI COLOR BIT MAPPING MODE

by Elfraim Halfron

Burlington Ont

(An algorithm for the Commodore 64 computer)

High resolution graphics in the Commodore 64 have a resolution of 320 pixels horizontally and 200 pixels vertically. This graphics mode however only allows two colors, a foreground and a background. Up to four colors can be obtained by losing some horizontal resolution, from 320 to 160 pixels, and using the multicolor bit mapping graphics. In this graphic mode the colors are determined by the bit pattern in each byte. For example a 11 will produce the foreground color, 01, a second color, 10 a third and 00 the screen color.

The C-64 BASIC at present does not support any extended graphics commands to draw lines and circles; all drawings in high resolution must be programmed using mathematical equations. In this article I present a method to draw circles and fill them with color, i.e. "paint" them. This method is then extended to "paint" circles within circles. This example is part of the more general problem to be able to draw a geometrical figure anywhere in the screen and painting it by turning on the bits in the bytes in the appropriate sequence, i.e. 01010101, as required by the multi color bit mapping graphics mode. In fact, if for example the bits in all rows are not aligned, i.e.

```
01010101010101010101010101
01010101010101010101010101
10101010101010101010101010
01010101010101010101010101
```

then, instead of a uniform painting, we have lines of different colors, in the above example row three has a different color from the others, depending on the bit pattern on that line.

The Algorithm (Table 1) allows this alignment to take place and to draw circles

in any of the chosen colors. The algorithm can then be extended to any closed two-dimensional geometrical figure. The principles in the algorithm are to draw the perimeter of the circle and then paint inside horizontally right to left. Since this algorithm in BASIC is fairly slow I suggest saving the high resolution screen on disk or tape for quick retrieval when necessary.

The equation of a circle centered on the origin of a cartesian graph is

$$x^2 + y^2 = r^2$$

where x and y are the Cartesian coordinates and r is the radius length. In the allowable resolution, x has a range of 0 to 319 and y a domain of 0 to 199.

The equation of a circle anywhere on the screen is

$$(x - x_c)^2 + (y - y_c)^2 = r^2$$

where x_c and y_c are the coordinates of the center. The circle circumference can be drawn with the algorithm starting at line 170, i.e.

$$\left. \begin{matrix} x_1 \\ x_r \end{matrix} \right\} = x_c \pm \text{SQR}(r^2 - (y - y_c)^2)$$

for $y = y_c - r$ to $y_c + r$.

I make y the independent variable, instead of x, because the bit color mapping alignment needed for the multi color mode is horizontal rather than vertical. Thus we draw

COMMODORE-64

the circumference line by line. X_L is the coordinate of the left semicircle and x_r the coordinate of the right semicircle.

Painting of the circle is obtained by drawing a line from X to x (line 230), i.e. right to left. As mentioned before, the important point is that all 0 and 1 bits be aligned vertically to obtain a uniform color. Thus if chosen so, x has to be 01 for all y 's. Algorithmically this is fairly simple, the x_r coordinate must always be even, odd for 10. Then a line is drawn between x_r and x_l with STEP -2. i.e., we turn on the screen bits 1 separated by the default bit 0, or the desired 010101 combination. Lines 190-210 provide this alignment. The test of oddness, or evenness, is made by dividing the integer portion of x_r by 2 and then multiplying the integer quotient x_A by 2. If x_r and x_A are the same, then the number is even, else it is odd. If x_r is not even, or odd as we wish, we subtract 1 to make the coordinate odd, or even, then we draw the line between x_r and x_l , i.e. we "paint" each line.

The circle is then uniformly painted in the chosen color (line 450 sets the colors to blue and red in this example) and at any chosen coordinate x_C and y_C for any given radius r .

To draw a circle within a circle of a different color, the extension is straightforward. The center coordinates are the same x_C and y_C but the radius is smaller. A different color is chosen, here red, and the bit pattern is not 0101010101, but 1010101010. The rest of the procedure is the same.

To draw a circle within a circle with screen color, bits 00, a test must be performed (line 220) to see which colors to paint where. The outside and inside circles are drawn together, so as not to turn on the bits in the inside circle. Thus, the inside circle remains in the screen, background color.

Once the algorithm presented here in BASIC is executed, the result is three concentric circles, the outside is blue, the middle white and the internal red. The

circles location and radius are determined in line 400. For faster execution smaller radius may be chosen. The high resolution screen is located in memory starting at location 8192 decimal (line 410). As mentioned before execution in BASIC is slow and if redrawing during a program execution is necessary the easiest solution is to save the screen on disk, alternatively the algorithm can be reprogrammed in machine language. A circle plotted in high resolution multi color bit mapping mode does not look as round and smooth as one plotted with standard two colors high resolution graphics, but this compromise was chosen by the designers of the C-64 to have four available colors.

Table 1: Description of the BASIC program line by line.

Line 100: Go to line 400 to initialize parameters and then start plotting from line 160.

Lines 130-150: Subroutine to turn on bits in high resolution mode. See C-64 programmers reference manual, high resolution section.

Line 160: Main program, set background color to white.

Line 170: Set outside limits of circle.

Lines 180 - 190: Set x coordinates and prepare to test for oddness by dividing right circle limit x_r by 2 and then multiplying the integer quotient by 2.

Line 200: Test for oddness

Line 210: If even subtract 1 from x_r .

Line 220: Test whether to plot an inside circle with screen color, if yes go to 250, else go to 230.

Line 230 - 240: Paint circle blue.

Lines 250 - 320: Do not paint inside circle but leave it in background color, white. This is done by painting only the area, between XX and XS and X to XQ . Test for oddness is performed on X .

Lines 330 - 380: Paint third inside circle red.

Line 390: End of program

Line 400: Set location of circle center and length of the three radius, $R1$ inside circle, $R2$ middle circle, $R3$ outside circle.

Lines 410 - 430: Set high resolution multi color bit mapping.

Line 440: Clear high resolution area

Line 450: Set high resolution color models

COMMODORE-64

to blue and red, 98 = 01100010. The high byte is blue, color 6 = 0110, and the low byte is 0010, color 2 or red.

```

100 GOSUB400:GOTO160
110 REM THIS PRGRAM PLOTS 3 CONCENTRIC
120 CIRCLES IN MULTI-COLOR HI-RES MODE
130 CH=INT(XR/8):RO=INT(Y/8):LN=YAND7
140 BY=BASE+RO*320+8*CH+LN:BI=7-(XRAND7)
150 POKEBY,PEEK(BY)OR(2+BI):RETURN
160 V=53280:POKEV,1:POKEV+1,1:REM SET WHITE
BACKGROUND
170 FOR Y=C2-R3TOC2+R3STEP1:REM OUTSIDE BLUE
CIRCLE
180 SQ=SQR((R3*R3)-(Y-C2)*(Y-C2))
190 XQ=C1-SQ:XP%=C1+SQ:XD=INT(XP%/2):XA%=XD*2
200 XX=XP%:IFXA%<>XP%THEN220
210 XX=XP%-1
220 IFY>=C2-R2ANDY<=C2+R2THEN250
230 FORXR=XXTOXQSTEP-2GOSUB130:NEXTXR
240 GOTO320
250 SQ=SQR((R2*R2)-(Y-C2)*(Y-C2))

```

```

260 XT%=C1-SQ:XS=C1+SQ
270 FORXR=XXTOXSSTEP-2GOSUB130:NEXTXR
280 XD%=INT(XT%/2):XA%=XD%*2
290 IFXA%<>XT%THEN310
300 X=XT%-1
310 FORXR=XTOXQSTEP-2GOSUB130:NEXTXR
320 NEXT Y
330 FOR Y=C2-R1TOC2+R1STEP1:REM INTERNAL RED CIRCLE
340 SQ=SQR((R1*R1)-(Y-C2)*(Y-C2))
350 X=C1-SQ:XQ=X+C1+SQ:XP%=X:XD=INT(X%/2):XA%=XD*2
360 X=XP%:IFXA%=XP%THEN380
370 X=XP%-1
380 FORXR=XTOXQSTEP-2GOSUB130:NEXTXR,Y
390 POKE 1024,16:GOTO390
400 C1=160:C2=100:R1=30:R2=60:R3=80
410 BASE=8192:POKE53272,PEEK(53272)OR8
420 POKE53265,PEEK(53265)OR32:REM ENTER BIT MAP MODE
430 POKE53270,PEEK(53270)OR16
440 FORI=BASETOBASE+7999:POKEI,0:NEXT
450 FORI=1024TO2023:POKEI,98:NEXT:RETURN:REM SET COLOR
TO RED AND BLUE

```

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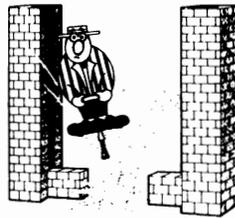
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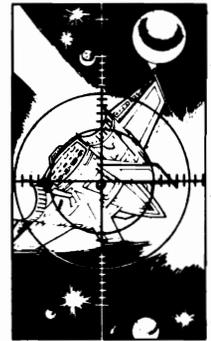
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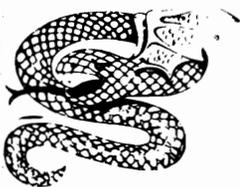
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MACHINE LANGUAGE

NEVER TALK TO STRANGERS: GETTING TO KNOW THE MACHINE THAT WE'LL BE CONVERSING WITH.

by Larry Goldstein

Bolton, ON.

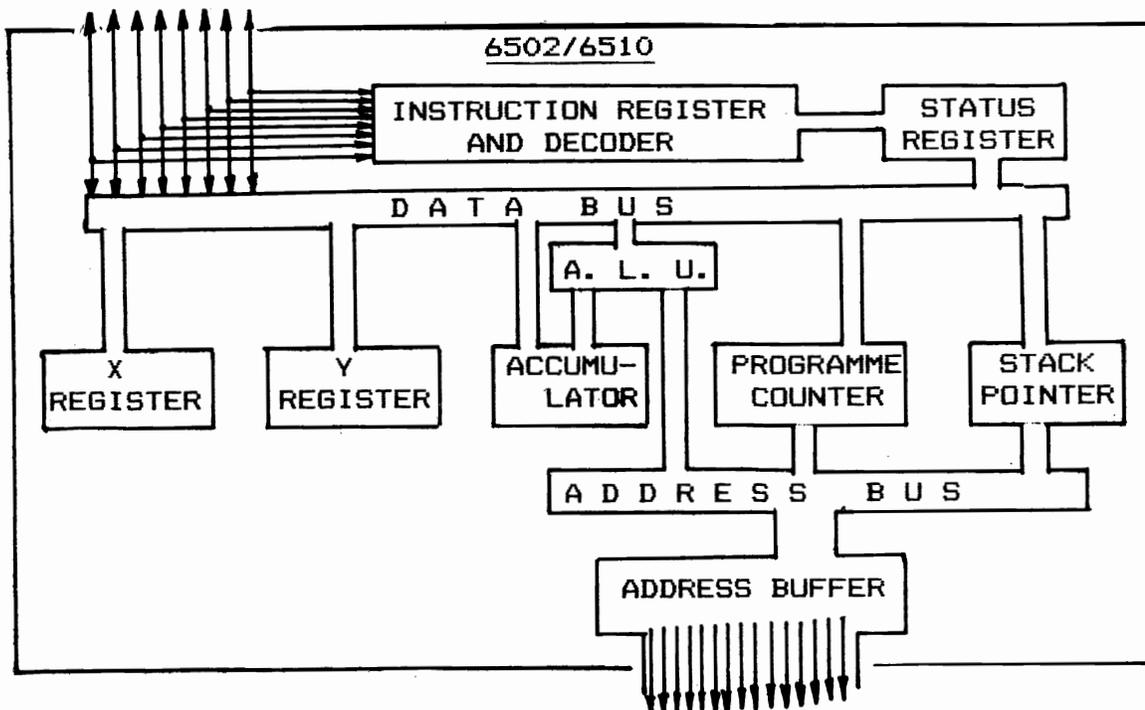
In our last installment we saw that machine language is a series of numbers representing switching patterns that are instructions for the computer. By giving instructions in this form instead of in BASIC, which must then be translated while the programme is running, we can speed up a programme and reduce the amount of memory needed to store it. Before we start writing machine language routines, it will be useful to take a look at "The Machine" and some of the things it can (and cannot) do.

The Brains in the Box

The machine that our machine language is directed at is not the computer as such but just one of the chips in it. The essential chip that made microcomputers possible is something called a microprocessor. It is the part that controls everything else in the

computer, and so is called the Central Processing Unit (or CPU) and must be our first interest in machine language programming. The microprocessors in the PET and VIC are the same (the 6502, also found in some of the competition) while the C-64 has an only slightly different 6510. Let's see what's inside.

Don't panic; it's not as bad as it looks--in fact it's worse, but let's tackle things calmly and try to make some sense out of it. The various rectangles mostly represent registers, usually one byte (i.e. eight digit) memory units which can hold one unit of information for a particular purpose. The A.L.U. is the Arithmetic/Logic Unit which allows the Machine to add and subtract as well as make comparisons and perform logical functions. The instruction register and decoder receives the switching



MACHINE LANGUAGE

patterns we have put so much emphasis on and controls the functioning of the microprocessor based on these. The decoder is connected to all the other registers, but I've omitted these connections from the diagram for clarity. The long narrow pathways carry data from one register to another one byte at a time. The address buffer holds routing information about where information is going to or coming from until it is needed. There's more, lots more, but I don't think it's essential at this point, so let's concentrate on what we can see so far.

The X and Y registers can each hold one byte of information and increase it or decrease it by one. Their most important purpose is as counters. The accumulator is much more versatile. Since it is connected to the ALU, the byte it holds can be subjected to various arithmetic and logical manipulations. The Status Register (SR) holds information based on the last operation performed, and each bit is individually important, telling whether the result of the operation was negative or positive, zero or non-zero, whether it is necessary to perform a carry to the next operation etc.

The Programme Counter (or PC if you'll forgive those initials) holds the address in memory of the next programme step to be brought into the CPU, and the Instruction Register (IR) and decoder determines what happens to the data that comes in.

Let's consider a bit of a programme that begins at location 830 (as our demonstrations did in the last installment). When we enter "SYS 830", we set the PC to 830, and the byte (or switching pattern) stored at memory location 828 is sent for (via the address buffer) and the PC value increases by one. The byte from 830 goes to the IR and is passed on to the decoder which determines what happens next. The switching pattern may say, in effect, "get the byte from the next memory location and put it into the accumulator". This instruction is represented by the pattern "on off on off on off on" or the binary number 10101001 or decimal 169. This then causes the byte to be fetched from the address now in the PC and fed into the ac-

cumulator, while the PC value is increased by one, and the SR value is changed to indicate if the byte was positive, negative or zero. The next byte of data in memory (at 832) is now fetched to the IR, the PC value is increased, and the instruction is decoded. Perhaps the instruction byte is 10001101 or decimal 141. This instruction tells the CPU to store the contents of the accumulator at the address to be found in the next memory locations, a useful instruction when you want to put values onto the screen or into colour memory.

The Machine continues going through your machine language programme step by step, with the PC keeping track of the progress and the IR receiving the instructional bytes and the decoder controlling the rest of the processes based on the switching patterns it receives. This can go on indefinitely until the decoder receives a value of 0, in which case the machine language stops, or a 01100000 (decimal 96) which can return you to the BASIC programme that you started from.

This introduction to the microprocessor is obviously too brief to do it justice, but I hope it gives you a bit of an idea of what goes on inside. Now we should be able to consider programming with a better understanding of what we are doing. I also hope that the connection between the decimal value of machine language instructions, the binary value, and the machine-eye view of the switching or voltage patterns is now obvious enough that I can stop flogging that point.

NEXT MONTH: Putting It All Together-- The Assembler. (Don't forget your Supermon etc.)



DISK DRIVES

Disk Merge / Converter

by Steve Snell

Middle Sackville, NB. (Can.)

Someone told me that it was possible to copy a "prg" file on disk to a "seq" file, but it was not possible to go the other way. The former is accomplished by the command OPEN 2,8,2, "FILE.W" : CMD2 LIST and don't forget CLOSE 2.

I find the latter very useful in merging two program files. It was a mite difficult to manage, but here's how I did it.

I wrote 10 lines to repeatedly get from the disk eight lines of up to 80 characters per line number, to place these on the screen, and then to procede to copy these from the screen into memory with the famous commodore screen editor. These lines must be entered from outside of the program, and then the program must be re-entered.

The key to doing this is to use the keyboard buffer. This allows up to 10 preprogrammed keystrokes, the last of which must be a "return" on a "goto xxxxx" line to re-enter the program.

When lines are entered into a program from the screen, the computer loses its memory of variables. However, two of these variables, being numeric, can be easily poked into some undisturbed portion of memory, and replaced by peeking them when back into the program. The title, on the other hand, cannot be so easily taken care of. Where it is constant throughout the program, I chose to reassign it on the same line that re-enters the program (see line 63993).

The program reads eight lines from the disk, places them on the screen, and then positions the cursor at the top of these, and ends. Of course the program deposits eight "returns", a "home", and another "return" into the keyboard buffer first. The eight lines are entered, then the cursor goes home and enters the last return on the top line (fi\$="file" : goto 63991).

Unfortunately, when a line is entered into a program, open disk files are forgotten as well as variables. The way to get around this is to keep track of each set of eight lines. When the program is re-entered, it reopens the "seq" file, reads and ignores X times eight lines, and then places the following eight on the screen for entry and closes the file. This is the first method that came into my mind, and on files that are upwards of 40 blocks on the disk, the search towards the end of the file can take up to 30 seconds. Maybe someone can out-genius me and do it with relative files, but I haven't had much luck with using "rel" files on the Commodore 64.

In order to enter the program as written, it is necessary to remove most of the spaces, and to abbreviate the larger words such as "print".

In order to use this program successfully, the object program cannot use lines from 63989 to 63999. For most programs this should not be a problem.

This program was originally meant to work on sequential files produced by the command sequence in the first paragraph, but is easily expanded. To use it to merge two programs, first list the smaller program into a sequential file using the command sequence above. Then copy these ten lines into the larger program, type RUN 63990 and answer the question with the file name you chose.

I also added an extra line. Line 63989 will make it simpler to rid yourself of this sub program after it has done it's work for you. Just LIST 63989, space over the line number and the REM, and hit return. The same principle is used as what's in the program itself. The ten line numbers are placed on the screen, and then entered to erase the ten lines of the program.

DISK DRIVES

This program is easily translated to work on the 8032 and other Commodore machines. The main changes are to find the new keyboard buffer locations, the new buffer size location, and a few other minor changes. i.e. on the 8032, which puts all eighty characters on the same line, one of the cursor up's must be removed from line 63995.

I haven't noticed any problem with this program working on the Commodore 64, but on the 8032 the fifth program line (the last of the first set of eight lines) seems to be mysteriously ignored. I haven't tried it on others like the "fat forty", but it shouldn't take too much for someone to modify it the little bit required.

```
63989 REM PRINT "clr/dn/dn/dn" : FOR I=1 TO 10 : PRINT 63989+I : POKE 630+I,13 : NEXT : PRINT "hm/dn" :
      POKE 198,10
63990 POKE 2,0 : POKE 787,0 : INPUT"clr/dn/dn FILE NAME";FI$: IF FI$="" THEN END
63991 DN$="dn/dn/dn/dn/dn " : Q$=CHR$(34) : CR$=CHR$(13) : LN=PEEK(2) : IF PEEK(787) THEN END
63992 OPEN 2,8,2,FI$: IF LN THEN FOR I =1 TO LN*8-2 : INPUT#2,X$: NEXT
63993 PRINT"clr FI$=" Q$ FI$ Q$" : GOTO 63991" DN$ : FOR I=1 TO 8 : C=0
63994 GET#2,X$: IF X$=CHR$(199) THEN 63999
63995 ON -(X$=CR$) GOTO 63997 : PRINT X$ : C = C + 1 : ON -(C < 79) GOTO 63994 : GET#2,X$ : PRINT X$ :
      PRINT "up/up/up/up"
63996 IF X$ <> CR$ THEN GET#2,X$ : GOTO 63996
63997 PRINT : NEXT : CLOSE 2 : POKE 2,PEEK(2)+1 : PRINT"hm/dn/dn/dn"
63998 FOR I=1 TO 10 : POKE 630+I,13 : NEXT : POKE 639,19 : POKE 198,10 : END
63999 I=8 : POKE 787,1 : GOTO 63997
```

review

TYPING TUTOR and WORD INVADERS

by G.R. Walter

Proton Station ON

These are two educational programs which teach typing. TYPING TUTOR teaches you the various keys you use your fingers with and drills you on what you learn (basically a typing drill program). In WORD INVADERS you use what you have learned to "shoot-up" words before they reach you. This is good practice and beside being just as educational as TYPING TUTOR is, it is a lot more fun.

The programs are fairly user friendly and the graphics and sound effects (for the C64 version) are ok on the WORD INVADERS game. (For the VIC-20 version the graphics and sound could be better).

The VIC-20 version only comes on tape. It will work only on the standard VIC-20 (no memory expanders needed - if you have any plugged in you have to remove them all to use this program).

The two programs are fairly well done and if you want to improve your typing speed or learn how to type this is a good package to get.

This program package was number one on the SKU Software Hit Parade for the

June, July and August of 1983 under the Educational category for the VIC-20.

The tapes are tape-locked and the disks are disk-locked (which is ok because it means the programs cannot be illegally copied) but it also means you cannot make backup copies very easily.

I give the C64 version a rating of 7.9.

I give the VIC-20 version a rating of 7.0.

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Cost is \$21.95 (U.S. dollars) for VIC-20 cassette version.

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COMMODORE-64

PLANETFALL for the Commodore-64

by William R. Frenchu

Princeton, N.J.

Planetfall is the latest in the Infocom science fiction series of Prose adventures. For those of you who have never played an Infocom game, don't expect to find the graphics associated with some other adventure type games. Infocom believes that the best graphics are the ones you create in your mind's eye. They provide you only with a detailed textual description of your location and the problems facing you. The rest is left to your imagination.

As the action opens, you are a lowly Ensign seventh class aboard the Stellar Patrol Ship Feinstejn whose duties seem limited to Polishing Deck Nine with your Patrol Issue Scrub Brush and accumulating demerits from your superior (?) officer (and nemesis) Ensign Cadet First Class Blather. This is soon to change, however, as the Feinstejn is rocked by explosions and you escape to the comparative safety of the Planet below. It is here you meet Floyd, a general purpose robot who is to be a constant companion over the next few days while you explore your new home. Shelter must be procured before night falls and a supply of food must be found before the supplies in your emergency kit are exhausted. Only then can you concentrate on repairing the malfunctioning equipment with the tools and spare parts you'll find. Not that everything is useful . . . this game certainly has it's share of distractions and

false leads and you can spend quite a bit of time on something only to find out later that it's not necessary to finish the game.

Planetfall is an interesting and entertaining game with a good series of puzzles and problems. As with most Infocom games, documentation is superb. It's colorful, easily understood and quite complete. Personally I feel the packaging is a bit overdone and probably goes a long way toward explaining the price difference between this and Starcross, Infocom's first science fiction game. The problem is that all of this paraphernalia is completely independent of the game. It doesn't seem to provide any clues (as did the transcripts in Deadline) although I suppose it could be argued that it gives the player a little insight into his computer alter ego. I would have much rather had a less expensive game in a plainer package.

Planetfall is also a less challenging game than the other Infocom games I have played, a serious drawback in a game that cost nearly fifty dollars. I was able to finish it in under eight hours of playing (and I know I'm not that seasoned an adventurer . . . I'm still trying to finish Zork 11). For that price I had hoped it would last a little longer. Overall, I enjoyed Planetfall, but it's the first Infocom game I really felt was overpriced. Give it seven out of ten. ■

Garbyte

by Dan Sloan



TPUG's This and That

by Doris Bradley, Assistant Business Manager

HAMS

What better issue to have the list of HAMS in than this one which also contains, among the new library releases, the October disks for the PET and VIC 20 which have several HAM-related programs.

List-Me Files

This month sees the introduction of two business disks for the Commodore 64, as well as the regular monthly releases for the PET, VIC 20, and Commodore 64! In total there are 8 new releases in this issue.

We Keep on Growing!

In the last issue I mentioned we had "almost 10,000 members". Well, we made it. On September 13th, in the afternoon, Dale (who processes memberships) said "Can anyone find another membership to process--I'm at 9,999. I proceeded to reach into my purse, take out \$30, fill out a membership form indicating that I own a PET, and became member #10,000--What more can I say?

Well, there is more. On October 18th we processed #11,000--Chris LaMont, a Commodore 64 owner from Richmond, California, and on October 20th we processed #11,111--Frank Polito, another Commodore 64 owner from Toronto, Ontario. A great big welcome to ALL of the more than 1,200 members who joined since the last issue!

Helpful Hints

In order to help speed up the processing of your order, please do not include any auxiliary questions, or make library submissions at the same time. Thank you.

Associate Club Chapters

The eighth group to join 15 or more members at one time is the Guelph Computer Club. You will find the time and place of their meeting, and the contact person listed with the other associate club chapter information elsewhere in this issue.

Other Computer Clubs

TPUG does have a growing number of computer clubs which have joined as associate members of the group. We will try to include information submitted by any of these groups regarding their meetings on a one-time only basis. We have recently received the following:

Hamilton Commodore User's Group meets the last Thursday of each month at 6:30 at Eaton's Downtown on the 6th floor. There will not be a December meeting. Call Tony 545-1649.

Commodore Buffalo User's Group meets the 1st and 3rd Thursday of the month at 24 Montcalm

St. (near Kenmore & Englewood) inside National Electronic Technical School. For information call 691-4013.

Group for Investment Professionals

A new group, "The Bay Street Group", is forming in Downtown Toronto. They plan to meet at lunch time. Call Derrick Leach (Office) 365-6077, (Home) 482-6661.

Caribbean Bulletin Board

The first bulletin board for the Caribbean is up and running. The hours are from 8 p.m. until 8 a.m.. The phone number is (809) 781-0350. It is the Steve Punter version modified by Commodore to work with the TNW Modem. It is currently being used by the Commodore User Group of Puerto Rico for program exchange and club notices. They also have a few Apple and Atari users logon.

Church Software

If anyone is interested in church software, contact Christian Computer-Based Communications, 44 Delma Dr., Toronto M8W 4N6, or call John Easton (416) 251-1511.

Bug in (P)T2

If you got a (P)T2 at an October meeting or in the mail recently, please note that in BANNER, the device number needs to be changed from 5 to 4 as follows:

```
250 OPEN 4,4: CMD4: PRINT: PRINT: PRINT: PRINT:
PRINT: PRINT
300 PRINT#4,"": CLOSE4: CLR: END
```

Stamps Again

As most of you know, we have a number of stamp collectors amongst the staff and board of directors. We take turns on having first choice of the stamps which come in each week. We want kindnesses in using unusual stamps on your mail and enclosing other stamps with your correspondence. Our latest windfall includes approximately 50 stamps from Israel and Chile which one of our members from Israel sent in!

Commodore Educational Software

Recently we have received the new listings for this software. Since there are so many changes, we are going to call it the "E" series. Those of you who have ordered disks from the "K" series over the past month will likely find that your orders have been held and that you are now being consulted as to which listings from the new E series you wish. When you investigate the new series, I think those of you who have disks or tapes from the "K" series will find that you might very well want some from the "E" series as well. We do not plan to exchange the "E" series for the "K" series.

CLUB ACTIVITIES

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.

HELP!

HELP!

WHO'S GOT THE ANSWER?

I have an Adventures, Inc. Program entitled "Gypsum Caves", a graphic adventure. I have tried to figure a way to get the spike in one of the ember rooms, but can't. Can someone give me a cheat-sheet so I can get into the cave?

David Rodriguez
104 W. Main St.
N. Manchester, IN 46962

I have a VIC 20 & 1541 disk drive and am attempting to write a program that would crossreference 3 catalogues. For example should I begin with a Scott number, the equivalent of Yvert and S.G. would be shown and vice versa. Since I am not a programmer all I can offer for some help is used stamps.

J. C. Sullivan
1812-77 Howard St.
Toronto, ON M4X 1J99

I have need of a good multiple linear regression programme for my Commodore CBM. Can anyone help?

Len Green
317 Bristol Road
Timmins, ON P0N 1C0

I have found "The Word Machine" is sufficient for my word processing needs. However, I have a Gemini 10 printer with Star interface and the printer often "hangs up". Can anyone help with program modifications?

Bill Morlan
Box 41213
Los Angeles, CA 90041

I have a Commodore 64 and VIC 1525 printer. I bought this printer in Japan and when I type upper case on my word processing programs (HES Writer and Quick Brown Fox) all I get is Japanese symbols. Could someone tell me how to get Latin alphabet upper case?

Lt. Bruce I Gudmundsson
3d LSB, 3rtrd FSSG9
FPO San Francisco CA 96604

Can I get some advice on some good business software for my Commodore 64. I am looking for a data base, general ledger, accounts receivable and payable. Has to be user-friendly—my wife is not a computer fan.

Lee Presse19
169 Caddy Ave.
Sault Ste. Marie ON P6A 6H7

If someone has some information as to the graphing of semilog plots I would be interested in hearing from them.

Dr. George Bedard
University City, MD

I am interested in knowing how to demodulate RITY signals with a Commodore 64.

S. N. Mandel
548 Coldstream Ave.
Toronto ON M6B 2K9
phone 416/787-1681

I have a SuperPET 9000 with a 4040 dual disk drive and am looking for hardware and software to use to interface a phone modem on the serial port. I purchased a modem (Signalman) and some software from the local PET dealer and it did not work. I called Commodore in Pennsylvania and they sent me some literature that does not mean a thing to me. It seems to me that it ought to be a straight forward problem: (1) which modem - manufacturer's model #, (2) what software—(McTerm?) and (3) are there any changes required to run the modem on the 6502 processor. Isn't this the same unit as the 8032? Can somebody help?

Gene Elmore
Colchester, Vermont

I am looking for a terminal program for my 64 compatible with a Christianson, X or S modem.

David Tingler
500 Stinson, Apt. 3
Norman, Oklahoma
75069

On the KBA and KBB business disk programs how may I dump the charts, graphs, and text information on the screen to my Gemini 10 printer. These disk programs are very useful and I would like to obtain a "hard copy".

Olus McNatt, Jr.
Garland, Texas

I have an urgent need to have a couple of written programs for Apple converted into Commodore BASIC. Can anyone help?

Ted A. Mitchell
Upland, California

Does there exist a simple operator's guide for the 1541 disk drive. In particular I can't figure out how to do sequential or random files.

Dennis Parass
Oakville, Ontario
416/844-4133

CLUB ACTIVITIES

HELPFUL HINTS

Try using those 8-track tape storage boxes with lids (\$32.00) for storing 5" diskettes. They fit perfectly in some.

Alfred M. Johnson Jr.
Cary, North Carolina

(?) Where to get replacement fuse for the VIC—Bob Hart, Illinois

It appears that there is not an "exact" replacement locally for the type T3 15 amp 250 volt fuse used in the VIC.

However a close replacement is a type GMA (formerly type GJU) 10 amp 125 volt made by Bussmann Mfg. division of the McGraw-Edison Company.

The type GMA is the same size as type T3 (5mm x 20mm). The VIC's input voltage is at 9 VAC so the voltage rating of the fuse is not critical. The fuse supplied with the VIC is at 15 amps, however the VIC will normally only consume about 5 amps, therefore the 10 amp rating should be sufficient to allow the VIC to operate and still provide protection from faults.

A box of five of these Buss fuses can be bought from Electrosonic or Saynor Electronics for about \$3.00.

S. F. Claughton
Mississauga, Ontario

PEEK(59271) will tell you what sort of computer your program is running on. 32 = 8032. 29 = fat 40. 170 = 4.0 ROM. 210 = upgrade ROM. 232 = VIC. 208 = 64.

Steven C. Darnold
Otago, New Zealand

(?) How to use the Sprite Editor—Everett Goodwin, Virginia

The Sprite Editor allows you to create one or more sprites on the screen, dot by dot, on a 21-line by 24-column grid. A sprite is a special type of user-designed object which can be displayed anywhere on the screen. These sprites can be displayed in a fixed location or as moving objects. When the sprites you have created are acceptable, the editor allows the option for storage to a disk file for future use with BASIC or ASSEMBLER programs.

Each sprite definition uses 64 bytes of memory, called a "page". Graphically, a page is set up as a 3 by 21 byte grid with the 64th byte not used. You can have up to 150 sprite-definitions in memory at a time, as follows.

Sprite Pages	Memory Locations	# of Sprites
32- 63	2047- 4059	32
128-255	8132-16383	128

When all of your sprite editing is done and stored on a disk file, at some point you will want to recall the sprites into memory for usage with a BASIC program.

The above originally appeared in a "Software Starter Kit" and was sent in by:

J. T. McGlone
Williamson, New York

(?) How to use 1541 Backup—Alan Tomlin, Ontario

Elsewhere in this TORPET you will find an article by David Bradley entitled "Using the 1541 Backup". This should help you get past the boxes.

"PET" PALS WANTED

I would like to hear from anyone in North Carolina who has TPUG library disks for the PET, VIC or 64 (especially the last two) for the purpose of trading.

Alfred M. Johnson, Jr.
1247 D Quincy Court
Cary, NC 27511
(919) 469-1758

My prime interest is Genealogy and I would like to be in touch with those of similar interest.

Elmer G. Heck
Virginia Beach, Virginia

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, Canada
M5M 4A1

Please let us know if you wish your full address published.

IF IT'S FOR THE COMMODORE 64 AND IT'S GOOD, IT'S PROBABLY



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BP-4	LEARNING VIC-20 BASIC	2 HR
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DIO-2	VIC 20 DISK I/O	1 HR 45 MIN

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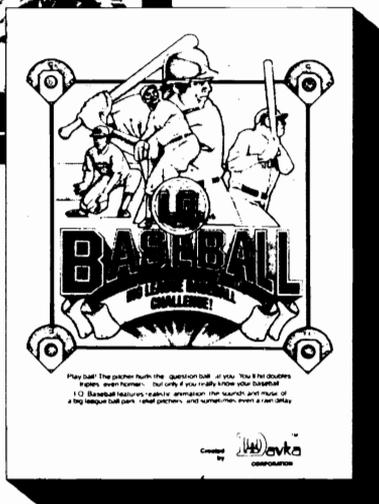
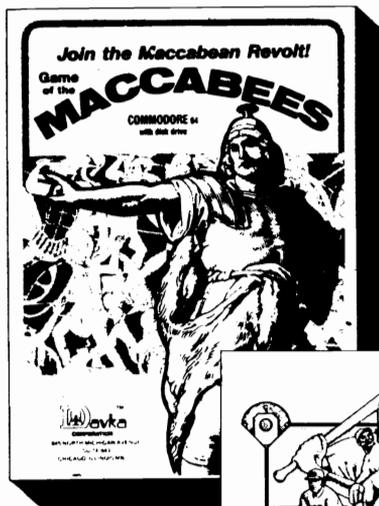
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From Davka's Educational Division, some current releases:

BIBLE BASEBALL An exciting way to see how much you know about the Old Testament—while you have fun learning even more! When your computer asks a question, your answer could get you a single, double, triple, or a home run—with your players racing around the bases! **\$24.95** (supplemental disks available with additional questions, as well as teachers disks to create your own questions)

GAME OF THE MACCABEES This program provides useful and interesting information about the Festival of Chanukah, combined with an exciting arcade type combat game. At any stage in the battle, the player may request new questions and win fresh troops for the "army" of Maccabees. Designed for high school students and adults. **\$24.95**

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CLUB ACTIVITIES

TPUG HAM OPERATORS

NAME	LOCATION	CALL SIGN	NAME	LOCATION	CALL SIGN
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Prince Edward Island			Karl Thurber	Millbrook, Alabama	W 8FX
Ron MacKay	Cornwall	VE1 AIC	John Trueman	Lompoc, California	K6LZF
Nova Scotia			R.C. Olson	Sacramento, CA	WA6 QVW
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Peter Lawson	Wolfville	VE1 CJP	Ginny Clough	Savannah, Georgia	WB4 ZTA
Jim Harris	Yarmouth	VE1RB	Kimball Clough	Savannah, Georgia	WB4 ZBV
Quebec			J.R. Proffitt	Pearl City, Hawaii	KH6C
Raymond Noel	Lac Etchemin	VE2 EEN	Peggy Proffitt	Pearl City, Hawaii	KH6 GJO
Gilbert Fontaine	Sherbrooke	VE2 BOG	Fred Walter	Arlington Heights, IL	W9JCD
T.A. Action	Terrasse Vaudreuil	J7V 5W8	R.D. Starkweather	Winnetka, Illinois	W9CMC
Ontario			John Reasoner	Bowling Green, KY	WA4 QM0
Ralph Clifford	Elginburg	VE3UG	Edwin Chestnut	Louisville, Kentucky	WB4 QD2
Buster Doubleday	Kingston	VS3NF	Theo Morrison	Grand Rapids, Michigan	N7BQH
Vern Mason	Kitchener	VE3 KPD	F. Brutsche	St. Joseph, Michigan	KM8V
George Brunet	London	VE3 BZI	Bruce Werner	Big Rapids, Michigan	WB8TVD
Dennis Mungham	Nepean	VE3 ASO	Lonnie Richardson	house Springs, MI	KA0 CIA
David Pratt	Nepean	VE3 MLP	S. Dunn	Jacksonville, NC	WB4 ICF
D. Beaton	North Bay	VE3 JHN	Arnold Ross	Bridgewater, NJ	W2NX0
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John MacRae	Willowdale	VE3 MRB			
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Robert Piggott	North Vancouver	VE7 CY4			

If you would like your name added to the TPUG HAM OPERATORS mailing list, please write to TPUG, 1912A Avenue Rd., Ste. 1, Toronto, ON., Canada, M5M 4A1.

ADDITIONS TO TPUG LIBRARY

(Access to library available to TPUG members only)

With the advent of the 96-page TORPET, we now have room to print the 'List-Me' files for the new releases in the TPUG library. 'List-Me's are on all the disks which have been added to the library since March 1983. It is hoped that we will gradually provide 'List-Me' files for previous releases and that eventually we will produce a publication containing them for all the listings in the library.

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). Do not send us diskettes.

Tapes

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

To order PET/CBM or Commodore Educational Software tapes, check first in the library (see August library listing in August TORPET). Each entry indicates the number of tapes required directly below the title of the listing. Send \$6.00 per tape required. Do not send us tapes.

Send all orders to:
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Include:

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

NOTE: Each List-Me File includes the following notation:
"Copyright (C)1983 by Toronto PET Users Group Inc."
"OK to copy but is not to be sold or published for profit"

PET Monthly Release

(P)T1 - SEPTEMBER 83

(1 disk/2 tapes)

LIST-ME (P)T1 List-Me for this disk/tape.
CATERPILLAR.P Game of Caterpillar.
COPY++ALL.P Copy disk to disk with alpha sort.
EXPANSION PRES.Z PET external ports explained.
FRENCH VERBS.Z French verb declension exercise.
IDEAL BODY MASS.P Calculate your body weight.
LIFESCORE.Z Life expectancy calculations.
MUSICTHEORY.P Learn music theory.
NUMBER RUBIKUB.P Rubic's Cube game & practice.
PET LIZZARD.P Game for kids—good eye-hand co-ordination.
PET STOCK MKT.P Game—play the stock market on your PET.
QUESTS & SORCERY.P Adventure game—dragons and sorcerers etc.
SID.P Game—Maze
SNAKE-PIT.Z Game—2 players chase each other and avoid traps.

(P)T2 - October 83

(1 disk/2 tapes)

LIST-ME (P)T2 List-Me for (P)T2 disk/tape.
AUDIOTEACH PET.P Educational program—run an audio cassette (article in TORPET 239).
BANNER.P Print a banner on your printer.
CALL PREFIXES.P HAM radio—call sign prefixes.

CB2SOUND SCHEM.P Simple CB2 sound schematic.
CDN PROV.P Educational program—learn the Canadian provinces.
COIL DESIGN.Z Electronics—design coils.
CROSS-REF.P Utility—cross reference BASIC program variables.
DUPE.P HAM radio—simple program shows duplicate call signals.
EYE OF KALATH.Z Game—BASIC program(32K!)—adventure-type game.
FAMILY BUDGET.P Business—keep track of family budget.
FORMULAS.P Electronics—calculate electronic formulas.
HAM UTILITY.P HAM radio—simple utility for HAMS.
MAFIA APPLIC.P Game—an amusing job application form.
MULTIQUIZ.P ?—a self-teaching multiple answer test.
MUSIC THEORY.P Educational music—Learn music theory.
NAME NOTES!.P Educational music—learn to read the music clef.
NS.CITIES+.P Education—learn Nova Scotia cities.
NS.COUNTIES.P Education—learn Nova Scotia counties.
NS.ERLY SETL.P Education—learn Nova Scotia early settlements.
PET FLASHCRDS+.P Education—flachcards.
SOUND EFFECTS.P Make sound effects on your PET.

New Additions to the TPUG Library

VIC Monthly Release

- (V)T2 - October 83
(1 disk/tape)**
- LIST-ME (V)T2 Documentation for this disk/
tape.
- TERM.VIC Upload/download terminal program using Punter protocol for bulletin board systems
- TERMINAL.VIC
- BABY DOS.V Loads standard programs on 8K VIC and autoloads from disk
- VIC LIST.V Requires 8K, printer and disk. Lists a program from disk.
- MOON-INST.V These next 3 programs are for MOON INST HAM Radio operators. They allow MOON a HAM to plot the exact position of the moon in order to bounce radio waves off it.
- MUSIC MACHINE.V Gives a demo of music capabilities of the VIC.
- FORMAT.V Allows formatting on screen of special numbers.
- CRAPS 8K.V Bet at Craps against the computer.
- LIFE SPAN 3K.V Takes statistics to see how long you will live.
- SPACE DODGE.V Use a joystick to dodge space debris (no sound).
- (V)T3 - November 83
(1 disk/1 tape)**
- LIST-ME (V)T3 LIST this file for descriptions of programs on (V)T3.
- MICROMON@\$OE003K These 2 Micromon programs are machine language monitors for the VIC. For complete instructions see TORPET #23, pages 39-43.
- MICROMON@\$30008K
- FROGRUN.V Similar to arcade game Frogger but you use the keyboard to get your frog across the water.
- DEPTH CHARGE J.V Use a joy stick to move your ship, & the fire button to drop the depth charges to destroy the subs. The lower the subs the more points you get.
- UFO PILOT Use your joystick to move your ship. Don't run into your own trail or hit the warplane.
- COMBAT.V You and the VIC fight a war. Each side gets 72,000 men to distribute between army, navy and air force. You can choose how many years the war goes on.
- MORSE CODE KEY.V You select the speed (wpm) & the VIC prints random letters (words), & plays sounds (dots & dashes).
- DOMINOES 8K.V You play dominoes against the VIC. There are 3 levels of difficulty.
- FANTASYLAND16K.V An adventure game for the VIC. It loads all the data into the VIC.
- FLIGHT SIMULAT.V The controls in this game respond similarly to a small aircraft. You must take off, make at least a 360 degree turn and land safely.
- MOON LANDER.V Your controls have failed—you must land safely on the moon by turning rocket thrusters on & off.
- DEMO 1.V Shows the Starship Enterprise flying through space with sound of engines running.
- DEMO 2.V Shows the different screen and border colours, and shows sounds available on the VIC.
- DEMO 3.V Interesting demo about the 2 men in the VIC.
- DEMO 4.V Demonstrates sound effects.
- DEMO 5.V Demonstrates graphics.
- DEMO 6.V Demonstrates more sound.
- MARKET INST.V Instructions for the Market Prog.
- MARKET PROG 8K.V Simulates the stock market.

C64 Monthly Release

- (C)T1 - September 83
(1 disk/tape)**
- LIST-ME (C)T1 List-Me for (C)T1 disk/tape.
- ADDRESS BOOK.C Your own computerised telephone book.
- AFO.C Kill the invading aliens with balloons.
- BLACK JACK.C Play Blackjack against the computer.
- CHARACTER GEN.C Interesting character generator.
- CIRCLES.C Fun with circles.
- COPY FILE.C Disk to disk copier for the 1541 (Butterfield)
- COPY-ALL.C Copy all for the 64(Butterfield)
- CROSS-REF.C Cross reference your BASIC programs (Butterfield)
- DIALER.C Dial the phone with your 64.
- DISK LOG.C Disk logger program (Butterfield)
- EASY EDIT.C Simple wordprocessor for the 64.
- EASY MATH.C Learn easy Mathematics (add and subtract).
- FROSTY.C Frosty the Snowman's theme song.
- HELI.C Watch the helicopter fly around your screen.
- HIRES.BOOT.C Boot for HIRES.D
- HIRES.D Data for HIRES.BOOT.C
- HRSUPP.D Data for SLIDESHOW.C
- KEYBOARD INTRO.C Learn about your keyboard.
- KSCOPE.C A Kaleidoscope for the 64.
- LOCKDISK.C Make your BASIC program autorun (Butterfield)
- LOTTERY DRAWER.C Large random number generator.
- SPRITE EDIT.C A Sprite Editor.
- PET EM.C Simple PET Emulator (Butterfield)
- PET EMULATOR.C PET Emulator that does not require a loader.
- PROG CONVERT.C Convert programs from VIC/64 to PET (Butterfield)
- REVERSE.C The game of Reverse.
- RONNIE.D Picture of Reagan, loaded by SLIDESHOW.C
- SLADY.D Picture of a lady, loaded by SLIDESHOW.C
- SLIDESHOW.C Shows 2 pictures, RONNIE,D and SLADY.D

New Additions to the TPUG Library

C64 mo release cont....

SOUTRAINS.C Keep the trains rolling on down the line (game)
 SPARKLE.C Eliminates screen junk during GET statements etc.
 STAR TREK.C Star Trek adventure.
 SUPERMON.V2.C Supermon with nice colours. (Butterfield)
 TOKER.C Game of Toker with some colour added by Jim Butterfield.

(C)T2 - OCTOBER 83 (disk only)

LIST-ME (C)T2 List-Me for this disk/tape. "LIST" this do not "RUN" it.
 COOL PICT BOOT.C See a colour picture of 'Diane'.
 DIANE.D Picture of 'Diane' loaded by COOL PICT BOOT.C.
 COLOUR PICT.D Loaded and used by COOL PICT BOOT.C.
 DIANE DATA.D Colour data loaded and used by COOL PICT BOOT.C.
 MOTION.C Very good looking high resolution display that creates the illusion of motion.
 MAP BIN.D File used & loaded by MOTION.C. Don't try to load it yourself.
 SCRCLR ASM.D File used & loaded by MOTION.C. Don't try to load it yourself.
 WORD PROCESSOR.C Simple word processor for C-64.
 BOOT MATH.C Test your math skills while enjoying some neat C-64 music and sound.
 MUSICA.D File used, loaded by BOOT MATH.C
 POLLY STR.D File used, loaded by BOOT MATH.C
 MATH.D File used, loaded by BOOT MATH.C

PZ BOOT.C

TOWERS.D
 THIRTEEN PEGS.D
 E PUZZLE.D
 SWITCH.D
 PEGSOL.D

JUMPING JACK.C

SOUND EFFECTS.C
 SITTING DUCK.C

DUCK DATA.D

COIN FLIP 1.C

COIN FLIP 2.C

COIN FLIP 3.C
 CHARGEN PEEK.C

CHAR DISPLAY.C

STRING THING.C

VISIBLE.C
 FORMAT.C

I BOOT.C
 SYS 40784.D
 CC B.D
 IADOREMY64.D

Choose 1 of the 5 games listed in the menu, get minimal instructions, wait for game to be loaded—then play the game.
 A game loaded by PZ BOOT.C
 A game loaded by PZ BOOT.C
Note: These 5 games can be loaded without the BOOT, but keep in mind that PZ BOOT.C has some instructions for each game. Jump the holes to live & prosper; fall in a hole & you die. Design your own sound effects. Shoot the elusive ducks—5 points per duck. To fire, press any non-destructive key. Data needed & loaded by SITTING DUCK.C.
 See your 64 flip either heads or tails.
 See your 64 flip either heads or tails—see a summary of results.
 See a summary of results only.
 See what all your 64's characters are made of.
 Pick a character, then see it enlarged.
 Tidies up the INPUT statement (Butterfield).
 See your Commodore 64 at work. Format numbers so the decimal point lines up.
 Boot program for a surprise. Loaded & used by I BOOT.C.
 Loaded & used by I BOOT.C.
 Loaded & used by I BOOT.C.

C64 Business

(C)B1 - BUSINESS 1 (1 disk/tape)

LIST-ME (C)B1.L LIST this file for descriptions of programs on this disk/tape.
 INTEREST.C Do various investment calculations.
 BOOKKEEPING.C Assists in summarizing cheques & cash payments from a business.
 LUMP SUM.C Analyse what will happen to your investment over several years.
 BOND YIELD.C Calculate bond values such as current yield, yield to maturity and more.
 FICA TAX.C A F.I.C.A. estimator.
 STOCK OPTION.C Compute theoretical value of a European type put or call option using the valuation formulas of Black and Scholes.
 STOCK LIST.C Keep track of your stocks.
 LOAN.C Compute loan amount, payments & number of payments.
 IREG CASH FLOW.C An aid in the analysis of uneven cash flow.
 INVESTMENT.C Which is better? The bank or that investment...
 INVENTORY.C Keep track of inventory.

GROWTH CALC.C

DECISION MAKER.C

FINANCIAL CALC.C
 PORTFOLIO.C

MORTGAGE.C

MORT SCHED.C

MORT CALC.C

MORTGAGE.Z

MEMORANDA.C

INVOICER.C

DATES.C

MILEAGE.C

MARKS.C

GROWTH RATE.C

Calculate compound annual growth.
 Got a tough decision to make? Look no further.
 Do financial calculations. Keep track of your stock holdings.
 Calculate your mortgage payments.
 See your mortgage payment schedule.
 See what your monthly payment will be.
 Calculate anything to do with your mortgage.
 Keep track of important dates & appointments (disk).
 Make up invoices to send to all your clients (disk)
 Keep track of dates and appointments.
 See how fuel efficient your car is.
 Teachers, keep track of your students' marks (tape).
 See how much you've been growing

DAY OF WEEK.C From the date, find out what day of the week that something happened.

CALENDAR.C Generate a calendar for any month since the birth of Christ.

TYPING TEST.C Test your typing accuracy and speed.

BUSPRCASHROI.C Calculate price/volume or cash flow.

APARTMENT.C Is buying that apartment building worth it?

COPS BASE TAPE.C Presently this program is set up to keep track of policemen but it can be easily modified to keep track of whatever you want simply by changing the data statements in the program (tape)

COPS BASE DISK.C Same as above but disk version.

HEATING COSTS.C Investigate & compute how much you should be paying to heat your home.

MONEY EXCHANGE.C See how much your currency will be worth before you take a trip to another country.

PROPERTY EVAL.C Find out how much you are spending on your home.

WEIGHT WATCHER.C Keep track of your dieting efforts & make a chart of your progress.

MEMORANDA.C Keep track of important dates & appointments (disk)

LIFE EXPECT.C Find out how long you should live. The results are based on your habits.

TEMP CONVERT.C Do temperature conversions, check the wind chill equivalent temperature and more.

REG'D SUPPLY.C Design a basic power supply BEFORE smoke appears.

BIO-COMPAT.C Check to see if you and that special someone are compatible.

BIO-PLOTTER.C See your biorhythm on your monitor.

BIO-PRINTER.C See your biorhythm on your monitor, or use your printer.

CAR COST MILE.C Find out how much that car will cost you in the long run

RECIPE SIZER.C Convert recipes to suit the number of people that you have invited to dinner.

ADDRESS BOOK.C Keep track of your friends' (or enemies') phone numbers.

RECORDINGS.C Keep track of your records and tapes.

LIBRARY CARDS.C Keep track of your books and literature.

CHECKBOOK.C Keep track of your hard-earned money.

MAG INDEX.C Keep track of your magazines.

BIOHYTHM.C See your biorhythm on your monitor in colour.

(C)B2 - BUSINESS 2
(1 disk/tape)

LIST-ME (C)B2.L LIST this file for descriptions of programs on this disk/tape.

WORD PROCESSOR.C Simple word processor for the 64.

EASY EDIT.C Simple word processor for the 64.

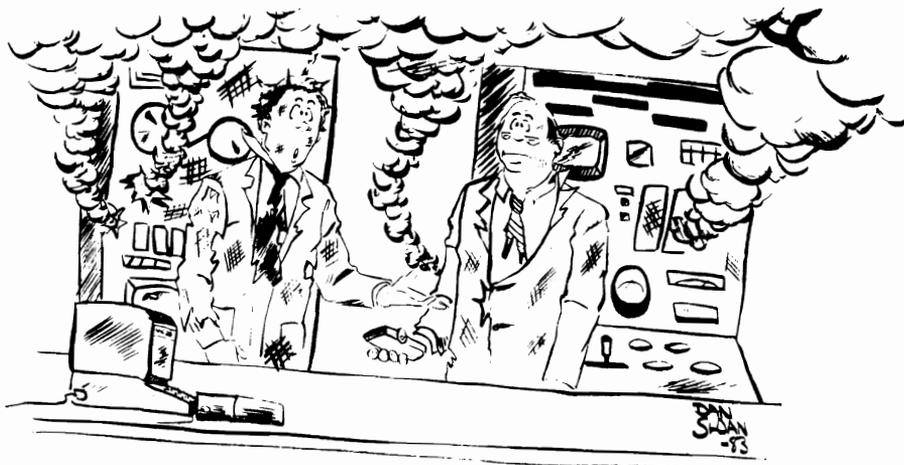
TYPEWRITER.C Write letters etc. using this simple word processor (tape)

TYPYR.C A very simple word processor.

TEXT EDITOR.C Simple word processor for the 64.

MINIWORDPRO.C Write letters etc. using this simple word processor for your C-64 (disk).

FOOD PRICES.C Keep track of food prices so you can compare & save.



"What do you mean 'Back to the old drawing board'? We blew that up too!"

CLASSIFIED ADS

5 Cents per word, with \$1.00 Minimum.

Payment in advance to:
TORPET CLASSIFIED
Horning's Mills, ON.
Canada / ON L10

The TORPET will limit ads from businesses placed in the classified column.

FOR SALE

November Special: Mastertype (d) by Lightning Software for C-64. \$37.00 - postpaid. Infosystems Limited, Box 2001, Sackville, NB E0A 3C0

C-64 Word Processor: Quickwriter II \$28. (U.S. funds, includes post. handling). 100% machine code. Features: works with tape/disk, any printer/interface. Easiest word proc. to use. Easy access to printer's special features. Pre-view displays text as it would be printed out before printing (save paper). Form letters, copy/transfer/delete blocks of text, memorize/append blocks, auto page numbers, right justify, text of infinite length, send any disk command while in the word processor. Avail. tape or disk.
C-64 Machine Utility: power plus gives over 40 new commands including: screen dump, un-new, DOS commands, machine lang. monitor, auto line nos., find, change, renumber, delete, etc. Cost: \$18. U.S. funds, includes post. handling. Aval. tape or disk. Send check to EDUCOMP, 2139 Newcastle Ave., Cardiff, California, 92007. Specify 1/d

STUNTMAN SPELLING-A quality field tested educational game for kids of all ages. Purchase 1 program and make up to 25 copies for school or home. Our policy on all products. Stuntman for VIC, or PET - \$24.95 to: Synchronizing Education and Games, 668 Sherene Terrace, London, Ontario, Canada N6H 3K1 (6)

Used, not abused 5 1/4" minidisks \$2.75 ea ppd. Single side, single and double density for most Commodore drives. We've reconfigured our equipment resulting in 100 - 150 name brand disks (3M, Verbatim, Maxcell, etc.) Stampsoft, P.O. Box 125, Pluckemin, NJ 07979 (1)

Game Cartridge:

Avenger, Jupiter Lander, Omega Race, Pirates Cove, Road Race. All five \$90.00 (Cdn.), \$20.00 each. Send cheque or money order to: Ben Hoi, P.O. Box 294, Station "B", Toronto, ON., M5T 2W2.

VIC 20/C-64 Dataset owners. Now Available! Complete dataset schematic, electrical parts list/layout for all CZN versions. \$8.00 PPD. Computer Clinic South, 6123 W. Mitchell St., West Allis, Wisconsin 53214. (1)

FOR SALE: 1 - 2001 PET with large keyboard and 32K RAM (BASIC 2.0) complete with Computhink 400K dual disk drive. (very fast access and loading). All manuals supplied including PET service binder. Also extra disk controller board and diskettes with utilities, games, etc. \$1200.00 or best offer. Call (416) 239-7933 evenings.

FOR SALE: Commodore 8032 computer with 2031 single disk drive. Manuals, cable and dust cover included. System cannot be sold separate. \$1400.00. Call Roy at (416) 247-9791.

FOR SALE: CBM Commodore 8032, excellent condition. I also have programs (games), tape drive, Waterloo basic chip. Manuals are all included. Will deliver for inspection if in Oshawa, Toronto, Waterloo, London area for \$35.00. Computer only \$1350.00 or complete package for \$1455. Write now to N. Todd Wright, A-13 Saugeen-Maitland, 239 Windermere Rd., London, Ontario, N6G 2J8.

FOR SALE--STOP THIEF eprom for CBM 8000 series. Your name, address and phone number appear when you power on. System only accessible after you type your invisible password (up to nine characters). No soldering required - fits into socketed position. Cost: \$39.95. Send name, address, phone number and password to: INFOSYSTEMS Limited, Box 2001, Sackville N.B. E0A 3C0.

Memory expanders for VIC 20. 32K switchable - adds 24K to BASIC, and 8K for machine language, etc. \$179.95 Cdn. each. 16K non-switchable - \$99.95 Cdn. each. Both are finished in a black plastic case, and are guaranteed for 90 days. Ontario residents please add 7% P.S.T. Please add \$3.50 postage and packaging. (Will come first-class registered mail). Compacc, 39 Second St., Orangeville Ontario L9W 2C2.

Re-ink your used printer ribbons for only pennies again and again with the Mac Mark 11 motorized re-inking machine. Fully guaranteed, for any model, includes ink for 20 inkings. To order, send cheque or money order for \$84.95 + P.S.T. where applicable to Relnc., Box 5555, Concord, Ontario, L4K 1B6, or phone (416) 635-6820/928-0691. Visa and Mastercard accepted. Please allow 4-6 weeks for delivery. Specify make and model of printer. Save Bundle\$.

GENEALOGY PROGRAMS-- For the C-64 and the VIC 20. FAMILY TREE will file all records of ancestry on disk and will retrieve information by individual name, individual number, family groups, or by pedigree. File is fully indexed and can be added to or edited easily. 664 names per file disk. Fully documented manual accompanies the program. Further Genealogy programs under development. For FAMILY TREE send \$49. for disk and manual to Genealogy Software, 1046 Parkwood Avenue, Sarnia, Ontario N7V 3T9. Phone (519) 344-3990 after 5:00 P.M. (3)

FOR SALE: 16K PET plus cassette drive, \$360. U.S. L. K. Shick, P.O. Box 125, Pluckemin NJ 07978. Call first (201) 658-3133.

For Sale, Software & Accessories for Commodore 64 and VIC-20 tapes, disks and cartridges. Large selection, low prices. Write or call for free price list. Dave Kilroy, 9942 Belden Dr., Windham, Ohio 44288. DPhone: (216) 326-3634.

VIC Owners.. I'm selling Krazy Kong - \$5.00, Snakman - \$10.00 Send sase and cheque to: Ron A. Patterson, S1 Fonda Rise S.E., Calgary, AB, Canada, T2A 5R3 (cheque will be returned if item already sold).

Home Inventory, with ease you can keep complete records on all your possessions, along with accurate information on each item (serial no., purchase dates, prices, etc). Completely menu driven and user friendly. So stop shuffling paper, order home inventory today. Send \$39.95 to: Cortech Software, P.O. Box 6618, Victoria, B.C., Canada, V8P 5M4. Dealer inquiries welcome.

Word Magic (5-8 year olds) is for youngsters learning to read. It helps them with friendly instructions on selecting words to build a sentence. Simple word lists are provided for nouns, adjectives, verbs, subject and object, or the student can select a word of his or her own to use. The narrative defines the word lists not as nouns, adverbs, etc., but in simple terms that the child will understand. After practicing to build proper sentences, the student can select different words to create a well-structured sentence that tells a silly story. Send \$25. (ON. res. add 7% PST) for disk or tape. To order Mathemagic and Word Magic send \$40. plus PST to Palantir Enterprises, 5468 Dundas St., W., Suite 500, P.O. Box 524, Islington, ON., Canada, M9B 6E3. Add \$200 for shipping and handling.

CBM dealers only: The Jolly Roger allows you to backup most 64 protected software. Requires Basic 4.0 and 4040 drive. Request on letterhead, specify password and enclose \$49.95 (Cdn. or US). Infosystems Limited, Box 2001, Sackville, NB E0A 3C0

Balloons: All machine language game for the VIC 20. Catch the falling balloons but beware, not all balloons are friendly. Send your name and address and \$10.00 per tape to D. Paxman, R.R.#1, Beeton, ON., Canada LOG 1A0

1/2 Price Liquidation PET/CBM/C-64 (new, unused balance of inventory). 1 visicalc for PET/CBM/Superpet with 4040, 8050, 8250 List: \$375. Sale: \$190. The complete BPI accounting package (General accounting, Accounts receivable, Inventory, Job Cost) for PET/CBM/Superpet with 8050, all 4 modules List: \$1200. Sale: \$600. Mcterm RS232 cable, connector and communications software for PET/CBM with 8050, 8250 List: \$290. Sale: \$145. RTC C64-link and VL-4 cable basic 4.0 with IEEE cartridge and RS232 cable by Richvale Telecommunications both for List \$225. Sale: \$110. Guaranteed original dealer stock, phone now: Addax Micro Inc., 208 Taschereau, Greenfield Park, Quebec, Canada J4V 2H4, (614)465-6056.

Attention VIC-20 Users: Announcing "PALACE ADVENTURE" for the 13K VIC. This wonderful game will keep you playing for hours upon hours. Send a cassette, self-addressed postage paid mailer and \$4.00 to: Jimmy L. Richardson, Route 1, Box 12A, Elk Creek, VA 24326. You'll be glad you did!

Small Software Collection? I'm willing to trade my homebrew software for yours (disk only please). Send me your disk I'll send it back with new stuff. Send disk and sase to: Ron A. Peterson, S1 fonda Rise S.E., Calgary, AB, Canada, T2A 5R3.

Attention teachers: Tamarack software, who brought you Vanilla Pilot, proudly present Gradecalc, an easy-to-use grade and attendance management system. You set up your specific class structure, easily enter and edit data, rapidly average grades, and generate a variety of reports. The program is clearly written in menu form, and can be quickly understood by persons with no programming experience. Cost: \$32.95 (\$29.95 US). Available for C-64, 4032 or 8032 - specify computer and disk drive used. Demo disk \$5.00. Canadian distributor: Infosystems Limited, Box 2001, Sackville, NB E0A 3C0. Dealer enquiries invited.

Buy Commodore-64 software written by the popular Enigman. Mathemagic (4-8 year olds) helps youngsters with their math while having fun. Mathemagic adds, subtracts, multiplies, and divides. It even allows for mixing the four math types. There is a selectable level of difficulty

feature, which progresses automatically based upon the students skill. The multi-level difficulty feature is easily changed if you want to make Mathemagic easier or harder. Clever graphics and friendly tone of queries will stimulate the student. When the youngster is finished, scores for right and wrong answers as well as percentage are produced. You can track your childrens progress. The kids should enjoy this program as well as improving their math skills. Send \$25. (ON. res. add 7% PST) for tape or disk to

Convert 8K RAM to 16K. Add or replace chips with 6116 low power units. Prices, complete with shipping & handling \$65.89 using 2016 chips (equivalent to chips in 8 K unit) or \$69.89 for 6116 units. When ordering send unit, insured for \$100.00, & your return address together with money order to Robert Russell, Box 1481, Uxbridge, Ontario, LOC 1K0 or call (416) 757-3611 (bus.) or (416) 852-5223 (home).

WANTED

Canadian distributor for Nibbles & Bits software - \$19.95/tape. Event Horizon's Sorcerer's Apprentice - super graphics for 64 - \$49.95. SS/DD diskettes, guaranteed, \$10./three; \$25./ten - postpaid. Third Party software for CBM - specify computer. TPUG Copy Tree Agent. Infosystems Limited, Box 2001, Sackville, NB E0A 3C0

Money! Challenge! Recognition! Highest prices paid for software written by you. Categories include Business, Personal, Games, Utilities, Educational, etc. A new series will be marketed including software written by Enigman. All software will be reviewed for originality, entertainment, graphics, ease-of-use, and documentation. To obtain a copy of the review results, include a stamped self-addressed envelope. Send disks, tapes, and documentation to Palantir Enterprises, Suite 500, P.O. Box 524, 5478 Dundas St., W., Islington, ON., Canada, M9B 6E3

Wanted! Commodore 8032 computer, 8050 or 8250 disk drive, and dot matrix printer. Call (416) 366-2130.

WANTED: HES-CAT for 8032/8050 or equivalent. "Disk Cataloging Programs" with all instructions. Write: F. Iannuzzi, N.Y. Hospital, 525 East 68 Street, New York, NY 10021.

HELP WANTED

Programmers, Commodore 64, VIC 20 and Atari. We are currently expanding our product line of software and are looking for original material in the areas of business, education, home and games. For further information programmers should write to; NYQUIS Software Inc., P.O. Box 6618, Victoria, B.C., Canada, V8P 5M4.

A Ylimaki

I am beginning to think some kind of military sabotage is going on inside my 64. If I don't supply it with exactly the right code, programs have been bombed in midrun. I first blamed it on the C.I.A. chips; however, I have since learned the operations are controlled by a tough military man, the KERNAL.

COMMODORE 64 SOFTWARE

Broderbund	
Choplifter (CT)	30 40
Sea Fox (CT)	27 00
Serpentine (CT)	27 00
David's Midnight Magic (D)	27 00
Sky Blazer (D)	27 00
A E (D)	27 00
Load Runner (D)	27 00
Commodore	
Assembler 64 (D)	16 90
Logo (D)	47 90
Pilot (D)	47 90
Pet Emulator (D)	16 90
Screen Editor (D)	16 90
Bonus Pack (D, C)	16 90
CP/M 2.2 Operating System (CT)	69 00
Super Expander VSP (CT)	16 90
Easy Calc 64 (D)	19 35
Easy Calc 64 (D)	73 75
The Manager (D)	43 00
Easy Script (D)	43 00
Easy Mail 64 (D)	16 90
Easy Spell 64 (D)	16 90
Word/Name Machine (D)	16 90
Intro to Basic I (C)	19 35
Gortek & The Microchips (C)	24 80
Easy Lesson/Easy Quiz (D)	16 90
Music Machine (CT)	16 90
Codewriter (D)	47 90
Zork 1, 2, 3 (D)	29 50
Inventory Mgmt (D)	43 00
Payroll/Checkwriting (D)	43 00
Accts Payable (D)	43 00
Accts Receivable (D)	43 00
General Ledger (D)	43 00
Creative Software	
Car Costs (C) 10 15 (D) 13 50	

Decision Maker (C) 10 15 (D) 13 50	Moonshuttle (D, C)	20 30
Household Finance (C) 13 50 (D) 16 90	Poo Yan (C, D)	20 30
Home Inventory (C) 10 15 (D) 13 50	Sands of Egypt (D)	20 30
Loan Analyzer (C) 10 15 (D) 13 50	Bruce Lee (D, C)	27 00
Moon Dust (CT)	Genesis (D, C)	27 00
Astroblitz (CT)	Heathcliff (D, C)	27 00
Trashman (CT)	O Rileys Mine (D, C)	20 30
Save New York! (CT)	Epyx Temple of Apsahai (D)	27 00
Datasoft	Upper Reaches of Apsahai (D)	13 55
Zaxxon (D, C)	27 00	

Curse of RA (D)	13 55
Sword of Farqal (D)	20 30
Jumpman (D, C)	27 00
Hes Software	
Hes Mon 64 (CT)	27 00
Turtle Graphics II (CT)	40 60
Hes Writer 64 (CT)	30 45
Gridrunner (CT)	20 30
Retro Ball (CT)	27 00
Benji Space Rescue (D)	30 45
Coco (D, C)	33 80

Micro Prose	
Floyd of the Jungle (D)	26 80
Hellcat Ace (D)	20 80
Sierra On-Line	
Frogger (D, C)	23 65
New Jawbreaker (D)	20 30
Crossfire (D)	20 30
Sirius Software	
Squish 'Em (D)	23 65
Repton (D)	27 00
Blade/Blackpool (D)	27 00
Critical Mass (D)	27 00
Type Attack (D)	27 00
Way-Out (D)	27 00
Bandits (D)	23 65
Orzy Ozone (D)	23 65
Shadow Scorch (D)	23 65
Spinnaker	
Face Maker (D)	23 65
Hey Diddle Diddle (D)	20 30
Kindercomp (D)	20 30
Snooper Troops 1 (D)	27 00
Fraction Fever (D)	23 65
Amazing Thing (D)	27 00
Synapse	
Ft. Apocalypse (D, C)	23 70
Protector (D, C)	23 70
Survivor (D, C)	23 70
Shamus (D, C)	23 70
Timeworks	
Dungeons of Algebra Dragons (D, C)	19 10
Robbers of the Lost Tomb (D, C)	19 10
Wall Street (D, C)	19 10
Money Manager (D, C)	19 10
Electronic Checkbook (D, C)	19 10
Word Pro 3	65 00

VIC 20, T.I. 99 4A, RADIO SHACK, IBM-PC SOFTWARE LISTS AVAILABLE

Commodore		BASF Soft Box (10)	23.00
Commodore 64	239.95	Jaywalks	
1541 Disk Drive	239.95	Pointmaster	10.95
1530 Database	61.30	Pointmaster Pro	18.95
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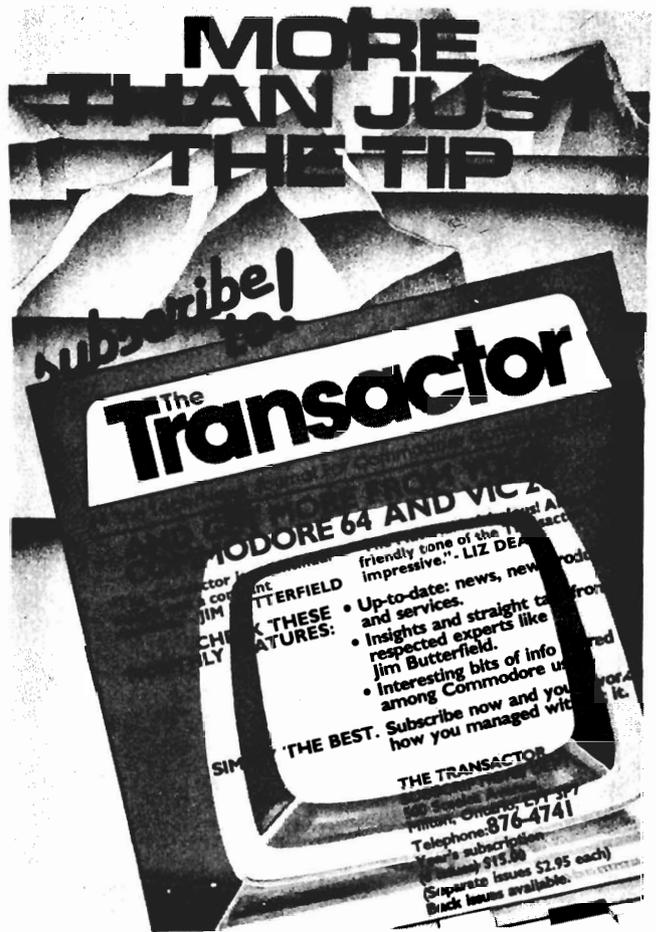
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Advertisers Index

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ADG Distributors Inc.	.54
Advanced Processor Systems	.14
Advantage Computer Accessories	.35
Automated Design	.54
The Binomial Group Ltd.	.26
BASIC Business Systems Ltd.	.95
Boston Educational Computing Inc.	.37
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Cardco	backcover
City Software	.12
Commodore Business Machines Ltd.	.48
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ComputerMat	.74
Computer Outlet	.50
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Comsoft Programming	.60
Connecticut microComputer, Inc.	.37
Control Microsystems Inc.	.29
Cosmopolitan Software	inside back cover
Davka Corporation	.86
Dyadic Resources Corporation	.60
Eastern House	.36
Entech	.83
French Silk	.26
Gosub	.59
Hunter Nichols Inc.	.11
Infosystems Ltd.	.36
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King Microware Ltd.	.72
Kobetek Systems Limited	.12
Lynn Computer Service	.83
Macom Systems	.59
Marketron	.73
Microcomputer Solutions	.60
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Skyles Electric Works	.47
Smoky Mountain Software	.59
The Soft Warehouse	.95
SoftWare Warehouse Outlet	.95
Southwest Micro Systems Inc.	.85
Such A Deal Software	.71
Systems Management Associates	.62
Torpet	.96
TOTL	.13
TPUG	.02.87
The Transactor	.96
Tycor	.37
Universal Software	.61
Variety VIC-A-THON	.23
World of Commodore	.23



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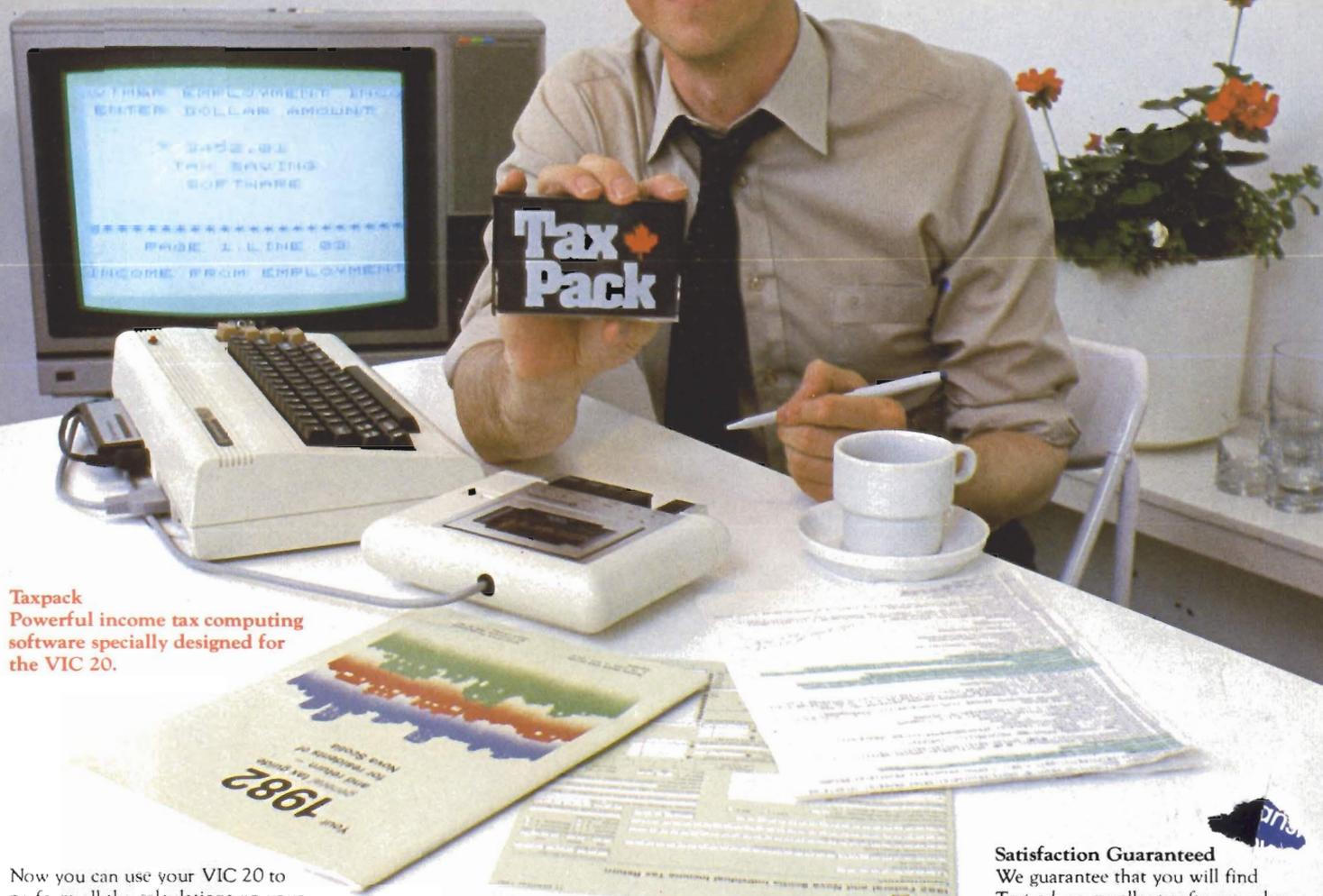
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