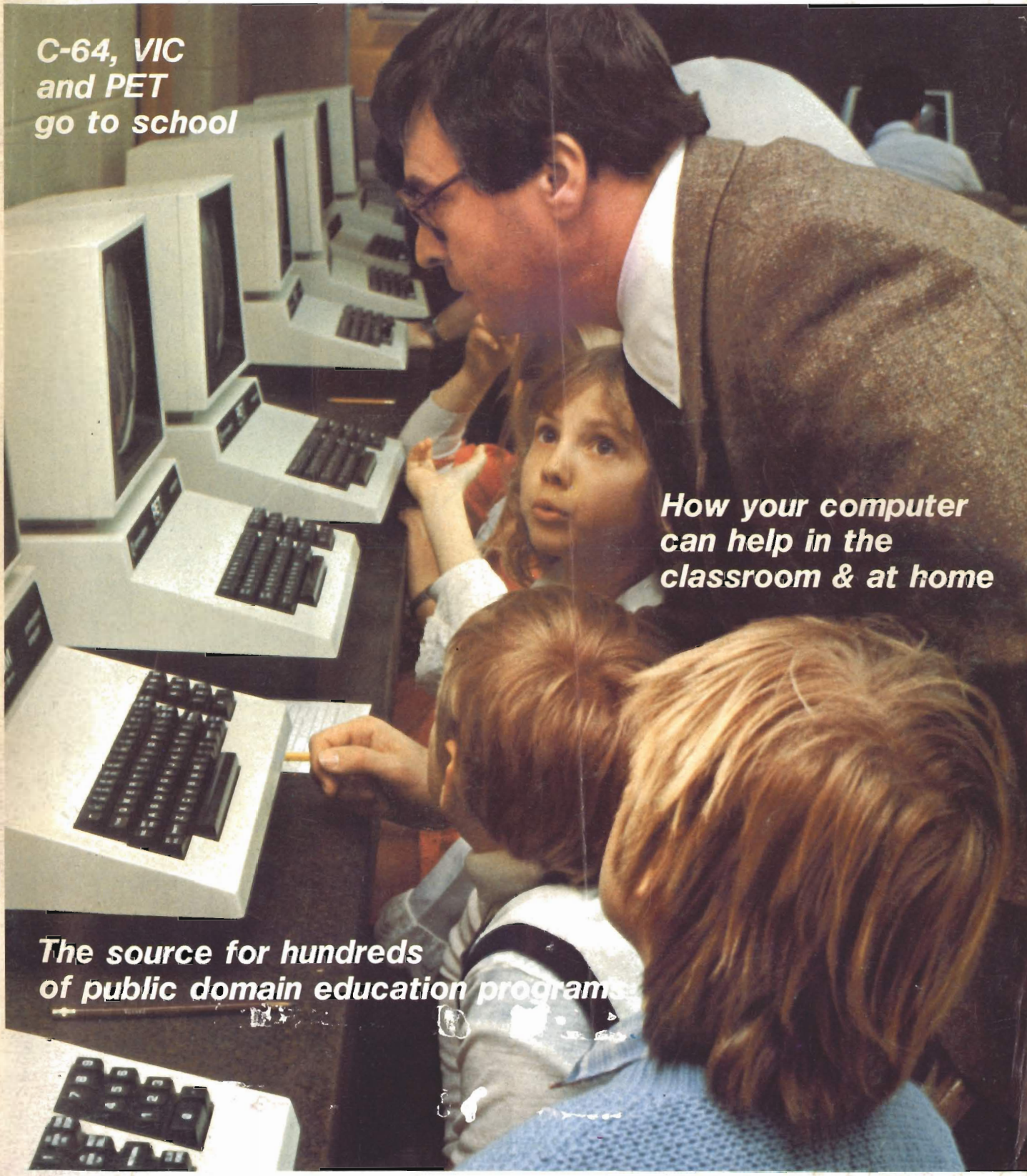
THE TORPET

$2.00

The INDEPENDENT Commodore Users' Magazine

No. 23 September **1983**



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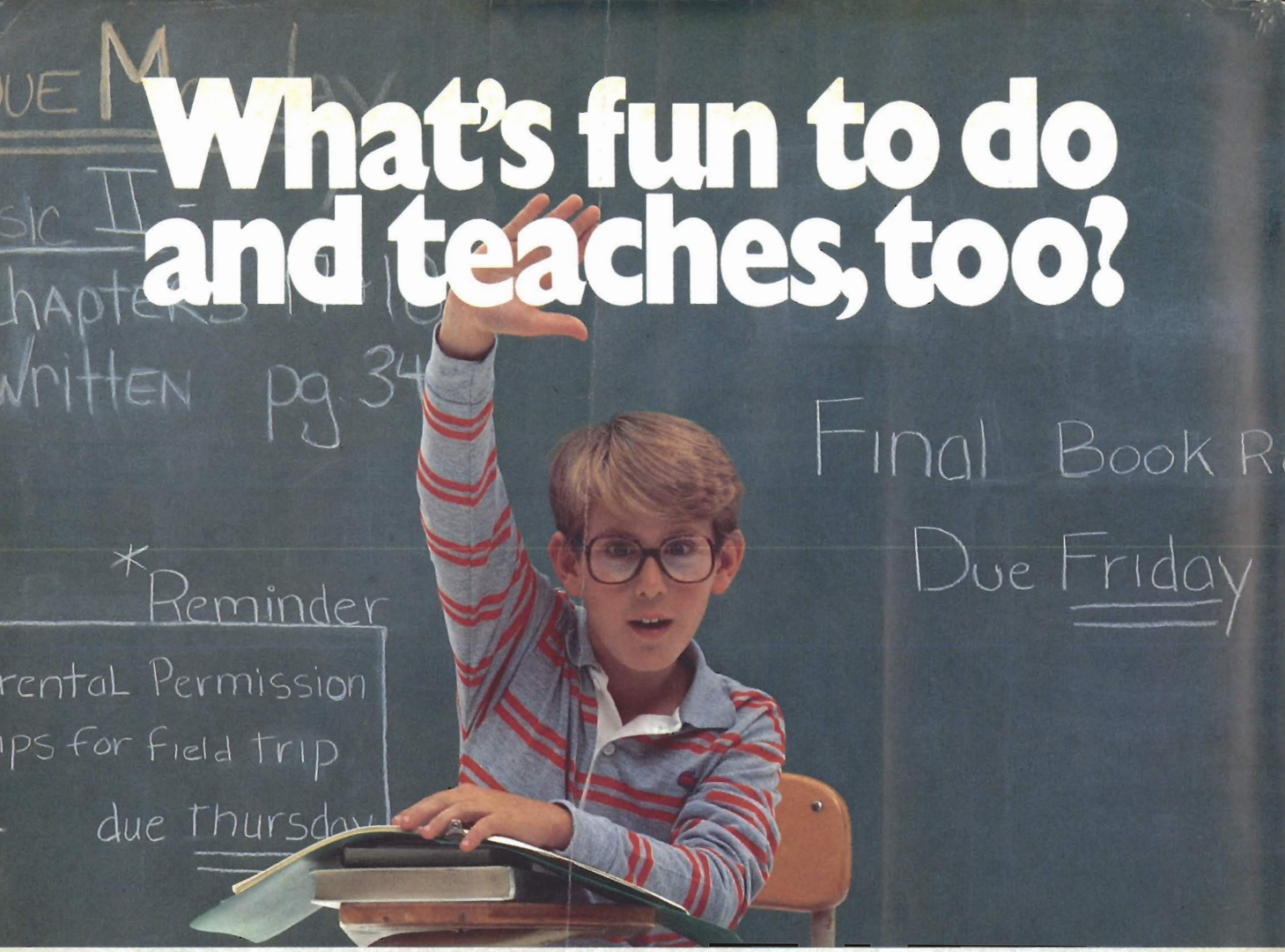

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Cover Story: Page 4

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LETTERS

Thanks to you and the people here in Savannah at Software South, I have thoroughly enjoyed my first year with a computer. Converting programs from PET to C-64 is a nice way to learn the inner workings of the machines.

Tom Tennille #2899
Savannah, Georgia

In contrast with the self-congratulatory letters The Torpet continues to print in each issue, I find your magazine to be very much less helpful than several others currently available. And access to software through membership in your club is just as expensive and even more confusing than it is through Public Domain, for example.

Shannon T. Morris #4870
Big Pine Key, Florida

As an owner of a Commodore CBM 4016, I, together with a lot of other Pet users, feel somewhat neglected with respect to software availability with Commodore's introduction of the VIC series of personal computers. The local dealers seem totally committed to VIC 20s and C- 64s with Commodore Australia regarding us PET/CBM users as a hindrance to the marketing of more current machines and collectors of old wares.

It was therefore a light in the wilderness when I found your advertisement in Compute and a restoration of my faith that there must be a few PET/CBM devotees still left out there.

As a teacher of Technical Education in Australia the computer finds itself falling into the role of a teacher's aid in engineering studies, but software availability in the field (apart from Apple) in Australia seems to be non-existent.

Paul Reay #8948
Sydney, Australia

I would like to take this time to express my appreciation for the LIST-ME program that I have found on several of the newer disks. Whoever took the time to encapsulate the programs and explain them on the disks is a man (woman?) after my heart. My C-64 has the new ROM and some of the earlier programs produce no visible action, and the descriptions are invaluable. Thanks again to you and your staff for a job well done.

Robert J. Cokel #0487
Monmouth, Illinois

I enjoy the club magazine and only wish I were closer to attend some of the meetings. Perhaps someday I might try writing an article for the magazine. I am a meteorologist with the National Weather Service in Muskegon. We have converted over to computers for most of our forecasting needs. Keep up the good work and thanks for your copy program which enables those of us that can't make any meetings able to see and use the programs.

Roger M. Galloway #4088
Muskegon, Michigan

I just received my latest Torpet magazine, and one thing for certain is I'm glad I joined the TPUG. The Torpet is worth the price of joining.

T. W. Willoughby #5398
Portland, Oregon

I enjoy your publication very much and think the new format is very attractive - keep up the good work!

Tom Wren #2676
McQueeney, Texas

I am a discouraged TPUG member due to missing documentation or instruction for most of the programs I have received to date from the TPUG library.

Realizing that all information is submitted by members as a voluntary donation, there is no obligation to take the extra time to write the necessary documentation. But as a newcomer to the field, believe me it would alleviate so much discouragement! I feel like a child outside a candy store dying to get in, but have no key.

I would really like to get documentation for: from V5--Wordpro-2, Vicword, Victerm; from V7--Vic Tape Index; from (V)TS--List-me.

Steve Woloz #0683
Montreal, Quebec

Thank you for a fine magazine. I really appreciate Torpet and what all of you have done for all Commodore users. I would have got rid of my fine computer if it were not for the beneficial information and software that you are providing for such a modest contribution from us.

Somehow I also wish that TPUG would be able to accept credit card payments from international members. This would be a real boon to us. Are we anywhere near there?

If you are on your way to Singapore, do feel free to drop me a line.

George Lim Hock Seng #2693
Singapore

As the author of File Cabinet and a onetime partner in Progress Computers, I was greatly surprised to read the Editorial column of your July, 1983 issue.

I left Progress Computers in June of 1981. I understand that my ex-partner Chet Lewis then sold the entire rights to my program to two or three other companies.

As you may be able to understand, I cannot support this program any longer. However, if you will put the people who have lost money in contact with me, I will endeavor to get them a copy of my program.

By the way, your magazine seems to get better with every issue. Keep up the good work.

Sincerely,

Michael Kouri
SACRAMENTO, CA

(ed. note: we will send Mr. Kouri the addresses that we have received to date. We appreciate his gesture.)

EDITORIAL

WHY EVERYONE NEEDS TO UNDERSTAND COMPUTERS

I predict that in the next few months we will begin to see a reaction against the current enthusiasm for widespread computer literacy. The push will come largely from those who feel left out and threatened by the technology which they do not understand but there will be some very visible and very qualified experts who will also voice their reservations.

The question will be raised as to why in this age of specialization everyone needs to understand computers any more than they need to understand automobile mechanics or any other technology in order to be able to use it. Why should everyone learn BASIC or any other form of programming? One does not need to know how to program a computer in order to use it any more than one needs to be an auto mechanic in order to drive a car. This will be the line of reasoning.

But there is a difference. Digital computers are logic machines and have a close kinship to man and his reasoning faculties. In my day (I am telling you my age) the classical education required one to learn Latin and Greek, not that one expected to ever meet any living Romans or Greeks. It was the intellectual discipline itself that was valued.

Socrates proposed that students learn the discipline of Euclid's geometry before tackling philosophy. Today's universities have similar requirements and yet surprisingly (an early indicator of the reaction) some will not give credit for high school computer courses. I, on the other extreme, feel that computer courses should be **required**.

The computer certainly requires as much intellectual and logical discipline as Euclid, Latin, or Greek and the teacher (the computer itself) is an infinitely patient teacher that never tires and **always** remains perfectly logical. When one adds to this the benefit of individual instruction and the ability to progress at one's own rate, how can there be caveat?

But there still remain objectors. "Many of the students will have no practical use of the skills they are learning", they will say. Wrong. The skill they are learning is not programming but logic and they have great need to learn logic. A society that places such stress on physical gymnastics will do well to place an equal emphasis on mental gymnastics, one more part of the Greek triad.

The fact that one has nothing to program does not mean they should not know how to program. Most students who learn to write English have nothing to say either. In fact, I know a fellow who speaks seven languages and has nothing to say in any one of them. In our educational systems we try to teach many to write in the hope that at least a few will have something to write about. Let us do the same with computers.

FEATURE

North wall of the computer lab at Our Lady of Help of Christians separate school in Richmond Hill Ontario. The class on the right is part of Mrs. Kam Meharchand's (standing with back to camera) 7th grade and the class at the back of the room is part of The English as a second language course. Facing the camera is Ursula Benders from Holland and to her left is Susan Turcek from Germany.

A Model For A Grade School Computer Lab

by Bruce M. Beach, Editor

In many ways it was like a little United Nations. Now, if only the nations of the world could get along as well as these children. One thing that helps the children is that they have a common language. It is called BASIC.

The class that I was visiting was Mrs. Rose D'Agostino's English as a Second Language (ESL) - Reception Centre at Our Lady of Help of Christians Separate School in Richmond Hill, Ontario. In the classroom were first generation students from Sweden, Poland, Costa Rica, Italy, Germany, Hungary, Hong Kong, Korea, and Holland.

The large laboratory was also simultaneously serving Kam Meharchand's grade seven class. Since this day was a new class orientation day there was only one student at each terminal. There were also five instructors in the room including RTC (see page 75) principal Peter Gouvis, RTC programmmer Gregory Beaumont, and Our Lady of Help of Christians principal, Paul Brand.

Usually there would have been only one instructor with each of the classes and there would also have been two students per terminal but experience had shown that at the start of a group's using the machines a very intense ratio of personal instruction was required.

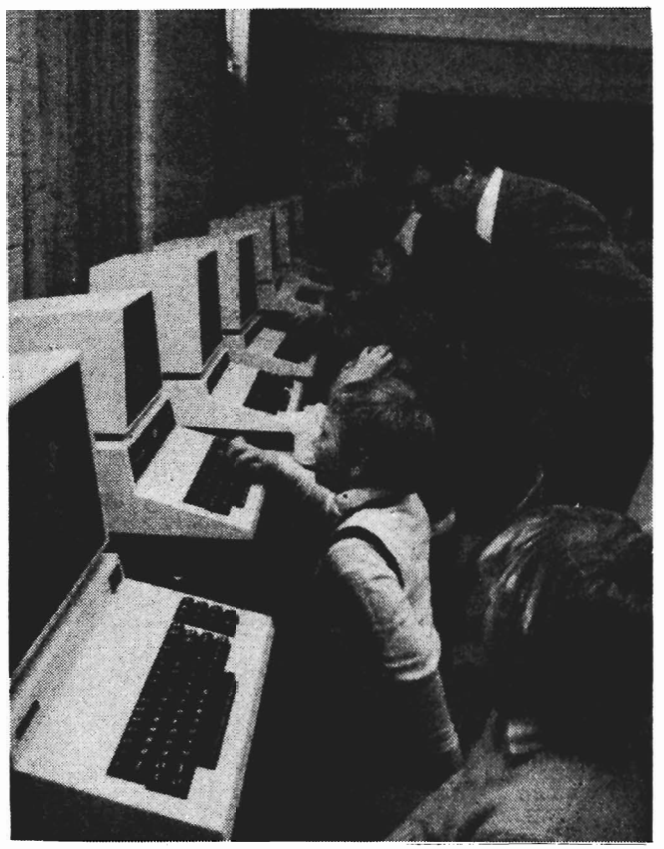
The students all received 15 to 18 hours of instruction at a terminal in January and February. (The pictures shown here were taken in late January.) They were then examined again in June and they were still able to write simple programs and remember most of what they had been taught.

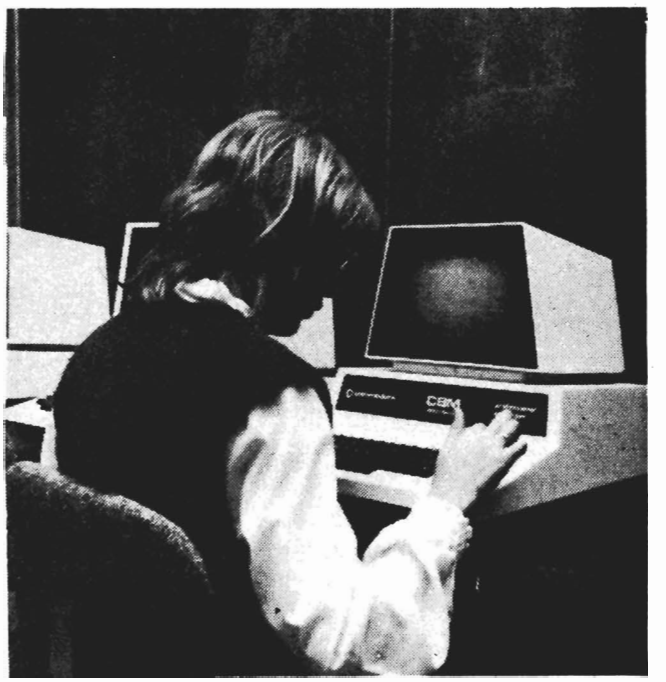
While the computer laboratory is used in the ESL course, and also in some Special Ed classes (for those students with learning disabilities), it is used mostly by Our Lady of Help of Christians for the grade 7 and 8 students. Two other schools also bus classes over to Our Lady of Help of Christians in order to use the computer laboratory. At still other hours of the day and evening, the lab is used by RTC to teach adult computer courses. These are very busy computers.

The enthusiasm of the students was evident throughout the course. Some of the students, like their teachers, enrolled for additional enrichment courses with RTC. The school principal, Paul Brand, took two courses from RTC and three credit courses elsewhere. He says that he would like to have still further training but because of the course demand in the area he is

having trouble finding available space in additional credit courses.

In addition to using the lab for gaining computer literacy the computers are also used as a motivational tool and for instruction in courses such as math. The principal, staff, and students are all so enthusiastic about the program that they would like to see it further extended.

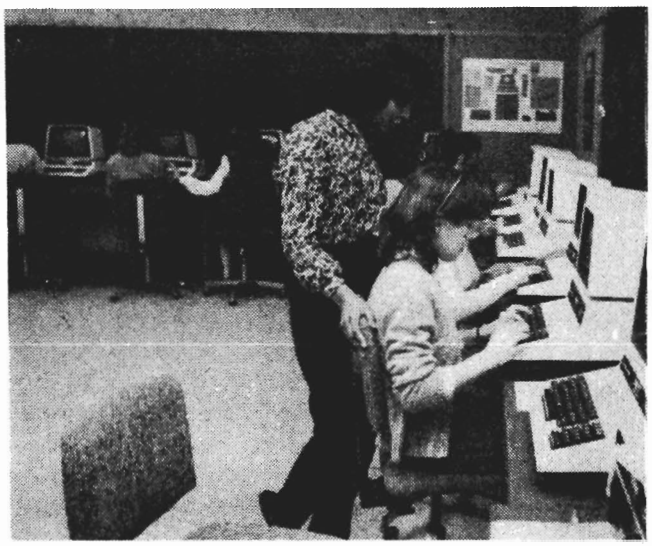


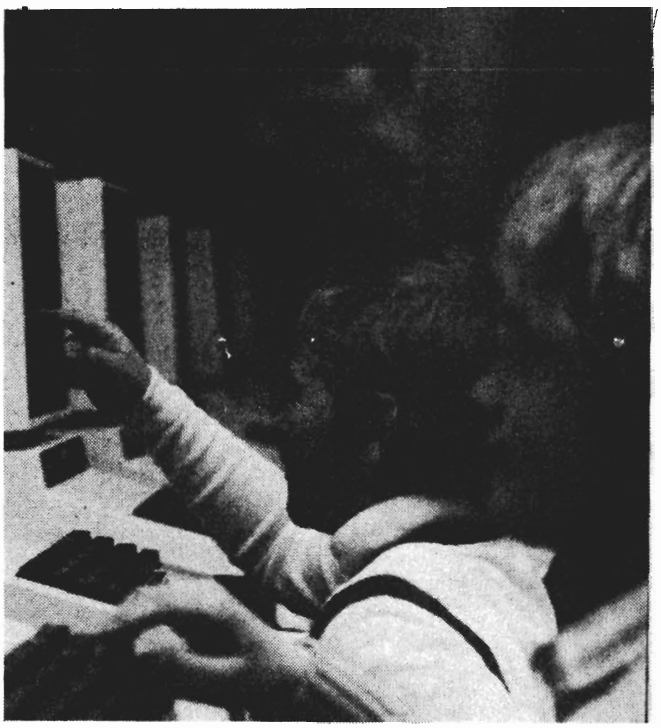


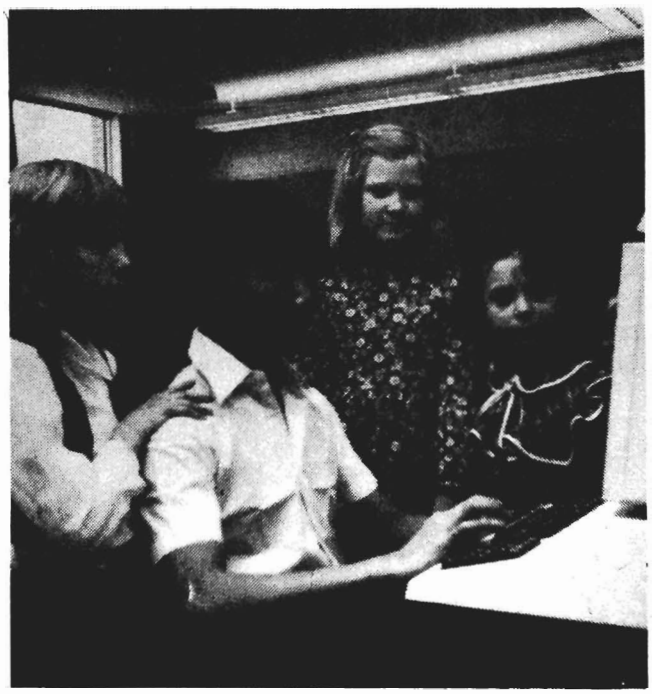
(Above) South wall of the computer lab showing part of "the little United Nations" ESL class. From the foreground, Johan Mannerheim (Sweden), Daniel Brodecki (Poland), Monika Hawryszko (Poland), Renata Smuskeiwicz (Poland), Sophia Mannerheim (Sweden), Agnes Budzyn (Poland), Marcella Verzuu (Costa Rica). Standing behind is Paul Brand (principal of Our Lady of Help of Christians and to his right are three of the other four instructors in the room for the orientation day (see story).

(Upper right) Beth Byers of the Grade Seven class looks over the shoulder of Michael Burgio an ESL student from Italy. (Lower right) Ursula Benders, ESL student from Holland, familiarizes herself with the computer. Since this was an orientation day there was only one student assigned per terminal but on most lab practice days there are two students at each terminal.

FEATURE







(Top left) Mrs. Kam Meharchand (a teacher from South Africa) works with Marie Gazeky a 7th grade student in the computer literacy course. (Above) Daniel Brodecki (Poland) and Johan Mannerheim (Sweden) share their computer culture in common. (Bottom right picture and from left) Monika Hawryszko (Poland– also seen on our cover), with Wilson Tang (Hong Kong), Sophia Mannerheim (Sweden), and Marcela Verzuu (Costa Rica). The children were free to move about the room and often shared experiences and helped each other.

EDUCATION

AUDIO TEACH
WITH COMMODORE COMPUTERS

by Ron Byers **Truro, N.S.**

One of the things you may want your computer to do is to talk to your students. While this is possible through the use of expensive speech synthesizers, an easier solution for the average teacher may be to combine the audio instruction capabilities of a tape recorder with the control functions of a micro-computer.

Through the use of the user port on your PET, VIC 20, or C-64 computer the switching on and off of external devices under program control is fairly simple. A POKE statement to the user port will tell the computer to communicate with an external device. Another POKE can tell the device to turn on or off; your program and the computer's built-in clock can tell the device which to do and when to do it.

Can you connect your tape recorder directly to the user port? Well...not quite. However, don't despair. The interface to do the job is quite simple to build. (This might be the time to search among your students' parents for an electronics enthusiast with an itchy soldering gun trigger finger.) A trip to a well-known electronics parts 'shack' with a few of your deflated dollars will provide the necessary hardware, with the exception of the connector for the user port. This connector (eg. AMP 530654-38205) should be available from your Commodore dealer. Refer to the 'Building the Interface' section for construction details.

Assuming that you have been able to build the necessary interface or have it built, the next step is to obtain the program from the TPUG Library. This program is really two programs in one. One part will be seen only by the teacher and the other by the students. The program you use is designed to time your audio instructional tape so that it will stop at the right places in preparation for the correct answers which you place in the program for each student's response. The instructions given in the teacher's part of the program explain how to do this, as in the print-outs shown.

This program would be particularly suitable for spelling lessons, foreign language, or any instruction which is best done through an audio presentation followed by student responses. It may look complicated at first but it really is not difficult after the first time. Just make a tape recording using many pauses for student responses. Each segment of your audio tape must end with a question or specific request for student input. Jot down the word(s) you want the student to type in when he/she gets to that point in the tape. You may wish to use a bell or some sound cue to indicate where the tape is stopped for each section, however, the sound of the pause control being pushed may be all that is needed.

When you run the teacher part of the program, just follow the instructions and be sure to press 'E' promptly at the end of each of your messages and 'L' after the last message. Instruction C. must be followed exactly since this is the part which creates the DATA statements to make the student program work properly. All of the data statements will be listed for you and you must press CLR/HOME (don't press shift) and then press RETURN once for each line. Delete line 110 and the program will be ready to SAVE for student use.

You might want to SAVE the student program at the beginning of the other side of your audio tape. Give it a name determined by the content of the lesson.

With the changes mentioned in the REM statements near the beginning of the program, this teaching aid will work on a PET, VIC, or C-64. As with any A/V media, try the finished program yourself before class use.

EDUCATION

NOTE FOR VIC 20:

It may be possible to use this program in an unexpanded VIC if the lines below are left out and instructions A, B and C from this article are used instead of having them on the screen. Lines to omit include the following: 20, 30, 700 to 860, 1200, 1330, 1380, 1500, 1640, 1650, 1660, 1720,1730, 1980 to 2120, and 2150 to 2240

Screens from Teacher's Program

INSTRUCTIONS A.

THE FIRST STEP IN PREPARING A TAPE FOR THIS PROGRAM IS TO RECORD YOUR MESSAGES AND/OR QUESTIONS ON THE AUDIO TAPE RECORDER.
WHEN RECORDING YOUR MESSAGE USE THE PAUSE CONTROL AT THE END OF EACH MESSAGE.
EACH MESSAGE MUST END WITH A QUESTION OR SOME PROMPT FOR STUDENT INPUT.
JOT DOWN THE WORD(S) YOU WANT AS THE STUDENT RESPONSE TO THAT MESSAGE.
THEN RELEASE THE PAUSE CONTROL AND REPEAT THE PROCEDURE FOR THE NEXT MESSAGE AND STUDENT RESPONSE.

YOU MAY ONLY MAKE 20 MESSAGES BUT THEY MAY BE AS LONG OR SHORT AS YOU LIKE.

WHEN YOU HAVE FINISHED RECORDING ALL OF YOUR MESSAGE TAPE,

PRESS * TO CONTINUE.

INSTRUCTIONS B.

AUDIO TAPE INTERFACE (BLACK BOX) MUST BE PLUGGED INTO THE USER PORT(NEXT TO THE CASSETTE INPUT).

THE MINI PLUG FROM THE BLACK BOX MUST BE PLUGGED INTO THE REMOTE INPUT ON THE AUDIO TAPE RECORDER.
IT WOULD BE BEST TO TURN THE COMPUTER OFF AND DO THIS AND THEN LOAD AND RUN THE PROGRAM AGAIN.

TURN BLACK BOX SWITCH ON.

REWIND THE AUDIO TAPE.

PRESS * TO CONTINUE.

PRESS PLAY ON THE
AUDIO TAPE RECORDER.
AND THEN PRESS *.

WHEN YOU ARE READY
FOR ME TO LISTEN TO
YOUR MESSAGE,
PRESS B.

WE WILL CALL THIS
MESSAGE 1

LISTENING TO MESSAGE 1

PRESS E WHEN YOU HEAR
THE SOUND WHICH SIGNALS
THE END OF
MESSAGE # 1

TYPE THE WORD YOU WANT
FOR THE STUDENT
RESPONSE FOR

MESSAGE # 1

AND PRESS RETURN

PRESS L IF THIS
IS YOUR LAST MESSAGE.

PRESS C TO CONTINUE.

STOP TAPE.
INSTRUCTIONS C.
READ CAREFULLY.
AFTER YOU PRESS C
I WILL LIST THE DATA
FOR THE MAIN PROGRAM.
YOU MUST PRESS
THE HOME KEY AND
THEN PRESS RETURN
ONCE FOR EACH LINE

DON'T GOOF IT UP
YOU ONLY GET ONE
CHANCE TO DO IT!
ALSO YOU MUST
SAVE THIS PROGRAM
BEFORE STUDENT USE.
DELETE LINE 110
BEFORE SAVING. .

READ THIS AGAIN
AND MAKE NOTES!
THEN PRESS C.

EDUCATION

Screens from Student's Program

```
ASK YOUR TEACHER
IF THE AUDIO TAPE
IS READY. IF SO..
BE READY TO LISTEN
TO THE AUDIO TAPE.

PRESS PLAY NOW.

PRESS C TO BEGIN.
(ADJUST VOLUME WHEN

THE TAPE BEGINS).
```

```
LISTENING TO
MESSAGE # 1
```

```
TYPE YOUR ANSWER
AND
PRESS RETURN
```

```
SORRY!

THAT'S NOT THE
ANSWER I'M EXPECTING

PRESS SPACE AND
TRY AGAIN.
```

```
THE ANSWER I WANT IS

PET

TYPE THIS ANSWER
PLEASE.
```

```
RIGHT!

WELL DONE!

PRESS SPACE
```

```
TURN OFF TAPE PLEASE.

YOU HAVE
FINISHED THIS
PROGRAM.
HERE ARE THE WORDS
YOU MISSED:
PET
VIC

THANKS FOR YOUR
EFFORTS!

YOU HAD 2 ERRORS
in 6 QUESTIONS.

READY.
```

BUILDING THE INTERFACE

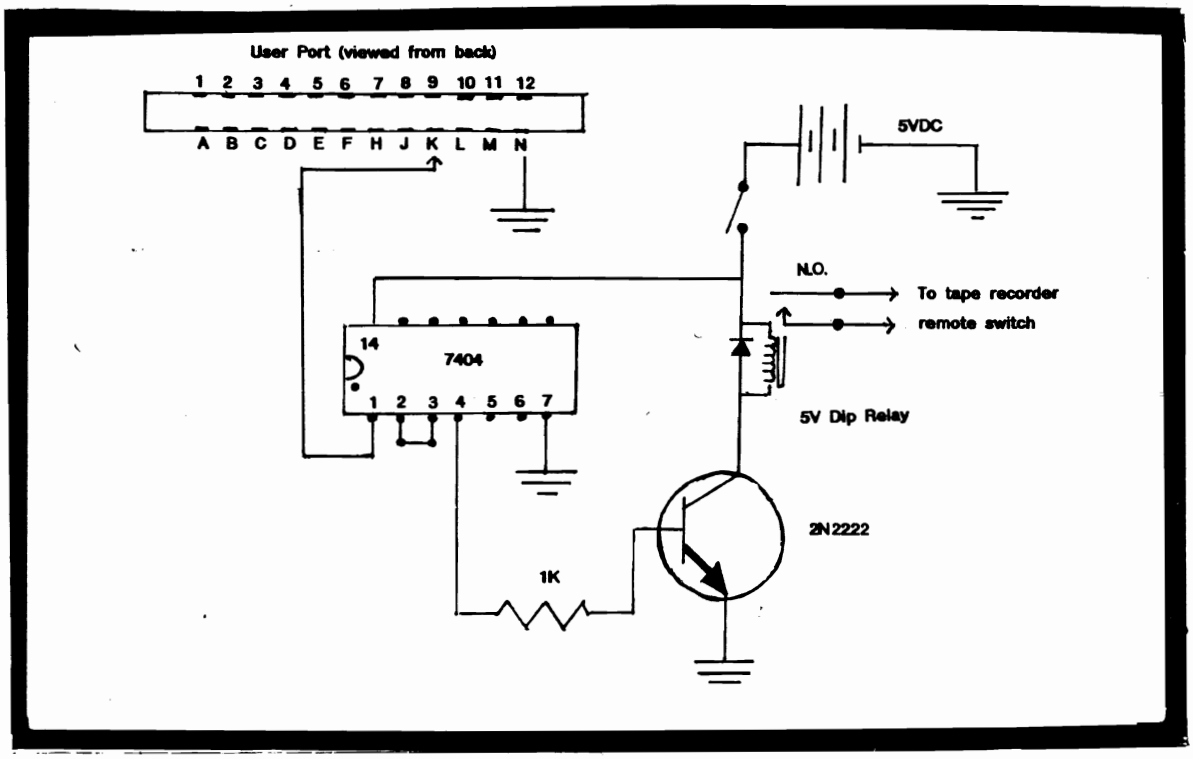
Use of a dual IC board and an IC socket will simplify construction. The 7404 and the relay can each be mounted on this and some extra holes should be available for the transistor, diode, and resistor. A LED may be added to give a power-on indicator. Depending on the size of the relay, it may be possible to use a cassette tape case as a box for the circuit. However, a larger box would allow the batteries to be mounted inside.

Four penlight cells in a battery holder may be used as the power supply. This gives 6V rather than the recommended 5V but has worked OK so far. It should be possible to obtain the 5V from pin 2 on the C-64 although this has not been tried as yet.

PARTS LIST

Circuit board (dual IC)	#276-159
NPN Transistor	#276-2009
Diode IN34A	#276-1123
Digital IC hex inverter (7404)	#276-1502
Dip socket (14 pin)	#276-1999
Switch (spst)	#275-0862
Battery snap	#270-325
Battery holder (4 AA)	#270-391
Submini phone plug	#274-291
Resistor 1K	#271-023
SPDT Dip relay (5V)	#275-243
User port connector	#AMP 530654-38205
Hookup wire and suitable plastic box	

*Considerable savings may be realized by ordering parts from a mail-order electronics supplier.



THEORY OF OPERATION

The 7404 is used as a buffer. It, together with the relay, isolates the computer from the device to be controlled. A logic 1 (high) from the computer will, after transfering the signal through two inverters in the IC, turn the transistor on and cause current flow through the relay. This in turn allows the tape recorder to play.

When the computer is turned on the data direction register (DDRA) which controls whether the data lines to the user port are inputs or outputs, is set for input on all data lines (address $E843 or 59459 decimal in the PET). Near the beginning of the program, the statement POKE E, 255 sets the DDRA to output data. Data, if any, in the output register (ORA at address 59471 decimal) will be sent out to devices connected to the user port. The interface is connected to pin "K" or bit 6. Therefore if the ORA is poked with a number which puts a 1 in binary bit 6, (eg. 64 decimal) the interface will turn the tape recorder on. A zero will turn it off.

The program is written so that the computer will stay in a loop for a period of time while the internal clock counts and waits for the teacher to indicate the end of each taped messsage. The numbers thus generated are used in the student program to determine when to POKE the ORA for a 0 to stop the tape at the right places in the tape.

HAM NOTE

For the benefit of amateur radio operators who might read this, I will mention that this same interface may be connected to a transmitter key to send morse code from the PET keyboard. Use of the MORSE WITH PET program from Kinetic Designs PET library, 401 Monument Rd. #171, Jacksonville, Fla. 32211 (or similar program) will provide send and receive capability. This program will come with a diagram for a simple interface, also using one IC and one transistor, which will enable one to copy cw on the PET (see Kilobaud Magazine, November, 1978). By changing two POKE values it will work on the C-64 or expanded VIC 20 as well. The two interface circuits may be packaged in the same box and use the same power supply.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Software Report Card

Time Accountant

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Performance	☐	☐	☑	☐
Documentation	☐	☐	☑	☐
Ease of Use	☐	☐	☐	☑
Error Handling	☐	☐	☑	☐

Hardware Requirements:

Commodore 8032 with 4040 drive (11,000 transactions, 300 clients) or CBM 9060 (140,000 transactions and 800 clients)

What Infoworld had to say:

"This is a smooth-running and fast time - accounting system. It will potentially overcome user resistance, since it was clearly designed by someone who understands how a law office functions."

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EDUCATION

COMPUTER MAGIC

by Joel Ellis — Hillsdale, MI

The key to the success of the VIC in a school library is open access. This small rural Michigan school system is by no means "behind the times." There are special computer classes with PET computers, a word processor for the business classes, and a large Burroughs computer servicing the administrative needs of the school. These computer uses, however, have limited application to student use except by secondary curriculum design.

The school library serves the entire 600 students from K - 12, on a limited budget. The purchase of a library computer was out of the question.

Through a book sale, the students earned a VIC 20 and cassette tape recorder for sole use in the library. None of us had any idea the enormous impact a free access computer would have on this student body. This computer belongs to the students.

The senior boys took it first, set it up, opened the little instruction book and began programming. The room was hot with excitement, challenged brain waves and frustration. When programs didn't work the crowd of students four deep would cry, "Let me do it!" It was a teasy little eighth grade girl (a VIC owner) who opened the door. She made a tape for the school VIC that began with colorful sing-song graphics that amazed the children from the smallest to the oldest. Then she included four "games" that had an all school appeal.

As librarian, I was concerned the VIC would become the draw, making the library a video den hangout. We found Compute magazine and subscribed to THE TORPET and thought we would try to maintain an educational profile constantly encouraging "educational" programs. It turns out that the VIC is the educator, the subject is COMPUTER, the technique is exploratory.

Very young students will cautiously approach the little "friendly" machine and ask meekly, "How do you turn it on?" Soon a name is flashing across the screen, and a little glow of excitement and accomplishment radiates from the "user". Then an older student will approach and show the younger one a few tricks which draw more excitement and more viewers.

One of our "differently abled" students who requires a walker and takes time to manipulate his hands to his demands refused to come near the VIC for a long time. Then one day, when the library was more quiet than usual, he carefully tried what he had observed for several weeks. The little computer has plenty of time for a slower manipulation. The success of that youngster that day has bloomed into a full scale programmer today, and he's not even in the middle school yet.

There are times when I wish the VIC were not so popular, but then it is not my computer. Some days after several classes of early elementary children have been in the room for their regular library time, I'll glance up from a well-used library room to find the VIC flashing a message to me, "Relax, Mr. Ellis. Take a deep breath. Stretch. Very Good."

The most rewarding experience of the free access VIC was recently with a very bright eighth grade student. This boy had demonstrated erratic behavior in the months preceding the VIC's arrival, which included skipping school and a sulking attitude. He was immediately drawn to the computer and went through the steps of programming growth rapidly. His personal behavior was changing. He became friendly again, accepted by those who had turned away from him. Every day, between classes he was in using the computer or assisting someone who was.

Gradually his curiosity took over. What does this mean, or how do they get it to do that? One week after the idea for his own program began to overtake him he spent every available minute (even those

stolen from classes) working out the idea on the computer. Yesterday, while a group of second graders busily gathered books from the shelves, the soft hum of happy little humans was broken by an exuberant shout, "I GOT IT! I DID MY OWN PROGRAM! IT WORKS!!" Brain cells rapidly connecting into a beautiful fiber of accomplishment. An educator's ultimate reward.

I highly recommend the accessible, unrestricted computer for every situation where young, curious minds are encouraged to grow.

Farquharson Features...

by Al Farquharson

Other Delightful Stories or About Bits & Bytes

I used to get confused about this. A bite from an apple is just a piece to eat and chew up, while a bit is somewhat smaller (?) Actually computers do chew their food, but in 8,16, or even 32 pieces at time. All digital computers use a stream of bits which flow endlessly through the machine like water from a tap. Occasionally someone turns off the tap.

For "8-bit" micros, eight zero's and one's from 00000000 to 11111111, in any combination, become the basic vocabulary for the computer: a WORD OR BYTE: HENCE any 8-bit combination is fed to the computer's "brain" as a series of eight bits such as 01001010. The computer then decides what this means and does something with it, or maybe nothing. It may just idle. For you and I, a bit is either a zero or 1, and eight of them make a byte.

The secret information found above applies to any 8-bit micro-computer. Now more: a 48K Apple equals a 32K PET. A Commodore C-64 may have a total of 64K for us. WOW! Confusion galore. Let me explain.

ROMS

NO,no, Charlie, this is not the Royal Ontario Museum. We went there last week, next to the Aardvark Gallery. Try Read Only Memory. Computers are full of chips and no potatoes. A chip contains little cells something like the idea of a honeycomb, but infinitely smaller and actually made from silicon. They come in 2K, 4K, and 8K packs. Now for the next lie: a K naturally is NOT 1000. Nuts! Actually 1K pronounced ONE KAY contains 1024 memory locations. Stupid.... but honestly, I didn't invent the thing. Handily, 1024 divided by 256, is 4. I knew you wanted to know that! You didn't? Actually I don't care either. One important fact you should remember: this kind of memory is there for good. You may read it, but poking to ROM is useless: it cannot change.

RAMS

All you farmer types from upriver, forget it. We have no ewes or other animals in this place. RAM means Random Access Memory. But you know that it really means the Royal Albanian Mountain. Random Access Memory is the reverse of ROM, you may peek and poke to it, but it goes to sleep and never wakes up again when the computer is turned off. When turned on, no useful information is found in RAM. Sometimes the computer puts information in RAM when the computer does wake up, but not the sort of stuff which you put in there while it was last on.

NEW PRODUCTS

COMMODORE INTRODUCES HOME EDUCATION PROGRAMS FOR THE VIC-20

TORONTO--Education programs for the VIC 20 home computer/video game--a new and valuable aid for children's education--was announced today by Commodore Computers.

"The Computer Educator System was designed primarily to assist children at various grade levels with their school work by providing a fun and stimulating learning series to help them become more involved in education," said James Copland, National Sales Manager, Consumer Division. "Many adults, however, will also learn a great deal from these programs."

The Computer Educator Programs offer series in science, language, social science and math. The science series is developed to appeal especially to people from the third to the tenth grades. The language series is designed to improve grammar, spelling and vocabulary. The social science series helps impart a greater understanding of key events that have shaped world history and important facts regarding world geography. The math series is aimed at increasing students' general proficiency in mathematics.

"The year 1983 is Commodore's 25th anniversary in Canada where it was founded in Toronto. We intend to celebrate this occasion by introducing more new hardware and software products than ever before, especially for the 200,000 VIC 20 units we expect to make in Canada and sell worldwide this year", said Copland.

The VIC 20 computer educator systems come in packs of six tapes each with course books where relevant, for a suggested retail price of $69.95 per pack.

In more detail, the series content is as follows:

SCIENCE SERIES

BOOK 1: ELEMENTARY SCIENCE

Grades one through six. These programs deal with the life sciences and explore the planets, the atom, cells and other interesting science phenomena, at the lowest level.

BOOK 1: PHYSICS

Explores electricity through specific programs relating to resistors, capacitors and power. Motion and force are also examined as is the subject of levers. Generally, this is an introductory program to high school physics.

BOOK 1: CHEMISTRY

This book introduces the student to chemical phenomena. For the first time he will learn about the elements, ions and compounds. We also introduce the student to chemical equations in preparation for a more extensive study of this subject in high school.

BOOK 1: ENGLISH

Elementary English; grades one through six, is designed to develop good basic reading and writing skills--spelling is emphasized.

BOOK 2: English

Intermediate English; deals with the sentence and its parts and is designed to build a better vocabulary. The student is also introduced to Shakespeare.

BOOK 1: FRENCH

This is an elementary course in French. Since the basis of a foreign language requires an extensive vocabulary, all six tapes in this book are designed to increase the student's proficiency with French and deals exclusively with vocabulary. Some exercises are French to English translations and some are English to French.

SOCIAL SCIENCE SERIES

BOOK 1: SOCIAL SCIENCE

Grades one through six, examines Canada, the North American continent, the North American explorers and the founding nations.

NEW PRODUCTS

BOOK 1: ELEMENTARY GEOGRAPHY

This book is designed to familiarize the student with world geography, with specific emphasis on Canada and North America.

BOOK 1: HISTORY

Introduces the student to Early Man; examines the Egyptian, Greek and Roman Empires. It takes the student through the Middle Ages to 1500 B.C. Basically the programs trace the development of man from his earliest beginnings through the Middle Ages.

BOOK 1: ELEMENTARY MATHEMATICS

Grades one through six, is an introduction to basic mathematics. The four elementary operations in mathematics are addition, subtraction, multiplication and division. This book deals specifically with these,as well as their application to fractions and percent.

BOOK 2: ADVANCED ELEMENTARY MATHEMATICS

Grades six through ten. In this book the student is introduced to algebra and geometry and, while these programs are designed only as an introduction to these subjects, they nevertheless represent a substantial step forward in the student's general knowledge of mathematics.

BOOK 3:

For students grades eight through eleven, is an introduction to algebra. Algebra is really an extension of arithmetic. While the same operations can be used in algebra, in arithmetic, numbers always have specific values while in algebra there is no need for a specific value. This book deals with basic algebra and the operations that are fundamental to this subject.

NEW COMPANY TO OFFER COURSES IN MICROCOMPUTER EDUCATION

OSHAWA--Microplace Inc., a Canadian owned and directed company, is the first to provide a chain of microcomputer education centres across the province, and they are planning to provide the service nationwide in the near future.

In June, the company is opening 24 microcomputer education sites across Ontario which will instruct upwards of 12,000 people this summer. Each of these will offer 14-hour beginner, intermediate and enriched courses with extensive hands-on experience on the Commodore 64.

Centres have been established by Microplace directors Bob Leth, Peter Taylor and Bruce Tuck in Barrie, Belleville, Brampton, Burlington, Chatham, Erin Mills, Etobicoke, Hamilton, Kingston, Kitchener--Waterloo, London, Mississsauga, Oakville, Oshawa, Ottawa, Peterborough, Sarnia, Sault Ste. Marie, Scarborough, Sudbury, Thunder Bay, Toronto and Windsor. Each site has two instructors, and 13 Commodore 64s, disk drives and colour monitors.

"Microplace is providing what is an essential service in today's technological society. In co-operation with those in education, we want to equip children with microcomputer skills. We also want to demystify this technology for adults and have them realize the potential this exciting technology offers," said Peter Taylor.

"Classes are arranged so that beginners and intermediates will work on a buddy system. The enriched classes will have one system per student," said Taylor. "That way, there will be a good student teacher ratio, students will get plenty of time to work on the equipment, and they can work with each other as well as using the instructors for resources," he added.

The courses are designed so that beginners get an introduction to computer terminology, equipment and operating prin-

ciples. They also learn the fundamentals of BASIC programming. The intermediate level reviews the beginner course and expands on the fundamentals. Emphasis will be placed on graphics and other more advanced applications.

The enriched course is less structured and is intended to further stimulate and challenge those who have mastered the two previous levels or who enter the course with substantial microcomputer expertise. All of the courses are open to anyone ten years of age and older.

"In addition to the 14-hour, Monday to Thursday, morning, afternoon or evening courses, we are giving students two complimentary hours on a microcomputer. These can be used on Friday or Saturday for practice, experimentation or completion of a previous project," said Taylor. Extra hours can be purchased.

Microplace purchased more than 300 Commodore 64s and peripherals as a result of a questionnaire included with their registration form. "We asked if people had any preference as to the type of computer they wanted to work with, and the majority indicated a desire to work with the Commodore 64," said Taylor. "Consumer demand was clear, and we made our decision on that basis as well as our assessment of comparable equipment in the market," he added.

"Microplace's staff of 100--many of whom are students in the University of Waterloo co-operative program--have a thorough knowledge of microcomputers. To this, the company training program adds the communication skills necessary for effective teaching," Taylor said. "Just as important, they are all enthusiastic about sharing their knowledge of this new technology," he added.

Microplace Inc., will be expanding the popular education centres across the country, with emphasis in the fall being on business applications. The next step may be to franchise the chain. For further details on the Microplace Centre nearest you, call 1-800-263-3727, or outside the province call (416) 571-2837.

FOR FURTHER INFORMATION:

Peter S. Taylor
Director
Microplace Inc.,
P.O. Box 162
OSHAWA, Ontario
CANADA
L1H 7L1
1-800-263-3737

GET BACK TO SCHOOL WITH COMMODORE'S EDU-PACK

Commodore Computer is offering great value in a back-to-school VIC 20 Edu-Pack for only $299.95.

The Edu-Pack includes the VIC 20 microcomputer, a datasette recorder and a six-cassette package of educational software. Also included is a Commodore sport bag containing a limited edition three ring binder with four notebooks, a daytimer and a pencil case with 11 Faber Castell markers, pens and pencils.

The Commodore back-to-school VIC 20 Edu-Pack is available from authorized Commodore Computer dealers for a limited time only.

Contact your local dealer for further information.

NEW PRODUCTS

THE LAST ONE

This is "THE LAST ONE", the program that writes programs.

This is a new product that can truly be called a revolution in programming.

THE LAST ONE is a program code generator that produces ready-to-use programs that are customized to the user's requirements without the user having to write a single word of code.

What this means is that anyone who has a clear idea of what they want a program to do, can produce bug-free programs in a mere fraction of the time that it used to take.

To use THE LAST ONE, you do not have to understand BASIC. You do not have to spend hours, days and weeks coding your requirements. You do not have to spend hundreds and thousands on buying commercial software which, by definition, can only perform the tasks for which it has been written.

THE LAST ONE means that you can easily produce your own software, designed to answer your needs, and to be updated as often as you require, at no extra cost.

THE LAST ONE is menu-driven. That is, you, the user, are shown a list of options on the screen, written in plain English, and from those options, you select and build a FLOWCHART.

Selecting some options will lead to the user's being shown sub-menus which ask for more detailed or specific information and so, in this way you continue until you are satisfied that your flowchart answers your requirements.

At this point, by selecting the "CODE PROGRAM" option, THE LAST ONE will go through your flowchart line by line, asking the user for such information as screen layout design, branch destinations and so on, until THE LAST ONE has a complete picture of your precise requirements.

Your program is then coded without any further effort on your part whatsoever, and the result is a fully coded program that runs independently of THE LAST ONE.

The code generated includes error-trapping routines and the code is naturally, bug-free.

Finally, you change or amend your finished program easily and without fuss. THE LAST ONE automatically produces trace documentation providing the answers to all the questions asked while creating the program. In this way, you can update and change your program using the absolute minimum of time and effort, and isn't that what it's all about! Available for the 8032 computer, 8050 disk. Suggested retail $495.00.

DES-Data Equipment Supply Corp.,
8315 Firestone Blvd.,
DOWNEY, CA 90241
(213) 923-9361

NEW GRAPHICS SYSTEM FOR COMMODORE MICROS

HAS FULL NAPLPS COMPATIBILITY

GraphEase, a new computer graphics system developed and released by LIMICON Inc., of Toronto for use on any Commodore microcomputers with at least 32K, is a reasonably priced, very powerful package which is fully compatible with NAPLPS, the international computer graphics standard of the telecommunications, computer and telephone industries.

GraphEase breaks many of the limitations imposed by other graphics packages, and has the following features:

- 32,000 colours under user control
- picture resolution of 256 x 256, 512 x 512, and higher
- 1/10 second or faster animation
- usual GraphEase picture requires only 1K to store
- only 32K needed to run GraphEase, all in memory
- pictures can be drawn in about one quarter of the time it would take with many other systems.

NEW PRODUCTS

NAPLPS - North American Presentation Level Protocol System - is the link between computer and video-graphic technology and will be used for defining, storing and transmitting all computer-generated drawings. Thus NAPLPS will be the basis for systems designed to produce:

. Computer-Aided Design drawings
. computer animation
. computer drafting
. special effects systems for film and television
. electronic publishing layout and distribution
. advertising artwork
. computer game graphics
. computer typesetting and colour separations
. computer art
. all other video-text applications

And GraphEase is the first complete, reasonably-priced NAPLPS system.

Among the markets for NAPLPS and GraphEase are educators, engineering and industrial designers, publishers, computer dealers, computer game authors, commercial artists, audio-visual experts, government officials and commercial broadcast and cable television producers.

Each GraphEase upgrade includes a software diskette, a GraphEase ROM, an RS232 interface with null modem, an NAPLPS or Telidon decoder with D2 ROMs and a GraphEase users manual. GraphEase needs only a compatible microcomputer and a colour television or RGB monitor to be run.

A related software product from LIMICON called TELECALC II automatically transforms standard VISICALC print files into GraphEase graphics. TELECALC II is completely user-proof, but still allows the expert user complete flexibility to edit files, change colours, add text and insert additional graphics if they wish. TELECALC II is completely compatible with GraphEase, and is available for use on Commodore 4032 and 8032 microcomputers.

FOR FURTHER INFORMATION, CONTACT:
LIMICON INC.,
144 Hampton Ave.,
TORONTO, Ont., M4K 2Z2
CANADA
(416)-465-4058

Her recipe program crashed and she says no dinner 'till she gets it on line!

SWAPPING AND SHARING

by Jim Butterfield

I must confess that I can't understand the logic of swapping programs.

Sure: you have a spare cat you don't need, and your friend has a shoe polishing kit... go ahead and swap, you'll both benefit. But programs are different.

I can see the situation where each of the two parties have written a program. You've written a telephone list, and I've written a simple game... why not swap?

But even then, it flies in the face of good sense.

You can give away a program -- and still have it. If it's yours - or if it's public domain - you incur no loss. Maybe, as the saying goes, he who steals my purse steals trash... but I'm out one purse. On the other hand, he (or she) who gets a copy of my program may also get trash... but I have lost nothing.

Occasionally, I run across someone who has an attractive program. And when I ask, "Is that public domain? May I have I copy?", I get the reply, What can you swap me for it?" My answer: "Nothing. All my programs are in the TPUG library". So I don't get a copy of the program.

This amazes me. The other person may have dozens - or hundreds - of my programs. But I'm not going to get the new program, because I have nothing to swap.

A few years ago, I received a letter from Oregon, asking if I had any music programs. The writer had bought a commercial package and interface, but didn't have much music. I put together a cassette of all the music I had... a dozen programs or so.

About a month later, a letter came from northern California. It said, "I got a copy of your music programs from XYZ in Oregon. I have some music programs of my own. What programs do you have to swap me for them?" Again, I had to reply, "None - I sent them all to Oregon, you have them all now".

The whole swapping thing makes no sense to me. The name of the game is sharing, not swapping.

Let's look back at the origins of the club. Suppose I - and several other programmers - had said to TPUG, "You don't get programs from us unless you can swap us something equally good". Suppose that TPUG said to its members, "You don't get a program until you submit a program of equal quality". We'd have a pretty weak operation. User groups don't work that way. Thank heavens

I fear that the swap syndrome encourages program theft.

Some poor beginner who isn't skilled in program writing is coerced by swappers into giving a program as a swap. What is he or she going to give? The pressure is to buy a program and give away a copy. And that's wrong, wrong, wrong.

Sometimes I send people programs. I usually refer them to the club, but occasionally I need to send a program or two directly. I don't expect anything in return; in fact, sometimes my return address is not on the package. Some people reply and say, "Thank you", which is OK. On a couple of occasions, people have replied by sending me bootleg copies of commercial programs. They shouldn't do that. I have a feeling that these people have been brainwashed into the "swapping"thing. They think that they must give something in return ... even if it's illegal. They shouldn't.

Let's get off this swapping bandwagon.

Any programs I have, provided they are not copyrighted or commercial, are freely available to anyone who wants them. They are in the club library, for that matter.

How about your programs? Surely you don't think that they are too good for the club? Throw them into the pot ... make them available.

The whole business of having a club is to share ideas, experiences ... and programs. Let's share -- not swap.

SUPER DISK

Floppy Disk Drive For VIC-20 & Commodore 64

Super Disk[2] is a Commodore compatible disk drive designed to interface to the various Commodore computers such as the PET[1], VIC-20[1] and the Commodore 64[1]. The disk drive is compatible to the model 4040, 2031, 1540, and the 1541 disk drives and recognizes programs generated on any of these disk drives. The capacities are comparable to those found on the Commodore drives, and Super Disk[2] recognizes the full instruction set of the Commodore drives. Super Disk[2] offers RAM area within the disk unit, a serial and an IEEE bus interface.

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Expandoport 6 VIC	75.	V24K RAM	105.
Expandoport 4 C64	65.	CIE (IEEE for C64)	95.

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[1]Trademark of Commodore Int. [2]Trademark of MSD

EDUCATION

RAMBLINGS ON EDUCATION

By David Bradley — Toronto, Ont.

The first time I saw a computer was on a Friday afternoon. I was just about to leave school when I saw the PET. It took only a moment to decide that I could sacrifice a bit of my weekend to have a closer look. Since then I have sacrificed more than one weekend on my computer.

At that time I was in the midst of a year of sleeping through a very uninspiring class called "DATA CONCEPTS" (now called "INTRODUCTION TO COMPUTERS"). The way the system worked at the school was that you had to take this class if you wanted to take any of the other computer-related subjects in grades 11 and 12. I can't be sure, but I think the main reason for this course was to discourage the students from continuing in computers, and to have a place to put the business teachers who didn't really care about teaching but were doing it so they would have something to do with themselves in between stock reports.

To be completely honest, the only reason I looked at the computer in the school was because somebody was playing a game on it. At the time I was on the border of being a video game fanatic and was looking for a way to get to play all the games I wanted, without having to pay for them. It wasn't long before I had rented a PET for a week. I wanted to see if I was actually going to use the machine. I spent the entire week playing games--I was hooked.

Before long I had my own computer (a C-64), and was playing games on it whenever I could. But I soon tired of the games, and began to wonder how they worked. So I began going through them trying to figure out what did what. That is how I started to learn BASIC.

By the start of the next school year I was getting pretty comfortable with BASIC and was hoping for some practice in it as I started grade 11 "COMPUTER SCIENCE". But we were learning FORTRAN and the "DATA PROCESSING" classes were learning BASIC on the school's newly acquired computer lab. So the only BASIC practice I got that year was at home teaching myself.

During the spring of that year I got involved in the world of Bulletin Boards and, by the summer, was running one out of my home. Through the BBS I met many, many people who were much more knowledgeable than myself, and I continued to learn from them as well as through my own personal studies.

By the end of grade 11 I had taken 2 so-called computer courses, but neither had dealt with BASIC. I decided to enroll in the grade 11 "COMPUTER PROGRAMMING" class (formerly called "DATA PROCESSING"). On the first day we were issued text books and were informed that we would need to know that book like the back of our left hand if we expected to pass the course.

A quick examination of the book told me that I already knew everything that the book covered, so I sat back and prepared to breeze through an easy credit. That is how it was for me, but many of the others in my class, for a variety of reasons, did not find it so easy.

One major reason was that they had never learned to type. Thus many people dropped out very early in the year, not because they were frustrated with BASIC, but because they were having so much trouble finding the keys on the keyboard. I may very well have ended up the same way except for the fact that because I thought it would be an easy credit, I had taken "PERSONAL TYPING" in grades 9 and 10. Looking back, I am very glad that I did, and I think that any high school that does not offer typing in all grades is robbing students of a very valuable asset.

EDUCATION

It took me a while to figure this out, but I found that most of the people in the class were just like I was when I got into computers. They had no interest whatsoever in programming. They wanted to play games! As soon as our teacher turned his back, half the class would be engrossed in a game of some kind or other. I think that teachers would find their classes much more attentive if, instead of assigning programs from the text book that none of the students are interested in, they tell the students that they are going to write some kind of game.

One teacher had an interesting approach. Every day his room would be open before and after school for students to work on assignments. But there was a strictly enforced "NO GAMES" rule in effect at ALL times. This was later relaxed to: "You can play any game as long as YOU WROTE IT."

Another thing that discouraged many was the fact that if a piece of equipment went down for any reason, it was not likely to be fixed for at least 2 months. The teacher would usually tell the students sitting at that set of computers that it was working that morning and that they must have damaged it. This would go on and on for weeks until finally the teacher would have some reason to use the equipment. Then he would find it didn't work and ask the class when this had happened.

For example, there is an Epson dot matrix printer in each set of computers. In January of this year, the bottom pin broke off one of the printers. On the last day of school in June it was still broken and I'll bet it will still be broken in September.

From what I have seen and heard, there are a lot of teachers teaching computer courses that are not yet really comfortable with computers. Having the teacher sit at home with a manual is no solution as most teachers already have a lot of school-related work to do at home. The only way to get teachers now in the system to know their stuff, is to take those interested teachers, give them a year off regular teaching, give them a computer system to use at home, and have them go to school.

Another approach would be to have the computer courses fall under the technical department and instead of training existing teachers, get professionals from industry, send them to teachers college for a year, and then let them loose on the schools to teach what they know best.

One thing that seems strange is that exams in computer programming are written on paper while all the students' class experience has been on a computer. I know several students who were doing quite well up until the exam but then they got shot down. In class they would debug by running the program and looking at the symptoms on the screen. On the exam they had to do it on paper. They were lost and their marks were unjustly low. I, too, found the exams difficult and had to go through them at a snail's pace for the same reason.

Over the past couple of years there has been much talk throughout the schools about the "BIONIC BEAVER", a Canadian educational computer that would soon be in every classroom in the province of Ontario. When the development of this computer was announced, many school boards decided to wait for the BEAVER, and stopped buying hardware.

From what I have heard, when the BEAVER is released (if indeed it is ever released), a class set will cost about $50,000. A class set of Commodore 64s costs $12,000 right now. I ask you, which is better? A class set of BEAVERS in 2 years for $50,000 or 4 class sets of Commodore 64s today for $48,000?

In short, computer education could be much better than it is today! ●

A Ylimaki

Don't be alarmed if someone tells you there is a QUICK BROWN FOX running in their computer. It's probably chasing the RABBIT cartridge. More critters are in the computer ads now than on Noah's ark.

EDUCATION

COMMODORE COMPUTERS USED TO TEACH PRESCHOOLERS

(Valley Forge, PA, March 15, 1983) Preschoolers are stepping into the future as they use the Commodore PET and the Commodore 64 to develop BASIC skills. The children, ages 3 to 6, attend Kindercare Learning Centers in three cities, Minneapolis, Minnesota; Houston, Texas; and Montgomery, Alabama, where an innovative computer learning program is available.

Since the preschoolers do not yet read, they are given directions by a natural voice recording played on a tape recorder connected to the computer. The children who use a light pen to answer questions, are being taught pre-math and pre-reading concepts, memory skills, colors, shape, and concepts such as over/under.

Working with Fisher Scientific, Inc., a Commodore Dealer specializing in educational sales, Kindercare, the largest nationwide childcare facility, started using the Commodore PET to teach preschoolers in June of 1982, at eight centers in Minneapolis. As this advanced educational technique proved to be successful, the program was expanded to 35 centers in Houston.

The program has been accepted with enthusiasm by both parents and students. The Commodore computers have proved to be so reliable and successful as a teaching tool that in January of 1983, the program was expanded once more and the Commodore 64 was installed in 11 centers in the Montgomery, Alabama area.

Contact:

Diane Ottinger (215) 687-9750 ●

PET EDUCATION

TWO USEFUL TPUG PROGRAMS

by Ed Crossman N. Logan, Utah

To those of us who do not live close to Toronto, one of the primary benefits of belonging to TPUG is the availability of all those programs. I would like to share with you a description of two such programs that have helped me out of a jam on more than one occasion, and could prove useful to you.

BANNER/R

As a behavioral scientist, I often attend meetings where the results of our experiments are communicated to other scientists. One method for doing this is a poster session in which we paste our charts and graphs on a large piece of cardboard for all to see. In the past I have used two inch press-type letters to label these figures, but it is difficult and time consuming to line up the letters with the proper spacing. **BANNER/R** to the rescue!

The purpose of this program is to print (on your printer) large letters in either one or two separate lines. It also prints large numbers as well as the PET graphic symbols and even works with my Epson MX-80 printer! Some of the options include: control over the horizontal and vertical size of the letters (specify whole numbers), compressed print, upper/lower case, and centering on the printed page. For creating giant messages BANNER/R is ideal, and undoubtedly you can think of many other uses than the one I have described. I don't know who wrote BANNER/R, but it is available on the APR/82 TPUG disk.

CROSS WORD

Here is one whale of a program that is fun to use and a teaching tool that can be helpful in the classroom. The purpose of CROSS WORD is to create a crossword puzzle after you have fed it the proper information. For example, you would enter in pairs, a descriptive phrase, "source of radiation" and the appropriate matching word, "sun". After entering up to 19 of these pairs, the program takes over and does the rest.

First it figures out the proper placement of all of the matching words into the standard crossword puzzle configuration. This is really exciting to watch, as the program tries to fit each word into the existing pattern of words on the screen. After the program has gone through the entire list of 19 words, it tells you whether it has been unable to properly locate all words. At that point, you can instruct the program to try again using a different arrangement of words, or you can accept the puzzle as it is currently shown on the screen. Next, the program gives you two printouts. The first is a hardcopy of the crossword puzzle with all of the words printed into the existing squares. This is the teacher's copy. Then it prints out the student's copy with the squares left blank for the student to fill in. I was unable to use my Epson printer (had to borrow a CBM 2022) for the hardcopy, since the program uses PET graphic symbols to print the squares.

I use CROSS WORD as an enjoyable teaching aid to teach new concepts and to improve my students' spelling. You can probably think of other uses. The program was written by Don Wood and Neal Reid for the 40-column screen, but I use it on my CBM 8032 after first running the program CBM 4032 v.1,. I wish the authors would expand the program for the 80-column screen so that a larger puzzle could be created. Both CROSS WORD and CBM 4032 v.1 are available on the APR/82 TPUG disk. ●

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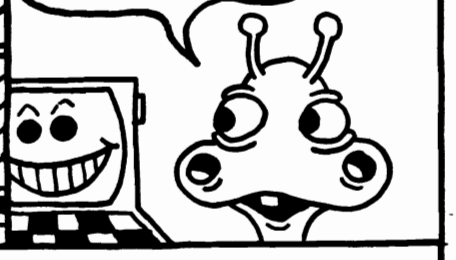
DIRECT MODE WITH CHIPP!

WHEN WE USE THE DIRECT MODE OF A COMPUTER, WE ARE COMMUNICATING DIRECTLY WITH IT. (TALKING)

BASIC COMPUTERS CAN BE USED AS CALCULATORS FOR A VARIETY OF COMPLEX CALCULATIONS.



THE QUESTION MARK IS USED TO REQUEST INFORMATION.

? = PRINT

A TYPICAL REQUEST:

?5+2

THIS REQUEST READS:

PRINT 5 PLUS 2

IF YOU TYPE ?5+2 ON YOUR SCREEN AND PRESS RETURN, YOU'LL RECEIVE AN ANSWER.

HERE ARE SOME OF THE COMPUTER'S FUNCTIONS:

+ = ADD
− = SUBTRACT
* = MULTIPLY
/ = DIVIDE
↑ = SQUARE (5↑2 = 5^2)

BRACKETS ( ) CAN ALSO BE USED TO SEPARATE CALCULATIONS. A STATEMENT CAN BE QUITE LENGTHY.

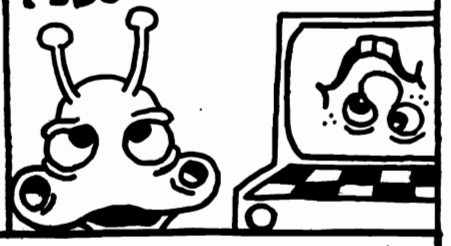
?5+(7-2)/(3*3)↑2

THERE ARE ALSO ABBREVIATIONS TO OBTAIN SQUARE ROOTS AND OTHER SUCH REQUESTS.

HERE ARE A COUPLE:

SQR = SQARE ROOT

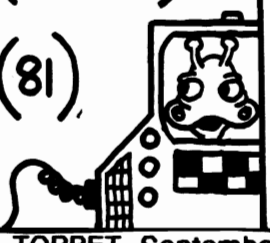
ABS = ABSOLUTE VALUE



BRACKETS ARE USED WITH THESE ABBREVIATIONS:

?SQR(5*(2+3))

?SQR(81)



ONE MORE THING. YOU CAN ALSO TELL THE COMPUTER TO PRINT WORDS IN THE DIRECT MODE:

?"CHIPP"

ALWAYS USE QUOTES.

I GUESS THAT ABOUT SUMS IT UP! (HA HA) SEE YA LATER!

MIKE RICHARDSON

C-64 EDUCATION

EDUCATION DISKS
(C)E1 & (C)E2

by G. R. Walter **Proton Station, ON**

These two disks contain educational programs submitted by PONZO of WATERLOO (who ??). They are programs which teach you how to program your C-64 in BASIC and Machine Language, and how to create and use SPRITES and the various graphics modes that the C-64 is capable of.

"TUTORIALS.C " E1 has the following programs :

"LIST ME E1"
"PONZO TUTOR-1.64" (teaches BASIC)
"PONZO TUTOR-2.64" (teaches BASIC)
"PONZO TUTOR-3.64" (teaches BASIC)
"PONZO TUTOR-4.64" (teaches BASIC)
"PONZO TUTOR-5.64" (teaches Machine Language)
"PONZO TUTOR-6.64" (teaches Machine Language)
"PONZO TUTOR-7.64" (teaches Machine Language)

"TUTORIALS.C " E2 has the following programs :

"LIST ME E2"
"SPRITES TUT-1.64" (teaches how to create/use sprites)
"SPRITES TUT-2.64" (teaches how to create/use sprites)
"GRAPHIC TUT-1.64" (teaches how to get-/use the various graphics modes)
"GRAPHIC TUT-2.64" (is an example of HIRES mode programming)

All of the programs use the same technique for teaching you. They show you something about your C-64, then they give you an example or two (which they work through with you so that you understand what is happening). In addition, in the 'teach BASIC' sections you usually are then given an opportunity to actually try out what you have learned (ie. you exit the program, experiment with what you have found out, and then re-enter the program which you exited by pressing the "@" [at--sign] - not by typing RUN !)

These programs all work with the C64-LINK by RTC.

(Note - some of the figures (eg. top of memory =32768) are the PET figures, not the C- 64 figures. In this instance, the slip-of-the-keyboard doesn't matter, but it is of interest.)

Here is a brief summary of what each of the programs teaches you:

PONZO TUTOR-1.64 explains how to do arithmetic on your C-64, PRINT the results, start writing programs, use the GOTO, GOSUB, INPUT, FOR/NEXT statements, and several other statements, commands (eg. LIST) and functions. It shows you how numeric (ie. numbers only) variables work and how you can use them. You learn how to use the [DEL/INST] key for editing lines. By the time you are done with this program, you should know how to write simple little programs involving numbers that work.

PONZO TUTOR-2.64 shows you all of the various cursor controls (eg. [HOME]) and how you can use them. String variables (ie. "anything" can go into these) are taught, along with most of the functions used to manipulate string variables. READing DATA is explained, as are the IF/THEN statements, among others. It also explains how the GET statement works and what the keyboard buffer is. By the time you are done with this program you will have done a program which draws bar graphs.

PONZO TUTOR-3.64 requires a Machine Language Monitor to be loaded (a good one is Jim Butterfield's SUPERMON64.V1 on (C)D1 - C-64 DEALER DISK). BITs and BYTEs are explained, and you are shown how to PEEK and POKE. Certain key locations in the C-64 are explained and you learn how to use them (eg. the C-64's internal clock [variables TIME and TIME$]). How to read and write data files to tape and disk is explained, as is how you use Random Numbers. Several other minor

C-64 EDUCATION

things (such as LISTing a program on a printer) are gone into. The Machine Language Monitor is introduced.

PONZO TUTOR-4.64 shows you a simple memory map of the C-64 and explains the significance of some of the memory locations (eg. top of memory pointer is .. , etc.). You find out how programs and string variables are stored in memory. Then you are given a little quiz on what you have learned.

PONZO TUTOR-5.64 introduces you to machine language; looping, the various addressing modes, and several of the commands.

PONZO TUTOR-6.64 teaches you more by showing you example routines from the BASIC ROMs (eg. NEW) and by explaining exactly how they work.

PONZO TUTOR-7.64 shows you the entire 6510 command set. The Status Register is explained and you are taught how to work with it (eg. CLearing flags and SEtting flags) and how to test it (eg. Branching on flags).

SPRITES TUT-1.64 teaches you how to create sprites, work with them, and use them in programs. In short you find out all you ever want to know about sprites!
NOTE - in my version of SPRITES TUT-1.64 there is a syntax error in line 10065. TPUG probably has fixed this error by now, but if you happen to have one of the earlier versions with the error still in it the fix is to LIST 10065 and delete the "EADY." you will find at the end of that line. You would then reSAVE "SPRITES TUT-1.64" to your disk.

SPRITES TUT-1.64 introduces multi-color sprites and how to create, work with and use them.

GRAPHICS TUT-2.64 explains several of the various graphics modes that the C-64 is capable of (eg. multicolor mode, hires mode, etc.). You are shown how to start utilizing these special modes.

GRAPHICS TUT-2.64 is a HIRES mode programming example/demo. If you list this program you can learn a lot from it, by comparing what the program lines are, and what they do. You will see some of what you learned in GRAPHICS TUT-1.64 put into action. When you QUIT this program the next program in the series is loaded - " >GRAPHICS 3" - or at least the attempt is made, because .... THE PROGRAM IS NOT ON THE DISK !?!?!

If you are a beginning C-64 programmer and would like to get better, then the (C)E1 and (C)E2 disks would be a valuable addition to your library. ●

More on... Line Speed Fallacy
by George Culbertson Spanish Fork, Utah

David William's article on page 43 of the June '83 TORPET shot down one of my beliefs, that using small line numbers and putting GOSUBs early in the program yielded a faster running program.

I don't doubt that David knows much more about PETs than I do, but I put his idea to the test and my results refuted his conclusions. I used the following simple program:

```
0 REM TEST
1 A=TI: X=0
2 X=X+1: GOTO7
3 Y=1
4 Y=Y*1.364
5 IF Y (less than) 1000 THEN 4
6 B=TI: PRINT"TI=";B-A: END
7 IF X (less than) 1000 THEN 2
8 GOTO 3
```

I got the following timings in jiffies:
Increments of 1: 825
Increments of 256: 873
Increments of 1000: 885

My PET has Updated ROMs plus Disk-O-Pro" which probably runs slower than without the "Disk-O-Pro", but the latter makes renumbering easy.

So I guess I'll hang onto my fallacy, as David calls it.

P.S: I also ran a similar program with one GOSUB to a low line number and one GOSUB to a high line number--with similar results. ●

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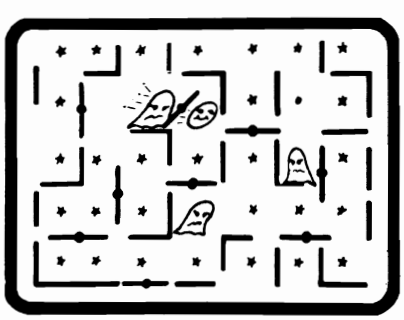

SHIFTY (c) By Kavan

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SAVE"filename"	INIT
RUN"filename"	WATCH
BLOAD"filename"	OFF
BSAVE"filename"	STAT
RENAME	CHAIN
DELETE	

BASIC COMMANDS - HIRES

PLOT	FLIP
HGR	WCHAR
SCREEN	DRAW
ALT	COPY
NORM	PIC
	PSAVE

LORES

LGR	HLIN
LCOL	VLIN
LPLOT	

MISC. COMMANDS

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

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

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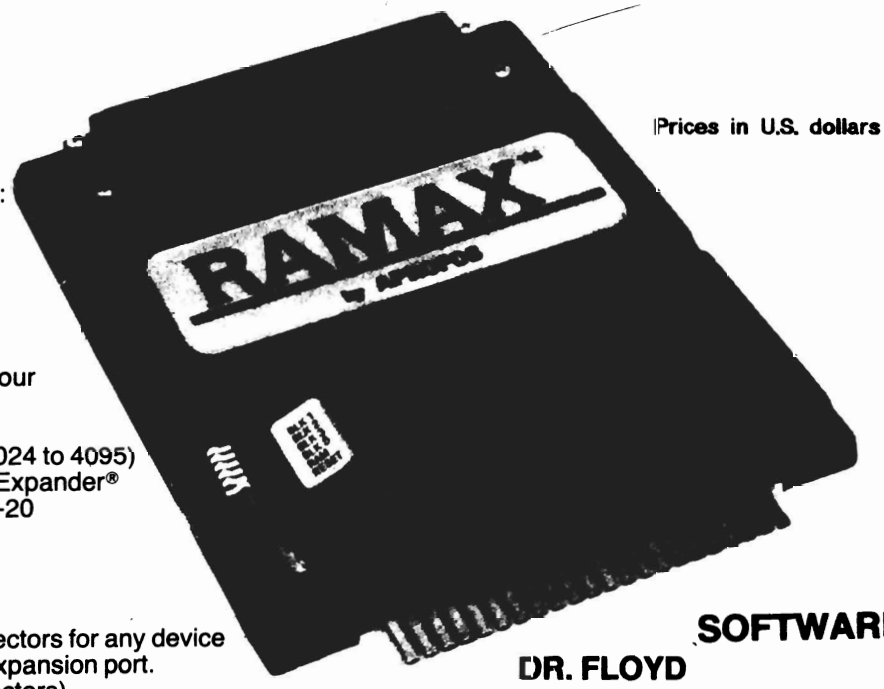

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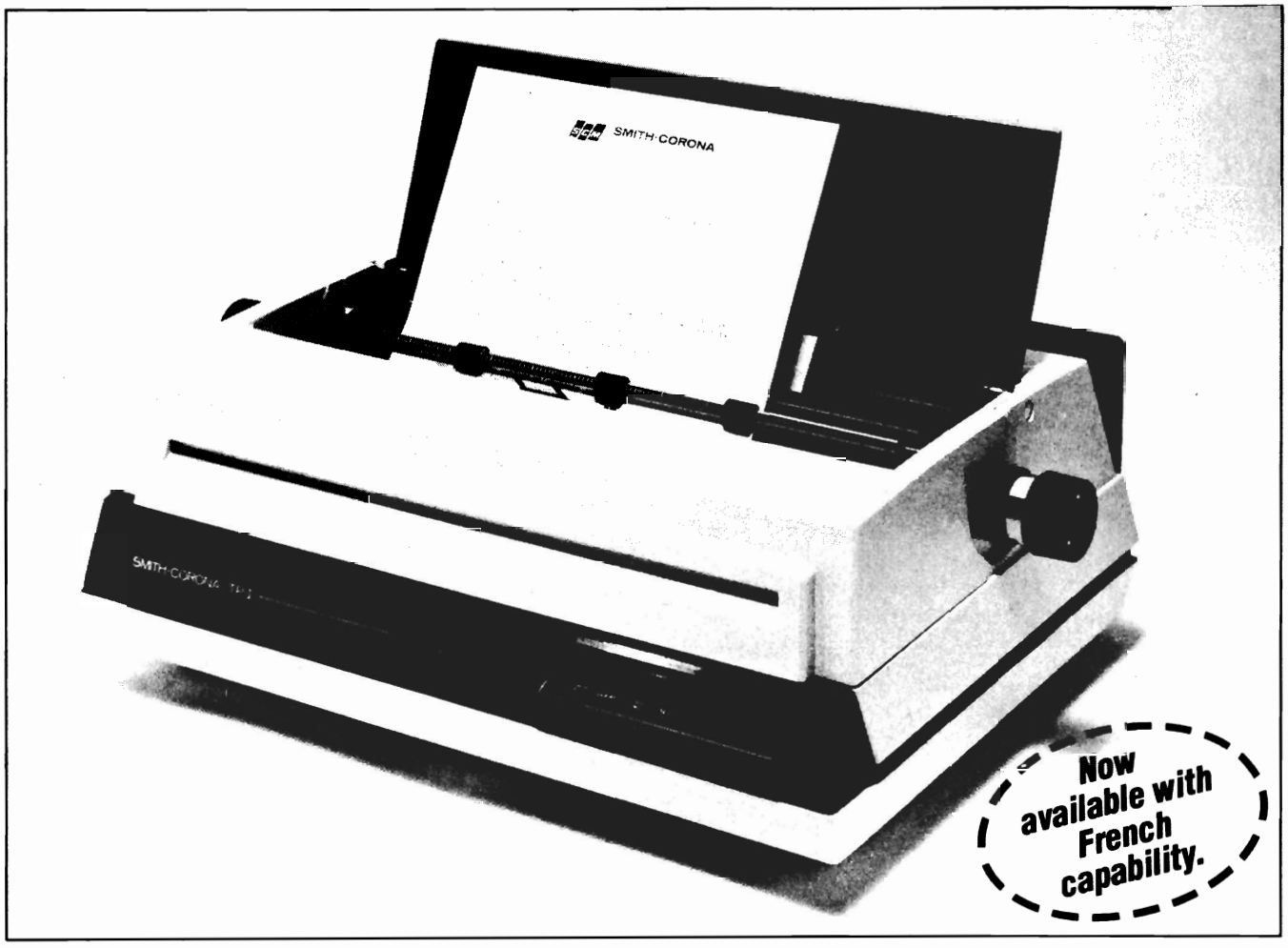

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T

VIC

MICROMON

by Bill Yee — Winnipeg, Manitoba

Attention VIC users! Have you been trying to do more with your VIC than just BASIC programming and games playing? Is the relationship with your VIC getting a little stale? Well, here is a powerful new utility that will open another dimension in your VIC. It provides all the basic support that is needed for assembler language development. Assembly language is the language of the "pros" and is the only language used for fast action-packed game programs.

The utility is a machine language monitor called VIC Micromon V1.3 which was developed over the last year. It has a single line 6502 assembler, disassembler, machine language debug, data editor, data convertor,datastorage and retrieval, and EPROM programmer I/O. A total of 37 commands are provided by a monitor that is exactly 4K bytes in size. This allows the monitor to be used in a VIC with just 3K bytes of RAM expansion. I have supplied TPUG with two versions of the monitor. The first named "MICROMON @ $0E00" loads into $0E00-$1DFF for a VIC with only the 3K memory expansion. The second called "MICROMON @ $3000" loads into $3000-$3FFF for a VIC with the 8K memory expansion.

The monitor is loaded with the non-relocating form of the LOAD command. Be sure to specify the name of the version required for your particular (3K or 8K) memory expansion. For disk the command is LOAD "file name" ,8,1 and for tape is LOAD "file name" ,1,1. Access the monitor at $0E00 with a SYS3584 and at $3000 with a SYS12288. Response will be a title, user image, and period prompt.

Due to the fact that BASIC and some kernal routines use workspace at the top of memory, the first command upon accessing the monitor should be a reconfiguration of memory. This is done with the .I (Initialize memory and screen) command. If you have the monitor at $0E00, use .I 0438 0E00 IE. The reason 0438 is used instead of 0400 is because the monitor defines the tape buffer as being from $0375 to $0434. If you have the monitor at $3000, use I 1200 3000 10.

If you have 16K of memory expansion, you may wish for a version located at $7000 to $7FFF. Well, with a little bit of work you can have your wish. You can use the monitor commands to generate a new copy at $7000 to $7FFF.with all of the addresses relocated. The following example starts with a copy at $3000-$3FFF and ends with a copy at $7000-$7FFF. The copy at $3000 is not changed and can be executed to do the relocating commands.

```
.T 3000 3FFF 7000
.N 7000 7003 4000 3000 3FFF
.N 7015 7E6D 4000 3000 3FFF
.N 7FB5 7FFE 4000 3000 3FFF W
```

Once you have done these commands, there are 6 locations which must be individually changed. Use the Memory display and colon commands to make the changes shown in Table 1.

LOCATION	OLD VALUE	NEW VALUE
7018	35	75
702A	33	73
7392	3C	7C
7650	35	75
76E7	35	75
7897	33	73

Table 1: Individual changes to relocate from $3000 to $7000.

The last location in the monitor is only used to make the 4K checksum be evenly divisible by 256. This makes it easy to verify the integrity of the program. The copy at $7000 to $7FFF has a last byte value of $4E at $7FFF to give a checksum of $1500.

After completing the last change, exit with the E command to BASIC and use a SYS28672 to access the new copy at $7000 for check out. If OK, save it to disk with .S 7000 8000 "MICROMON @ $7000" 08 or to tape with .S 7000 8000 "MICROMON @ $7000".

What next? I'll bet that some of you are now wishing that it could be put on EPROM. Well, if you build the EPROM programmer whose schematic is shown on figures 1 and 2, you can use the EPROM commands in the monitor to "burn" your own copies. There is no self-modifying code so the monitor will run just as well in EPROM.

For the more advanced VIC enthusiast, it is only a minor step to getting an EPROM version located at $A000 in the games cartridge area. I've already included the required calls to kernal routines for initialization on power-up. First, you must relocate your copy of the monitor to $A000-$AFFF then make the additional changes shown in Table 2.

LOCATION	VALUE
A000	09
A001	A0
A002	C7
A003	FE

Table 2: Additional individual changes for cartidge version.

After making a copy on EPROM and installing as a cartridge, the monitor will be entered immediately after power-up of the VIC-20. Use the .E command to exit to BASIC. Once in BASIC, always use SYS40981 to re-access the monitor at $A015.

Following is a list of the VIC Micromon V1.3 commands shown with examples. It should be sufficient to get you started on assembly language development on your VIC-20. I hope that many of you will enjoy powerful monitor.

COMMANDS

A period prompts the user for a command. All the commands consist of a single character. One or more operands may follow depending on the command. Here are examples of each available command.

Assembler

.A 2100 LDX #$12 : COMMENT (use colon only if comment)

Assemble and display address, machine code, and instruction.

.A 2100 A0 12 LDA #$12

.A 2102 (hit RETURN to exit)

Break Set

.B 2102 0010 (Walk on 17th pass of $2102)

Compare Memory

.C 05F0 05FF 0600 ($5F0-$5FF compare to $600-$60F)

Disassembler

.D 2100 2102 (second operand optional)

Disassemble and display address, machine code, and instruction.

., 2100 A0 12 LDX #$12

```
.; 2102 CA DEX
```

Exit Micromon

```
.E                                  (clear linkages & exit to BASIC)
```

Fill Memory

```
.F 2000 27FF 00                     (zero $2000 to $27FF)
```

Go Run User Code At Full Speed

```
.G                                  (execute user image PC location)
.G 2100                             (start execution at $2100)
```

Hunt Memory For Up To 32 Byte String

```
.H C000 DFFF 'CBM                   (look for character string CBM)
.H C000 DFFF 43 42 4D               (look for byte string 43 42 4D)
```

Initialize Memory And Screen Pointers

```
.I 1000 1E00 1E                     (initialize as unexpanded VIC-20)
```

Jump To Micromon Subroutine

```
.J 2100                             (call subroutine at $2100)
```

Load

```
.L 4000 "DATA FILE" 08              (load from disk into $4000)
.L 4000 "DATA FILE" 01              (load from tape into $4000)
```

Memory Display

```
.M C23B C243                        (second operand optional)
```

Display address, 8 bytes in hexadecimal, and ASCII translation.

```
.: C23B 52 45 54 55 52 4E 20 57 RETURN W
.: C243 49 54 48 4F 55 54 20 47 ITHOUT G
```

New Locater

```
.N 7015 7E6D 4000 3000 3FFF         (relocate instruction addresses)
.N 7FB5 7FFE 4000 3000 3FFF W       (relocate word addresses)
```

Offset Branch Calculate

```
.0 2103 2102 FD
```

Print Switcher

```
.P CCBB                             (set command=CC & control=BB)
.P                                  (switch output to screen or port)
.P 0000                             (clear port and output to screen)
```

Note: For VIC printer, use OPEN4,4:CMD4 then access Micromon.

Quick Trace

```
.Q                                  (execute user image PC location)
.Q 2100                             (start execution at $2100)
```

Register Display

.R

Display user image with title strip.

```
PC  IRQ  SR AC XR YR SP
  0E4E 1191 32 33 00 00 F7          (user image on entry at $0E00)
```

Save

```
.S 2100 21FF "file name" 08         (save $2100-$21FF to disk)
.S 2100 21FF "file name" 01         (save $2100-$21FF to tape)
```

Transfer Memory

```
.T 05F0 05FF 0600                   ($5F0-$5FF copied to $600-$60F)
```

Verify

```
.V 2100 "file name" 08              (verify against file on disk)
.V 2100 "file name" 01              (verify against file on tape)
```

Walk Code

```
.W                                  (execute user image PC location)
.W 2100                             (start execution at $2100)
```

Do single instruction step then display user image as SR, AC, XR, YR, SP, then next instruction address, code, and disassembly. Hit RUN/STOP to stop walk. Hit J to execute subroutine at full speed with walk on exit from subroutine. Any other key does single step.

Exit To BASIC

```
.X                                  (linkages exist on exit)
```

ASCII Conversion

```
."A
."A 41 65 0100 0001                 (ASCII, hex, decimal, & binary)
```

Binary Conversion

```
.%0100001001011001
```

Display binary value in hexadecimal, decimal, & ASCII characters.

```
.%0100001001011001 4259 16985 B Y
```

Decimal Conversion

```
.#16985
```

Display decimal value in hexadecimal, ASCII characters, & binary.

```
.#16985 4259 B Y 0100 0010 0101 1001
```

Hexadecimal Conversion

```
.$4259
```

Display hexadecimal value in decimal, ASCII characters, & binary.

```
.$4259 16985 B Y 0100 0010 0101 1001
```

Addition

+ 6000 7000 D000

Subtraction

- FFFF 7000 8FFF

Checksum

.& C000 CFFF 2DFC

Command End Tone

.((tone at end of next command)

Hit return to shut off tone between commands.

.) (tone disabled)

User Image Modify

.; 2102 1191 32 12 00 F7 (output from R command)

Machine Code Modify

., 2100 A0 12 xxx (output from D command)

Use cursor to modify code in line. RETURN writes memory, reads memory, disassembles, and displays as follows for the example.

., 2100 A0 12 LDX #$12

Memory Data Modify

.: 2110 40 41 (output 8 bytes from M command)

If 8 bytes input, ASCII conversion and next address is displayed.

Screen scrolling will occur when output from D, M, or $ command is displayed and cursor is moved either to top or bottom of screen.

Program 2716 EPROM

Warning: To avoid destroying EPROM, do EPROM insertion or removal

*******Always with EPROM programming voltage OFF (switch at +5).

*******Always read EPROM before turning on programming voltage.

.π 5000 57FF 00 ($5000-$57FF programmed into EPROM starting at page 00 in EPROM)

Read 2716 EPROM

.£ 0600 09FF 04 (last 1K of EPROM into $600-$9FF)

Compare 2716 EPROM

.=0500 05FF 00 (1st 256 bytes of EPROM compared)

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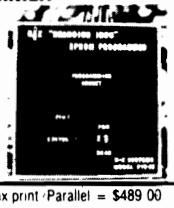

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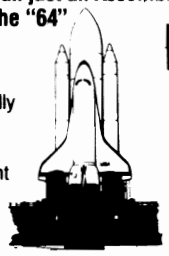

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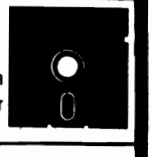

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C-64 GAMES

SEVEN GAMES FOR THE C-64

by Vince Sorensen Regina, Sask.,

When I first got my C-64, the only game that I could find for it was called Froggee. It's a fun game, but there's only so long you can keep playing the same thing over and over. I almost went back to my VIC, but happened to run into another TPUG member who had a C-64, and was saved. He directed me to a place that sold more C-64 games than one could imagine. Here are the results of my quest.

1. GRIDRUNNER
HES
71 PARK LANE
BRISBANE, CA 94005

Rating: 8

This is a Centipede-type game set in space, and it's better than most available for the C-64 or VIC 20. It is exactly the same as the VIC GRIDRUNNER, except you travel over 40 grid lines, not 22. It's a very fast game, and has that one feature that's a must: it is very easy to catch on to, but can keep you challenged the better you get. Its only fault is not even its own: there are just too many Centipede-type games out there already.

2. CENTROPODS
COMM*DATA
320 SUMMIT AVE.,
MILFORD, MI 48042

Rating: 6

Again, it's Centipede in space. This time, even the name says "Hello, I'm Centipede." Unfortunately, it's not quite as playable as the arcade game, or other versions of that same arcade game. The beginner finds it impossible to make any progress, and frustration drives him to do one of two things: quit or give up. It's a shame, because everything on the screen moves smoothly, making it a realistic game. Still, it's only worth a 6.

3. OMEGA RACE COMMODORE BUSINESS MACHINES
Box 500R
CONSHOHOCKEN, PA 19428

or

3370 PHARMACY AVENUE
AGINCOURT, ONT. M1W 2K4

Rating: 7

Going through the list of software for the C-64, I noticed that there seemed to be a trend in program design. Either VIC software was quickly converted in order to grab a piece of the rapidly expanding C-64 market, or it was slapped together from scratch for the same reason. OMEGA RACE was made the former way, but it is distinct from other games in that it is not as good as the copied VIC version. Perhaps the version that I saw was a prototype (the salesman said it was specially imported), but I still have to tell you about the bugs. This game rates a seven only because it is fast, playable and player-friendly.

4. WIZARD OF WAR
COMMODORE
(Address above)

Rating: 7

WIZARD OF WAR is similar in that despite its faults, it is fast and fun to play. The graphics, however, rate special mention. They are very poorly done, to put it simply. The game also lacks some of the better features of the arcade game, including two-player-option, and radar. This would be excusable in an arcade game ripoff, but not in a licensed, official version. Still, it's a seven.

C-64 GAMES

5. APE CRAZE
COMM*DATA
(Address above)

Rating: 6

In this Donkey-Kong type game, you jump to avoid the bombs. The first level, not even vaguely like Donkey Kong, consists of hopping onto floors of bricks with holes to let the bombs and you through. The second level is nearly identical to the arcade game, with you walking over some sort of trapdoors, making them disappear. APE CRAZE has some major faults. The graphics are poor, without even the use of sprites. Like CENTROPODS, the beginner finds it impossible to play, and there are only two levels, even if you get that far. I can only justify a six with the reason that it is the only Donkey Kong-type game I have found for the C-64.

6. KICKMAN
COMMODORE
(Address above)

Rating: 9 1/2

As you've probably noticed, I've been saving the best for last. Commodore has finally "done themselves proud". I've never seen such a novel theme before, on either the VIC or C-64. The graphics are high quality, the play fast. The beginner finds it easy to catch on to, the expert finds it challenging. The object is, depending upon the level you're on, to pop or catch, or kick to keep up, the balloons. If I had to pick my favourite C-64 game, this would be it.

7. CYCLONS
SYNTAX SOFTWARE
33 ELMHURST AVE., SUITE 502
WILLOWDALE, Ont., M2N 6G8

Rating: 9

A close runner-up to KICKMAN is Syntax's CYCLONS. It is a shoot-em-up-in-space game, something I am not usually thrilled by. It has some neat gimmicks, including optional ricochet, ranking and (don't crash on the) terrain features. You can even choose the level of play, from beginner to expert. The graphics are shockingly good, and the playspeed is perfect. The game starts off with the best game music I've heard on the C-64, an orchestral STAR WARS theme. My only complaint is that you must thrust in the direction you want to fire in. This means that in close quarters, you almost always end up getting killed, half the time with your own shot. A speed control hint: Try POKEing 56325 with different numbers. This game is a definite nine.

Well, there you have it. My favourite seven games, the reasons why they are good and why they are not. They certainly helped brighten up a dim start on the C-64.

A Ylimaki

It read like a Harlequin ROMance... As I entered the room, I was drawn to her with a passion. The feeling must have been mutual. She was winking at me. What was this magic attraction I felt for her?
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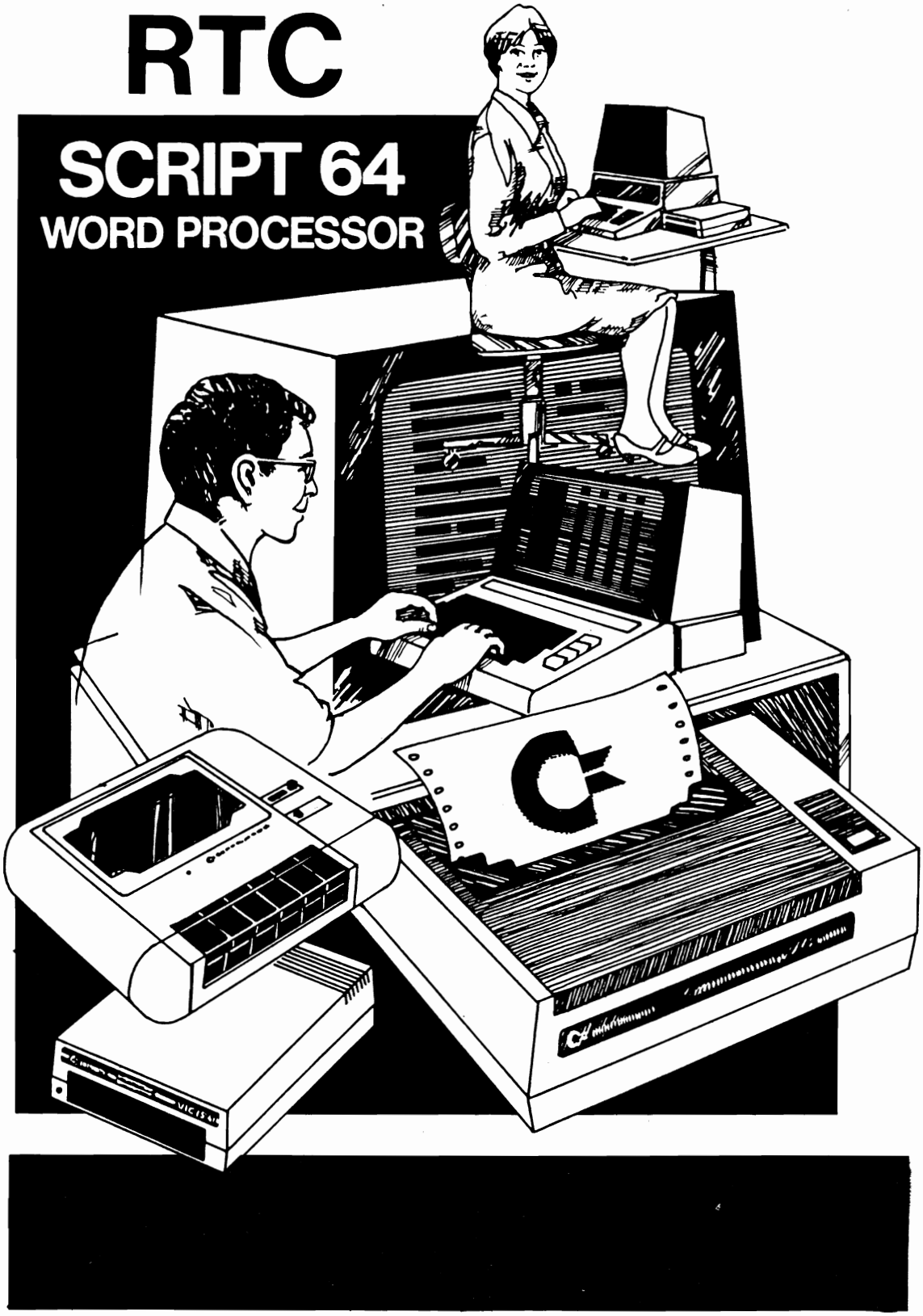

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A GAME INPUT ROUTINE

--interrupt driven--

by Terry Herckenrath Toronto, Ont.

Include this G.I.R. in your new or existing program when you want VERSATILITY, SPEED or both.

The G.I.R. will accept input from either the KEYBOARD or the JOYSTICK. This is specified at run time, so you can give the user the choice.

The input can either be MOMENTARY (the input defaults to CENTRE if no direction is indicated from the Keyboard/joystick) or LATCHED (the input remains fixed until another direction is indicated from the keyboard/joystick - NO CENTRE position).

When input is to come from the JOYSTICK, the G.I.R. will either allow or disallow DIAGONAL directions.

The G.I.R. is linked to the VIC's interrupt handler, so that the inputted values are always up-to-date when you use them in the program. this allows the user to indicate a change in direction even when the program isn't ready yet to check the inputted values. This is not possible when you handle the input from BASIC.

The routine as shown below is designed to be appended to an existing BASIC program (see note). After it is appended, RUN 10000 (see note) will POKE the actual G.I.R. in place, at the end of the BASIC program. Statements 10000 and on can then be deleted from the program. A copy of the G.I.R. is included on the May 1983 VIC tape.

Before you can use the G.I.R. in your program, the following statement must be executed from within the BASIC program to link the G.I.R. to the VIC's interrupt handler.

```
SYS PEEK (46)*256+PEEK (45)-30
```

To end the program, use SYS 65234 instead of 'END', to remove the G.I.R. from the interrupt handler.

The G.I.R. uses the value of memory location 155 to determine where the input is to come from. So before the program starts to use the G.I.R. you must put the proper value in memory location 155:

0	- Momentary input from keyboard (default)
1	- Momentary input from joystick - no diagonals
65	- Momentary input from joystick - with diagonals
128	- Latched input from keyboard
129	- Latched input from joystick - no diagonals
193	- Latched input from joystick - with diagonals

When you select input from the keyboard, the G.I.R. will check the following keys:

P for UP
L for LEFT
; for RIGHT (semi-colon)
. for DOWN (period)
SHIFT for FIRE

The G.I.R. will set the value of memory locations 156, 158 and 159 to pass the user's inpust to the BASIC program:

156 - Fire button/key 0-no 1-yes
158 - Vertical direction 0-up 1-centre 2-down
159 - Horizontal direction 0-left 1-centre 2-right

The BASIC program then simply 'peeks' these memory locations to find out what the user wants.

NOTE: To append the G.I.R. to an existing program, you must do the following:

- clear screen
- enter in direct mode:

```
PRINT PEEK(43)PEEK(44)
```

- jot down the two numbers that are printed on the screen
- enter in direct mode:

```
10000 I% =PEEK(46) * 256 + PEEK(45) + 4

10001 READ J% :IF J% >=0 THEN POKE I%,J% : I% =I% + 1 : GOTO 10001

10002 J% =I% / 256 : I% =I% - J% * 256 : POKE 45,I% : POKE 46,J% : CLR : END

10010 A =10015 : B =10048

10011 PRINT"[CLEAR] [DOWN] [DOWN] [DOWN]" A : IF A <=B THEN PRINT "A =" A+1 ":B =" B ":GOTO10011" :
PRINT "[HOME]"

10012 POKE 631,13 : POKE 632,13 : POKE 198,2 : END

10015 REM USE SYSPEEK(46)*256+PEEK(45)-30 TO LINK G.I.R. TO INTERRUPT HANDLER

10016 REM TO END PROGRAM WHEN G.I.R. IS USED: USE SYS65234 INSTEAD OF 'END'

10020 REM USE POKE155,0 FOR MOMENTARY INPUT FROM KEYBOARD

10021 REM USE POKE155,128 FOR LATCHED INPUT FROM KEYBOARD

10022 REM USE POKE155,1 FOR MOMENTARY INPUT FROM JOYSTICK- NO DIAGONALS

10023 REM USE POKE155,65 FOR MOMENTARY INPUT FROM KEYBOARD- WITH DIAGONALS

10024 REM USE POKE155,129 FOR LATCHED INPUT FROM KEYBOARD- NO DIAGONALS

10025 REM USE POKE155,193 FOR LATCHED INPUT FROM KEYBOARD- WITH DIAGONALS

10026 REM PEEK(158) =VERTICAL: 0-UP 1-CENTER 2-DOWN

10027 REM PEEK(159) =HORIZONTAL: 0-LEFT 1-CENTRE 2-RIGHT

10028 REM PEEK(156) =FIRE BUTTON\KEY: 0-NO 1-YES

10029 REM FOR KEYBOARD INPUT USE KEYS: P-UP L-LEFT ;-RIGHT .-DOWN SHIFT-FIRE

10030 REM ### RUN 10000 ### APPEND G.I.R. TO BASIC PROGRAM

10031 REM ### THESE DATA STATEMENTS MUST BE THE FIRST OR ONLY ONES IN THE PROGRAM ###

10032 REM ### IF NOT, YOU MUST TEMPORARILY 'REM' THE OTHER DATA STATEMENTS ###

10033 REM ### RUN 10010 ### DELETE THESE DATA AND REM STATEMENTS FROM PROGRAM ###

10035 DATA 165,155,106,176,69,162,0,110,141,2,144,1,232,134,156,162

10036 DATA 1,165,197,201,13,208,7,134,159,202,134,158,240,41,201,21

10037 DATA 208,7,134,158,202,134,159,240,30,210,22,208,7,134,158,232

10038 DATA 134,159,208,19,201,37,208,7,134,159,232,134,158,208,8,36

10039 DATA 155,48,4,134,158,134,159,108,18,3,162,1,160,127,140,34

10040 DATA 145,160,255,44,32,145,140,34,145,48,1,232,173,17,145,44

10041 DATA 124,255,208,1,202,160,1,44,155,254,208,1,200,44,175,255

10042 DATA 208,1,136,44,202,255,208,4,169,1,208,2,169,0,133,156

10043 DATA 227,177,208,4,196,176,240,44,134,177,132,176,36,155,112,20

10044 DATA 224,1,240,16,192,1,240,12,165,159,201,1,240,4,162,1

10045 DATA 208,2,160,1,36,155,16,8,224,1,208,4,192,1,240,4

10046 DATA 134,159,132,158,108,18,3,173,20,3,141,18,3,173,21,3

10047 DATA 141,19,3,120,165,45,56,233,213,141,20,3,165,46,233,0

10048 DATA 141,21,3,88,96,-1
```

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IBIS is available from Commodore dealers. A Commodore 64 version of IBIS is also being considered.

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A Ylimaki

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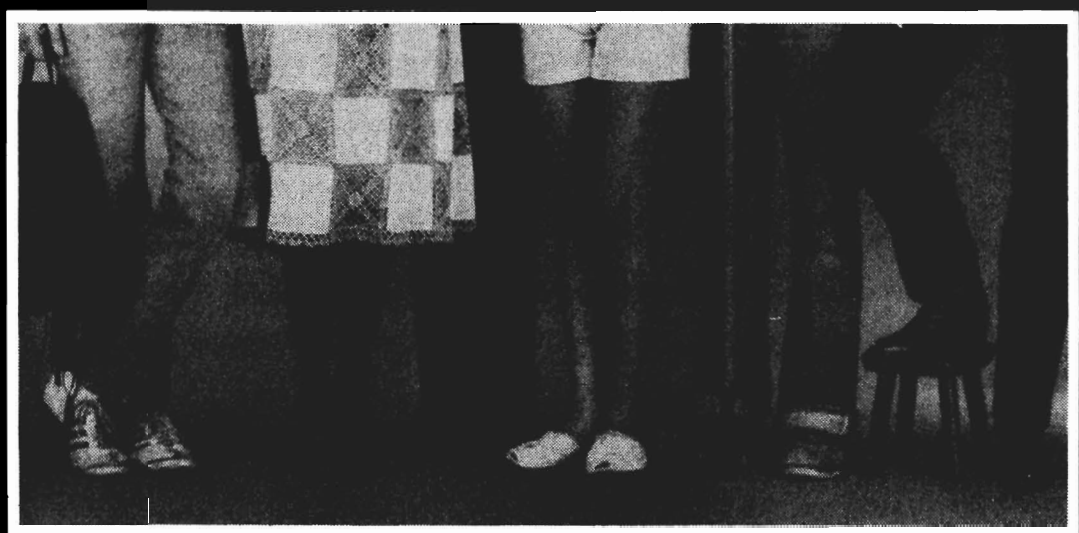

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C-64 DOWN UNDER

by Steven Darnold Alexandra, Otago, N.Z.

Three months ago the Commodore 64 arrived in New Zealand. Like most new computers, the C-64 had some teething problems. In fact, the first two months were a shambles.

Problem number 1 was the modulator. The first batch of C-64's had UHF modulators, which don't work on New Zealand television sets. Dealers, therefore, had to convert the modulators to VHF (not an easy job) or use the C-64's only with monitors. The dealers were not amused.

Problem number 2 was the disk drive. You would think that, since the C-64 uses tried-and-true VIC peripherals, there would be no problem here. However, the only disk drives in New Zealand were 1540's. No 1541's, or ROM chips to upgrade 1540's were expected for several months. Dealers soon became adept at poking the screen blank before using the disk. The customers were not amused.

Problem number 3 was software. Until recently there simply were no programs for the C-64. Some dealers bravely tried to use PET programs. Others were content to point at advertisements for C-64 software overseas. Nobody was amused.

Put these problems together and it's no wonder that a lot of dealers left the C-64 on the shelf. Why bother fiddling with modulators, disk drives and programs when there are Ataris, VICs and BBCs to be sold.

Despite this inauspicious beginning, the C-64 has sold well. The initial batch of 500 has sold out, and dealers are gearing up to sell a lot more, now that the teething problems are over. Thankfully, recent C-64's have arrived with VHF modulators, and upgrade ROM chips for the 1540 drives are now available. Some software, too, is beginning to dribble into the country.

Perhaps 500 doesn't sound like very many computers. However, New Zealand is a pretty small country, and computers are relatively expensive here. For example, an Atari 400 is $995, a VIC 20 is $595, and a C-64 is $1295. Several things contribute to these high prices: the small volume of the market, transport costs, importers' markups and sales tax. Incredibly, the sales tax on computers in New Zealand is 40%. That's not just for microcomputers, even the buyer of a mainframe pays a whopping 40%.

The Commodore 64's main competition comes from the BBC microcomputer, which has a very high profile in New Zealand. Not only has the BBC micro been heavily advertised on television, it received a lot of exposure from a television series on computer programming produced by BBC television. Moreover, the BBC micro is one of the few computers approved for use in New Zealand secondary schools. In contrast, no Commodore computer has been approved for schools, and Commodore does not advertise on television. In fact, only one other company advertises home computers on television: The New Zealand agent for Atari and Sinclair runs a commercial which pushes both the 400 and the ZX-81.

The BBC is quite a nice computer. It matches many of the C-64's features (e.g. sound) and even beats it in some areas (e.g. hi-res graphics). However, overall, the C-64 is a slightly better machine. Add to this the fact that the C-64 sells for two-thirds the price of the BBC, and the C-64 should win easily. However, only time will tell whether the New Zealand consumer agrees.

So far I have the only C-64 in Alexandra (population 5000). There are also three PETs and about a dozen VIC 20's. One of the PET owners is frantically trying to sell his PET in order to get a C-64, but he's not had much luck. Lots of other PET owners around the country have the same idea, and the price of second-hand PETs has plummeted.

COMMODORE-64

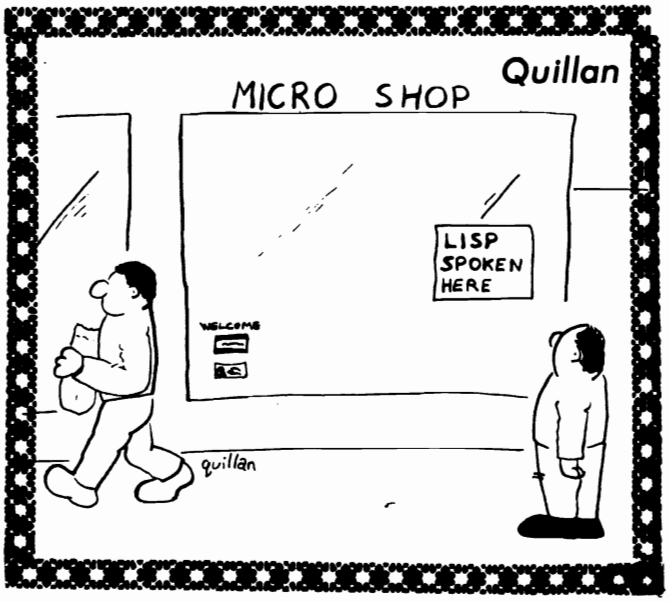
Clearly the PET is on the way out. Home users are moving to the colour computers, and business users are moving to the 16-bit machines. PET material has all but disappeared from local computer magazines. The PET's decline was inevitable, but it's a bit sad nevertheless.

On a more cheerful note, it's encouraging to see how many software companies are supporting the C-64. Infocum is a case in point. I am very keen on Adventures, and for years I have longed to run "Zork" on my PET. However, although Infocom made versions of "Zork" for many brands of computers (even NEC!), it never released one for the PET. Alas! But now, Infocum has released "Zork" for the Commodore 64, and I am happily working my way through the nether regions.

"Zork" is an excellent adventure. It has a very large vocabulary, and its descriptions are rich and varied. The plot is cleverly intertwined with puzzles, laughs and surprises. I highly recommend it. However, "Zork" is not for novices; it's far too demanding. There are no hints, and the maze is the most vicious I have ever encountered. Inexperienced adventurers will find "Zork" very frustrating and should really begin with a more straightforward adventure.

I have just submitted several Commodore 64 programs to the TPUG library. Among them are two adventures: "Nellan is Thirsty" and "Atlantis Adventure". "Nellan" is designed for children, but it also provides an excellent instroduction to adventures for complete beginners. "Atlantis" is more advanced, but it contains plenty of hints to help the inexperienced. Both of these adventures are thoroughly debugged and should provide many hours of enjoyment. They may not be as challenging as Zork, but they certainly are a lot cheaper.

"Zork" is available only on disk. This is necessary because the adventure is too large to fit in the computer all at once. However, I am a bit concerned that so many other programs being sold for the C-64 are available only on disk. Certainly it is easier to protect a disk from copying than it is to protect a cassette. However, it would be a great pity if the C-64 were to become too disk orientated. The Commodore cassette system is quite reliable and sophisticated. There is no need for the average home user to buy a disk drive. However, if all the best software is to be available only on disk, then a prospective purchaser will face a much higher cost for an effective system. One of the reasons why an Apple II is so expensive is that it would be unthinkable to get one without a disk drive. I hope this doesn't happen to the C-64. ●



OK...Now what does it pick for the daily double?

B-SERIES

The New Business Computer

by Gord Campbell — Toronto, Ont.

NEW BASIC COMMANDS

There are at least a baker's dozen of enhancements to the BASIC language of the 'B' series.

Disk Handling:

. CATALOG' and 'DIRECTORY' may be followed by selection criteria, such as:
. CATALOG D0, "b5*
to list all files on drive zero, which begin with 'b5', or
. DIRECTORY D1, "*=r
to list all relative files on drive one.

. 'BLOAD' is used to load machine-language programs and continue. In addition to unit and drive, the load-address and bank (see below) may be specified. For example:
. BLOAD"obj.file" ON U9, D1 ON B1, P512
will load the object file from drive 1 of unit 9, into memory in bank 1 beginning at location 512.

. 'BSAVE' is to save machine-language programs. You may specify high and low addresses as well as the usual disk options. For example:
. BSAVE"obj.file"on B1, P40960 to P45057
will save $a000 to $b000 onto the default unit and drive.

. 'DCLEAR' will initialize a drive. Watch out for this one - it's in the ROM's but not the draft manual. Example:
. CLEAR D1
to initialize drive 1 of unit 8.

Error Handling:

'TRAP' identifies a routine to handle errors. For example:
. TRAP 9000: REM error-handler at 9000
Note that one of the things you can 'trap' is the stop key - without any peek's or poke's.

There are three new reserved variables for error-handling. 'ER' is the error code, while 'EL' is the line-number where the error occured. ERR$ (note the length of the name) is an array of error and other messages. For example, ERR$(1) says 'too many files', while ERR$(19) is the power-on message.

. 'DISPOSE' will eliminate unwanted NEXT or RETURN addresses from the stack. Eg.:
DISPOSE GOSUB

. 'RESUME' will clear the error condition and continue processing. It may be followed by a line number, or the word NEXT. For example:
RESUME NEXT: REM IGNORE ERROR

The error conditions which are recoverable include even syntax errors, but exclude 'out of memory' conditions.

Print Formatting

. 'USING' says that there is a formatting expression. For example:
PRINT USING "#,###,###,##-"; N
will format a number up to 9,999,999.99 with the sign on the right. The formatting expression must be a literal, and may contain the above symbols, plus:
. plus-sign to request that the sign always be printed
. '$' - to request a floating dollar sign
. four carets to request scientific notation
. equal-sign to centre a string
. greater-than to right-align a string

. 'PUDEF' allows for re-defining the fill character (default is space), the comma, the decimal-point, and the monetary symbol. Example:
. PUDEF"*.,M"
switches the decimal and comma, fills the field with asterisks, and uses 'M' as the currency symbol.

VIC 20 GAMES

Miscellaneous Commands

'KEY' will list the content of the programmable keys, or set one key to a desired string.

'BANK' says what memory bank to use for subsequent PEEK, POKE, BLOAD, BSAVE, and SYS commands. For example:
BANK 1: REM SET TEXT BANK

'DELETE' deletes a range of lines from a program. Eg.:
DELETE 1000-1999

. 'ELSE' follows an IF statement. For example:
IF S THEN PRINT "BAD" ELSE PRINT "GOOD"

. 'INSTR' identifies the position of a substring within a larger string. Eg.:
PRINT INSTR("gordon","or")
will print '2'

Summary

The added BASIC words will definitely make it easier to write high-quality business programs. ●

GAMES FOR THE VIC 20

by Derick Campbell Willowdale, Ont.

AMOK - The thrilling robot game in the arcades is brought to your VIC via cartridge or tape. Four different types of robots come in screen after screen to attack. You watch in awe as they come towards you relentlessly, shooting violently, the only thing missing is video blood. Shucks! Great VIC game to have, with sound and programmed characters, but don't pay too much for it. The evil bouncing ball is missing in this home version, but who cares? I never did like him anyway.
RATING: B+

MOTOR MOUSE - The cats are coming! Watch out mouse, these cats have brains and they haven't had a meal in a long time. Get-the-cheese-and-run style game with added attractions like mouse squishers which threaten to send your little mouse out of existence as you take the cheese home. The sound will drive any mouse out of his mind so this is one game where a volume control helps.
RATES : A

SNACK MAN - Pac Man lovers rejoice! This game has the ghosts and the food, all you have to do is apply Pac Power! The new selection of food makes a great change from cherries, pretzels, and other boring Pac Snacks. Some of the selection includes: christmas trees, musical notes, cherries(ho-hum), and many other delights. This great game uses sound and programmable characters. It can be played a lot without becoming boring, but don't overdo it or it will.
RATES : A-

FROGGEE - This popular frog is a hit on the VIC now too. All the action anybody can handle comes in a neat package with sound, programmable characters, and great colour. Don't get squished by the cars, hop on that lilypad, that's it! He made it! Does not get boring. The only things wrong with this game are the non-smooth movement of the frog on the water obstacles and the bonus not resetting on each new frog.
RATES : A

Excuse me, I have to go play some games on my VIC. Bye! ●

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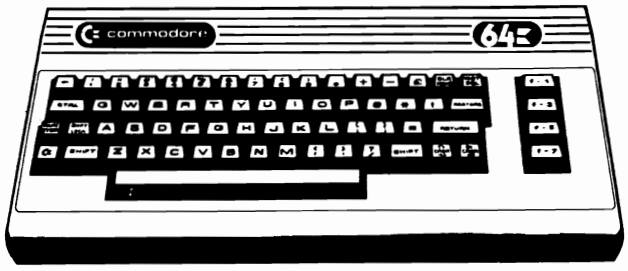

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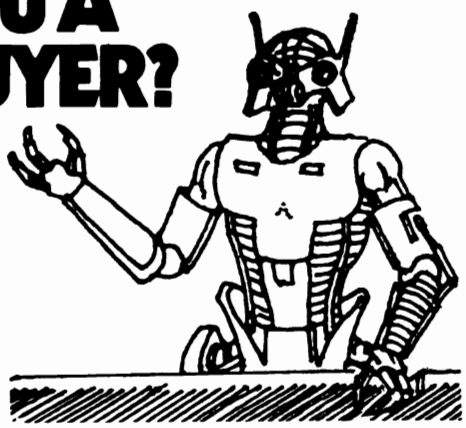

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BOOK REVIEW

Innovative Computing & Tricks for VICs
by Michael Quigley Vancouver, B.C.

Considering the popularity of the VIC 20, the number of quality books available for it is pretty small. Innovative Computing by Clifford Ramshaw (Melbourne House, 1982, price around $15.00) does little to change that situation.

This book contains 30 programs--mostly games--for the unexpanded VIC. Its author, according to the jacket, is "recognized as one of the most creative programmers of computer games."

On the whole, the book is a big disappointment. Experienced programmers will find most of the games too simple. The version of Squash, for example, makes some of the public domain Pong and Breakout games look like Spiders of Mars by comparison.

People with less experience will face another kind of disappointment, thanks to errors in the listings, which occurred in practically every one of the programs which I completed. Most of these errors affect the graphic displays, and since the point of many of these programs seems to be how one can make very intricate displays with the VIC symbols, one can expect considerable frustration here, unless you're the kind of person who likes to play detective.

Over half of the games are concerned with death and destruction, as their titles suggest: Space Fight, Dragon's Lair, Earth Attack, Bomber Attack, Nuclear Attack, Invasion, Seige. One of these, Assassin, deserves some kind of prize for bad taste. Its synopsis asks: "Have you ever wanted to be a lone sniper, hidden from view, but able to see your targets? Well, now here's your chance as you play assassin in this exciting new game! Not only are people your target but cars, trucks and aeroplanes." Supposedly this will appeal to all the Oswalds and Hinckleys of the world. Ironically, this is one of the better games, despite some illiteracies in the screen messages ("This contract has ran out."; So your a dead man!!").

Another recent book for the VIC which actually makes Innovative Computing look good is Tricks for VICs (Elcomp Publishing, 1983, cost about $12.50). This book, which is printed in West Germany, is "published as a service to VIC 20 personal computer users worldwide."

Although the book's cover says its author is Sam D. Roberts, it is actually written by Winfried Hofacker (an example of Xenophobia, perhaps?). While the book is not a complete waste of time, its typesetting is mediocre and there are numerous errors in grammar and spelling. There are some programs for "3.5K RAM" and others for "8K RAM". Does 8K here refer to the basic 5K VIC plus 3K expander? One of these 8K games--Bird Attack--doesn't work at all, while another Motodrom (a car race) is too hideous for words.

In addition to games, there are several hardware projects which are described in a kind of gobbledygook English which makes them all but inaccessible to the average VIC owner.

In short, this is no "friendly" book, and should be approached with caution. ●

A Ylimaki

Things I'd like to see:
- an I.C. plant in upper New York State called Buffalo CHIPS
- a weight reduction program called METRICALC
- a new computer called TOLLHOUSE because it is loaded with CHIPS.

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by Dr. F. Covitz

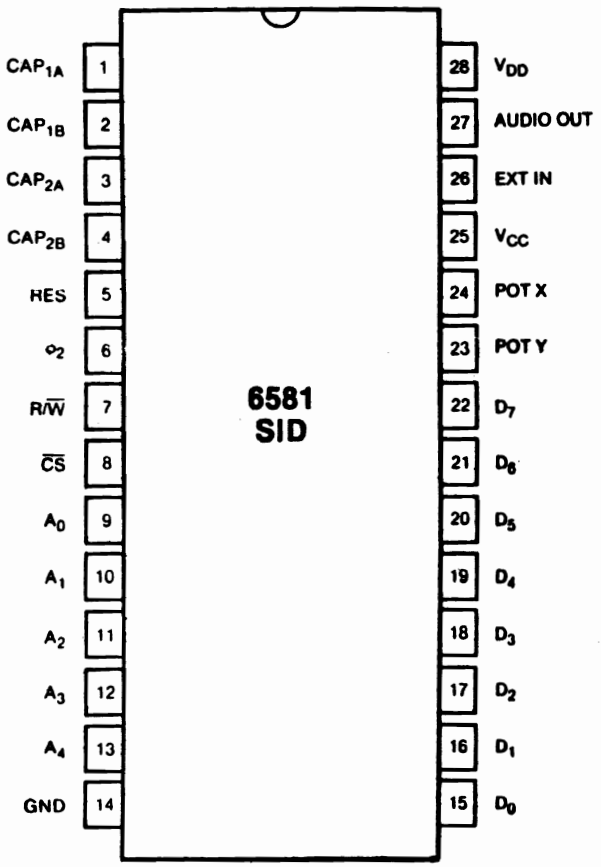
Lebanon, NJ

The MOS Technology Sound Interface Device (SID), type 6581, is a single-chip, three-voice sound synthesizer, directly compatible with 650X microprocessors. Each of the three voices can have, under program control, a separate waveform selected from triangle, sawtooth, pulse (with variable duty-cycle), or noise, and each voice can have its own attack, decay, sustain, release (ADSR) amplitude envelope, in which attack rate, decay rate, sustain amplitude, and release rate are defined by 4-bit values. Frequencies may be set to a precision of 16 bits with the smallest frequency step being ca. 0.06 Hz. The chip has overall volume control (4 bits), three filter modes which are additive, (high-pass, band-pass, and low-pass), variable resonance (4 bits), and a cut-off frequency settable to an accuracy of 11 bits. Each voice (as well as an external audio input) can be routed through the filter under program control. Other special features include ring modulation, synchronization and two 8-bit analog to digital converters. The chip at the time of writing is not commercially available although it is in wide use in the Commodore CBM-64 personal computer. The 29-register set and package pinouts are shown below:

REGISTER DESCRIPTION

	ADDRESS					REG #	DATA								REG NAME	REG TYPE
	A_4	A_3	A_2	A_1	A_0	(HEX)	D_7	D_6	D_5	D_4	D_3	D_2	D_1	D_0	**Voice 1**	
0	0	0	0	0	0	00	F_7	F_6	F_5	F_4	F_3	F_2	F_1	F_0	FREQ LO	WRITE-ONLY
1	0	0	0	0	1	01	F_{15}	F_{14}	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	FREQ HI	WRITE-ONLY
2	0	0	0	1	0	02	PW_7	PW_6	PW_5	PW_4	PW_3	PW_2	PW_1	PW_0	PW LO	WRITE-ONLY
3	0	0	0	1	1	03	—	—	—	—	PW_{11}	PW_{10}	PW_9	PW_8	PW HI	WRITE-ONLY
4	0	0	1	0	0	04	NOISE	⊓	◿	∧	TEST	RING MOD	SYNC	GATE	CONTROL REG	WRITE-ONLY
5	0	0	1	0	1	05	ATK_3	ATK_2	ATK_1	ATK_0	DCY_3	DCY_2	DCY_1	DCY_0	ATTACK/DECAY	WRITE-ONLY
6	0	0	1	1	0	06	STN_3	STN_2	STN_1	STN_0	RLS_3	RLS_2	RLS_1	RLS_0	SUSTAIN/RELEASE	WRITE-ONLY
															Voice 2	
7	0	0	1	1	1	07	F_7	F_6	F_5	F_4	F_3	F_2	F_1	F_0	FREQ LO	WRITE-ONLY
8	0	1	0	0	0	08	F_{15}	F_{14}	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	FREQ HI	WRITE-ONLY
9	0	1	0	0	1	09	PW_7	PW_6	PW_5	PW_4	PW_3	PW_2	PW_1	PW_0	PW LO	WRITE-ONLY
10	0	1	0	1	0	0A	—	—	—	—	PW_{11}	PW_{10}	PW_9	PW_8	PW HI	WRITE-ONLY
11	0	1	0	1	1	0B	NOISE	⊓	◿	∧	TEST	RING MOD	SYNC	GATE	CONTROL REG	WRITE-ONLY
12	0	1	1	0	0	0C	ATK_3	ATK_2	ATK_1	ATK_0	DCY_3	DCY_2	DCY_1	DCY_0	ATTACK/DECAY	WRITE-ONLY
13	0	1	1	0	1	0D	STN_3	STN_2	STN_1	STN_0	RLS_3	RLS_2	RLS_1	RLS_0	SUSTAIN/RELEASE	WRITE-ONLY
															Voice 3	
14	0	1	1	1	0	0E	F_7	F_6	F_5	F_4	F_3	F_2	F_1	F_0	FREQ LO	WRITE-ONLY
15	0	1	1	1	1	0F	F_{15}	F_{14}	F_{13}	F_{12}	F_{11}	F_{10}	F_9	F_8	FREQ HI	WRITE-ONLY
16	1	0	0	0	0	10	PW_7	PW_6	PW_5	PW_4	PW_3	PW_2	PW_1	PW_0	PW LO	WRITE-ONLY
17	1	0	0	0	1	11	—	—	—	—	PW_{11}	PW_{10}	PW_9	PW_8	PW HI	WRITE-ONLY
18	1	0	0	1	0	12	NOISE	⊓	◿	∧	TEST	RING MOD	SYNC	GATE	CONTROL REG	WRITE-ONLY
19	1	0	0	1	1	13	ATK_3	ATK_2	ATK_1	ATK_0	DCY_3	DCY_2	DCY_1	DCY_0	ATTACK/DECAY	WRITE-ONLY
20	1	0	1	0	0	14	STN_3	STN_2	STN_1	STN_0	RLS_3	RLS_2	RLS_1	RLS_0	SUSTAIN/RELEASE	WRITE-ONLY
															Filter	
21	1	0	1	0	1	15	—	—	—	—	—	FC_2	FC_1	FC_0	FC LO	WRITE-ONLY
22	1	0	1	1	0	16	FC_{10}	FC_9	FC_8	FC_7	FC_6	FC_5	FC_4	FC_3	FC HI	WRITE-ONLY
23	1	0	1	1	1	17	RES_3	RES_2	RES_1	RES_0	FILTEX	FILT 3	FILT 2	FILT 1	RES/FILT	WRITE-ONLY
24	1	1	0	0	0	18	3 OFF	HP	BP	LP	VOL_3	VOL_2	VOL_1	VOL_0	MODE/VOL	WRITE-ONLY
															Misc.	
25	1	1	0	0	1	19	PX_7	PX_6	PX_5	PX_4	PX_3	PX_2	PX_1	PX_0	POT X	READ-ONLY
26	1	1	0	1	0	1A	PY_7	PY_6	PY_5	PY_4	PY_3	PY_2	PY_1	PY_0	POT Y	READ-ONLY
27	1	1	0	1	1	1B	O_7	O_6	O_5	O_4	O_3	O_2	O_1	O_0	OSC_3/RANDOM	READ-ONLY
28	1	1	1	0	0	1C	E_7	E_6	E_5	E_4	E_3	E_2	E_1	E_0	ENV_3	READ-ONLY

PIN CONFIGURATION

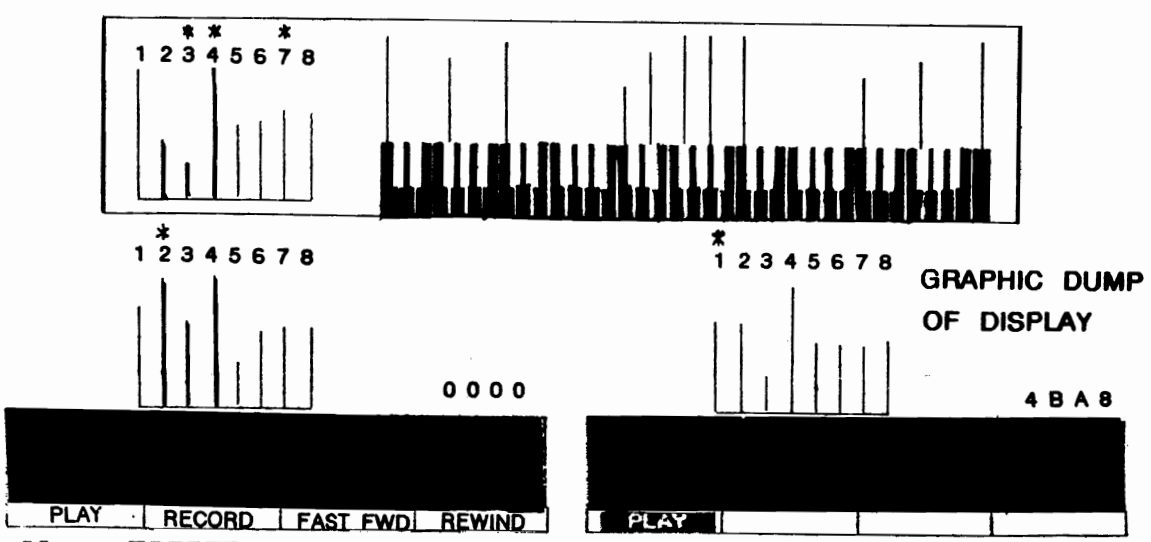


In this article, I will describe a hardware/software system which interfaces an 8 SID chip board and a microprocessor-controlled music keyboard to a MTU-130 (6502-based) computer. The software emulates a dual tape recorder system which permits an arbitrary number of sound-on-sound passes; a total of 24 voices can be active at the same time. Information can originate simultaneously from the keyboard and either or both 'tape recorders'. The digital information stream can be keyboard depression/release events, or switch and slide-pot settings available from the keyboard, which can be used to control the voice characteristics.

THE MULTIPLE SID BOARD

The 8 SID chips interface easily into a 6502-based system. Power requirements are approx. 600 ma at +5 VDC and 200 ma at +12 VDC (both regulated and well-filtered). The data lines of the SID chips connect via an 8-bit tri-state bus tranceiver (74LS245) to the system data bus. The low 5 bits of the system address bus can be directly (or through a tri-state driver) connected to the SID A0-A5 pins. The next three address bits go through a one-of-eight decoder (74LS138), the outputs of which fan out to the individual chip enable pins, and when NAND'ed through a 74LS30 (and inverted with a 74LS04) form and enable input for the data bus tranceiver. The upper 8 system address bits (inverted when necessary) need to be combined to form either an active high or an active-low board select signal. Thus the 8 SID chips occupy 1 full memory page (256 bytes).

The audio output pins are connected through capacitor decouplers to provide an AUX OUT signal to an audio amplifier. A somewhat simplified circuit diagram is shown below:



MUSIC

THE MUSIC KEYBOARD

The music keyboard is based on a 61 key (5 octave) Pratt/Reed standard size organ keyboard, with double bus action, that is, each key forms an SPDT switch between upper and lower bus wires. The microprocessor scanning function is described in detail in Chapter 9 of Hal Chamberlin's book, "Musical Applications of Microprocessors", Hayden Book Co. (1980), except that a few mistakes are present in the original edition (if you undertake this project you should contact Hal or myself). Some additional features were later implemented by Hal (switches and potentiometers on keyboard), who also built the particular version of the keyboard I am currently using.

In brief, the swinger of each key is connected through demultiplexers to the microprocessor (a 6502, of course) data bus and therefore the key is accessed as user-alterable (depressed or released) read-only memory. The state of all keys can then be scanned very quickly. An interrupt timer provides time resolution to 1 millisecond.

For key depression, the time between the last break of the upper bus and the first make of the lower bus is also measured by the microprocessor and gives the effect of velocity sensing. (The reverse logic gives velocity for key release although the release velocity is almost never used in music playing.) Each key event (depression or release) generates 4 bytes of information - the 1st byte combines the identity of the key (lower 7 bits) with the type of motion (in the high order bit). The 2nd byte is proportional to the event velocity. The 3rd and 4th bytes together form a 16 bit time in milliseconds, so a time interval between successive keyboard events can be over a minute before 'wraparound'.

The switch settings (8 of them) are also scanned as are 8 potentiometers (through an 8-channel 8-bit A-to-D converter and are saved when they change from their previous state.

All events are queued in an internal 256 byte (64 event) FIFO buffer, so essentially no events are lost due to lack of response of the host processor, which is interrupted when the FIFO has data. Transfer of data (with 'data available/data taken' protocol) to the host processor (an MTU-130 computer, in this case) is accomplished through the full handshake capability of a 6522-type I/O chip.

Finally, in case it isn't clear, let me state a fact that is probably obvious. The keyboard is purely an information generator, i.e. it is completely divorced from physical sound generation, which is perfectly appropriate since it then can be used with several types of sound synthesizers.

SOFTWARE FEATURES

The software was designed from the outset to have a straightforward 'human interface' since the system would naturally be used 'live' by a musician. To accomplish this, a 'dual tape recorder' emulation was attempted. In other words, the player, in addition to manually playing the keyboard should also have the option of record/playback of his work. The 'dual' aspect is designed to provide sound-on-sound capability not only for accompaniment but also to permit indefinite build-up of very complex music (up to 24 voices can be 'live' in the present system). Since all data ends up in memory, the piece can be dumped to mass storage (disk or tape) at any time.

The MTU-130 is well suited for this task since it has 8 user-definable function keys and legend boxes (to implement a pair of PLAY, RECORD, FAST FWD, REWIND functions), potentially very large RAM area (four 64K banks in a fully populated system) to hold a significant amount of music (remember each keyboard action- key depression, key release, switch or pot setting- takes 4 bytes), and a full 6522 user I/O chip for data transfer and timing.

In the present software implementation, 5 switches are used to select waveforms from triangle, sawtooth, 3 types of rectangular, and noise; the remaining 3 select the filter mode from high-pass, band-pass, and low-pass. Four of the slide pots adjust attack rate, decay rate, release rate, and overall volume. (Sustain amplitude is set by the velocity-sensing keyboard on each note event.) The remaining 4 potentiometers were physically implemented as a pair of X,Y joysticks, one of which is interpreted by the software to allow adjustment of resonance

and cut-off frequency, the other of which is unimplemented by the current version of the software. Although to some extent graphics are a 'frill' in the program, the 'recorder-like' functions are displayed complete with 'tape' and 'tape-counter'. The keyboard is depicted with vertical lines depicting which keys are active as well as the velocity of the depression. Pot and switch settings are also displayed. A 'graphic screen dump' of the display to an Epson MX-80 printer is displayed below. ●

to be continued

MENU SELECTION WITH A JOYSTICK

by Alfred J. Bruey — Jackson, MI

There are hundreds, perhaps thousands, of programs that use the joystick for operations. Most of these are game programs. The introduction of LISA by Apple demonstrated that it is possible to write a business program which provides for a non-keyboard interface between the user and the applications software. This article describes one approach that might be used to allow joystick control of the Commodore 64.

Introduction

This program is for demonstration purposes only. It will demonstrate

1. How to program for the Commodore 64 joystick.
2. How to select items from a menu using a joystick

The program will not perform the functions that you select with the joystick. I have indicated where you need to add coding if you want to continue building on this program.

Programming the joystick

Although there are two joystick ports on the C-64, labelled Control Port 1 and Control Port 2, the following discussion and the program will assume that a joystick is plugged into Control Port 1.

When a joystick is plugged into Control Port 1 and the joystick handle is moved around or the fire button pressed, specific values are placed in memory location 56321. Location 56321 is one byte (8 bits) long. (See Figure 1) We will only be interested in the 5 rightmost bits of this location.

To tell whether the fire button has been pressed, we only need to look at bit 4 of location 56321. If that bit is a 1, it means the button has not been pressed. If it is a 0, the button has been pressed. To look at location 56321, we have to use the PEEK instruction. To look at bit 4 of this location, we can AND the value in location 56321 with the value 16, which in binary form is 00010000. For example, if 56321 contains the binary value 10110111, then

10110111 AND 00010000 =00010000

and since the new value is 00010000, which is the binary representation of the decimal number 16, we know that the button has not been pressed. If the result of this operation had been 0, we would have known that the fire button had been pressed.

The same principle applies in determining the joystick position. As figure 1

shows, the low order four bits determines whether or not the joystick has been moved and, if it has, which position it has been moved to. To zero out the first (high-order) four bits and keep the last (low-order) four bits unchanged, all we have to do is AND the value of location 56321 with 15, which is 00001111 in binary notation. The new value, which I'll abbreviate as JD (for Joystick Direction) can only take on part of the values from 0 to 15. Each 1 in the value of JD represents a joystick direction that was not selected. I'll subtract the value of JD from 15 to reverse the bit values in JD so that a 1 will represent a chosen direction.

Listing 1 shows how to zero out the high order four bits and then convert the value remaining to one where the binary representation contains a 1 if the joystick position is chosen and a 0 if it is not.

In this program, we will only be interested in moving the joystick up or down. Listing 1 gets a value of FB (0 =fired, 16 =not fired) and JD(JD=1 if stick pushed up, 2 if pushed down). As you can see by the REM statements in Listing 1, JD can take on other values, which we will ignore in this program.

The Program

Listing 2 shows the complete program. Notice that the joystick routine that was shown in Listing 1 is included here as a subroutine. The first thing you should do is enter the program and then run it. I haven't included any operating instructions as part of the program because I wanted to keep it easy to enter. The operation is simple: just type RUN and then press the RETURN key. Then move the joystick ahead or back. When you've got the cursor on the selection you want, press the joystick button. Remember, I warned you at the start that the program doesn't do any of the things listed on the menu (except for the END OF RUN selection); the program simply demonstrates how to use the joystick to make selections from a menu.

Conclusion

There's no limit to where you can go from here. You might want to put menu selections all over the screen. Then you'll have to check for other joystick directions. Maybe you would like to write a program that requires some data from the keyboard and some from the joystick. As a final test of your understanding, you might try writing a joystick-controlled game program like some of the arcade games. I should warn you, however, that if you write a game that's too complicated, you'll have to program it in machine language or it will run so slowly that it won't be any challenge to the player.

LISTING 1

```
1000 REM CHECK FOR FIRE BUTTON PRESSED
1010 REM JV IS JOYSTICK VALUE
1020 JV=PEEK(56321)
1030 REM GET VALUE OF FIRE BUTTON
1040 REM 0 IF FIRED, 16 IF NOT FIRED -
     PUT IN FB
1050 FB =JV AND 16
1060 REM GET JD, JOYSTICK DIRECTION
     VALUE
1070 REM 1=UP, 2=DOWN
1080 REM JD CAN HAVE OTHER VALUES
     THAT WE WON'T USE
1090 JD=15 - (JV AND 15)
```

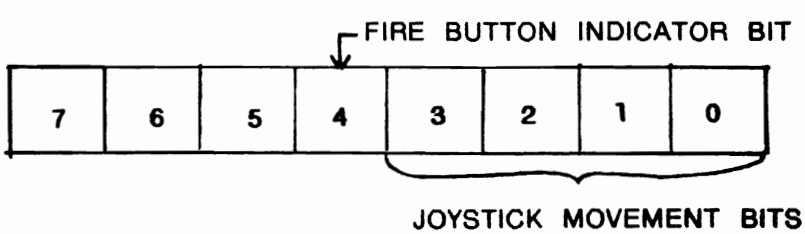


FIGURE 1

LISTING 2

```
100 REM MENU SELECTION WITH A JOYSTICK
110 REM DISPLAY MENU WITH CURSOR
120 L=1510:V=0
130 PRINT"■":POKE L,81
140 PRINT"SAMPLE MENU: USE JOYSTICK TO CHOOSE LINE"
150 PRINT"THEN PRESS BUTTON TO SELECT"
160 PRINT"■■■■■■■■■■■■PAYROLL PROGRAM"
170 PRINT"■■■■■■■■■■■■ACCOUNTS PAYABLE PROGRAM"
180 PRINT"■■■■■■■■■■■■ACCOUNTS RECEIVABLE PROGRAM"
190 PRINT"■■■■■■■■■■■■INVENTORY PROGRAM"
200 PRINT"■■■■■■■■■■■■STOCKHOLDER RECORDS PROGRAM"
210 PRINT"■■■■■■■■■■■■STOP RUN"
220 GOSUB 350:REM CHECK JOYSTICK AND BUTTON
230 REM SEE IF BUTTON WAS PRESSED
240 IF FB=0 THEN 460
250 REM IF JOYSTICK NOT UP OR DOWN
260 REM AND FIRE BUTTON NOT PRESSED,
270 REM GO BACK TO SCAN KEYBOARD
280 REM CHECK FOR JOYSTICK UP
290 IF JD=1 THEN IF V>4  THEN 220
300 IF JD=1 THEN V=V+3:POKE L,96:L=L-120:POKE L,81:FORI=1TO250:NEXTI:GOTO 220
310 REM CHECK FOR JOYSTICK DOWN
320 IF JD=2 THEN IF V<-7  THEN 220
330 IF JD=2 THEN V=V-3:POKE L,96:L=L+120:POKE L,81:FORI=1TO250:NEXTI:GOTO 220
340 GOTO 220:REM GO BACK TO CHECK FOR JOYSTICK
350 REM CHECK FOR FIRE BUTTON PRESSED
360 REM AND TO FIND JOYSTICK DIRECTION
370 REM FB IS FIREBUTTON VALUE
380 REM FB=0 IF PRESSED
390 REM FB=16 IF NOT PRESSED
400 JV=PEEK(56321)
410 FB=JV AND 16
420 JD=15 - (JV AND 15)
430 REM JD=1 IF JOYSTICK UP
440 REM JD=2 IF JOYSTICK DOWN
450 RETURN
460 REM HERE IS WHERE YOU GO IF BUTTON IS PRESSED
470 FOR I=1 TO 250:NEXT I
480 IF V=6 THEN PRINT"■■■■■■■■■■■■PAYROLL PROGRAM SELECTED":GOTO 540
490 IF V=3 THEN PRINT"■■■■■■■■■■■■ACCOUNTS PAYABLE SELECTED":GOTO 540
500 IF V=0 THEN PRINT"■■■■■■■■■■■■ACCOUNTS RECEIVABLE SELECTED":GOTO 540
510 IF V=-3 THEN PRINT"■■■■■■■■■■■■INVENTORY PROGRAM SELECTED":GOTO 540
520 IF V=-6 THEN PRINT"■■■■■■■■■■■■STOCKHOLDER RECORD PROGRAM":GOTO 540
530 IF V=-9 THEN PRINT"■■■■■■■■■■■■END OF RUN":STOP
540 PRINT"■■PRESS BUTTON TO RETURN TO MAIN MENU"
550 REM WAIT HERE UNTIL BUTTON IS PRESSED
560 A=PEEK(56321) AND 16
570 IF A<>0 THEN 560
580 FORI=1 TO 250:NEXT I:GOTO 130
READY.
```

6502 MACHINE LANGUAGE WORKSHOP

Sheridan College is again hosting its popular two day workshop on 6502 Assembly Language programming for the Pet, Apple, and Atari computers. Participants will study the conceptual foundations of machine language programming, learn the most useful commands in the 6502 instruction set, and write working assembly language subroutines and programs. All computer time and manuals are provided for this intensive two day course. The only prerequisite is an elementary knowledge of BASIC programming.

Topics in the course include:

I. Machine Language: An Introduction to the Naked Chip
II. Hexadecimals: I Wish I Was Sixteen Again
III. The 6502 Registers: Barney Does His Boring Job (and Does It Again)
IV. The 6502 Instruction Set: Tiny Commands For Total Control
V. Assembling and Disassembling: Putting It Together and Taking It Apart
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 microcomputing systems.

The workshop will be held at the Oakville Campus on September 10-11 1983. The fee is $150 for the two days (including lunch). Further information may be obtained by calling the Sheridan College School of Computer Studies at 416-845-9430, 416-823-9730, or 416-632-7081, ext. 142

The Fence Comes Down Between Business And Education

The fence between the school and the commercial area had been practically like the Berlin wall. But now, there is an open gate and a new stone pathway.

Fence cutting ceremony between RTC (Richvale Telecommunications) and Our Lady of Help of Christians separate school.

It was in part, of course, their very proximity that led to the initial co-operation but it was the advent of the micro-computer that provided the necessary catalyst. Here, as undoubtedly elsewhere, the closed fence had stood for many years.

It is a synergism that has proved very beneficial to both of the parties involved and may well serve as a model for such co-operation elsewhere. The business (in this case RTC) provides the equipment and technical expertise. The school provides the space and teachers. Both the business and the school gain use of the created lab, one for teaching the school's students and the other for conducting commercial classes.

Peter Smith (owner of RTC) and Paul Brand (principal of Our Lady of Help of Christians) shake hands through the new gate.

In this case, use of the terminals cost the school $1 per terminal hour but, in consideration of the dramatic drop we have seen in computer prices in the last few weeks, the economic feasibility for similar arrangements elsewhere must be even greater.

The innovative spirit of men like Peter Smith, the owner of RTC, and Paul Brand, the principal at Our Lady of Help of Christians Separate School, and their willingness to share their experience and insights with others are doing as much to spread the benefits of the micro-computer revolution as the developments in the hardware itself.

SIMONS BASIC

by Dr. Efraim Halfon Burlington, Ont.

When a 16 year-old teenager bought his Commodore 64 in England he wondered why Commodore had not provided a BASIC language that could handle high resolution graphics, music and text rather than having to rely on PEEK's and POKE's. He then set to work and developed over 100 new BASIC commands for the C-64. This addition will provide Commodore users with programming capabilities better than those available on the Radio Shack Colour computer and Texas Instruments among others personal computers. This new BASIC will be marketed this summer, July or August, in cartridge form by Commodore for a price of about 100 - 150 Cdn. dollars. As mentioned above the software was developed in England but the final debugging is taking place in Toronto, Canada. Thus, I was able to obtain a preliminary version for review a few months before official marketing.

The extra commands of SIMONS BASIC fall into twelve broad areas. The attached table 1, shows an abbreviated description of all commands. The programming aids facilitate BASIC programming, for example AUTO automatically generates program line numbers and RENUMBER automatically renumbers all the program lines. This renumbering does not include the GOTO or GOSUB numbers but SIMONS BASIC has the capability of calling subroutines by name (PROC command) and therefore this is not a problem. In the subroutines, variables may be made LOCAL so that the same name can be used as in the main program without having to change variables' names in the subroutine. The GLOBAL command restores the original values to local variables. The MERGE command can be used to merge two programs, one in memory and one saved on disk or tape. The OPTION 10 command highlights SIMONS BASIC commands while the program is listing. The OPTION command only works with the parameter 10 and other numbers do not seem to make any difference. The KEY command enables the user to program the function keys quite easily. I liked this feature very much since it makes programming much easier and concise.

In addition to programming aids there are program debugging aids such as the command TRACE that displays on sthe screen the number of the program line being executed. The command DUMP displays values of all non-array variables. These debugging aids are quite useful. For security minded programmers the command DISAPA marks lines that should not be listed. The command SECURE executes the security part and lines marked for security can never be listed. The manual suggests that the programmer keeps for his own safety a non protected version. The only disadvantage I found is that all lines that need to be protected must be marked with DISAPA, which for some users, may be the whole program.

Character strings can be manipulated with the INSERT, INST, PLACE, DUP and CENTRE commands. Other commands such as INKEY and FETCH provide control over which inputs can be accepted by the program. All these commands improve programming flexibility. For mathematical programs six new commands, MOD, DIV, FRAC, %, $ and EXOR can be useful. However, I do not expect that the average user would have much use for MOD and DIV (see Table 1)but they are nice to have for programmers accustomed, for example, to FORTRAN.

Two disk commands DISK and DIR are also provided. The DISK command saves the effort of programming the OPEN, PRINT# and CLOSE commands when some disk operations are required. Thus, disk initialization, formatting and file scratching can be performed with one command. The DIR command enables all, or a selective part, of a diskette directory to be displayed on the screen. This command replaces the LOAD "$",8 command.

The high resolution graphics commands

are really excellent but for a lack of consistency on parameter order in the various commands. (Table 2). The high resolution commands allow standard high resolution and multi-colour modes.

In high resolution the screen is 320 pixels wide and 200 long, in multi-colour mode 160 pixels wide and 200 long. Plotting and background colours can be chosen and changed rapidly and easily, the HIRES and MULTI commands allow a rapid change between standard high resolution and multi-colour. Different parts of the screen can be in different colours and different modes. In high resolution mode different colours can be programmed in different parts of the screen so that high resolution plots with several colours are possible. Several standard geometrical figures can be plotted on the screen, rectangles, circular shapes and shapes of any form. Once drawn, these shapes can be PAINTed. The high resolution screen can also include text and the CHAR and TEXT commands print characters and character strings on the graphic screen, respectively. The CSET command with option 2 allows the display of the last high resolution screen; this feature is quite useful for games.

The only problem that I find is that the user can not save on disk a high resolution screen once this is programmed. In fact, SIMONS BASIC could be used to program fast arcade games which require several high resolution screens. At present only the last one can be immediately recalled with the command CSET 2. If another screen is needed in a game, it must be drawn anew. Drawing is fast but not immediate as it is required in an arcade style game. For example, when I was introduced to SIMONS BASIC the first time, it took me only about three minutes to program a high resolution screen for a game, which previously took me over ten agonizing hours with regular BASIC and PEEKs and POKEs. Unfortunately I could not take it home with me and this was disappointing. The fact is that to save memory space most of the RAM memory used is under ROM. For example, the high resolution screen is under the kernal, this memory area can only be POKEd but not PEEKed, thus the inability of saving a screen. The rest of SIMONS BASIC is in the 8K reserved for the cartridge and in the RAM under the regular BASIC ROM. Thus, SIMONS BASIC only reduces the regular BASIC memory by 8K. Quite an accomplishment!

Not all graphics commands are for the high resolution screen, some are for the low resolution screen. For example the FLASH command flashes screen colours at variable speeds, from very slow to maddeningly fast. The same is valid for the border colour (BFLASH). The FCHR, FCOL, FILL, MOVE, and INV commands are used to fill areas of the screen with characters and colours and to move data from one part of the screen to another. I really enjoyed the SCROLL commands. The user can define several windows and in each window scrolling is allowed up, down, right and left. On a screen all four scrolling directions can take place simultaneously. Visually the scrolling capability is excellent.

Sprites and special characters can be easily programmed with the nine special commands. Sprites can be created within a program, stored and modified. User's specific graphic characters can also be easily programmed. Even if several software programs now exist on public domain to produce sprites, it is useful to have specific commands that can be easily used within a program. SIMONS BASIC also includes four structured programming commands, such as IF THEN ELSE, REPEAT UNTIL and LOOP. The structured programming part also includes commands which prevent a BASIC program to crash by trapping program errors, ON ERROR GOTO, for example, helps in program debugging.

The five music commands are all that music programmers want, to compose simple and complex melodies. No more PEEKs and POKEs and complex calculations to produce the appropriate notes with the appropriate tempo (the function keys take care of all timing and note duration). With SIMONS BASIC music composition was instantly open to me. The only objection that I have is that perhaps the commands, especially the MUSIC command, are too

sophisticated. To play music the average user may want to use the public domain programs ORGAN and PIANO. The latter one especially allows one to play the melody and save automatically the notes on disk or tape. With the MUSIC command all notes and the duration of each note within each voice must be individually programmed and entered through the keyboard. However, for specialized applications and games where music is important, then the MUSIC commands are excellent. For example the PLAY command can be used to play the music while the program continues its execution or to stop the program execution until the music is finished, PLAY 2 and PLAY 1 respectively. I did not find much use for PLAY 0, which supposedly stops the music, but the last note continues on. When I wanted the music stopped in a program I preferred to use the VOL 0 command.

Finally, four commands, PENX, PENY, POT and JOY allow a program to read the coordinates of a light pen, the resistance of the paddle and the direction of the joystick. These commands greatly simplify programming games and graphic applications.

Overall I found SIMONS BASIC a very good addition to the BASIC commonly provided with the C-64. From now on complex programs can be developed in BASIC since the execution of most commands is at machine language speed.

The programming and debugging aids are quite easy to learn and use and I particularly enjoyed working with high resolution graphics with an ease never before obtained on the C-64. While SIMONS BASIC will be marketed by Commodore I understand that several independent software firms have their own versions of BASIC that they plan to market soon. Some will have some features similar to those of SIMONS BASIC, probably for high resolution graphics and music, but I expect that few will have all the comprehensive commands that this package has. My recommendation would be to use it only if you can use the special capabilities. That is if you do not particularly enjoy POKEing and PEEKing, and if you want to reduce your programming time several folds, such as happened to me. A reduction of from ten hours to a few minutes is probably worth the expense of the cartridge. the manual is very well written, comprehensive and with several examples. The error messsages are clear and informative.

TABLE:1: SIMONS' BASIC Commands

Programming Aids:

KEY	to assign a command to a function key
AUTO	automatically generates program line numbers at a specified interval
RENUMBER	automatically renumbers all the program lines
PAUSE	pause number of seconds
LIM	to determine the number of the screen line on which the cursor is positioned
CGOTO	to compute the line number to which the program should branch
RESET	to move data pointers to a specified line of data
MERGE	to merge two programs
PAGE	to divide a program listing into "pages" of n lines
OPTION 10	to highlight SIMONS BASIC command while program is listed on the screen
DELAY	to vary the rate of scrolling of a program listing
FIND	to search a BASIC program for a character string on display line where it occurs

Program Debugging Aids and Program Security

TRACE	to display the number of the program line being excuted
RETRACE	to resume tracing after editing a program
DUMP	to display values of all non-array variables
COLD	resets the C-64 to the start of SIMONS BASIC
OLD	reverse NEW command
DISAPA	to indicate that the code in a program line is to be hidden
SECURE	to hide all program lines beginning with DISAPA

input validation and text manipulation commands:

INSERT	to insert one character string into another
INST	to overwrite a string beginning at a specified position

PLACE	to determine the position of a string within a string
DUP	to duplicate a character string n times
CENTRE	to centre a character string on a screen line
USE	to format numeric data, i.e. to align decimal points
PRINT AT	to print a character string at a specified location
FETCH	to limit the type and number of characters for user input
INKEY	to test for a function key input
ON KEY	to branch to a specific point in a program
DISABLE	to terminate ON KEY command
RESUME	to reinstate ON KEY command

arithmetic operators:

MOD(x,y)	to return the remainder when one integer is divided by another
DIV(x,y)	to return the largest integer which, when multiplied by y is equal or less than x
FRAC	to return the fraction part of a number
%	binary to decimal conversion
$	hexadecimal to decimal conversion
EXOR	to perform exclusive OR between two numbers

Diskette commands:

DISK	to open a diskette channel and then close it when the operation is executed
DIR	to list some or all of a diskette directory

graphics:

HIRES	to initialize high resolution graphics mode and select plotting colour and screen background colour
REC	to draw a rectangle
MULTI	to initialize multi-colour graphics mode and select three plotting colours
LOW COL	to change plotting colours
HI COL	to revert back to originally selected plotting colours
PLOT	to plot a dot
TEST	to return the state of a screen location, dot plotted or not
LINE	plot a line
CIRCLE	to plot a circular shape
ARC	to draw an arc of a circular shape
ANGL	To draw the radius of a circle
PAINT	to fill an enclosed area with colour
BLOCK	to draw a fully shaded block of colour
DRAW	to design a shape of any form
ROT	to rotate a shape
CSET	to select one of the character sets or recall and display the last high resolution screen
CHAR	to print single characters on a graphic screen
TEXT	to print a character string on a graphic screen
COLOR	to set screen background low resolution

Screen Manipulation

FLASH	to flash a screen colour at variable speeds
OFF	to turn off FLASH
BFLASH	to flash border screen at variable speeds
BFLASH 0	to turn off BFLASH
FCHR	to fill an area of the screen with a character
FCOL	to change a character colour
FILL	to fill a defined area on the screen with a specific character in a particular colour
MOVE	to duplicate a section of screen data on another part of the screen
INV	to inverse a specifed screen area

Scrolling:

LEFT, RIGHT, UP, DOWN	to scroll an area of the screen within a window in any direction. Also several parts of the screen can scroll in different directions at the same time
SCRSV	to store data from a low resolution screen on disk or tape
SCRLD	to display screen data previously stored
COPY	to produce a hard copy of a graphic screen
HRDCPY	to print low resolution screen data

Sprite and User-defined Graphics:

DESIGN	to allocate memory space for a MOB (moveable object block or a sprite)
@	to set up the design grid for MOB
CMOB	to set up colours for multi-colour MOB
MOB SET	to set a MOB, i.e. MOB initialization
MMOB	to display and/or move a MOB

RLOC MOB	to move a MOB between two screen locations
MOB OFF	to clear a MOB from the screen
MEM	to move a character from ROM to RAM
DESIGN	allocate memory for characters defined by user

Structured Programming:

IF THEN ELSE	If condition THEN true: ELSE false
REPEAT UNTIL	REPEAT loop UNTIL condition is met
RCOMP	to re-execute latest IF THEN ELSE test
LOOP EXIT	LOOP program loop EXIT IF condition true END LOOP

Program Procedures: to call subroutines by name rather than number

PROC	to label program subroutine
END PROC	end of a procedure (subroutine)
CALL	call procedure name, to continue program execution from a specified line of code
EXEC	to call a program routine and return to the line following the call when the procedure has been completed
LOCAL	to assign variables to specific program routine
GLOBAL	to restore original values to local variables
ON ERROR GOTO	line number traps program errors
NO ERROR	disables ON ERROR GOTO command
OUT	to re-enable "64" error handling routines

music commands:

VOL	volume level
WAVE	to set music voice type, synchronization and ring modulation
ENVELOPE	to define shape of sound played, attack, decay sustain and release
MUSIC	to compose music and save notes
PLAY	to play the music

read functions:

PENX	x coordinate of light pen
PENY	y coordinate of light pen
POT	returns resistance of paddle 0-255
JOY	test direction of joystick

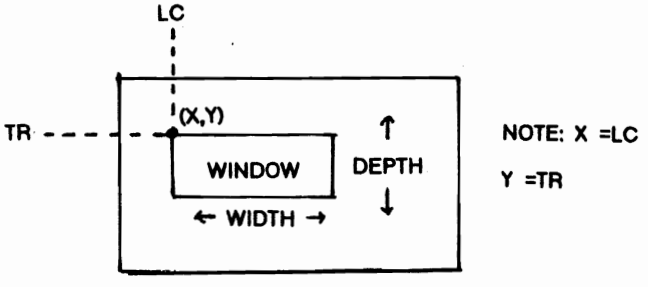
error messages:

SIMONS BASIC has nine error messages to point out specific mistakes.

TABLE 2: SIMONS BASIC Graphic Commands in High Resolution and Low Resolution Modes.

SIMONS BASIC

Syntax of Text Commands



Scroll A Window
UPB TR, LC, Width, Depth
Similarly for UPW, LEFTB, LEFTW, RIGHTB, RIGHTW, DOWNB, DOWNW

Note: The first two parameters are the coordinates of the top left corner of the window in reversed order.

Reverse A Window
INV TR, LC, Width, Depth

Fill A Window With Colour
FCOL TR, LC, Width, Depth, Colour

Fill A Window With A Character
FCHR TR, LC, Width, Depth, Character

Fill A Window With A Character In A Specific Colour
FILL TR, LC, Width, Depth, Character, Colour

Move A Window
MOVE TR, LC, Width, Depth, Destination Row, Destination Column

Flashing
FLASH Colour, Speed [OFF turns flashing off]

BFLASH Speed, colour1, Colour2 [BFLASH 0 turns flashing off]

Print At A Specific Spot
PRINT AT(x,y)"text" etc.

Syntax of Hires commands

Plot Types

HIRES MODE: 0 =clear dot
1 =plot dot
2 =reverse dot

MULTI-COLOUR MODE: 0 =clear dot
1 =plot dot(col.1)
2 =plot dot (col. 2)
3 =plot dot (col. 3)
4 =inverse dot col.

Turn On High Resolution Graphics
HIRES Plotting Colour, Background colour

Change to Multi-Colour Mode
MULTI Colour1, Colour2, Colour3

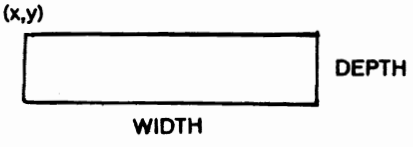
Change colour Registers
LOW COL Colour 1, Colour2, Colour3

Note:
- In HIRES mode, colour 2 should be the same as the background colour, otherwise the entire 8x8 block in which plotting takes place gets changed to colour2. (This can sometimes be useful, e.g. drawing a solid 'thick' border).

- In MULTI-COLOUR mode, colour1 corresponds to plot type 1, colour2 corresponds to plot type 2, and colour3 corresponds to plot type 3.

Restore Original Plotting colours
HI COL

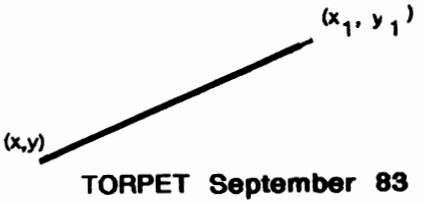
Draw A Rectangle
REC x,y, Width, Depth, Plot Type



Plot A Single Point
PLOT x,y, Plot Type

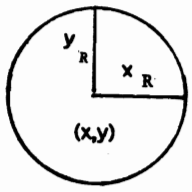
Test to See If A Specific Pixel Is On
TEST(x,y) [0 =pixel off: 1 =pixel on]

Draw A Line
LINE x, y, x_1, y_1, Plot Type



Draw A Circle
CIRCLE x, y, x_R, y_R, Plot Type

Note:
For a true circle x_R should equal $1.3xy_R$

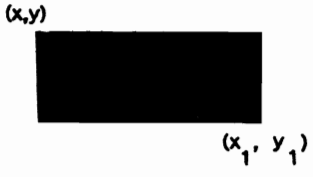


Draw An Arc
ARC x,y, Starting Angle, ending Angle, Increment, x_R, y_R, Plot Type

Note: Angles are measured clockwise with 0 degrees being straight up.

Paint A Region
PAINT x,y, Plot Type

Draw A Block
BLOCK x,y, x_1, y_1, Plot Type



Draw A Shape
DRAW "shape string",x, y, Plot Type

ROT Rotation Number, Size. [Rotation Number - rotates in steps of 45 degrees.]

Print text On Hires Screen

TEXT x, y, " control character character string", Plot Type, Size, Increment

CTRL A =uppercase/graphics

CTRL B =upper/lower case

Biography

I am a research scientist with the Federal Government. I have been a member of TPUG since November 1982 and have bought a C-64 in March, 1983. In my work I use mainframe computers to develop simulation models describing the fate of toxic substances in the aquatic environment, Lake Ontario and the Niagara River. I have used my C-64 to teach my wife and children about computers. I am a heavy user of the public domain educational programs provided by Commodore.

CALENDAR OF TPUG EVENTS

☆ FALL SCHEDULE ☆

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

Wed. Sept. 14
Wed. Oct. 12
Wed. Nov. 9
Wed. Dec. 14

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

Tue. Sept. 6
Tue. Oct. 4
Tue. Nov. 8
Tue. Dec. 6

NOTE: New location and date for VIC 20 meeting. If driving (whether from the east or the west), approach the parking via the street **east** of the library (Glenholme), and keep bearing to the right. The parking lots for the library and for the separate school are both right behind the library. Both parking lots should be available.

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

Tue. Sept. 20
Mon. Oct. 31
Wed. Nov. 30

WESTSIDE CHAPTER - (tentatively booked at) Sheridan College, Trafalgar Rd., Oakville at 7:00 p.m. in the cafeteria for **PET/CBM/VIC 20/Commodore 64**

Wed. Sept. 21
Wed. Oct. 19
Wed. Nov. 16
Wed. Dec. 21

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

ANNUAL BUSINESS MEETING - Thursday, October 6, at Leaside High School, Bayview & Eglinton Aves. at 7:30 p.m. in the auditorium. Regular members are voting members.

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, 519-948-5327

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

Contact Dennis Trankner
519-681-5059

Genesee County Area Pet Users Group - meets at Bentley High School on Belsay Rd. on the 3rd Thursday of each month at 7:00 p.m.

Contact Gordon Hale
313-239-13669

VIC 20/Commodore 64 Assembly Language and Communications Group - Earl Haig S.S., Kenneth & Princess Aves. (6 blocks north of Sheppard, 2 blocks east of Yonge) at 7:30 p.m. in the auditorium

Mon. Sept. 12
Wed. Oct. 5
Wed. Nov. 5
Thr. Dec. 1

Correction

In TPUG's Information Package, in the last issue, Mike Donegan's 'phone number should have read (416) 639-0329

TPUG MEMBERS

Our club is growing and we need more volunteer workers.

- **We need volunteers to document all the programs**
- **We need more writers for The Torpet.**
- **We need presenters for the various meetings.**
- **And, of course, we need you to keep sending in those programs for the public domain library.**
- **We need a person in the Toronto area with P.R. experience to help develop ads, promotional literature, image material, etc.**

No matter where you live you can help organize new chapters, write for The Torpet, document existing disks, and submit new programs.

Think! What can you do for the club?
Write or call the office and give us your help.

Giant Fall Membership Drive

Enroll four new TPUG members and receive a free disk or tape from the library. Just fillout the new members names, addresses, phone numbers and type of computer on a sheet of paper and enclose your check to pay $20 for each new member. Also specify your type of computer and whether disk or tape so we can send you the correct tape or disk.

If you live in the Toronto area you may bring prospective members as guests FREE **one time only** to a September meeting.

Its your club. Help make it grow!

THE TORPET

pays

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We also pay for pictures

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

Horning's Mills, Ontario L0N 1J0
Canada

OR CALL (519) 925-5376

CARTOONISTS

We are especially looking for a cartoonist

to draw a regular monthly strip.

world of commodore

INTERNATIONAL CENTRE, TORONTO
DEC. 8-11, 1983

The World of Commodore is being presented by Commodore to commemorate their 25th anniversary. It is the first all-Commodore show ever held in Canada, and will bring buyers flocking to examine and purchase your products.

World of Commodore represents a tremendous sales opportunity for retailers and distributors of products and services relating to Commodore computers. It is your opportunity to introduce your products and services to over 35,000 interested buyers.

The World of Commodore is designed specifically to appeal to the interests of present and potential Commodore owners, to Commodore dealers looking for new products to sell, and to meet your needs as an exhibitor.

December 8-11, 1983, The International Centre
6900 Airport Road, (Derry and Airport Road)
Toronto, Ontario, Canada

For more information contact:
Cameron MacDonald or Debbie Bannon
Hunter Nichols Inc., 721 Progress Avenue,
Scarborough, Ontario M1H 2W7 Canada
(416) 439-4140

COMMODORE

WORLD OF COMMODORE

Big Toronto Commodore Show Planned

It will be called World of Commodore. It will be a Commodore only show held in Toronto to celebrate Commodore's 25th anniversary and it will be BIG. And you will be hearing a lot more about it before it happens.

The show is scheduled for December 8-11 at The International Centre (out by the airport). All the exhibitors have not been lined up as yet, so if you produce a Commodore only product you should either contact the show producer, Hunter Nichols Inc., 721 Progress Avenue, Scarborough, Ontario, M1H 2W7 Canada (416) 439-4140, or you should make arrangements with some scheduled exhibitor to become your distributor.

The show prospectus points out that by the time of the show there will be over 100,000 Commodore owners within a fifty mile radius of the show facility, and prospective attendance also includes many more **prospective** Commodore owners. There are also over 700 Commodore dealers in Canada and many of these will be attending the show as guests rather than as exhibitors.

Show attendance is expected to be in excess of 35,000. Now, if just half of them will join TPUG--.

HE SAYS AS FAR AS HE'S CONCERNED WE'VE BOTH BEEN REPLACED BY A COMPUTER!

HELP!

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

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

HELPFUL HINTS

If you find that after you clear the screen on your Commodore 64, poking the screen memory does not produce anything you can see, then try the following:

Poke the background colour to the same as the current character colour.

Print Clear/Home

Poke the background colour back to what you want it to be.

Some of the programs on the "K" disks may need this modification for newer models of the Commodore 64.

Commodore Canada
&
David Williams
Toronto, Ontario

If you want to initialize your disk under 4.0 without typing in the usual two-line command, simply do a directory command.

People using the Mupet 2 with a 4040 disk drive please note that drive 0 cannot be write-protected because the system uses that drive.

A Krause #1083
Saskatoon, Saskatchewan

For those who have TPUG Utilities disk #7, I believe there is an error in the "FIXFILE" program. Line 1480 should read--IF PEEK (216)>20 then-----i.e. the bracket after the 216 is missing.

Donald E. King #0859
Kittery, Maine

Make sure you give all your files different secondary addresses. If you don't you'll find all kinds of confusion happening.

David Williams #1058
Toronto, Ontario

PET PALS WANTED

I am after a "CBM 8032/SuperPet Pal interested in electronics and of course the 8032/SP9000. I will answer all those who write. My disk unit is an 8050. I would also like to get in contact with any of the German TPUG members as I can understand & read Deutsch.

Rob Kobenter #5897
4068 Borden St.
Victoria, British Columbia V8X 2G1

I am in the process of writing a book for machine language and advanced programmers. Is there anyone interested in helping to write or publish it?

Daniel Bingamon
Batavia, Ohio

I am interested in communicating with anybody who has software for the SSE Softbox CPM version 2.2

A. Krause #1083
1611 Arlington Ave.
Saskatoon, Saskatchewan S7H 2Y6

WHO'S GOT THE ANSWER?

I'm looking for a terminal package with upload/download capabilities for the VIC or 64. I intend to hook into the US Postal Service. Can you help?

Steve Zwillick #3103
42-07 220 Street
Bayside, New York, NY 11361

I am looking for a good, cheap RS232C modem. What hardware modem works best with Mr. Punter's "TERMINAL" software which I have?

R. W. Kobenter #5897
Victoria, British Columbia

HELP!

When I purchased my Commodore 64, the bonus demonstration disk for the 1541 included a program called "1541 BACKUP" by Michael Schoff (v1.0). There are no instructions with the program and as a result I have been unable to use it. RUNning the program results in 6 boxes being displayed on the screen beginning with "BACKUP COMMAND" and a flashing cursor. Does anyone know where to go from here?

Alan D. Tomlin #6045
London, Ontario

I would appreciate it, if someone in the group would recommend a printer interface to enable me to get screen dumps of HI-RES graphics on my Commodore 64.

Ronald Miller #7653
Sault Ste. Marie, Ontario

I own a C-64 with a 1541 disk drive. Trying to find out how to make my disks auto-boot, I discovered that the September 1982 Compute carried an article on Commodore Automatic disk boot. I tried to find this issue at the university library or at a newsstand but in vain. How does one go about formatting a disk so that it will auto-boot on the C-64 with a 1541 disk drive?

Rino Clarizio #5568
Montreal, Quebec

A program that I have written generates considerable text--as many as 10 lines. I have no way of knowing at what point the printer (VIV 1525) will come to the end of a line. Yet, I would like to double-space the printed text.

David Handelsman #6711
1305 Robbins Ave.
Philadelphia, Pennsylvania 19111

Is there any way I could obtain information on how some of the programs on club disks work, in particular, the utilities and languages? Some programs have documentation but others (esp. FORTH) come with nothing. Any information would be greatly appreciated.

David Zacharuk #2557
Saint John, New Brunswick

I am particularly interested in information on the KMMM Pascal for Wilserv Industries. Can anyone help?

Suzy Fox-Menhart #8905
Stierstat, West Germany

Could someone help me with the following difficulties:

1) How do I get the PET/CBM to use the VIC 20 and Commodore 64 goodies such as the Speak Easy or other speech synthesisers?

2) What is the difference between the pin configurations of Commodore 64/VIC 20?PET?CBM user port?

3) How do I get the PET/CBM to scroll horizontally and watch programs as they are loaded from disk or tape.

4) How do I build a 4K eprom programmer for the PET/CBM. The June 1982 issue 25 of Compute has an article for a PET eprom programmer for a 2K 2716 eprom. If anyone could advise how I could modify the circuit and software to accommodate a 4K 2532 eprom, I would greatly appreciate your help.

George Lim Hock Seng # 2693
Singapore

Can you name me a good book about building a data base with relative files on disk for the Commodore 64 with the 1541 disk drive?

Adrien Goyette #8809
Vassan, Quebec

Regarding the Sprite Editor on a disk I recently ordered, I can't figure out how to use. Can someone provide some clues?

Everett A. Goodwin III #6017
Manassas, Virginia

PUN-shment

Glasses filled with HOMEBREW cause the hacker and program to get LOADED at the same time.

If a PET is DOWN, it's out of SORTS.

If it's at a critical time then it's definitely a NINCOMPUTER(nincompooter)

Will too many COLD STARTS give your PET frost-BYTE?

a Ylimaki

COMMODORE-64

COMPUTER MECHANIC

by G.R. Walter Proton Station, Ont.

This is a program for the C-64 that aids in keeping track of when and how you should maintain your automobile. There are versions for both tape and disk. It is produced by SOFTSYNC, INC., 14 East 34th Street, New York, NY, 10016.

It is menu driven and fairly user friendly. The program's functions are fairly well outlined in the main menu and are as follows:

1. initialize recordkeeper (this formats a disk so that this program can use it)

2. add a record (this is used to add a car's maintenance record to the file)

3. search for a record (this allows you to update your car's maintenance record as your car ages)

4. diagnostic section (this is a simple 'question and answer' section where the computer asks you questions regarding any problems that your car has, and gives you a list of probable answers. You pick the best one for the situation. This will continue until the computer has narrowed down what the likely problem is and then the computer will tell you what you should do to fix the problem.)

5. exit program

6. when to check section (this is used in conjunction with your car's maintenance record - if you access this option after you have accessed your car's record, then you will find out when the next time that you will have to maintain your car (ie. rotate tires) will occur)

7. how to check (this section shows how you would check the various items (ie. suspension system) that you need to regularily maintain. For each section a diagram is given, complete with arrows pointing to the appropriate part of the car, with instructions to the side of the diagram on how you would check that section).

8. to load or save (this is only with the tape version, and is used for loading and saving the records to tape)

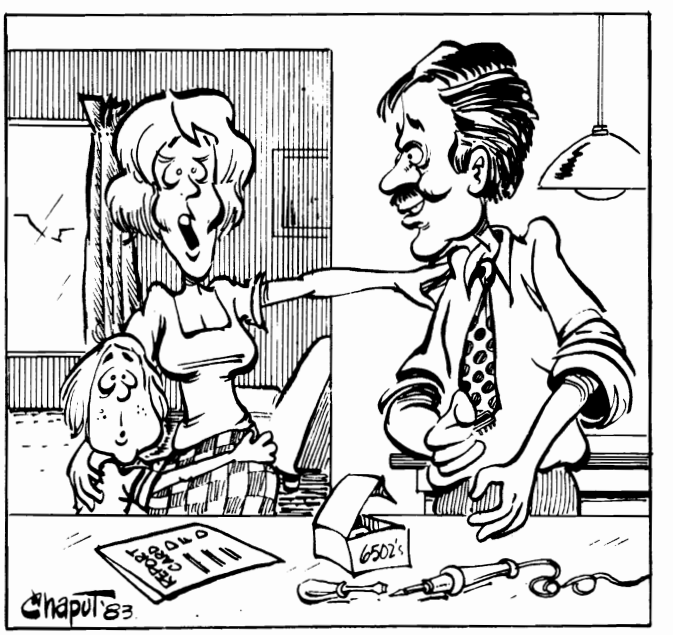
All in all it is a program of good quality, about which I have no major complaints, and just a few minor ones:

a) it uses imperial measurements only (eg. gallons, miles, etc.)

b) it doesn't allow the user to choose the colors used

c) it doesn't have an option where the car maintenance records can be printed on a printer

I give it a rating of 7.8 out 10.



Come on Frank! Implanting a chip in his head is not going to help his school work!

Hardware Hacker

by Hank Mraczkowski — Houston, Texas

A **NEWER** "new" version VIC 20 was introduced to the public last month without the usual horns, fanfare or confetti. If you've noticed the price dip lately you'll have witnessed Commodore's way of cleaning house and moving out the older "new" version. The obvious change, seen without disassembly, is the power supply. It's the same as the one provided with the C-64 which supplies 9 volts AC and +5 volts regulated, outboard, through a DIN plug.

The new VIC regulator was located outside of the keyboard case after the 2114 RAM chips (read space heaters) were replaced with sedate CMOS 6116 RAM chips. (Note to the semi-non-technical people: A regulated voltage at a high current level must either use heavy wiring and remote voltage sensing or the power source must be located very close to the load.) This important change resulted in an extremely cool running machine and a much smaller Printed Circuit Board (PCB); reduced almost two inches for the whole front to rear depth of the board. This narrower board presented a short-term problem because the case had screw holes only for the larger board and the front would flop around with nothing to fasten it down. Commodore resolved this with a piece of sheet-metal the size of the big board soldered beneath the smaller new version PCB. This sheet-metal piece replaces an expensive copper foil RFI shield. The big anodized aluminum heat sink was shucked for a small sheet-metal cartridge guide formed around the memory expansion edge connector. Quite a few changes to be so quiet about, huh?

All this equates to a major layout and production change which cuts Commodore's costs on the VIC-20 even further! The big C (Commodore) doesn't seem to be dropping the VIC, yet. On the contrary, it looks like a new battle line has been quietly drawn in the Big Three (Commodore, TI, and Atari) Price War. How about the others?

I can't see how the **Atari** 400 or 800's will survive this round with that big and extremely expensive casting holding its box together and base cost up. **Texas Instruments** ' 99/4 or 99/2 may not be able to take the price plunge or compete on features...but, rumblings say that they may meet the challenge. Whom did I miss? **Tandy**? They'll survive, even though they're not "vertically integrated." They don't make their own chips, and that is hurting them, right now, with a relatively high base cost. Their marketing, however, is supporting them very well, contrary to Wayne Green's dire predictions, and their Color Computer is still extremely popular. Watch for their new push, portable telecomputing. How about **Apple?_right. They can't be accused of price cutting or real competition in the low price end, can they?**

reprint from CHUG

TPUG's This & That

by Doris Bradley, Assistant Business Manager

New Members

Guess what?--you're right. We enrolled member number 9,000. Who is it?--G. J. Birbiglia of Metairie, Louisiana (a Commodore 64 owner).

A PET Comes Visiting

The largest PET ever to be seen in our office wandered in a few days ago. It had a black shiny nose, a long wagging tail, a mass of about 60 kilograms and a tag on its collar showing its name to be Boozer. We called the phone number on the tag and in that way contacted the owner of this large German Sheppard. He came around to be reunited with his pet, and was surprised to find that the office was that of TPUG--he is a member. Doug Delville of North York obviously has more than one PET in his house!

HAMS

We've heard from a few of you, but I know there are more of you out there. Please send in your name and call as we plan to print a list so that you can communicate with each other.

Commodore Educational Software

Commodore Canada is upgrading the "K" series this summer so that the programs will work well on all models of the Commodore 64. Also, the series is being enlarged. Unless you have a pressing need for "K" disks or tapes, I would suggest ordering them in the Fall.

Disk/Tape Orders

To ensure faster processing of your order, please be sure to enclose your membership number.

Stamps

Our stamp collectors are thrilled with your correspondence. Please keep using unusual stamps. I have one letter on hand from Spain which has EIGHT different stamps on it!

Delays

We recently ran out of invoices, and accumulated a two-week backlog of orders to type. The invoices have arrived, and a typing-bee has resulted in our almost getting caught up. Oh for the day when the orders are all filled! the replacement tapes and disks are all sent out! and the questions are all answered!

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:
TORONTO PET USERS GROUP
1912A Avenue Rd., Ste. 1
Toronto, Ontario, Canada
M5M 4A1

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

(C)G4 - EMULATOR GAMES 1 (1 tape)

LIST-ME (C)G4.L	THE LIST-ME FILE FOR (C)G4
PET EMULATOR.C	RE-CONFIGURES YOUR 64 SO IT WILL RUN MOST PET PROGRAMS.
HUNTER SATELLITE	INTERCEPT THE ENEMY SATELLITE--THE FASTER THE BETTER!
STARBASE&UFO	SHOOT DOWN THE UFO'S IN THE ALLOCATED PERIOD OF TIME.
SPACESHOOTER	GET THE TARGET IN YOUR SIGHTS THEN BLOW HIM/HER AWAY!
SUPERLANDER	COMPUTER FAILURE! YOU HAVE TO LAND THE SHIP YOURSELF.
C.C.STARWARS INS	INSTRUCTIONS FOR C.C.STARWARS.
C.C.STARWAR	TRY AND DESTROY DARTH VADER BEFORE HE DESTROYS YOU!
HANGMAN 1	PICK A CATEGORY, THEN GUESS THE WORD OR YOU GET HANGED.
HANGMAN 2	YOU GUESS OR THE COMPUTER GUESSES YOUR WORDS!
HANGMATH	SOLVE THE MATHEMATICAL PROBLEM OR GET HANGED.
MATH IQ	TEST YOURSELF! YOU HAVE 15 MINUTES TO DO 20 PROBLEMS.
ANDROID NIM	TRY AND GET THE LAST ANDROID. (HAS NEAT SOUND!)
REVERSE	REVERSE THE NUMBERS TO REACH YOUR OBJECTIVE.
3D TIC-TAC-TOE	PLAY THE COMPUTER. GET 4 IN A ROW TO WIN--IF YOU CAN.
NIM	TRY AND TAKE THE LAST ITEM.
BAGELS	SUPPLY THE PATTERN SPECIFICATIONS--THEN FIND THE PATTERN.
REVERSE #S	REVERSE THE NUMBERS TO REACH YOUR OBJECTIVE.
BINGO	PLAY BINGO AGAINST YOUR COMPUTER!
BAGELSX2	YOU GUESS THE COMPUTER'S PATTERN AND IT GUESSES YOURS.
STARS	TRACK DOWN THE COMPUTER'S NUMBER BETWEEN 1 & 100.
MASTERMIND	GUESS THE PATTERN AS ECONOMICALLY AS YOU CAN.
CRYPTO	HELPS YOU SOLVE SIMPLE SUBSTITUTION CRYPTOGRAMS.
KENO	PICK #'S. THEN SEE HOW MANY OF YOUR #S GET PICKED.
MAGIC SQUARE	TO WIN LIGHT ALL THE NUMBERS EXCEPT 5.

ADDITIONS TO TPUG LIBRARY

(C)G3 - EMULATOR GAMES 1 (1 tape)

LIST-ME (C)G3.L	THE LIST-ME FILE FOR THIS DISK.
PET EMULATOR.C	RECONFIGURES 64 SO IT WILL BASICALLY ACT LIKE A PET.
OSC LUNAR	TRY AND LAND SAFELY ON THE MOON.
STAR WARS	WITH LIMITED AMMUNITION DESTROY TIE FIGHTERS.
STAR TREK	SEARCH THE GALAXY FOR ENEMY CRAFT...THEN DESTROY THEM.
LUNAR LANDER 1	TRY AND LAND SAFELY ON THE MOON.
LUNAR LANDER 2	TRY AND LAND SAFELY ON THE MOON.
SUPER STAR TREK	SEARCH THE GALAXY FOR ENEMY CRAFT...THEN DESTROY THEM.
ELIZA	FIND OUT WHAT IS REALLY BOTHERING YOU.
KLINGON CAPTURE	CATCH THE KLINGON, DON'T KILL HIM!
EASY DUNGEON	FIND THE HOLY GRAIL AND GET OUT AGAIN!
PLANET PROBE	TAKE A PICTURE OF THE PLANET, THEN TRY TO GET AWAY.
AFO WITH SOUND	SHOOT DOWN THE AFO BEFORE HE GETS YOU!
ATARI II	SHOOT THE ENEMY SHIPS...NOT YOUR OWN!
STAR WARS TRANIN	SHOOT THE ENEMY BEFORE HE SHOOTS YOU!
DEEPSPACE	DESTROY HOSTILE VESSELS OR BE KILLED!

(P)C4 - COMMUNICATION 4 (2 tapes) and (C)C1 - COMMUNICATION 1 (2 tapes)

LIST-ME (C)C1.L	
or LIST-ME (P)C4.L	LIST-ME FILE FOR THIS DISK.
--PET/CBM TERM'LS	FOLLOWING 3 PROGRAMS ARE BASIC TERMINAL PROGRAMS FOR
AUTODIAL TERM	40- OR 80-COLUMN PET/CBM'S.
TERMINAL.R12	
TERMINAL/16K	
--SUPERPET TERM'L	FOLLOWING PROGRAM IS BASIC TERMINAL PROGRAM FOR SUPERPET.
TERMINAL.S12	
--C64 TERM'L	FOLLOWING PROGRAM IS BASIC TERMINAL PROGRAM FOR C-64
TERMINAL.64	
--MACHINE LANG.	FOLLOWING FILES ARE PROGRAMS IN MACHINE LANGUAGE WHICH
TERM.R12	ARE AUTOMATICALLY LOADED AND USED BY THE ABOVE BASIC
INTELCOM3/40	PROGRAMS. IT IS NOT RECOMMENDED THAT YOU LOAD THESE
INTELCOM3	PROGRAMS IN ANY OTHER WAY.
INTELCOM4	
TERM.R12A/16	
TERM.64	
AUTODIAL ML	
SUPERCOM	
--IEEE MODEM TERM	FOLLOWING PROGRAM IS A BASIC TERMINAL PROGRAM FOR
TERMINAL.I12	PET/CBM'S WHICH ARE EQUIPPED WITH IEEE MODEMS.
TERM.I12	ML PROGRAM AUTOMATICALLY LOADED &USED BY TERMINAL.I12
--INSTR'N READERS	
SEQ. READ/PRINT	THESE TWO PROGRAMS CAN BE USED TO READ AND/OR OUTPUT TO
WP.READ/PRINT	PRINTER THE CONTENTS OF THE INSTRUCTION FILES WHICH FOLLOW.
--INSTRUT'N FILES	
AUTODIAL INST (SEQ)	
INTELCOM (SEQ)	
TERM INST/WP 1	
TER, INST/WP 2	
RS232 DOC (SEQ)	
--OTHER PRGMS	
FREQ GENERATOR!	GENERATES MODEM NOISES
VT52.BASIC	TERM PROGRAM TO RUN 8032/8010 AS A VT52
VT52.BIN	MACHINE LANGUAGE FOR ABOVE PROGRAM
CBM 8010	SIMPLE BASIC TERMINAL PROGRAM FOR 8010 MODEM
COMM PRIMER	COMMUNICATIONS PRESENTATION
8010 MODEM DRIVR	TERMINAL PROGRAM FOR 8010
LOGGER	AS PER 'CBM 8010' PLUS LOG TO DISK
MORSE TUTOR	TEST YOUR MORSE CAPABILITY
MORSE-BTTRFLD	MORE MORSE CODE
TERMINAL DOC	DESCRIPTION OF TERMINAL FUNCTIONS
TOKENIZER	TOKENIZES PROGRAMS DOWNLOADED AS SEQ FILES

CLASSIFIED ADS

5 Cents per word, with $1.00 Minimum.
Payment in advance to:
TORPET CLASSIFIED
Horning's Mills, Ont.
Canada L0N 1J0

Commencing next issue, The TORPET will limit ads from businesses placed in the classified column.

WANTED

CREATIVE PROGRAMMERS! Original VIC 20 and Commodore 64 programs required by new software company. Programs of all kinds may be submitted on tape or 1541 disk with documentation and stamped, self-addressed mailer to: The Cintechs Company, P.O. Box 2220, Station A, LONDON, Ont., CANADA N6A 4C3. All submissions will be answered.

Has anyone seen or heard from Dr. Daley? Has anyone experienced and solved problems with Dr. Daley's Mail List version A.4 or newer? We invite correspondence in an effort to retain the utility of this versatile software. Call collect (201) 658-3133 or write L. K. Shick, Stampsoft, P.O. Box 125, Pluckemin, NJ 07978.(2)

FOR SALE

Commodore 64 Software. Six cartridge games, Commodore assembler, PILOT, Easyscript wordprocessor and mail list. Call (416) 782-8402 evenings.

Four Commodore PET 4032, like new. $600.firm. SIS Computer Store, 5459 Yonge Street, Toronto, Ont. (416) 224-1313.

2031 drive purchased new and never used. Asking $650. and original boxes. 'Phone Wilf, (519), (R)487-3559 or (B)862-2087.

Commodore owners stop spending hours writing programs. Our Foundation Program can help you develop your programs within minutes. Our Foundation Program has all the BASIC routines already in it. You just modify those routines to fit your requirements. Send for free details. Micro-Wood Software Dept-T, 306 Bartram Avenue, Essington, PA. 19029

VIC 20 Accessories for sale, Games: Sword of Fargoal, Rescue at Rigel, Ricochet, River Rescue, Sargon II Chess, Astroblitz, Alien. All $30. each. Froggee & Vikman - $30. for both, Cardco 6 slot expansion board, $75. Must sell. Call (416) 826-6094.

Are you a C-64 owner in need of AID? Well, we've got one for you. C-64-Aid adds 6 DOS wedge commands. (>@ /[lb.] [up arrow] [side arrow]) to simplify disk usage; a simple extended monitor (;;RMGXLSTFHDP,A) is included plus 29 commmands that aid you in programming your C-64 (FIND, CHANGE, DLIST, CONVERT, SOUND OFF, DUMP to name only a few). Only $40.00. Also have new fast action M.L space game ALIENS! for both C-64 and VIC 20. Only $15.00. Or for more information about these and other programs send $1.00 to: G.R. Walter, Gen. Del., Proton Station, ONT., Canada, N0C 1L0. Must specify tape or disk. Foreign orders (outside Canada) must be sent in U.S. funds.

"FOR SALE": COMMODORE 8032 microcomputer and 8050 dual disk drive (one megabyte capacity). like new. $2500.00 for the pair. Will <u>not</u> sell separately. Write CS Design Inc. Box 602, Waterloo, Ontario, N2J 4B8."(2)

Used 4022-P PRINTER: True Bi-Directional Printing, 90cps, NEW RIBBON, IEEE Cable included. Make offer. (519) 524-9520 or write: D. Carpenter, 36 Anglesea St., GODERICH, Ont., CANADA N7A 1T9

VIC 20/Commodore 64 Desk Top Unit: An attractive desk top cabinet designed to neatly hold a VIC 20 or COMMODORE 64 keyboard, up to two tape or disk drives, and a monitor on top. Constructed for appearance & utility from solid oak. - $49.95 (shipping/handling $4.50). Send $54.45 to: <u>COMPUTERCRAFT</u>, 36 Anglesea Street, GODERICH, Ont., CANADA N7A 1T9.(519)524-9520

PARALLEL PRINTER INTERFACE, Model ADA 1600 IEEE to Centronics 36 Pin Ribbon Connector. Hardly used. $145. Transactor by COMMODORE VOL. 2 & 3 for PET owners. Excellent buy at $7. Call (416) 299-0772.

<u>GENEALOGY PROGRAMS</u>-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 Ave., SARNIA, Ont., CANADA N7V 3T9. 'Phone (519) 344-3990 after 5:00 P.M. (1)

VIC 20/C-64 Datassette owners. Now available! Complete Datassette Schematic, Electrical Parts List/Layout for all C2N versions. $8.00 ppd. Computer Clinic South, 6123 W. Mitchell St., WEST ALLIS, Wisconsin, 53214 U.S.A. (3)

VIC 20 SOFTWARE PACKAGE Super Expander cartridge, Snakman tape, Vic Revealed, VIC Graphics, An Introduction to BASIC: part I & II (with tapes), VIC 20 Guide, Getting Acquainted With Your VIC 20, Compute's First Book of VIC, VIC 20 Programmer's Reference Guide. $210. value, package price $150. D. Howard Davis, 411 Winston Road, MARIETTA, Georgia 30060, U.S.A. (404) 427-7740.

FREE advertisement for your Commodore 64 software/hardware/books, etc. in our **GUIDE TO COMMODORE 64 SOFTWARE AND HARDWARE.** Send #10 envelope for forms to COMPUTERARK, Dept. T, 808 W. 245h. Street, LAWRENCE,KS 66044 U.S.A.

Software for VIC 20 & C-64, Runway, Torpedo, Tape or Disk. For C-64, Tanks, Tape or Disk. The Mailer, Data-Bites, The Editor, Disk only. Tape $34., Disk $36. postpd. Send S.A.S.E. for list and prices on other programs available.

Copy: Re-Ink your used printer ribbons for only pennies again and again with the Mac MarkII 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 ReInc., Box 5555, CONCORD, Ont., CANADA 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 Bundles. (5)

Used CBM 8032 w/64K Expansion Board CBM 8050 8010 Modem, Visicalc, Wordpro 4 Ozz Utilities and Manuals (602) 323-3277 or 323-9273, Charles Rosenbaum, 4560 E. Bdwy, Suite 1, TUCSON AZ 85711.

VIC 20: M & M Software announces its first in a series of 16K Adventure Games. This first role playing adventure takes you throughout the United States, and possibly other countries. The object of the game is to get from New York, your home-town, to L. A., with at least $1.00 left from the $10,000.00 you left home with. You'll be involving yourself with many obstacles from bike gangs to international smugglers. Available on tape and disk. VIC must have a minimum of 16K. Please specify tape or disk. Tape - $15.99, Disk - $17.99. Ont. residents please add 7% sales tax. Payable by cheque or money order. Free postage and handling. Send for the ultimate in adventures to: M & M Software, 29 Woody Vineway, Willowdale, Ont. CANADA M2J 4H5. If you like Adventures, you're going to love M & M's ***Added Bonus***. If you order before December 31, 1983, you will receive as an added bonus, 100 free Bulletin Board Numbers, covering North America. *(Additional BBS Lists in future issues).(1)

PET 4032, 9 inch screen, excellent, cassette, tapes with games, $600. or offer. Several ROMs available, Waterloo BASIC, Command-O, Supermon. (519) 886-0155.

APPLE Compatible computer (heresy in TPUG!) with two drives, many peripheral cards, software, and some manuals. Good price. (519) 886-0155.

Discount For TORPET Readers: VIC 20 Versatile RAM boards. 4K RAM boards that can be modified to 8K RAM, are EPROM compatible, Jumper address selectable (BIK1,BIK2, etc.), and have provisions for battery back-up (requires switch and battery clip). 4K kit $39.95, 8K kit $59.95 (less case). Fully assembled and tested units with battery option (less batteries), case and 30 day warranty: 4K $79.95, 8K $99.95 (default addressed to BIK1, others are special order at $5.00 extra.) Mention this magazine and take $3.00 discount on each unit. Ont. residents add 7% P.S.T. Canadian Micro Peripherals, Box 123, WATERLOO, Ont., CANADA N2J 3Z9

For Sale: Pet 4032 (Fat Forty) - 2040 Dual Disk Drive upgraded - 2022 printer - visicalc & power included. Many tapes and some disks. Many PET computer manual, also available, asking $3500.00. Write L. Montgomery, Box 299,Onaping, On., or phone 705-966-2369.

For Sale: "STAR" MODEM with leee interface cable. Brand new, $300.00, call Rene: (416) 272-3899.

4022 Commodore tractor printer, power cable and manual for sale, 416-494-1900 anytime $800.00.

2022 Tractor printer with cable. Like new condition. Call Bob Gidden at 671-8111.

8023P Printer, hardly used. $1,000. Call 519-271-8669, after 5 p.m.

For Sale: Bell 103 Modem with dataphone, A-1 conditon. Asking $245., Phone Peter 845-9384.

FOR SALE: Olivetti Typewriter-Printer ET-121, hooks directly to PET system. 15 cps. $1850 or best offer. Call John Childs 613-345-5521.

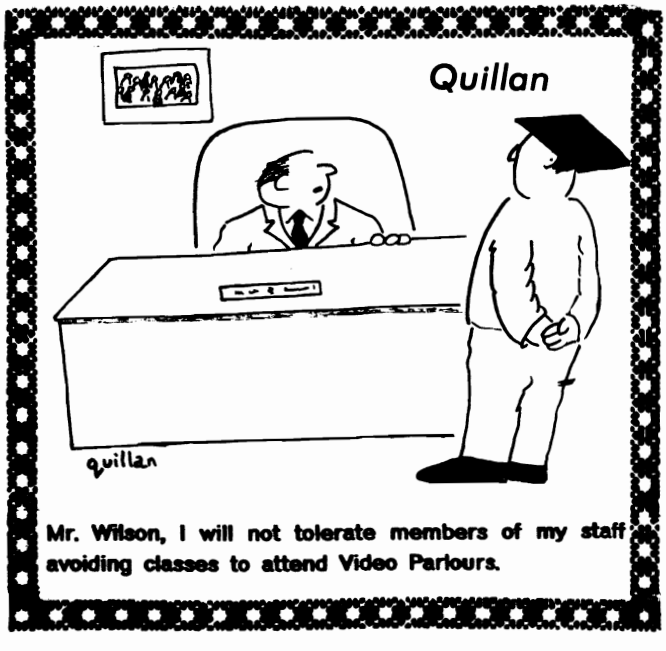
HELP WANTED

HELP WANTED! I have a VIC-20 with 32K expandable with disc need some one to write simple custom business programs for me will include 4or5 small programs. Please send all information to Jim Kemp 1010 S. Elm Henderson, Ky 42420 or call 502-827-8153. Also any one wishing to help a real novice who needs all the help he can get drop me a line.

FOR TRADE

Wishing to trade computer games on tape between other Vic-20 owners. Please call: 312-355-6822.

IEEE to Parallel Interface Model ADA 1600. Original ??? included $145. VILS 2 & 3 of Transactor (several books), $7. for all. PET BASIC Progreramming Manual $10. (416) 299-0772

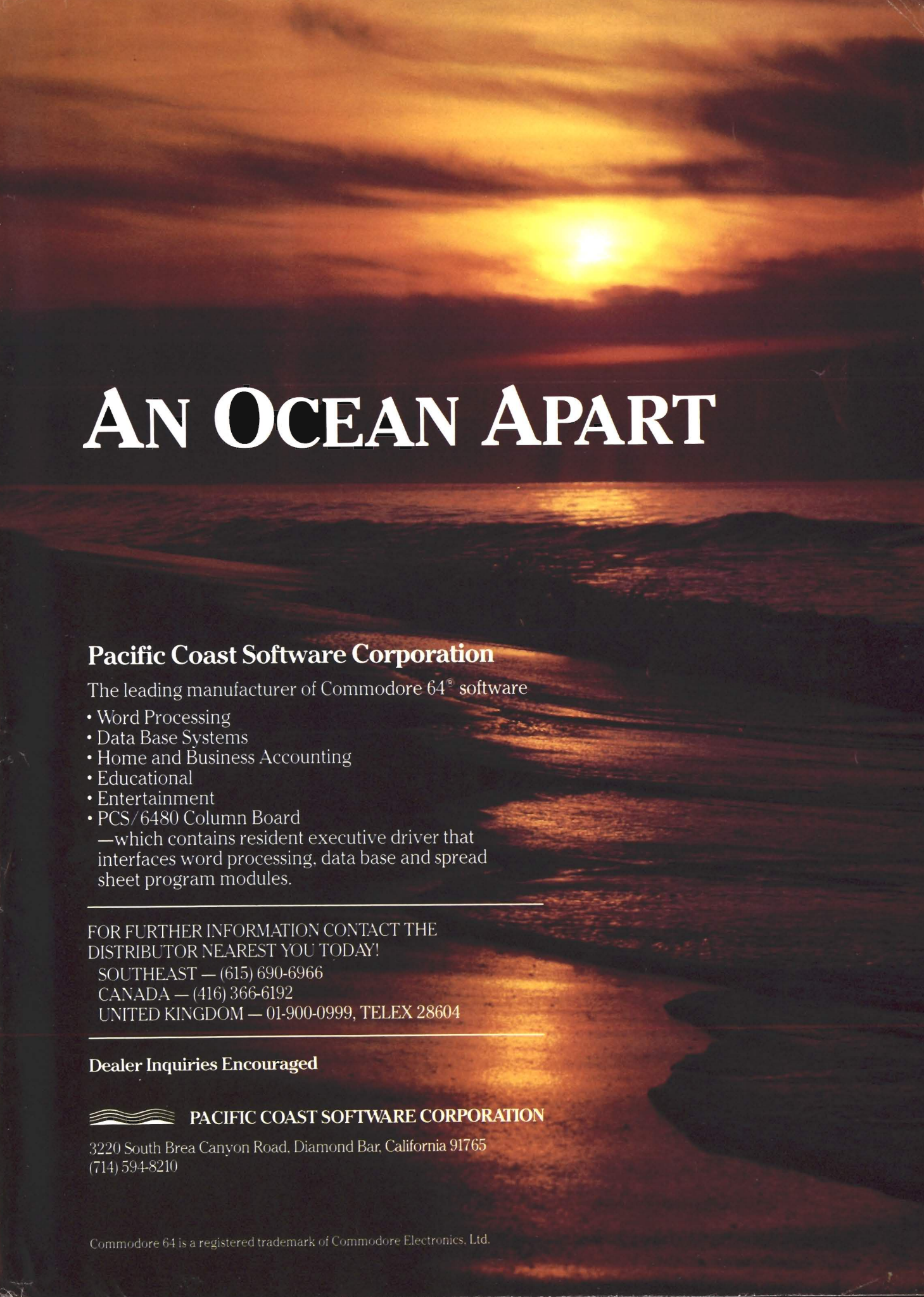


A Ylimaki

Electronic tellers leave me skittish. More voluptuous figures are found in banks than in MEMORY banks.

Don't be PET-rified but be sure to be careful in your computer repairs. Monkeying with the parallel user port could render you PARALLELIZED. It HERTZ.

Advertisers' Index



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New From Cardco

Five Slot Expansion Interface for the C-64

The CARDBOARD/5 (CB/5) is an enclosed five slot, fully switch selectable, expansion interface for the Commodore 64™. This quality product allows the user to switch select any cartridge slot or combination of cartridge slots. Twenty-two color coded light emitting diodes give status indication. Each slot has four LEDs and two toggle switches for indication and control. Two master toggle switches allow the user to manually override any situation.

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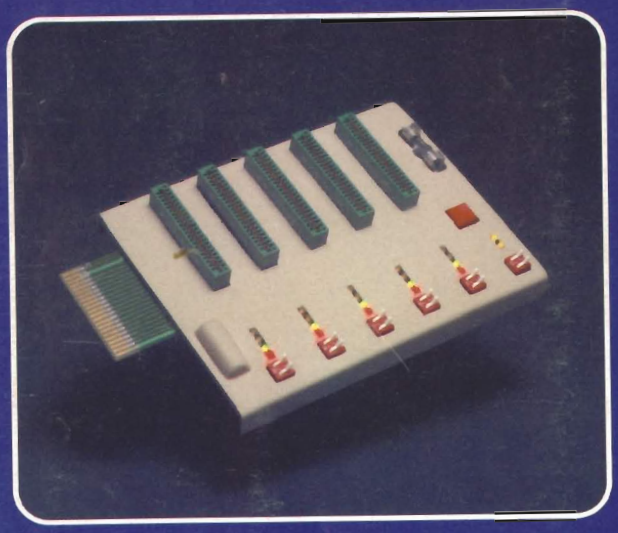

- full support under the board to prevent flexing
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- fused to protect your computer
- convenient reset button
- CARDCO, Inc.'s exclusive Lifetime Guarantee

Some of the features of the CARDBOARD/5 are:

- high quality glass/epoxy circuit board
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- full LED status indication
- convenient toggle switches

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