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TUG

November, 1984

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Magazine

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PET/CBM
SuperPET

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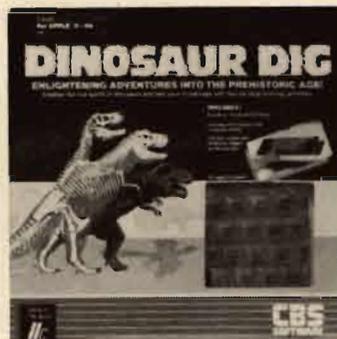
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The election results were not available before press time, so the list of the current members of the Board and the Executive Committee will appear in the December issue.

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editorial

This is a special issue of *TPUG Magazine*. Compared with others in recent months, which have contained many technical articles and relatively few reviews of commercial products, this issue leans heavily in the reverse direction. We have suspended all our regular series of technical articles — those on disk handling, menu creation, SuperPET programming, COMAL, use of the user port, and forecasting with the 8032. They will all be back next month.

Some of you may well be wondering why we could not publish both our technical fare and all these product reviews in this issue. The answer is the root of all evil — money. For various reasons, some of which (such as a recent pause in the growth of the membership of TPUG) have little to do with this magazine, we have found ourselves in a somewhat less affluent position than we had hoped. The situation is not serious; we are not having to contemplate ceasing publication, or anything like that, but it has caused us to postpone our plans to increase the number of pages in *TPUG Magazine*. We are therefore still printing 64-page issues, just as we have done since the magazine started (although, by using slightly smaller type, we are now squeezing more material into the magazine than formerly), instead of the 80 or 96 pages which we had planned to have by now.

This has led us into a difficult bind. Over the past several months, anticipating an increase in the number of pages, we undertook to publish the various series of articles which we have recently been running, and also accepted for publication a lot of product reviews and other feature articles which were submitted to us. Now, we find ourselves unable to publish them all, at least not all in one issue!

Up to now, we have preferred not to interrupt the continuity of the regular series of articles, and have therefore tended to publish them in preference to product reviews. But, for this issue which is appearing at the start of the traditional free-spending "season of goodwill", it seems appropriate to reverse this preference. Interrupting all the regular series at the same time should also, we hope, minimize the confusion!

Jim Butterfield's article, this month, is one of several we have recently received on the subject of software piracy. We do not have room to publish them all, at least for the time being, but perhaps this does not matter much since they all say the same thing: Piracy is *BAD*.

I sometimes imagine what would happen if items of hardware, such as automobiles,

could be duplicated as can software. Imagine that you could get a machine such that you could drive your neighbour's car into it, shovel in some iron ore, wait five minutes, then drive out two cars — your neighbour's and a perfect copy of it for yourself. Imagine that this mechanical wonder could even be used to make duplicates of itself! We would all soon have copies of as many automobiles as we liked. We would also put the auto-makers out of business, throwing vast numbers of people out of work and ensuring that few, if any, new types of cars would ever again be produced. The initial effects of the duplicating machine would be beneficial to many of us, but ultimately it would harm us all by slowing or halting new developments. The same is true of software piracy. By hurting the software developers, it is really harming us all.

Perhaps the real problem is that it is so difficult to catch pirates to bring them to justice. By the time the existence of a pirated version of a program is known to its legitimate owners, there are usually so many copies of it around that tracing them back to their source, or preventing their further spread, is impossible.

There seems to be something about high-tech wrongdoing which makes people who commit it difficult to catch. Those of us

who are involved in running Bulletin Board Systems are aware that the phone lines are infested with modem- and autodialler-equipped fools, who recklessly autodial phone numbers without checking their authenticity as BBS numbers, or who rudely hang up or switch on their modems if a human voice answers. The realization that it is virtually impossible to trace their anti-social behaviour back to them encourages them to continue it.

It also *DIS*courages others of us who might otherwise help them. For example, a few months ago, *TPUG Magazine* published a BBS phone number (on the other side of the continent) which, it turned out, was outdated. As a result, the new users of the number were plagued by calls from people with autodiallers, who did not bother to remain on the line for long enough to discover that the number was wrong. In the end, they changed their phone number and we at *TPUG Magazine* decided to stop publishing BBS numbers. BBS users were hurt by their own thoughtlessness.

The idea that evil returns to do harm to its perpetrators is common to a lot of optimistic philosophies. It isn't always true, but it isn't always false either! *TPUG*

David Williams

Do You Believe In The Disk Fairy?



One of our series authors telephoned recently to check up on a disk which he had submitted.

"We don't have it", we said. He was upset.

"What do you mean, you don't have it? I sent it to you a month ago! As a matter of fact, I personally hand-delivered it!"

We were distressed. Not one of us remembered seeing the disk.

We hunted in all the appropriate places. No sign of it. Then we hunted in all the inappropriate places. Still no sign. Abjectly, we phoned him back to ask for another copy of the disk.

"We just don't understand it," we apologized. "You say you personally hand-delivered it yourself?"

"That's right. Slipped it under the magazine office door".

It was at this point we all looked at each other, a strange wild light in our eyes. As one, we converged upon the magazine-laden bookshelf and couch which blocks the *second*, sealed-and-never-used Magazine Office door and started heaving and hauling the furniture. Our author, meanwhile, was left dangling (literally) on the phone. . .

He heard our raucous laughter. Quickly, we picked up the receiver again and explained that his envelope containing the precious disk had been sitting for a month under the couch.

Strangest disk delivery we've ever had . . . *TPUG*

Editor's Note: We have no idea who wrote the above. We found it under the couch. . .

THIS AND THAT

Doris Bradley
Asst. Business Manager

TPUG Bulletin Board

The TPUG Bulletin Board is enjoying its new home, down the hall from the TPUG office. I am also enjoying my easy access to the board when it comes time to verify members and read messages. Upon occasion I even write a few messages, though I try not to get too involved. I must say, if I don't sign on every day, I get way behind and find that the NEW command often leaves me with 30 or more messages to read! This is due in part to the modification that was made by the current SYSOP, Richard Bradley. Normally a Punter bulletin board can have 399 users; TPUG's can have almost 700! During the week of September 15th, the user's log got dangerously close to the magic 700 mark. As a result, **all those who last signed on the BBS prior to June 1st were wiped off the list.** Anyone involved in this "purge" will have to apply again for verification. The SYSOP is again looking at the program and attempting to find places where he can cut corners in order to allow more than 700 members on the log. Quite often some of the more knowledgeable and well known members of TPUG can be found on the board providing helpful information. I am starting to copy some of, what seem to me, the most generally informative messages, with the hopes that they may appear in this magazine.

It is a few months now since many details have been provided about the BBS. **One important change that was made was the elimination of the download section.** You can still upload articles for the magazine, programs for the library, etc. but you can't download.

Please remember to **always sign on by typing in your name in exactly the same way, and don't forget your user code!**

TPUG Conference 1984

Have you sent in the Appraisal Sheet which was on page 58 of the August/September TPUG Magazine? No? — please take a few minutes and do it today. We need your input!

Other Computer Clubs

I try to include information submitted by other computer clubs. These groups may or may not have an associate membership in TPUG.

San Bernardino Commodore 64 Club meet on the 1st Thursday of each month. The group is growing rapidly. Members' interests range from how to set up a system to telecommunications. Contact Carl Gardenas 714-864-4498.

Main Line Commodore Users Group meets in West Chester, Pennsylvania. Contact Emil J. Volcheck, Jr. 215-388-1581.

Commodore 64 West users club of West Los Angeles and Santa Monica, with ~~over~~ 250 members, has a new permanent address — P.O. Box 406, Santa Monica, CA 90406-0406

Australian Computer Education Association produces a newsletter six times per year. According to their constitution, their focus includes the VIC 20 and Commodore 64 computers with emphasis on program construction and telecommunication. For further information write P.O. Box 194, Corinda 4075 Queensland, Australia.

World of Commodore

The World of Commodore II will take place at the International Centre, Toronto, Ont., near the airport, from **Thursday, November 29th to Sunday, December 2nd.** TPUG plans to have a booth, so come on over and see us. On Thursday and Friday the hours are 10 a.m. to 9 p.m., and on Saturday and Sunday the hours are 10 a.m. to 6 p.m. If there's enough interest shown, we'll try to organize some kind of get-together on Saturday evening, especially for those from out-of-town, so let us know if you plan to come!

Meeting in Downtown Toronto?

If you would be interested in a really "central" meeting, probably at Central Technical School, please contact the TPUG office and leave your name, membership number and telephone number.

Home Study Farm Computer Course

Would you like to find out more about this course which acquaints you with computers and gives you a good introduction to their application on the farm? Contact Home Study, J. G. O'Donoghue Building, 7000 — 113th Street, Edmonton, Alberta T6H 5T6 Phone 403-427-2404

Farm Inventory and Filer

This program, which runs on the Commodore 64, includes a database and inventory control program. For further information contact Digipac, 907 River St. E., Prince Albert, Sask., S6V 0B3.

C-64 Word Processor and Spreadsheet Support Group

If you live in the Seattle, Washington area you might be interested in contacting Clif Gazaway 206-935-2697 regarding this group which meets on Mondays at Automated Training Systems.

Renewing with an Associate Club

The membership and/or renewal fee for someone who belongs to one of our 51 associate clubs who have 15 or more members as members of TPUG is \$5 less than it would otherwise be. In order to take advantage of this saving it is imperative that you send your renewal and/or membership in through the TPUG contact person in your local club. If you don't know who it is — find out. We offer this saving on the condition that we are able to cut down on the paper work here in the office. This is why we request our associate club contacts to send in a minimum of 5 memberships and/or renewals at one time, covered by one cheque. Please note — to establish associate club status, the minimum number of applicants is 15.

Tape Prices

In the last three issues of this magazine the order form has indicated that you can order Commodore 64 or VIC 20 tapes for \$6.00 each, and PET or Commodore Educational Software tapes for \$10.00 each. I felt it was worth pulling this information and highlighting it here as there has been some confusion of late.

As we deplete the stock of VIC 20 and Commodore 64 tapes which were mass produced by one of our suppliers, we will revert to also doing these "in-house". **Once "in-house" tapes become the prime source of VIC 20 and C-64 tapes, the price of ALL tapes will become \$10.00 per tape.** The moral of this story is — if you want current VIC 20 or C-64 tapes, order them now!

Tape Alignment Kit!

It's here! The tape alignment kit includes all the necessary equipment to align the heads of your datasette — the cost is \$5.00. If you order 4 or more tapes you can get the kit free — but only one per member please. When purchased, most datasettes are out of alignment — some only a little, but others a lot. This is TPUG's attempt to help you with the problem since there is nothing that we like better than to supply tapes to members and have them work properly.

Do You Remember When. . .

. . . a commodore was a nice man who ran a ship. A byte was what happened to you when you teased the neighbors' dog. ROM was a museum in Toronto (the Royal Ontario Museum for our American and International members). A pet was a warm animal that welcomed you home. The figure 4032 meant the number before 4033. Syntax was money you paid to the government for booze and cigarettes. BASIC was something that was so simple even you could understand it. Mode was something that went a la pie. Dim was what you did with the lights on a hot date. . . and graphics was how you told your friends about it! Output was what

you used to do to the garbage. An error was something the Detroit Tigers made a lot of (but not in 1984!). Memory was something you lost before a test. A chip was a greasy snack. A ram was what chased the ewes around. . . and a COMPUTER was something you would never, ever learn how to use. (Author — we don't know)

TPUG Information Package

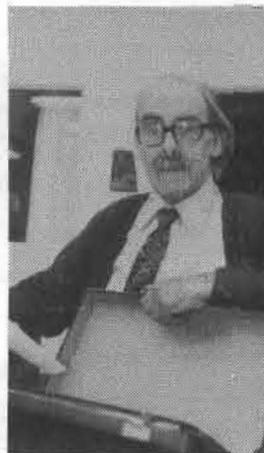
Please give us feedback on the insert you found in your August/September magazine. Adding this to the magazine is costly (especially as far as postage is concerned) and cannot be done on a regular basis. Was it worth it?

If

If Jim Butterfield does go to speak to our associate club in Trinidad, and if we can find an appropriate scheduled trip to Trinidad at that time leaving from places in Canada and the United States — we'll attempt to organize a TPUG get-together in the Caribbean.

If you would like to, and might be able to take a week's vacation in Trinidad this winter, without having to plan a long way ahead, then let me know and I'll keep you informed as to what is happening. TPUG

THE EVOLUTION OF A COMPUTER SYSTEM



Lynn Earley
Willits, CA

OR: HOW MY VIC 20 BECAME A COMMODORE 64

When I bought my VIC 20 computer, I also bought the Commodore Datasette. This permitted SAVING programs onto ordinary audio-type cassettes, from which they could be recalled at any future time and LOADED back into the computer's memory. Of course the process was quite slow; taking quite a few minutes to SAVE or LOAD long programs. Also, tape is a sequential medium. Programs cannot be randomly selected from a tape. So. . . I then bought my VIC 20 a 1540 Disk Drive.

With a Disk Drive, programs may be randomly selected. It's like putting the arm down on a phonograph record at any desired place instead of having to go through the entire record from the start. Now programs could be loaded in seconds.

But I had no means of obtaining a printed copy: so I bought my VIC 20 a VIC-1525 printer. Now I could print out copies of my computer programs directly from the computer's memory.

The author is a 71-year-old retiree who, after living in the Big Apple for 40 years moved from New York City to Willits, California; pop. 4000. Here Mr. Earley pursues his hobbies of Video off-the air recording, Audio recording and corresponding and Home Computing. And, during the school year, he serves as a crossing guard for school children.

Of course I didn't have the means of producing documents such as this. So. . . I had to get my computer a WORD PROCESSOR.

To use my Word Processor, (together with other peripherals), I had to augment my Cardboard-6 Expansion Interface board with a Cardboard-3 Expansion Interface board.

And now we enter a new phase. . . With all of the above, there just wasn't enough memory to handle some material such as my COUPON FILE program. My VIC had the disconcerting habit of throwing lines at me like "OUT OF MEMORY".

So. . . I had to get a Commodore-64. And for the C-64, I had to get a VIC-1541 Disk Drive because the VIC-1540 Disk Drive is not compatible with the C-64! Fortunately,

the 1541 Drive is compatible with both the C-64 and the VIC 20. The VIC-1525 printer is also compatible with both computers.

But now we had a switching problem. Each computer came with a switch which can be used with a TV set to permit its use either as a Computer Monitor OR as a conventional TV set. By hooking up these two switches in a suitable configuration, I am able to use the TV as a Color Monitor for either the C-64 or the VIC 20 or to use the set as a second household TV connected to cable.

Switching the 1541 Disk Drive and the 1525 Printer to either the C-64 or the VIC 20 presented another problem. For most problems there is a solution if one is patient enough. And the solution to the problem appeared in the August 1984 issue of COMPUTE!'s GAZETTE magazine. In this issue, there was an ad and a review for THEREUNION, a single push-switch which connects the 1541 Disk Drive and the 1525 Printer to the VIC 20 when the push button is "IN" or to the Commodore-64 when the push button is in the "OUT" position.

In photo No. 1 we see, from left to right, the 1525 Printer, the Commodore-64 and the VIC 20. In back of the computers, we see a bench which holds a 13" Color TV. On the under surface of this bench, we see THE REUNION, (the switch box described above). To the left, rear of the C-64 will be seen power strips which contain individual rocker switches for each outlet. Into these outlets the computers, disk drive and printer are plugged. (The power switches on these devices are left in the "ON" position and the devices are then controlled by the individual rocker switch on the power strip.

The computer console was custom-designed and built by the author. TPUG

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—meets at MacAulay Public School, Bracebridge, on the first Wednesday of each month at 7 p.m.

Contact Mike Wilson 705-645-6300

Edmonton Commodore Users Group

—meets at Archbishop Jordan High School, Sherwood Park on the last Friday of each month at 7 p.m.

Contact Bob Kadylo 403-465-3523

Guelph Computer Club

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

Contact Brian Grime 519-822-4992

London Commodore Users Club

—meets at Althouse College of Education, main auditorium on the 3rd Monday of each month at 7 p.m.

Contact Dennis Trankner 519-681-5059

Sarnia C-64 Users Group

—meets at Lambton College on the first Sunday of each month at 7:30 p.m.

Contact J. C. Hollemans 519-542-4710

Commodore Users Club of Sudbury

—meets at Lasalle High School in the cafeteria on the last Thursday of each month at 7 p.m.

Contact Tim Miner 705-566-9632

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 p.m.

Contact John Moore 519-253-8658

UNITED STATES ★

Boston Computer Society/Commodore Users Group

—meets at Minute Man Tech High School, Rt 2A (just off Rt 128) in Lexington, MA every 2nd Monday of the month at 7 p.m.

Contact Harvey W. Gendreau 617-661-9227

Commodore Houston Users Group (Texas)

—Clear Lake Chapter — Nassau Bay City Hall, NASA Road #1, on the first Wednesday of each month at 7 p.m.

—Central Chapter — Farrish Hall, University of Houston main campus

—NW Chapter — Bleyl Jr. High School, 10,000 Mills Rd. (Cypress-Fairbanks SD), on the 3rd Thursday of each month at 7:30 p.m.

—Klein Chapter — Hildebrandt Middle School, 22,800 Hildebrandt Rd. (Klein ISD), on the 3rd Tuesday of each month (except July & August) at 6:30 p.m.

Contact Mary F. Howe 713-376-7000

Genesee County Area Pet Users Group (Michigan)

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

Contact Gordon Hale 313-239-1366

Greater Omaha Commodore 64 Users Group

—meets at South Omaha campus of the Metropolitan Technical Community College, 27th and Q Streets in Room 120 of the Industrial Training Center on the first Thursday of the month at 7 p.m.

Contact Bob Quisenberry 402-292-2753

Manasota Commodore Users Group (Florida)

—meets at Mr. G's Computer World, 2057 Whitfield Industrial Way, Bradenton, FL on the 2nd and 4th Thursdays of the month at 7 p.m.

Contact Robert O. Bronson 813-747-1785

Michigan's Commodore 64 Users Group

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

Contact Chuck Ciesliga 313-773-6302

Mohawk Valley Commodore User's Group

—meets at the Clara S. Bacon School in Amsterdam, NY at 7 p.m. on the 2nd Tuesday of the month

Contact William A. Nowak 518-829-7576

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Contact Bob Brazeal 501-967-1868

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—meets at Kit Carson High School on the 4th Monday of each month at 7 p.m.

Contact Geoff Worstell 916-961-8699

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—meets at Mankato State University on the first Thursday of each month at 7:30 p.m.

Contact Dean Otto 507-625-6942

Westmoreland Commodore User's Club

—meets at Westmoreland County Community College (Youngwood PA) on the 3rd Friday evening of each month

Contact Bob McKinley 412-863-3930

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—meets at CFB Baden-Soellingen on the 2nd Sunday of each month at 7 p.m.

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Please note: The exceptions to the "rule" for the designated date for a meeting (e.g. 2nd Thursday) are shown in bold.

BRAMPTON CHAPTER — Central Peel Secondary School, 32 Kennedy Rd. N. on the second Thursday of the month at 7:30 in the Theatre.

Thu. Nov. 8 Thu. Dec. 13

CENTRAL CHAPTER — Leaside High School, Bayview & Eglinton Aves. on the second Wednesday of the month at 7:30 p.m. in the auditorium for PET/CBM.

Wed. Nov. 14 Wed. Dec. 12

COMAL CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the last Thursday of the month at 7:30 p.m. in the auditorium.

Thu. Nov. 29 Thu. Dec. 27

Commodore 64 CHAPTER — York Mills C.I., 490 York Mills Rd., (east of Bayview) on the last Monday of the month at 7:30 p.m. in the cafetorium.

Mon. Nov. 19 Mon. Dec. 17

COMMUNICATIONS CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Wednesday of the month at 7:30 p.m. in the Story Hour Room (adjacent to the auditorium).

Wed. Nov. 7 Wed. Dec. 5

EASTSIDE CHAPTER — Dunbarton High School, (from the traffic lights at Highway 2 and Whites Rd. — go north on Whites Rd. to next traffic lights — turn left to parking lots) on the second Monday of the month at 7:30 p.m.

Mon. Nov. 12 Mon. Dec. 10

FORTH CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the second Tuesday of the month at 7:30 p.m. in the Story Hour Room (adjacent to the auditorium).

Tue. Nov. 13 Tue. Dec. 4

HARDWARE CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Friday of the month at 6:30 p.m. in the Story Hour Room (adjacent to the auditorium).

Fri. Nov. 2 Fri. Dec. 7

MACHINE LANGUAGE CHAPTER (6502) — Call the TPUG Office 416/782-8900 for additional information.

SuperPET CHAPTER — York University, Petrie Science Building (check in Room 340). Use north door of Petrie to access building. On the third Wednesday of the month at 7:30 p.m.

Wed. Nov. 21 Wed. Dec. 19

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

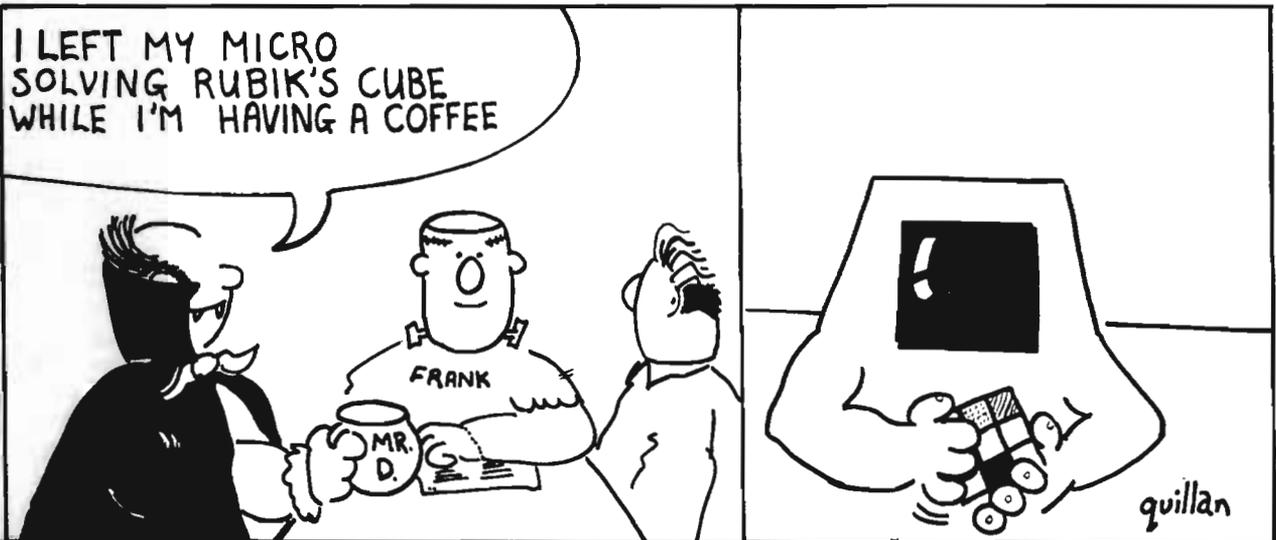
Tue. Nov. 6 Tue. Dec. 4

WESTSIDE CHAPTER — Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd. (south of the QEW) on the third Thursday of the month at 7:30 p.m. in the Little Theatre for PET/CBM/VIC 20/Commodore 64.

Thu. Nov. 15 Thu. Dec. 20

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Commodore is coming out with two spectacular machines. One goes under the name COMMODORE 16, the other — PLUS 4. The PLUS 4 was called various names before: TED, Commodore 264 etc. In the PLUS 4 you have a choice of three levels of extra built-in software: two in the empty sockets, one on a cartridge. Commodore has a substantial amount of software to support the computers, both on chips and tape or disk. This, I believe, includes wordprocessing, a spreadsheet program, LOGO, extra graphics, and a whole range of educational programs.

These computers are so much fun to work with that the C-64 seems like a thing from the stone age, by comparison. It isn't really, it's just that to do the simplest thing on the C-64 you have to find the reference book and the Butterfield memory maps, and load the monitor and Power or BASIC Aid. By the time you do all this you forgot what it is you set out to do. Enter the new machines: flip the switch, code your thing, the job is done.

When new machines enter the market, people always ask what will happen to the support for the old ones. As I see it, the C-64 is not being made obsolete, not yet in any case. The VIC 20 might suffer. The PET, of course, can NEVER become obsolete. There is a balance of its power and the language that makes it one of the easiest machines to cope with, but then it doesn't have many features that are fun, such as graphics and sound.

SHORT DESCRIPTIONS

Now, back to our story: In a way this article is a review. But I cannot look at a machine, so closely related to all other Commodore machines, in abstract. You can skip the comparisons with other machines. If you do not have those machines, the details will mean little. But if you have worked other CBM machines, this review might show the new computers in their evolutionary perspective.

The Plus 4 machine is enormous. It's a POWERHOUSE: Bank switchable sixty thousand bytes free for BASIC to use! No jiggling of memory locations is needed, all the necessary switching is done in firmware, a welcome change from the C-64.

In both computers, the BASIC language is incredible (see separate section below). No longer must you hunt for POKE addresses to do trivial tasks . . . you just say it to the computer in BASIC and the job is done. It's about time that to draw a line all we have to do is say: GRAPHIC1 : DRAW1, x1,y1 to x2,y2. There is some book-looking needed, of course. Some graphic commands have so many powerful variants, that you have to know what values go where, how many commas to put in and things like that. But, overall, it is reference-less work. A pleasure.

MACHINE CODE is simple (6502 instructions). To have a monitor available, you just say the magic word: M, shifted O, and you're in. No loading, no fuss, and it's a good monitor, too. It includes Assemble, Disassemble, Hunt, Save, load, verify, (the usual stuff), and various forms of memory displays, from one line to paused, to continuous. The disassemblies are chopped up into about 12-line hunks, I don't like that, but can live with it. The Assembler is OK, but it immediately moves what you typed rightwards, which may be nice for some people. I normally like to see things stay put where I type them, and I have never liked text moving from under me such as in word-wrap in wordprocessors. I know, I'm peculiar.

C-16 IS A REAL COMPUTER

COMMODORE 16 at first seemed to me to be a blunder. Why would ANYBODY design a computer, in 1984, with twelve thousand bytes free for BASIC, I wondered. Well, I've grown to like the machine. I rarely need huge memory. It, too is a powerhouse! It is identical in operation to its big relative, with two important exceptions: less memory and no ACIA chip which is used for external communications.

I see it as an ideal starter computer and an ideal computer for schools. No kid could or should, in a course of a lesson, write more than 1K of code. So its little size is of no consequence. Yet its power is: schools can use the new BASIC language, machine code, mathematics of graphing, simple sounds . . . and lots more. Debugging aids and disk commands are valuable in any learning environment, as it makes it possible for the kids to concentrate on programming rather than fighting the computer.

More and more people have two computers. You could have one PLUS 4, and a little C-16. Run big programs or games on PLUS 4, develop small subroutines on the C-16 without tying up a big machine for 256 bytes of test-code.

The famous "a chicken and two computers in every home" saying could well become a reality. . .

ASSORTED FEATURES

External differences: PLUS 4 looks beautiful, tiny and slick. It has a diamond arrangement of the cursor keys (flat little arrows, positioned too low, but fairly easy to use). The keyboard is softer than the upgrade PET's, almost too easy to type on. It has four differently shaped function keys which have eight functions pre-programmed, and you can change that.

C-16 is in a C-64 or a VIC 20 case, but dark grey. The keyboard is the same as on the C-64, but the cursor keys are a pain to use: four separate keys up top replacing + - pound and Home. HOME is where RESTORE is on the C-64. If you are used to another computer you'll curse the cursor keys, otherwise it makes no difference.

Both computers have a little button on the side to get you out of any crash. The RESTORE key isn't needed. Very handy. Two exits exist: cold start, (bytes free type), and into the monitor.

Both can use the standard serial peripherals such as the 1541, but a fast disk is being talked about. Some routines seem to be in place for that. I haven't used a printer, but have no reason to believe there'll be problems. Some sort of RS232 support is provided.

There seems to be a user port, I don't know what the arrangement of the pins is. There are two joystick ports with non-standard connectors. There is no lightpen port, but if you know chips and wires, you might be able to hook one up to the TED chip itself to trigger the IRQ.

Both computers can use tape or disk. The tape connector is different. Users of other CBM computers can't hook up their old recorders any more. The tape writing format is different, so, for the first time in Commodore's history, we have tape incom-

THE C-16

Roberto Portolese



Hex and numeric conversion are included, POKE DEC("7000"),DEC("C4") or PRINT HEX\$(32769) are valid, most useful, and fast. Goodbye conversions.

Displaying information on the screen is pure pleasure. No more messy, unaligned columns of numbers, PRINT USING is a dream come true. It works on integers, real numbers, characters and strings. It rounds numbers correctly, unlike the INT function which mangles the negative numbers. PRINT USING can also insert dollar signs or any character of your choice.

BASIC has new loop-commands in addition for FOR J...NEXT J loops: DO...LOOP is supported, as well as DO WHILE...LOOP or DO...LOOP UNTIL some condition is true. They are handy, but not as easy to use as it seems at first, because there are no loop markers. It's a bit rough to have to match your own LOOP with the appropriate DO earlier in the code. IF...THEN...ELSE are supported, so long as the ELSE-clause is on the same line.

BASIC 4-like disk commands are built in. Directory CAN be selective. There is no "I" command, a weird omission. SCRATCH reports the DS\$ errors—not very convenient, as you have to sit and wait. This should be changed in production models, I'm told. I'm puzzled by the long words that are used, the disk only understands single letters (NDVIRSC etc), I see it as a waste of space. I do not like the reversed syntax in "COPY this TO that", all other BASIC commands have the right to left logic: X=5 means 5 goes into X and not X into 5. Picky point, but it has always

patibility. Chances are, there will be conversion programs written. A C-64 could well write a tape using the necessary format. The tape is sloooooooooooooow. About half the speed of the other machines.

The screen is separate, a TV set or the Commodore 17xx monitors can be used, hooked up to either the front or the back. The picture area is much larger than on the C-64, the border is barely there. You have 15 colors with 7 luminances each, plus black color. You also have flashing, done by hardware, at the cursor rate. So you can flash "press any key to continue" on and off. I actually don't like the flashing part of this computer. The cursor rate is faster than the C-64 or the PET and the flashing, unless done subtly in your programs, can be an irritant.

The whole video system is super-stable—it seems to run like on the PET. The main source of the interrupts is the raster. Three clocks on the chip seem to be used only for external I/O. The display never flickers; split screens are clean. Printing on the screen is faster than in my upgrade PET but slower, considerably slower, than in the C-64. In fact everything is slower, the fancy banking routines and double the amount of BASIC commands has to take its toll. Nothing annoying, I'm just reporting a visible difference in speed, and that includes the screen editor which enters BASIC lines into the program.

GREAT BASIC LANGUAGE

Finally, Commodore realized that when they build super features into chips such as the VIC chip or the SID, the features should be supported by a language, else everybody suffers from the POKE and PEEK disease. I'm sick and tired of POKES.

BASIC language is the richest, ever. All conceivable graphic commands are included. The commands are somewhat similar to, but NOT identical to the C-64 Superexpander and some routines seem to work faster (clearing the screen and line plotting).

The system permits easy working of the graphics and sound for another reason: clean exits. In the event of errors, the computer turns the sound and graphics off. You're rarely left in a state of a screen mess as is often the case in debugging programs on the C-64. Don't want a cleanup? TRAP the errors.

TRAPing errors is a good thing. It should be most useful in input and output. It is particularly useful in situations such as character definitions—if there is an error in the program, the screen can become a mess. But if you TRAP the errors yourself, you can clean up the mess, print your own error message and exit elegantly. Super stuff!

THE PLUS 4

Roberto Portolese



continued on next page

puzzled me. In any case BASIC 4 people will have no trouble using this reversed logic; others will have to adapt, of course.

There is a poor-man's BASIC Aid built in. AUTO line numbering, DELETE, TRACE (line numbers only), RENUMBER (all or a tail end section, no line-range permitted). The great loss is the absence of FIND, MERGE or SEARCH and REPLACE. They just aren't there. There is no scrolling listings with the cursor keys, a major pest, in my opinion since the code to do that already exists on other computers. CTRL and S pause the listings, or any output, but they clutter up the keyboard buffer! Pressing the LOGO key alone slows down all output, but pressing the LOGO and STOP keys together has the effect of DLOADing a program — not very nice when it DLOADs on top of a program you're listing! Keep the drive door open.

GENERAL MEMORY USE

A bit of perspective on the C-16: its small size can be problem. You can't easily use memory consuming programs such as word-processing or spreadsheets. Unless disk is used cleverly, forget those applications. It also causes problems in one other situation — graphics. When graphics are used, only 2K is left for a BASIC program. What can you do in 2K? Surprisingly MUCH! Because you do not need to load any graphic support programs, or DOS wedges — you really have 2K. If schools use this computer, it might teach kids to program in tight spaces in an orderly way, instead of spewing bytes all over the machine as some people are now doing on the C-64 (twenty bytes at \$C000, four bytes at \$4100, one byte at \$CF00 — sounds familiar?).

The C-16 BASIC configuration is stable. Nothing moves about the computer. On the PLUS 4 invoking GRAPHIC shoves the BASIC program and all variables and strings to a larger area. This is totally

transparent to BASIC users (NEW command now stuffs that initial zero!), but machine code programmers will have to be careful with the placement of machine code, as well as with poking the top-of-memory pointers to avoid turning the machine upside-down. Key BASIC pointers are identical to the C-64.

Character strings are a whole new ball game. There are *NO GARBAGE COLLECTION* delays. But there is some overhead penalty: extra bytes to serve as pointers. A totally new feature is that all character strings declared within a program (M\$="HELLO TPUG!") are copied to the RAM string space. Their pointers are to there *NOT* to the BASIC program — very handy for program overlays, and general moving of a BASIC program and its variables. But it costs some space unless you balance carefully what must be in an assignment statement with what could be placed in a PRINT statement directly.

MISCELLANEOUS ITEMS

Sprites don't exist. You can move predefined objects on the high-resolution screen, but in BASIC it's rather slow, speed depends on the size of the object. The SID chip isn't there either. Instead, there is a two voice PET-like sound, not very exciting, but terrific for beeping and primitive games. Sound, too, is supported in BASIC. With one exception, you don't have to POKE, ever. Exception: changing sound parameters while the sound is on.

Loss of sprites will affect the game market more than home-programmers. It took an advanced degree in programming-planning to get sprites going on the C-64, most people couldn't use it anyway, so it doesn't seem to be such a big loss.

The computers have an ESC key, as in the 80-column PETs for all sorts of functions including windows, erasing parts of lines,

inserting lines, deleting and so on. ESC can be used in direct mode as well as in PRINT statements. Having never used an 80 column PET, I can't comment on differences, but there are some funny things going on: for instance, when you set a window on top of an already existing screen, all line links are reset to single lines. It's probably a good thing, but don't push RETURN over any such line, or you can mangle your program.

This brings me to a related detail. The screen editor line links, for the first time, I think, are handled differently. Instead of the usual byte per screen arrangement, they are now packed into four bytes, one bit per line. Also, while it is possible and easy to set up alternative screens, as is often done on the C-64, you cannot print on the alternative screens. All output goes to the standard screen location. To summarise: there are significant differences in the screen editor from the earlier machines.

Characters can be redefined. It's much easier than on the C-64. The only difficulty is that the standard set is a bit rough to get at from BASIC. However, the built-in Monitor is a dream to use, and has no problems in looking at any RAM or ROM.

THE BOTTOM LINE

You gotta see it to believe it. There hasn't been a computer like it. Simple to use and huge (not C-16, of course). In a way it reminds me of the PET more than the C-64 ever did. It's probably the absence of all those nasty POKEs. Everything you do seems natural and pleasant, from using the keyboard to the memory management and graphics. There will be superchallenges ahead, of course. Because as soon as we learn a little how to use a computer for some things, somebody thinks up another use which can't be done easily... but then isn't that part of the whole fun? TPUG



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SOFTWARE THEFT

A Case History

Jim Butterfield
Toronto, Ont.

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Maybe you're tired of reading about program piracy. There's been a lot said about it lately. But I have one or two extra thoughts on the subject.

Recently (September 1984) I was chatting with the author of the program **FBACKUP**. You probably know it: it's sometimes called **Fast Backup**, sometimes the **Four-Minute Backup**. Everybody must have a copy by now. In contrast to the single disk backup program that comes with the 1541 and which takes a half hour or more to perform a disk backup, the fast backup program will do the job in four minutes, sometimes less.

It's quite cleverly written — to describe it technically, it formats as it writes in order to get this amazing speed. When it wants you to change disks so as to continue the backup process, it whoops at you. Perhaps I don't need to tell you all this. . . it seems as if most people I talk to have a copy.

This celebrated program was written for commercial distribution by Thomas Tempelmann, a student who lives in Oldenburg, West Germany. It has been for sale in Europe for some time now. There were problems lining up a U.S. distributor, and so the program has never been offered for sale in the U.S.A. or Canada.

Thomas told me his total sales on the program — world wide — amounts to seventy copies. I suspect there are at least ten thou-

sand copies in North America alone. If all Thomas' sales had been to North America (and as far as is known, none of them were), that would mean that over 99% of the copies in circulation were not purchased.

Seventy copies. If you have a copy of **FBACKUP**, how do you feel about that? Would it be better if you didn't know the author's name; if the program were written by somebody unknown rather than by Thomas Tempelmann? Would it be better if you thought maybe he has sold a million copies, so won't miss your royalty?

Seventy copies. Listen, you can't be blamed, right? It wasn't even for sale in North America. So how else could you get a copy except from a friend? And it's a really fantastic program that everyone needs, right?

We seem to be entering a new era where pirates are proud of their work. Bootleg copies are signed by the pirates who broke the protection. There's now a regularly published newsletter which deals with how to make "unprotected backup" disks. The newsletter names commercial software packages, details the protection schemes they use, and gives precise procedures to remove the protection.

Thomas Tempelman's story might have a happy ending. He told me he hopes to sell **FBACKUP** rights to Commodore for general distribution. It's a first class utility and would look great on a bonus disk. It's certainly well tested — thousands of people have used it. So Thomas might — possibly — eventually receive respectable compensation for his work. But it won't be from the sale of seventy copies.

How do you think such an experience would affect Thomas Tempelmann's attitude towards developing new software? Well, Thomas is not the type of person to let small setbacks like this slow him down. Six months ago, he wrote a fast disk program that will load software at remarkable speed. About the time it was completed, he was visited by a young person to whom he showed the system. During the demonstration, Thomas was called away to the phone. The kid stole a copy, and there are hundreds of copies around West Germany now. Thomas doesn't think he'll ever put his fast disk on the market now.

Thomas' current project has something to do with reading sequential files from other computer disks — perhaps Apple, Atari, and/or IBM PC. But he doesn't talk about it much, and he doesn't show his new system to anyone. I get the impression that he's learned not to trust people. I wonder why?

Maybe you hope to write software some day soon. And maybe you plan to work hard, learn efficient coding, get some good insights into machines and people, and put together a program that will be universally admired. It will be useful; it will be elegant; it will be efficient; it will be easy and convenient; and it will do something that hasn't been done before.

And maybe you'll get it all together, and your program will be a sensation. Everybody will admire it, everybody will want it — more, everybody will need it.

And maybe you'll sell seventy copies. *TPUG*

GARBYTE



FREWARE

Gordon Campbell
TPUG Vice-President

Effective immediately, TPUG will act as a distributor for free commercial software.

But don't those terms conflict? No, because only a special kind of commercial software will be included: programs whose authors give them away.

Freeware is okay to copy. But the author, through a message in the program, requests a donation from users. If you try it and don't like it, you don't send any donation.

Freeware is commercial-quality software. Because the author expects to be compensated, it is polished and complete. (At least, that's the theory.)

One benefit of Freeware to users is that they can try the package before they pay for it. In fact, they don't have any legal obligation to ever pay for it. And the cost of Freeware should be much less than for normal commercial packages.

Freeware in many ways is an extension of public-domain software. But instead of submitting a program to the library which works to the author's satisfaction, the author has reason to polish it — maybe adding menus, tutorials, help screens, or more options.

For programmers, there are also benefits. There is no cost for promotion and advertising (which was well over \$10-million last year for Lotus 1-2-3). There is no cost for packaging and distribution. And they get to keep all the money, as opposed to the five per cent which is typical for commercial packages.

For TPUG, Freeware is an excellent way of supporting its objectives. The librarians will have to make a little effort, making sure that no thieves "convert" standard commercial packages into "freeware". We ask the help of all members in this endeavour.

Freeware is also known as "user supported programs". (In fact, the actual term 'Freeware' may become a trademark.) The author makes no commitment of support — as a user, you are expected to

make sure that the program is good enough to use as is before you send away your donation. But registered users may find that their requests for enhancements are acted upon.

TPUG will be establishing a category of library disk for Freeware. The disks will be available to members at the usual fee. Any donation goes directly to the author, not to TPUG. Documentation of the disk will be the responsibility of the author. Generally, only one Freeware package will appear on a disk. Appearance in the library does not constitute endorsement of a package by TPUG. Hopefully, there will even be competing packages.

At present, there are no Freeware packages in the library. However, it is hoped that several will appear before the end of the year.

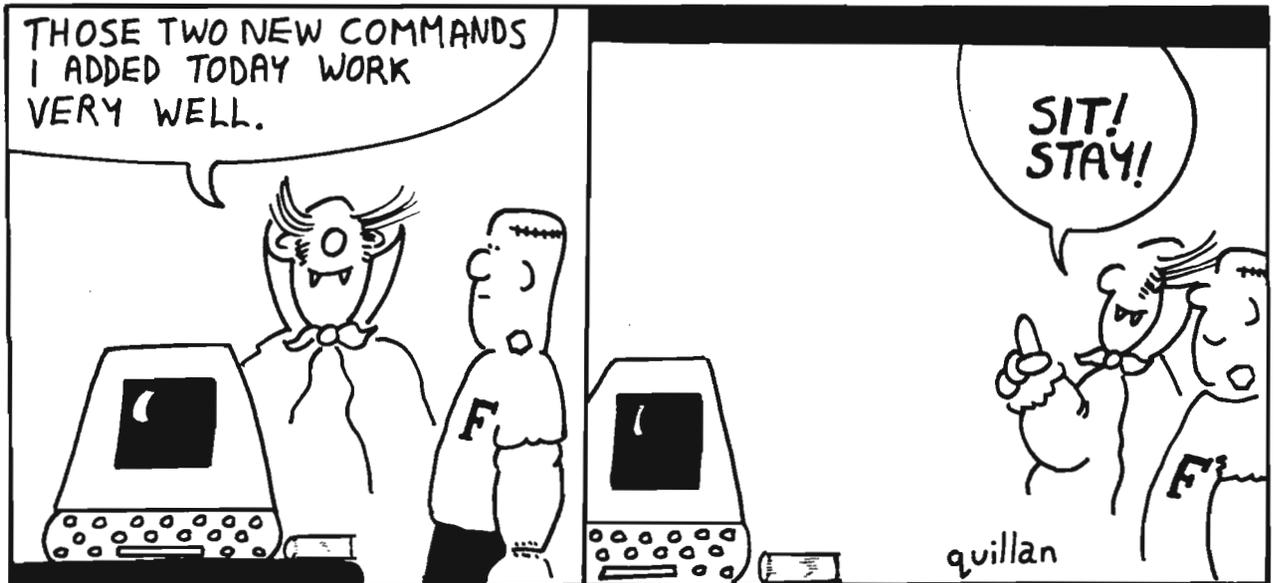
How well will Freeware work? We don't know, but it has worked extremely well in the IBM PC world. Several authors have made in excess of \$100,000 for well thought-out products. In a recent survey of *InfoAge* readers, the most used communications program was PC-Talk, which is Freeware. On the other hand, Jim Butterfield's experiment of requesting 25 cents flopped by commercial or any other standards.

The program's author will suggest a set donation for Freeware, which we expect will range between \$20.00 and \$99.00. However, users can feel free to send what they believe the program is worth to them.

At this point, what is needed are programs. Based on personal experience, I am sure there are many programs which people have written for their own use, but which need substantial work before they can be used by others. So, authors, polish those up, and start making some money! *TPUG*

Editor's Note: To submit Freeware programs to TPUG, send them on disk to "The Freeware Library", c/o the club office. Make sure that they are fully documented, including information on what machines are capable of running them.

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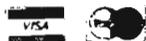


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CARDCO PRINTER UTILITY PROGRAM

Mike Martin
Phoenix, AZ

REQUIRED HARDWARE:
Commodore 64 or VIC 20(+16k expansion)
Cassette or Disk Drive
CARD PRINT (Card/?) interface
Joystick (optional, but helpful)
PRINTERS SUPPORTED
Epson MX RX FX 80 & 100
Star Gemini 10 & 10X
Leading Edge ProWriter
C-Itoh 8510 & 8023

The Cardco Printer Utility is actually an interesting collection of programs, all with strong good and bad points. The collection starts with a versatile **SCREEN DUMP** and includes a very good **BANNER** program. The Disk collection also includes a simple joystick drawing program, and a Hi-res loader, with demonstration pictures. The package includes both the VIC 20 and Commodore 64 programs on each tape or disk. The tape programs cost \$20.00, and the disk version \$25.00

The best program included is the **BANNER**. Once booted up, it allows the user to print banners lengthwise on the printer with a choice of two type styles and two type sizes. Each style can print in either 1" or 2"-high letters with six lines per page in the 1", and three lines per page in the 2". Sizes may be mixed by physically moving the paper back to the starting position on the printer. Line length may be up to 255 characters. The program will print the full letter set, numbers and punctuation, but no graphics. The tape version can take up to 6 minutes to load. The first style is called "Gothic" and is a simple, heavy block style of type. Some of the letters are rather interestingly shaped, such as the lower case 'h' with the header bent over, resembling more of an inverted 'y' than anything else. The printing varies by printer logic. On the Star 10X, the print head works hard by typing in each individual block of the letter, rather than making quick passes to lay each strip of the letter. On the "Mag" style print, it does print by strip, and the letters resemble the magnetic "coding" style used by your bank on the bottom of a check. Both fonts are

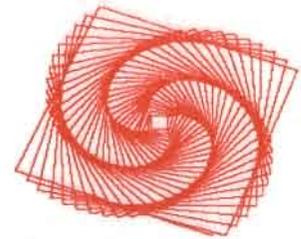
interesting, but I would have preferred more of a simple, plain type face. When printing the "Gothic" style, I worry about my printer. It runs hard and repeatedly goes over the parts of the letters. It also gives an "overheated" smell to the area. The results look nice, but I wouldn't use it frequently with an Epson or Star type printer. The "Mag" type prints faster, and with less wear and tear on the printer.

The **SCREEN DUMP** has plenty of features, but also some strong drawbacks. It works well, and quickly draws a very dark, intense version of your screen. However, the proportions are wrong. When it prints, the finished picture has lost part of its height, in fact, about 20% of its height. If your picture was perfectly proportioned on the screen, it will be squashed on the print-out. This can be easily compensated for while doing the drawing, but it is inconvenient. The screen lettering looks better on the print-out than on the screen, and doesn't have the "dot-matrix" look, but instead looks more like traditional printing or press-type.



The program asks you where to locate it in memory, and gives you four choices on the Commodore 64 (\$CC00,\$C800,\$9C00,\$7C00), and three on the VIC 20. Then it prints out for you a list of eight commands that will cause it to print in different ways. By SYS or POKE commands it will turn on or off a keyed screen dump on Function key 1, a graphics character print, a reverse screen, force flag or key character print. While you can use commands in your own programs that will automatically cause a dump, the program is rather heavily copy-guarded, so you cannot include it in your program.

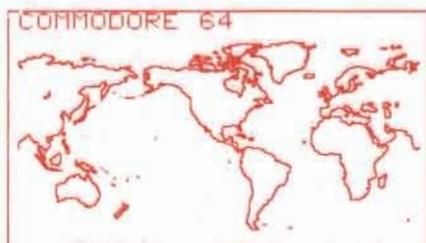
You must load it first every time you want to use it. It is not easily backed up. And even with the choice of locations, it is easily overwritten by other programs that you might want to use it with. For example, using the *COMPUTE FIRST BOOK OF 64 SOUND & GRAPHICS* Joystick Drawing program, it will give you one print-out, then self-destruct.



The joystick program included by Cardco is very simple, and does not include provisions for saving or loading a drawing. The Hi-res loader and demonstration pictures are fun to play with, but were obviously not drawn with the included joystick program, but digitized from some other source. The joystick program might be interesting for a small child to use like a white crayon on black paper, but is not much use otherwise. And a caution: One demonstration program is of a "nude". Not really graphic, but if you don't want your children playing with this one, you might want to erase it from the disk.

In summary, the **BANNER** program is well worth having although hard on your printer. The **SCREEN DUMP** is useful, but in limited applications. The Joystick draw program is the most simple I've ever seen, and the Hi-res loader and drawings are useful only to demonstrate the screen dump. Resolution is excellent on both **BANNER** and **SCREEN DUMP**, and the programs are not easily backed up. *TPUG*

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PROXY

S.A.M. voice synthesizer

William R. Frenchu
Hopewell, NJ

S.A.M. (the Software Automatic Mouth) is a voice synthesizer from Tronix for the Commodore 64 computer. Unlike many other voice synthesizers, S.A.M. requires no additional hardware; it makes use of the C-64's own SID chips. This enables C-64 owners to add speech capability to their computers for under \$70.00 U.S.

The S.A.M. package contains two speech programs, (one to produce the actual sounds and the second to translate text to speech) several demonstration programs and a 35-page manual. The manual is quite well done and includes sections on how to use the programs, how S.A.M. produces its speech, using S.A.M. from machine language, important memory locations, and a dictionary of about 1500 words spelled in the phonetic system S.A.M. uses.

S.A.M. is an unlimited vocabulary synthesizer, that is, the S.A.M. program contains a collection of phonemes that can be strung together to produce any word. (Phonemes are to spoken words what letters are to written words — the smallest parts (sounds)

into which the word can be broken. There are about 50 phonemes required to speak English.) Also under software control is the amount of stress to be put on each phoneme as well as the overall speed and pitch. Finally, there is some control over the type of voice produced using the KNOBS function. According to the manual, KNOBS varies the size of the "throat" and "mouth" producing the voice. Through its use, voices can be produced that sound somewhat like men, women, robots or ETs.

The second program on the disk is **RECITER**. **RECITER** translates written English directly into speech. It sacrifices some of the flexibility of S.A.M. for the ease of regular English input. KNOBS, speed and pitch can still be varied, but inflection and stress are now determined automatically by the punctuation. The translation produced by **RECITER** is quite accurate although some longer words must be deliberately misspelled to come out right.

The quality of the speech produced by these programs is very good and the demonstration programs are quite impressive. (In one, the computer will actually "sing" *The Star Spangled Banner!*) The program does,

however, blank the screen and turn off the sprites and system interrupts whenever it speaks. It can be made to leave them on (using the **LIGHTS** and **INTERRUPTS** commands) but this causes the quality of the voice to degrade and changes the timing slightly.

S.A.M. should be compatible with most other programs. The S.A.M. program itself resides mostly under BASIC (only about 2.75K stays in normal program space) and **RECITER** is supplied in two versions that fit either in the 6K directly below S.A.M. or 2K below S.A.M. plus 4K from \$C000 to \$CFFF. With **RECITER** in the lower space it is compatible with DOS 5.1. A run time version is also available under license from Tronix for professional programmers who wish to distribute programs with speech.

S.A.M. seems a great way to get a C-64 talking. It's versatile, produces easily understood speech and is just plain fun. Its ease of use and low cost should make it a popular program. *TPUG*

*S.A.M. — Software Automatic Mouth
Tronix 8295 S. La Cienega Blvd., Inglewood,
CA 90301*

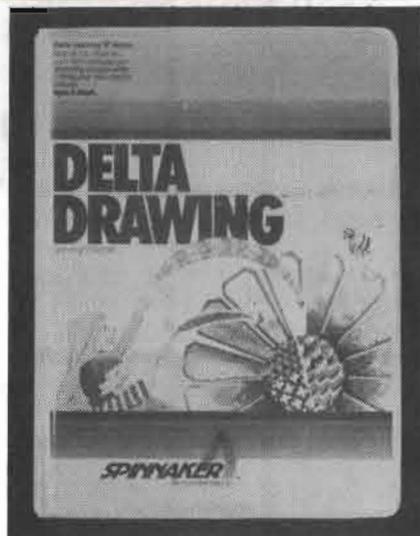
DELTA DRAWING

Tim Grantham
Toronto, ON

Delta Drawing is an elegantly simple, yet powerful, LOGO-like learning program for young people. I say "LOGO-like", but it really would be more accurate to say "LOGO in reverse". Children move the delta around the screen by pressing keys (D for Draw, L for Left, etc.) They can then press T (for "text") and see the record of the commands they used. But the important thing is that, with a minimum of assistance from an adult, they can work intuitively and create quite complex pictures.

Delta Drawing utilizes all 16 colours and the medium-res screen on the C-64. It is only available on cartridge, presumably because young children can handle them better than disks. Similarly, once they have created their programs, they can only use the tape recorder to save them. Only ten procedures can be saved into one program file and there is no way to name the file. There is provision made for printing the programs, or "text histories".

The cartridge comes in a sturdy plastic case, complete with attractive documen-



tation, and a quick-reference card with nearly sixty commands listed. It is available, for \$49.95 Cdn., at Electronics 2001 Ltd., 5529 Yonge St., Willowdale, Ontario M2N 5S3, (416) 223-8400. *TPUG*

*DELTA DRAWING Learning Program
Spinnaker Software, 215 First Street, Cambridge, MA 02142*

APPLE PANIC

Vincent Sirugo
Scarborough, ON

Walk back-and-forth and climb the letters, to get to the different levels on the screen while avoiding the apple monsters. That's **Apple Panic**. The monsters move back and forth with no idea of where you are, so when they are moving away from you, press your 'fire' button to dig a hole in the ground. If the apple monster comes back, then he will fall into the hole. Now, before he gets out, press your 'fire' button again to bash him on the head, pushing him through the hole, thus collecting 100 points.

There's not much to this game. The graphics and sound effects are reasonable. The response on the joystick is slow. The digging of a hole is very difficult for young and old alike, and if you hold the 'fire' button down too long, you'll end up filling in the hole you just dug. If you have the money to spend, bypass this one and get something else.

Rating: 5 out of 10 *TPUG*

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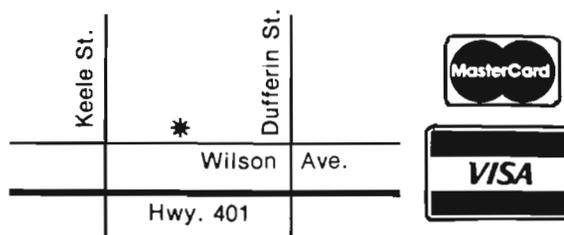
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ZAXXON

Malcolm O'Brien
Toronto, ON

With 3-D graphics and a diagonally-scrolling screen, ZAXXON was sure to be an instant hit. It had a captivating display. This alone would not be enough to make the game a hit. A bad game that looks good would not be successful.

The good people at Synapse Software (especially Peter Adams, the programmer) have done a great job of transferring a great game to the C-64. The colour, sound and graphics are all excellent, and it's a very good reproduction of the arcade version.

When the game starts, your C-64 is transformed into the gateway to the treacherous Asteroid City. Be warned—although the radar towers, fuel tanks and enemy planes will pose no threat to you here, the base missiles and gun emplacements are out to clip your wings! Also, there are various obstacles that test your navigation skills. The altimeter on the left side of the screen will help you decide if you are flying too low or too high. You must fly over brick walls, over or under electronic barriers, and avoid colliding with *anything* on the ground.

Don't think that you can simply fly over the Asteroid City and avoid any confrontation. Attempting this will result in the release of seeker missiles. These are easy enough to shoot down if you're careful, but the passive approach will mean no points. Even worse, without destroying fuel tanks you will soon find your fuel gauge on empty, and you'll have one less fighter as a result.

So swoop down low (joystick forward) and do some major damage. Make sure to destroy as many enemy planes as you can, in order to reduce the fleet that attacks you in Deep Space.

The Deep Space dogfight is more difficult than the Asteroid City. It's difficult to gauge how high or how low the enemy fighters are flying. Sometimes you will see a sighting device in front of your ship which is accompanied by a beep. Shoot! This means that your laser cannons are on target. Don't move up or down, though, because there will be several ships on the same level.

Successful negotiation of Deep Space brings you to the next Asteroid City. This one is more difficult, and demands more of your navigational skills. You'll have to fly through small openings between the electronic barriers and the brick walls. If you succeed,

you will find yourself face-to-face with Zaxxon himself. To destroy this nasty robot, you must make three direct hits on his missile launcher (otherwise known as his left arm, to us biological units). This is tough! I only managed to do it twice. Destroying his missile causes him to back off and you go back to the Asteroid City again. But it's tougher now—more guns are shooting at you.

The thing that I personally don't like about ZAXXON is that you quickly learn to follow a set pattern of moves to get you through to Zaxxon himself. For this reason, the game will appeal most to the disciplined, goal-directed player (the kind you see at the arcade who gets furious with himself when his game ends after three hours on one quarter). This type of player is perfectly content to follow the same pattern for a few minutes to get those precious few moments of head-to-head combat with Zaxxon.

Alternatively, you could try different patterns to attempt a higher point total or to

eliminate more enemy planes, but you'll run the risk of getting shot down without meeting Zaxxon. The choice is yours.

One more thing about Synapse. When you buy the game, you get printed instructions which are brief, but sufficiently informative. On the other side of the sheet is an illustrated, full-colour software catalog. More importantly, there are demos of four other games on the disk. After the distinctive title screen you have the option of playing ZAXXON or viewing the demos. You can preview several action screens from *Survivor*, *Shamus Case II*, *Necromancer* and *Drelbs*. A nice idea for the software consumer, and a smart marketing idea on the part of Synapse!

Synapse, by the way, is looking for good fighter pilots. If you would like to volunteer, march down to your local software dealer on the double and tell them you want to challenge Zaxxon. *TPUG*

ZAXXON from Synapse Software, 5221 Central Avenue, Richmond CA 94804. \$28.00 U.S.

SOLOFLIGHT

William Wilbur
Kittery, ME

Solo Flight is advertised as a "real" flight simulator program for the Commodore 64. Some of the features include three-dimensional graphics, multiple airports and runways, radio navigation instruments, VFR (Visual Flight Rules) and IFR (Instrument Flight Rules) flying.

Included in the software package is an **Air Mail Delivery** game, for 1 to 4 players. The object of this game is to deliver a selected amount of mail to selected airports, re-fuel, and head for the next city. Various hazards, real or otherwise, conspire to make your flight more difficult. Each player must select how much mail, how many destinations, load sufficient fuel and plan an air route. Small items such as fog, turbulence and engine or instrument failure add quite a bit of spice to each flight.

Actual "flight" is not very difficult. The joystick flight controls are very responsive, other controls (via the keyboard) are clear and concise. Visual references are more than adequate as you view the aircraft from

about 400 meters aft of the actual cockpit. Unfortunately, the instruction manual provides only the most elementary air navigation maps. Not only are these maps extremely small, but the compass rose (very small) is only marked every 5 degrees. This makes accurate navigation well nigh impossible!

The "actual configuration" instrument panel is somewhat like that found in real aircraft. Although this panel supplies you with most of the necessary information, the method of displaying this information is quite unlike any aircraft I have ever seen. (Aviation history is just one of my hobbies, so I've seen a few aircraft instrument panels!)

All in all, **Solo Flight** is an excellent flight game. I am having a great amount of difficulty accepting this program as a "real flight simulator", as claimed by the advertising! As a flying game, I'd rate it 8 out of 10. As a "real" flight simulator, 1 out of 10! *TPUG*

SOLOFLIGHT from Microprose Software, 10616 Beaver Dam Valley Rd., Hunt Valley MD 21030 (301) 667-1151. Disk or cassette. \$34.95 U.S.

FLIGHT SIMULATOR II

Dave Neale
Meaford, ON

If you've ever wanted to take up flying as a hobby, now's your chance. **Flight Simulator II** by SubLOGIC Corporation can help you learn to fly a modern aircraft without spending hundreds of your hard-earned dollars.

Flight Simulator II was designed around a single-engine, 148 MPH, fixed-gear Piper Archer II (PA-28-181), because this aircraft offers great performance and easy handling without the bother of a constant speed prop or retractable landing gear. In addition to the flight simulator, a **World War I Ace** game is included in which you (the pilot) must destroy several enemy installations.

What makes this flight simulator stand out is the incredible out-the-window view using a 360 degree, 3-D dynamic shaded colour graphics flight display, as well as flight and navigational instruments that look like the real thing. SubLOGIC's first simulator used a flying environment (known as a "small world") of several hundred square kilometers, whereas **Flight Simulator II** has a world that is more than 16,000 by 16,000 kilometers, encompassing most of the western hemisphere. All this is done with an incredible resolution finer than 6cm. Over 80 airports in four scenery areas — New York, Chicago, Seattle and Los Angeles — are included, with additional scenery areas becoming available (SubLOGIC will respond to requests and suggestions).

When **Flight Simulator II** is loaded and ready you can enter the "Edit" mode, enabling you to program the type of flight you wish to have. With 35 parameters controlling the flight simulator, the editor can adjust virtually any factor affecting the flight. The parameters include:

(1) **User Mode:** This controls a 25-mode library pointer that can call up information off a disk to allow you to fly customized flight parameters. There are 10 preset modes to choose from and 15 user modes where you can store your current flight parameters. This feature lets you complete a long cross-country flight in more than one sitting.

The simulator will default to mode 0, the "easy" mode. Here the aircraft is very forgiving of flight control, engine handling and navigational mistakes. However, there is a "realistic" mode (mode 1) which adds the sophistication of a real flight. As all pilots know, a number of problems can arise during any flight, ranging from diffi-

culty starting the engine to a light bulb burning out at night on a vital flight instrument (or getting stuck in mud or a snow bank if you leave the runway).

(2) **Auto Coordination:** During aircraft turns, a little rudder is necessary for a properly co-ordinated turn. This feature can be selected "on" or "off"; if "off" is set then you must apply the proper amount of rudder yourself. Lazy pilots may always want this on, but there may come a time when you will want to lose some altitude to get to a better position for landing. In these cases you can cross-control the ailerons and rudders to side-slip to a lower altitude.

(3) **Communication Rate:** By selecting certain communication frequencies you can receive ATIS (Automatic Terminal Information Service) messages that assist you in determining weather and active runway at your destination.



(4) **Aircraft Position:** A series of parameters can be set to start or change the aircraft's position at any time. These include North and East positioning, altitude, heading, pitch, bank, airspeed, throttle, rudder, ailerons, flaps and elevator. With all these settings, you can start (or change) the aircraft in any position or attitude, which may come in handy while you're just learning to fly.

(5) **Seasons:** The four seasons will affect your aircraft's performance if you're in the "reality" mode, as well as determine the proper time for transition from day to dusk to night, etc.

(6) **Cloud Layers:** At any time you can program up to two cloud layers by setting the altitude of both the "tops" and "bottoms" of each layer. While in cloud, the view becomes

completely white, blocking any altitude information, and while on top of the cloud there is no terrain information to help you locate an airport. This means you must fly the aircraft to the appropriate MDA (minimum descent altitude) before breaking out into the clear for landing.

Several other features are included to make the simulated flight as realistic as possible.

The real advantage of this package is its graphic capability. Having flown several real flight simulators (DC-10, B-737, B-747 and DC-8) with a major airline, I can appreciate the time and care that the SubLOGIC team put into this flight simulator. Some of the terrain features include buildings, taxiways, snow-capped mountains, water, and communication antennas. The instrument panel has every instrument or device the aircraft has except cabin heat — that, of course, is left for you to set before you start.

The radio stack includes a communication radio, two navigational VOR receivers (Very high frequency Omni-range Radio) with one ILS (Instrument Landing System) head and one localizer head. (A head is a display presentation unit) A DME (Distance Measuring Equipment) and 4096 code transponder complete the radio package. Also provided are a full range of engine instruments, including magneto selection and carburetor heat indicator.

After becoming familiar with the simulator, I started planning a short cross-country flight from Chicago's Merrill C. Meigs (the default airport) to Bloomington-Normal airport. Almost all of the regular preparations can be carried out in detail prior to takeoff and, while airborne, I was very surprised by the accuracy and detail of the navigational instruments. This is where **Flight Simulator II's** training capability can really be seen. If you want to get into IFR (instrument flight rules) flying, then this could actually be used as a training aid. Considering that most simulators at local airports cost between \$35 and \$65 per hour, you could pay for the package in just a short time.

The sound provided is very realistic for most conditions, like the tire squeak on landing. However, the sound for a crash could be improved (although I have no first-hand knowledge of what it should sound like, touch wood).

The documentation includes two manuals: **The Pilot's Operating Handbook and Airplane Flight Manual** and **The Flight Physics and Aircraft Control** manual (with an introduction to Aerobatics). It was easy to see that the manuals were written by an experienced pilot; they provide a very detailed description of the aircraft and the flight simulator. **The Flight Physics and Aircraft Control** manual was designed for the user who has absolutely no previous flight experience. Its explanation of the theory of flight and the physics involved will guide you through eight flight lessons covering different aspects of aircraft control and instrument handling.

When you feel you can handle the aircraft, it may be time for the **World War I Ace** game. You will be required to destroy the enemy's fuel depots and factories while six computer-controlled enemy fighters (each with their own flight technique and characteristics) test your flying ability in a real-

life dogfight. Attack radar, a machine gun and five bombs are available to complete the mission. Refuelling and resupplying can be carried out at your home base.

The only drawback I see with the simulator is that the graphic display is sometimes too slow in responding to control inputs. This can cause a lot of over-controlling. There is an overloading control that is supposed to solve this problem, but after hours of practice I've yet to see it work. Because I have flown a real Piper Archer II, I know that the handling could be improved in certain situations, like steep turns, stall and dive recovery. When doing some aerobatics, an actual aircraft responds much faster and better than this computer counterpart. I will admit, however, that more practice could overcome this drawback. The stated projection rate (between 2 to 6 frames/second) seems a bit high with the C-64; I counted about 0.5 to 3 frames/second, and this could not keep up with the quick manoeuvres of

aerobatics. When higher clock or bit rates are produced, this type of program could be in the same league as the simulators used by the airlines.

For anyone interested in the navigational part of flying, **Flight Simulator II** would be a real asset. I know that my C-64 will be doing several cross-country flights in the near future.

Flight Simulator II is available on disk for the Commodore 64, Apple II and Atari, with a limited feature cassette version available soon. You can contact your dealer or order from SubLOGIC directly. Enclose \$49.95 plus \$1.90 shipping and state the type of delivery. Most credit cards are accepted. Contact:

*SubLOGIC Corporation
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Champaign, IL 61820
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CHOPLIFTER

Vincent Sirugo
Scarborough, ON

If a simple program is to attract the attention of many VIC 20 users, then it must have something going for it. **Choplifter** by Creative Software is such a program. Being one of the top three selling programs for the VIC 20 is no small feat: therefore, we had better take a look at it.

Choplifter has a very simple plan behind it: "fly your helicopter and free all the prisoners". You take off from your base and you fly around until you see little men running around the ground or until you see a house with the chimney smoking. At this point you land your helicopter either on the ground or on top of the house, thus freeing the trapped men. The men now run towards you and into the helicopter. The helicopter can only hold sixteen men at one time, so when you have your fill you take off again back to the base. You repeat this procedure until you have all forty-eight men safely back at the base.

No, it's *not* that simple. There is a little more to it than that. Patrolling the ground is a Tank. When you land your helicopter the Tank will start to come after you, destroying you and/or the men that you are trying to save. But feel relieved: only one Tank will come after you at a time! The Tank is also a great distance away from you, so it can only hit you if you're on the ground or

very close to it. "Take off and fly away to avoid the Tank!", you say. Not so fast! The enemy has planes flying around to protect the Tank and guard the prisoners. But do not fear: your helicopter can fly very fast. It is also equipped to fight. You can fire at the enemy planes, outmanoeuvre them and drop bombs on the Tank. But you can never destroy them all, therefore you must fly back to your base for absolute safety.

That's the basic plot. Now for the graphics. **Choplifter** uses high-resolution graphics only (no multi-colour). The ground is always RED and the men, Tank, helicopter etc. are always WHITE. I find this takes a bit away from the game. Colours aside, though, the effects are excellent. The helicopter is a marvel as it flies forwards, backwards or sideways, with its two blades turning and its engines roaring. The planes, the Tank and the little men running around are also wonders of animation — at least for the VIC 20.

The only problem I found with the game is that after I got all forty-eight men back to the base, that was it. The game was now over. No second or third level to advance to. It didn't take long to master the game and save one and all. When this happens, what do you do next?

Choplifter is available on cartridge only from Creative Software. *TPUG*

COCKPIT 64

William E. Wilbur
Kittery, ME

*From: Susie Software, 709 Wilshire Drive, Mt. Prospect, IL 60056 (312)394-5165
For Commodore 64
Disk or Tape
List price: \$30.00 (US)*

Cockpit 64 is a flight simulator game for the Commodore 64. The program is written entirely in machine language. Features include a windshield view, keyboard or joystick control, seven different airports, multiple difficulty levels (from easy to impossible), and a full-color display, with sound.

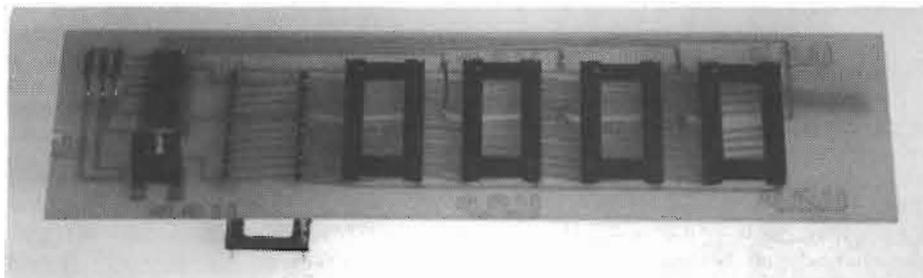
Instrumentation includes an altimeter, VOR, DME radar, air-speed indicator, fuel gauge, artificial horizon and indicators for flap and landing gear positions. Standard flight controls are supported.

The object of the game is to fly to one of seven airports and make a safe landing on the runway. To accomplish this, you follow the suggested altitude and direction shown on the control panel. Just be sure to keep an eye on your air-speed and flap indicators.

All in all, **Cockpit 64** is an exercise in eye-hand co-ordination! I'd rate this program at 4 out of 10. Not recommended at the normal selling price. *TPUG*

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SPITFIRE ACE



Dave Neale
Meaford, ON

Have you ever wondered what it would be like to take part in the Battle of Britain, or defend Pearl Harbour from attacking Japanese fighters? All it takes now is a C-64 and one of two programs by Microprose Software.

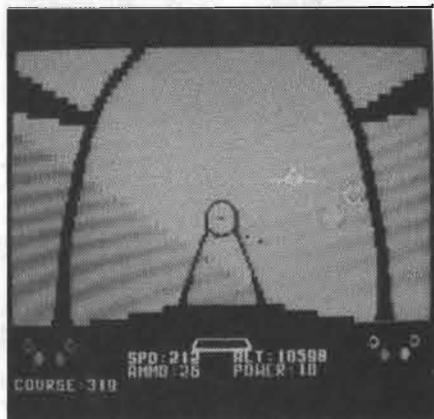
Microprose has developed *Hell Cat Ace* (Pacific battle) and *Spitfire Ace* (European battle); both of these are similar in that they pit you and your skill against an enemy aircraft that either must be destroyed or evaded. Each has up to fourteen different battle areas, as well as several types and skill levels of enemy aircraft for each area.

There are many great features included in the games, but the most important one is the very fast projection rate (the rate at which a new horizon line is presented on the screen) — about 4 to 6 frames per second. One reason that the rate is so high, though, is that the detail of the horizon is not as accurate as some of the more sophisticated programs. However, after using both types, I feel much more comfortable with the Microprose version. This speed of projection gives you great control over your aircraft with little or no chance of overcontrolling. When the projection rate is slow, however, you sometimes miss a horizon projection and this could cause you to miss a cue that is needed to properly handle the aircraft. As a result, you may miss a heading on a turn, or be unable to maintain a certain altitude. With the Microprose game, those of you who have had absolutely no flying experience before should

be able to pick up the basic flight control sticky movements that will be required to fly your aircraft.

The graphics are great, considering the fact that anything better might slow down the action. As the game starts, you will see an enemy aircraft somewhere on the screen, a targeting sight, and either the sun or moon, depending on whether it's a day or night fight. The one disadvantage is the lack of ground terrain but, as I mentioned, it would slow things down.

Your task will be to place the sights over the enemy and fire the machine guns, destroying him. There are four levels of play and in each successive level the enemy will be a bit harder to shoot down. You will have to remember, though, while you're in a turn you must lead your firing, because the enemy will turn away from the bullet's path. This is what makes the game interesting and challenging.



Below the cockpit window is a small control panel that provides the basics needed for flight. Airspeed, altitude, course, ammunition level, power setting and a rear-view mirror that will tell you if you've got the enemy on your tail are all included. By adjusting the power setting, you can perform a great variety of flight manoeuvres, including mild stalls, spins, inside and outside loops. All of these manoeuvres can help you get an enemy off your tail. Of course, sometimes the enemy will get the better of you and shoot your aircraft. The more times he hits you, the more your aircraft will be damaged. This damage can range from losing a bit to all of your power, or even control of your aircraft. When all your fight has been knocked out and you're going to crash, there's only one thing to do — bail out! However, you can only do this if the speed is slow enough (as I learned

after losing power and control of the aircraft and going into a screaming dive of over 380 mph). For the more brave among you, there is the option of flying your crippled aircraft to the ground and carefully landing, hoping that you will be rescued and returned to fight again.

When you have shot down five aircraft, you are proclaimed to be an Ace. This may sound easy, but you'll have to see for yourself. Four levels of play allow beginners to challenge the most experienced Aces, because the levels can be set within each game to match a player's skill.

The last feature is the sound, which is very good. The drone of the engines, machine-gun fire and explosions seem very realistic.

Although *Hell Cat Ace* and *Spitfire Ace* are not as sophisticated as the flight simulators out today, I feel that in some respects they can teach you the basics of flying as quickly as anything else. They are definitely a must for those of you interested in flying. *TPUG*

HELL CAT ACE and SPITFIRE ACE from Microprose Software, 10616 Beaver Dam Dr., Hunt Valley, MD 21031 (301) 667-1151. \$29.95 U.S.

RUNWAY 64

William E. Wilbur
Kittery, ME

Runway 64 is an instrument flying game for the Commodore 64. The object of this game is to make a safe landing on a runway in as little time as possible, while losing as few points as possible.

The instrument display, while not realistic, is very well-laid-out, complete and easy to use. The instruction sheet is also complete and easy to understand.

Overall, this game is very easy to play and is mostly an exercise in eye-hand coordination. I found it to be not very exciting, thus a rating of 5 out of 10. *TPUG*

*From: Susie Software, 709 Wilshire Drive, Mt. Prospect, IL 60056 (312)394-5165
For Commodore 64
Disk or Tape
List price: \$25.00 (US)*

THE KOALA PAD - a colourful experience

Chris Johnson
Toronto, ON

One of my childhood fantasies was recently shot down: My father's standard silly answer to any question about colour was: "It's sky-blue-pink".

It didn't take me long, of course, to realize that this colour was a pigment of his imagination. But that didn't stop me from picturing, in my mind's eye, the colour "sky-blue-pink". It was a beautiful colour: combine the vibrance of sky blue and the pastel softness of pink into a single hue (not the visible colours, mind you, just the *essence* of each) and the result is breathtaking.

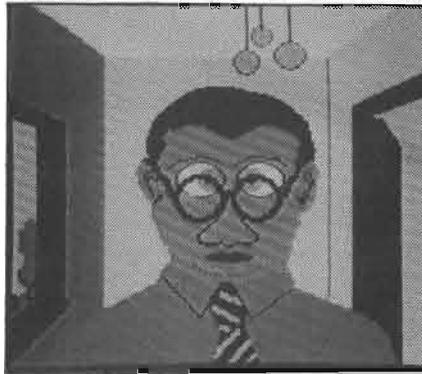
I adopted that same expression with my children, but I am afraid I shall have to stop. My nine-year old daughter has ruined it for me.

We recently acquired a Koala Pad with the **Koala Painter** program for the Commodore 64. Rosalyn (she's my nine-year-old daughter) took to it immediately. Until then she hadn't been much interested in the computer. Her favourite program was a low resolution drawing program operated with a joystick. Then came Koala Pad, and she was fighting her brothers for computer time.

So what did that have to do with ruining my conception of "sky blue pink"? Let me describe the Koala Painter program to you.

The Koala Pad is a small graphics tablet which plugs into joystick port one, sending signals to the paddle locations. The pressure-

An example of a picture created on the Koala Pad with the Koala Painter program. "Mirror" and "Copy" "Swap" were used to create and merge symmetrical features such as the eyes and glasses.



sensitive drawing surface is only four inches square, and has two control buttons above it. (Either button can be used — a boon for lefties, let me assure you). The **Koala Painter** program that accompanies it is a multi-colour, high resolution drawing utility which is used entirely from the Koala Pad. (There is a small exception which I shall get to later.)

When the program is booted — it takes a while and there is a beautiful landscape displayed on the screen for most of the time — a menu appears. Using a stylus (supplied) the cursor (in the shape of an

arrow) is moved to the appropriate choice and one of the buttons pressed.

The basic choice is "draw". The arrow is then moved to choose one of several "brushes," from a single pixel to a wide vertical, horizontal or diagonal brush. Then on to choose the colour! By moving the cursor to one of the sixteen C-64 colours displayed across the bottom of the menu screen and pushing a button, the colour is selected. Moving the stylus (and cursor) to the very bottom and pressing a button switches the screen to a blank drawing surface.

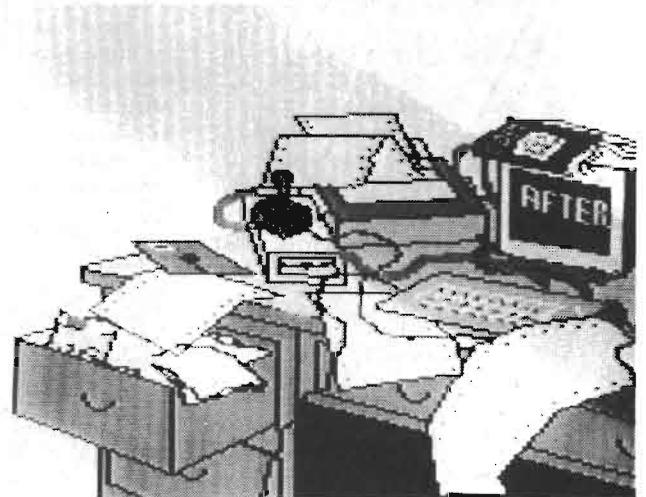
Drawing with the stylus is hard to get used to at first, since the movement of the hand is magnified on the screen (assuming you're using something larger than a four-inch monitor). It is accomplished by holding one of the buttons down as the stylus is moved.

Drawing freehand with the stylus is only the beginning of the story. Moving the stylus back to the bottom of the pad and pressing a button returns you to the menu.

There are other drawing commands, each of which can be used with any of the eight brush strokes.

"Line", "circle", "disc", "frame" and "box" share a transportable feature: once the size has been decided upon, the shape may be moved around the screen before fixing it in place. "Line" is a straight line; "circle" and "frame" are outlines, while "disc" and "box" are filled in.

Before and after by Chris Johnson



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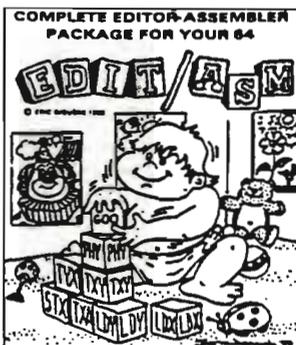
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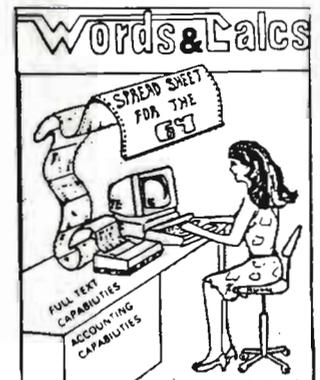
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MASTER COMPOSER

Tim Grantham
Toronto, ON

It's always a pleasure to review well-crafted, carefully designed software. **MASTER COMPOSER**, a music utility program for the Commodore 64, could serve as an example to all programmers.

Mind you, there are no glamorous graphics or flashy packaging. The most you get is a brief display of a hi-res portrait of Ludwig van, as the main program starts loading from the disk. If you blink, you might miss it.

The first thing to appear on the screen is an approximation of the musical staff, containing the first measure of Beethoven's *Für Elise*. This is the INPUT screen. Notes are entered here, using the cursor keys to position the numbers for each voice.

If you want to hear the current composition, you go to the PROGRAMMING mode. This is where you design the sounds to be played. Using single stroke commands, you can adjust the waveform settings, tempo, envelope parameters, filtration, etc. You can even turn on the synchronization and ring modulation effects from here. **MASTER COMPOSER**, like most music software currently available, does not enable the use of the outputs of the oscillator and envelope generator of voice 3 to modulate the other two voices. This is one of the most potentially powerful features of the SID chip on the C-64, one that I'm sure future products will exploit more fully.

MASTER COMPOSER organizes music into measures, blocks and pages. A measure consists of a sequence of notes to be played by the SID. Each measure is assigned to a

block which contains the list of sound settings determined in the programming mode. A block can control up to 127 consecutive measures. By switching from one block of settings to another, one can change tone colours, tempo and volume at any point in the piece. You arrange the blocks into playing order by grouping them into pages. This may seem over-organized but it offers maximum flexibility and ease of editing. It's all explained much better than I can, with tutorials and demos, in the excellent documentation. If you don't have a revised copy, though, hang on to the errata sheet supplied. This corrected significant mistakes in the copy I had.

MASTER COMPOSER is interrupt-driven. These mysterious words mean that the part of the program that does the actual playing of the music is, in effect, inserted into the operating system of the computer. Every time the OS checks the keyboard to see if a key is being pressed, it first goes through the playing program. Consequently the SID chip is being up-dated with new musical information every sixtieth of a second, quite independent of the main program. Whenever you save a song to disk, this interrupt-driven program is saved with the music data. This makes the songs easily transportable. They can be accessed from a BASIC program, and yet run independently from it, in the background, as it were. You can add your compositions to games, educational programs, whatever your imagination desires.

The program does have some limitations. It cannot play in real-time. The notes must be entered first. A more serious limitation is that there is no control over the articula-

tion of the notes: you can't slur from one note to another, or accent them, or add vibrato. They're the sort of things one only notices when they're missing. They make music more interesting.

My copy had a couple of bugs in it. The "change all blocks" command (@) did not work reliably. And, more interestingly, when I replaced the first voice settings with settings from a file on the disk and then played the piece, it caused the second voice to play at a drastically reduced volume, something that is supposed to be impossible on the SID chip!

These are minor flaws, however, in what is otherwise a very carefully thought out, and useful, piece of programming. This kind of work makes for durable software, if you'll pardon the mixed metaphor.

If you want to hear an example of my handiwork with **MASTER COMPOSER**, you can download **MUSIC BOX** from the new **BBBBB** being run by Patrick Cole (416-272-0709). You'll need to download **MUSIC BOOT** also, to run it.

MASTER COMPOSER comes on a copy-protected disk for \$59.95 Cdn. You can purchase back-up and replacement copies from Access Software for nominal charges.

I'd give this program a 9 out of 10. *TPUG*

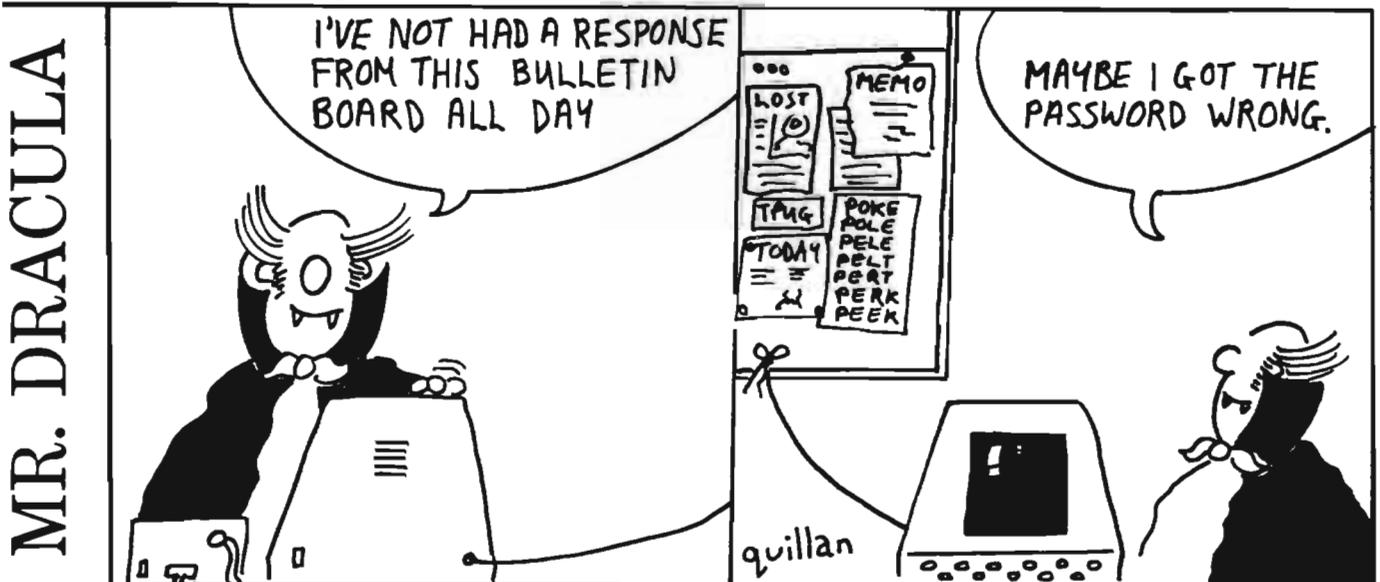
MASTER COMPOSER program

by Paul Kleimeyer

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VOICEBOX/WHEN I'M 64 - make your computer speak

Tim Grantham
Toronto, ON

The makers of this Votrax-based speech synthesizer for the VIC 20 and C-64 claim that it is "the world's ONLY *singing* speech synthesizer". They further state that it has an unlimited vocabulary and that it speaks with a natural inflection controlled either from the program or from the built-in Pitch control. "No other speech synthesizer has this feature!"

Fortunately, the hype in the ad copy isn't carried over into the design and documentation of the software accompanying the unit. Both the **VOICEBOX** software and the **WHEN I'M 64** music synthesizer software (which is sold separately) are powerful and easy-to-use. The accompanying manuals are admirably concise and straightforward.

"But how does it *sound*?!" Generally speaking (pun intended), not bad. The programs on the disk packaged with the unit produce crisp, intelligible speech. If you don't want to break down what you want it to say into phonemes (the sixty-four basic units of speech), there is a simple English text-to-speech program included. But, as the manuals point out, this is very limiting. They have charts of the phonemes, and many examples of their use. It's worth the time invested in learning them to get the best from the synthesizer.

The software with the unit includes the aforementioned English text-to-speech converter, and four other programs: text-to-speech with an animated "Alien" face added, a phoneme-only speech driver, a demo program and a spelling quiz that will accept new words. This latter program, intended to demonstrate the unit's educational possibilities, proved to be a disappointment. I had trouble understanding what some of the words were — "grammar" sounded like "yer anger", "murmur" was made to sound like it rhymed with "pure-pure", and "cuisine" and "scissors" were simply unintelligible. Some "fine-tuning" can be done by altering the phonemes used in this program, but I think a speech synthesizer would have to be more advanced than this one before a child could feel comfortable with it.

The only serious criticism I have of the **VOICEBOX** is its control of pitch. The software provides only four distinct pitches for inflection, and the documentation offers no suggestions for its use. Apparently, one has to buy their **DICTIONARY EDITOR** package in order to obtain natural-sounding inflection. Another drawback is that changing the pitch changes the timbre of the voice. If the **VOICEBOX** is singing or speaking on a high note, it sounds like one of The Chipmunks. If it is pitched low, it sounds like slow-motion dialogue. This quality of the voice can be quite grating, especially during songs. Perhaps the Pitch control knob on the unit can be used to remedy this, but nowhere are you told how to use it.

The **VOICEBOX** plugs directly into the user port and gets its power from the computer. It has its own speaker, plus a jack for use with headphones or an external amplifier.

The **WHEN I'M 64** music synthesizer software is a menu-driven program designed to control the powerful SID chip in the C-64. If you've got the **VOICEBOX**, it will provide the vocals to its library of songs as well.

I spent one pleasant Sunday afternoon recording my version of "King of the Road". To save time, I used the default ADSR and wave-form settings for all three voices, but you can create your own quite easily.

I first "laid down" the bass line of the arrangement. The software converts the top two rows of the C-64 keyboard into a synthesizer keyboard. I entered all the notes for the bass on the first pass. On the second pass, I started the click-track going, and set the note and rest lengths. Another pass was made to add accents and vibrato.

I repeated this process with the other two voices of the accompaniment. Then I removed the click-track that had synchronized them all.

Using the lyrics editor, I phonetically recorded the words to be sung by the **VOICEBOX**. Then, using the same synthesizer keyboard conversion of the top two rows, I recorded the pitches to be sung on each syllable. One more pass was taken to time the sung syllables to the accompaniment and *voila!* a 1980's version of "King of the Road", starring the **VOICEBOX** and its C-64 back-up band. You can even order up an animated hi-res face that will mouth the words along with voice.

All this took me only four hours, and that was the first time I had recorded a song. Another menu selection allowed me to save my efforts to disk.

WHEN I'M 64 makes effective use of the SID chip's filters, allowing one to easily obtain a triggered sweep up or down on any note, with any of the filters. This permits the use of subtractive synthesis, which really broadens the range of tone colours. The program does *not* allow for the modulation of one oscillator by another, thus ruling out such tricks as ring modulation, frequency sweeps, harmonic envelopes, etc.

Like all menu-driven software, **WHEN I'M 64** is eminently logical in its use but does not encourage a more intuitive, experimental approach. Almost all of the synthesizer settings are adjusted by entering a number from 0 to 15. While this reflects the actual values being poked into the SID's registers, a musician would probably prefer to have representations of an analogue nature — like the controls on a more conventional synthesizer. I think this program would be most suitable for programmers and hobbyists wishing to explore the SID chip's possibilities.

As it looks like Commodore's piano keyboard for the C-64 won't be around for quite a while yet, **WHEN I'M 64** and other synthesizer software such as Electronic Arts' **Music Construction Set**, and Waveform's **Musicalc**, will have to front the band.

WHEN I'M 64 retails for \$39.95. Considering its relatively low cost and its relatively powerful features, I give it a 7.5 out of 10.

The **VOICEBOX** with software sells for \$179.95. Commodore should be coming out with its speech synthesizer quite soon. I heard it at the World of Commodore show and was quite impressed. As it should fall into the same price range, it's going to give the **VOICEBOX** a real run for its money. I rate the **VOICEBOX** at 7 out of 10. Both **VOICEBOX** and **WHEN I'M 64** can be found at COMSPEC, 866 Wilson Ave., Downsview, Ontario, (416) 633-5605. *TPUG*

VOICEBOX Speech Synthesizer
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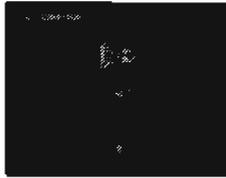
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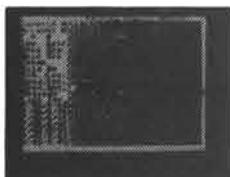
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Summer Games

Patrick Grote
St. Louis, MO

The time is 3:00 PM on a hot, muggy afternoon in Tokyo, Japan. You are participating in the 1992 olympics. As you begin your flight down the runway towards the bar, you feel drops of sweat rapidly racing down your forehead. You plant your pole, push up and release! You did it! A new world record! A six meter pole vault. The crowd roars with joy and you trot off to your next event, always knowing that you defeated the pole vault!

The type of excitement described above is the feeling you will receive when playing (participating in) **SUMMER GAMES**.

Let's first look at the events. There are eight events:

POLE VAULT	DIVING
4X400 METER RELAY	100 METER DASH
400 METER FREESTYLE	100 METER FREESTYLE
GYMNASTICS	SKET SHOOTING

The events are all in High-Resolution graphics with excellent sprites!

Before you play you must enter your name then pick from one of the 18 countries to represent. Each country is depicted by a flag and when chosen, the computer then plays that country's *full* national anthem. One to eight players may play. You may also play with one or two joysticks.

The first event is the pole vault which is a very realistic simulation of the real thing. You have to gain speed by running down a path then pull down on your joystick to plant your pole. To push of the joystick you push the joystick up. When you are ready to release press the fire button. You receive three attempts at clearing a certain height. If you fail to clear then the other players continue.

The next event is diving. This event requires planning and a timed layout. You attempt four types of dives:

FORWARD	INWARD
BACKWARD	REVERSE

You are rated on how you enter the water and difficulty of the move that you attempted. You can dive in four positions:

ROLL	PIKE
HALF-PIKE	FORWARD

At the end of your dive the judges, sitting at the edge of the pool, hold up cards with your score on them. After you are finished you are shown a total score and move on to our next event, the 4X400 METER RELAY.

You start when the gun goes off. To push ahead of your competitor, push left to dash off. Watch your strength meter on the bottom of the screen: it goes down as you push left. To gain that power back, push your joystick to the right. This causes the meter to increase because you are jogging. If you leave the stick in the middle you coast. As you approach the next person, pour on the speed. You want to hand the baton to him before he gets to the end of the box. Watch the crowds as you race past them. They wave signs and yell.

The next racing event is the 100 METER DASH. This race takes about two seconds to load in because it was the same graphics from the last event. To move your man it is suggested that you move your joystick side-to-side or up-and-down. What I do is move the joystick in a circular motion *very* quickly! This allows me to hit every spot that the computer may be checking for.

The event that takes the most skill (*luck???*) in **SUMMER GAMES** is **GYMNASTICS**. You have *total* control over your player, who is a girl with long hair, dressed in brown leotards. She can do some amazing things. She can perform a triple somersault with a 180 degree twist and land perfectly. You are scored on performance and difficulty. The scoring is on a 1-10 basis, with a total score of two attempts as your final.

The first swimming event makes you want to put your trunks on! The event is so realistic you feel as if you are there swimming with them. The **FREESTYLE RELAY** team is composed of four swimmers who cover 400 meters in a pool! The swimmers are so realistic that when they enter the water to perform a stroke their swim suits go half under water. To perform a power stroke, hit the fire button every time the swimmer's hand enters the water. Pay close attention to the digital clock. You could set your watch by it.

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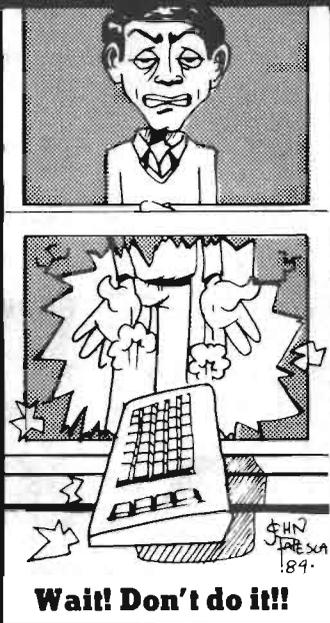
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The next swimming event is the **100 METER FREESTYLE**. Do basically the same you would in the **RELAY** except hit the fire button at all times.

The last event of this great game is **SKEET SHOOTING**. This requires a lot of skill. You have a circular sight through which you shoot your clay pigeons. You can not let your sight hang in the air too long because the force of gravity will slowly pull it down. You first press the fire button to release the pigeons then aim your sight and press the fire button to shoot. You have eight different shooting positions from which you move left to right.

The awards ceremony is an interlude in which the programmers could have done a better job. The opening ceremonies, though, couldn't have been done better.

The documentation is brief and to the point. So, if you are willing to pay \$35.00 U.S. for a game, and it's a toss-up between an "arcade classic" and **SUMMER GAMES**. I would pick **SUMMER GAMES** without a doubt. *TPUG*

SUMMER GAMES
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L.F. Jarrett
Carp, Ont.

Attracted by the colourful advertisement in *Compute* I persuaded my wife to give me for Christmas the C-64 version of **Home Accountant**, produced by Continental Software. I have been using **Account Pac**, produced by Pacific Coast Software, for the past year or so and (while quite satisfied with it) after making some personal adaptations, I thought that **Home Accountant** would be an improvement and give me printed output in greater detail.

In this respect, I have nothing to complain about. The **Home Accountant** can produce a variety of statements, balance sheets and budget comparisons, both in print and as graphs, and is all that is claimed. It is a very good, useful program.

However, nowhere is mentioned the time necessary to input all the information and — take it from me — this is considerable. **Home Accountant** is, in fact, a collection of different programs — the **Main Menu**, plus different ones for transactions, graphs, printed reports, activity reports, start new system, et cetera — a total of eight. *Only one is loaded at a time.* This means quite a wait to go from, say, entering payments to producing a print-out showing your current situation. But even that would be acceptable, if it were not for the time taken to enter transactions. The **Account Pac** program takes your daily input, which could be, say, ten or twenty cheques, sorts them and records them. **Home Accountant**, however, records each transaction individually, and you cannot enter the next one until this is complete.

Here is a comparison showing the times taken by each program just to record transactions:

HA	ACCTPAC	
Loading main menu	1' 22"	0' 50"
Loading transactions menu	1' 22"	0' 25"
Changing disk & loading current data	1' 00"	0' 45"
Total before any entry can be made	3' 44"	2' 00"
Average to enter and record 10 entries	14' 10"	4' 10"

Another complaint about the **Home Accountant** program — it can handle five chequing accounts to the **Account Pac's** one. But in the **Home Accountant**, every chequing account *must* have a related cash account — which seems to me completely unnecessary.

When I first received the package, I could not get it to accept cheque entries at all, although it would take deposits. (Must have been written by an Income Tax Inspector!). Furthermore, I could

not get a print-out of anything. So I wrote to Continental on December 29th, returning the warranty card, together with a cheque for \$20.00 U.S. to cover updates to the program, and two or three weeks later received another disk. This cleared up the cheque-entering problem — but still no print-outs. This time I went into the program and discovered that the lines covering both printing options ended with the instruction "GOTO 400". Investigation showed that this was equivalent to pressing an out-of-range key. By deleting the phrase completely, I could now obtain printed reports, etc.!

I wrote to Continental on February 6th, advising them of this action but up to now they have not seen fit to reply. They have, however, cashed my cheque!

My conclusion — the **Home Accountant** program is a good program — if you have time and patience. Mine has, however, been relegated to a back shelf, and I am continuing to use the **Account Pac**. *TPUG*

HOME ACCOUNTANT from Continental Software, 11223 S. Hindry Ave., LA, CA90045 U.S.A. \$99.95 U.S. (213) 417-8031



ENHANCE YOUR COMMODORE-64

RAMDISK-64

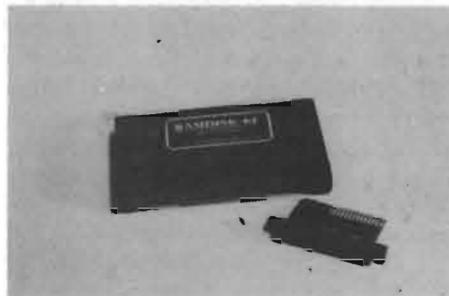
The RAMDISK-64 is a cartridge containing 64K bytes of RAM used to emulate a disk drive. No more long waits for program saves and loads. Use Ramdisk-64 as a second disk drive. Or use the 64K bytes as extra memory for large and data intensive software.

FEATURES:

- 64 kbytes of dynamic RAM
- Includes software to emulate a disk drive
- Loads an 8 kbyte program in less than 1 second.
- Does not use COMMODORE-64 RAM space
- System reset does not erase files in RAMDISK-64.
- Small size only 3"x5.5"x0.5"
- Useable with other cartridges

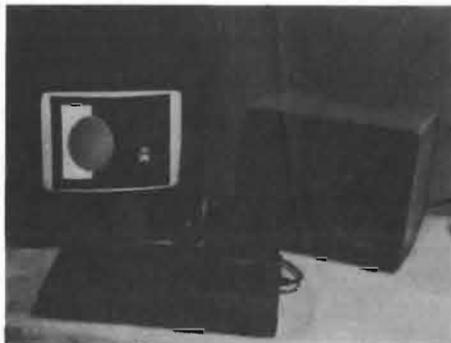
APPLICATIONS:

- Time saver where disk usage is high:
 - Software development
 - Large programs using overlays
- Software requiring large data storage. Use with data bases or spreadsheets. Save multiple graphic screens.
- Use as a second drive. Minimize diskette swapping.



MORE ABOUT DISK EMULATION SOFTWARE

- Allows 16 directory entries or 63.5 kbytes of storage.
- Compatible with BASIC commands OPEN, CLOSE, GET#, INPUT#, PRINT#
- Supports PRG and SEQ files
- Treat RAMDISK-64 as device 15, user changeable.
- OTHER FEATURES TOO NUMEROUS TO MENTION HERE.



VIDEO-80

The VIDEO-80 is a high-quality 80-column cartridge.

The RAMDISK-64 and VIDEO-80 use the COMMODORE-64 expansion slot. An optional extender board (\$10) or motherboard is required.

FEATURES:

- 80 columns x 25 lines display
- 256 character set with full Ascii and reverse letters
- Flicker-free crisp display even during scrolling
- Compatible with BASIC and the KERNAL
- Includes customizing video routines like scrolling, insert and delete line, address cursor, and screen blank
- DUAL SCREEN: Connect the normal C-64 video output to a color monitor AND connect the VIDEO-80 video output to a B/W or green screen monitor. Text will appear on the B/W or green screen monitor and the color graphics on the color monitor. A NECESSITY FOR GAME DEVELOPERS AND GRAPHICS PROGRAMMERS.
- Compact size only 3"x5.5"x0.5".

APPLICATIONS:

- Word Processing
- Spreadsheets
- Terminal Emulation
- Software Programming. Eliminate irritating line wrap around.
- Graphics development. Use VIDEO-80 for text and C-64 video output for color graphics simultaneously.

PRICES

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RAMDISK-64	\$349.00	\$199.00
VIDEO-80	\$259.00	\$149.00
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TPUG Magazine page 39

ATTENTION ALL COMMODORE 64, VIC 20, AND PET OWNERS

A complete self-tutoring BASIC programming course is now available. This course starts with turning your computer on, to programming just anything you want! This course is currently used in both High School and Adult Evening Education classes and has also formed the basis of teacher literacy programs. Written by a teacher, who after having taught the course several times, has put together one of the finest programming courses available today. This complete 13 lesson course of over 220 pages is now available for the COMMODORE 64, VIC 20, and PET computers and takes you step by step through a discovery approach to programming and you can do it all in your leisure time! The lessons are filled with examples and easy to understand explanations as well as many programs for you to make up. At the end of each lesson is a test of the information presented. Furthermore, all answers are supplied to all the questions and programs, including the answers to the tests. Follow this course step by step, lesson by lesson, and turn yourself into a real programmer! You won't be disappointed!

We will send this COMPLETE course to you at once for just \$19.95 plus \$3.00 for shipping and handling (U.S. residents, please pay in U.S. funds), If you do not live in the U.S. or Canada, please add \$5.00 for shipping and handling (and pay in U.S. funds), If you are not COMPLETELY satisfied, then simply return course withing 10 days of receipt for a FULL refund.

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COMMODORE 64

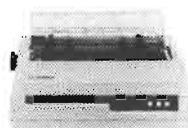
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KIDWRITER

Rich Westerman
St. Anne, IL

KIDWRITER From Spinnaker. \$34.95. Disk for Commodore 64. Recommended for ages 6-10.

At various times I have approached my kids with different versions of "childrens' word processors". Their response, in the main, has been a uniform one: they narrow their eyes and look furtively at the room's exits, much the same as a prisoner planning an escape.

"Look," I say, "you can do your homework on the C-64 now, and then print it out. Won't your teacher be impressed?"

Well, maybe their teacher *would* be impressed, but that's not incentive enough to get them to engage the computer keyboard in hunt-and-peck combat - not to mention the dreary task of memorizing all the formatting commands. Homework is something that kids just want to *finish*. Especially if you're only 9 years old and you're still working on getting your hands to do what your eyes/mind tell them to.

Enter **KIDWRITER**.

"Hey, guys - here's a new kids' word processor!"

"Oh?", they say, as they edge towards the door.

"Yes, and this one is different - you can make illustrations for your stories with *sprites*," says I, gaining confidence as they come closer to peer over my shoulder.

To cut a short story even shorter, within half an hour my 9-year-old had completed a 3-page, illustrated story about a fisherman whose boat overturned and his subsequent rescue by helicopter. All accomplished without once looking at the manual, thanks to lots of prompts, excellent error-trapping and the comprehensive self-running demo with the program.

By following the omnipresent and simple prompts, the child is first shown how to create an illustration describing his or her story on the *upper half* of the screen. To accomplish this, a simple graphics editor allows choosing from a 99-item list of characters and objects. Up to eight of these are arranged by the child on one of many different backgrounds. When the illustration is finished, the child hits the (D)one key.

Now **KIDWRITER**'s word processor is engaged and the child is encouraged to *describe* the illustration he has just made. Eight lines are available per 'page' for text. When the text area is full, the child is asked if he is finished with the story. If so, he is asked if he wants to SAVE it to disk. If he's not finished yet, another blank page is presented to him to again illustrate and describe with text. Until he declares his work 'finished', all the 'pages' are considered to be part of a 'book' and will be filed on disk under the same name. When the child wants to show the book to Mom or Dad, he only has to call up the book's title from the disk and all the pages of his story will be displayed sequentially - complete with a cute musical soundtrack supplied by **KIDWRITER**.

The *perfect* educational software package hasn't crossed my disk drive yet, but **KIDWRITER** is the current contender for first place. I *would* like to see an enhanced version of **KIDWRITER** with a print-out option and perhaps a more sophisticated high-res drawing routine (a machine-language, joystick-driven one would be ideal). In the end, though, I find myself in the nit-picking mode. This is really a first-class piece of software. *TPUG*

PICTURE BLOCKS

Rich Westerman
St. Anne, IL

PICTURE BLOCKS From PDI \$24.95. Disk for Commodore 64. Recommended for ages 5-up.

PICTURE BLOCKS is a shape and pattern recognition program which can be used in either a *free-form* or in a *structured lesson* mode.

I had assumed that most kids would choose the **FREE FORM** mode over the structured **PATTERNS** mode but was proven wrong immediately by my own 9-year-old. After having read the five pages of instructions and running **PICTURE BLOCKS** through both its modes, he ended up spending nearly an hour going through the library of shapes in the matching game part of the program called **PATTERNS**.

In the **FREE FORM** mode, the child uses shapes provided by the computer to create his own picture. The program developers suggest that the **FREE FORM** mode be used as an introduction to the **PATTERNS** portion of the software.

Choosing **FREE FORM** from the two-item opening menu presents you with a black screen displaying ten different geometric shapes at the bottom, the shapes being flanked by the letters 'E' and 'N'. Moving the joystick right or left lights up each of the shapes. By pressing the joystick button while a shape is lit, you choose that shape. The nine other shapes disappear and the chosen shape can now be maneuvered around the screen until it is where you want it. Pressing the button again locks that shape in place and brings back the ten original shapes at the bottom. This selection and placement routine is repeated until you're finished with your creation. By moving the cursor over the large 'E' (erase) at the bottom, you can erase any shape which

you're dissatisfied with. A large 'E block' is to be moved over the offending shape, where a press of the button erases both the 'E' and the shape. At any time, you can scrap the creation on the screen by placing the cursor over the large 'N' (new) and pressing the button. The screen blanks, and you may start again.

The **PATTERNS** mode, which ended up having the most attraction, is chosen from the opening menu and you're presented with another menu. Six categories of patterns are displayed, including such topics as **Living Things, People and Places and Up and Away**. In each category, there are two levels: easy and hard. The procedure you followed in **FREE FORM** mode is followed here. That is, you use the joystick to light up the desired shape and move it to the

continued on next page

correct position on the screen. Now, however, the screen is split in *two* and it is your task to duplicate on the left side of the screen, the picture or design that the computer has placed on the right side. In the EASY level, the pieces of the pattern appear one at a time. You must choose and 'set' the proper piece on your side of the screen before the computer will show the next piece. When you complete the picture, the name of the object appears at the bottom and you are prompted to either 'Continue' or 'End'.

In the HARD level of PATTERNS, the *entire pattern* appears on the right side of

the screen. You may choose and place your shapes in any order you wish as long as you place the right shape in the correct position. Again, the 'E' and 'N' prompts are present, should you wish to change your mind and quit. In the PATTERNS mode, the 'N' selection will cause the computer to finish the pattern for you and name it.

PICTURE BLOCKS rejects the use of fancy high-res graphics in favor of highly contrasting, easily recognized basic shapes. I applaud the programmer for this decision because I believe it makes the program more accessible to pre-schoolers just learning the basic shapes. Surprising to me, the

use of large basic shapes did not decrease its attraction to older kids. Remembering the attraction of ancient games such as TANGRAMS (which PICTURE BLOCKS is reminiscent of), I should not be surprised, I guess.

Better use of sound would add greatly to the attraction of PICTURE BLOCKS. It is limited to simple beeps, which is probably a result of the program being written originally for micros with less sophisticated sound capabilities than the C-64. Still, this is well-written, enjoyable software at a good price. TPUG

TWO BIBLE GAMES

John Easton
Toronto, ON

Reviewing two BIBLE games from Davka Corporation produced for the Institute for Computers in Jewish Life, 845 North Michigan Ave., Suite 843, Chicago, IL 60611. (312)787-7858

Distributed in Canada by: Israel's, The Judaica Centre, 973 Eglinton Ave. W., Toronto, ON M6C 2C4. (416)789-2169

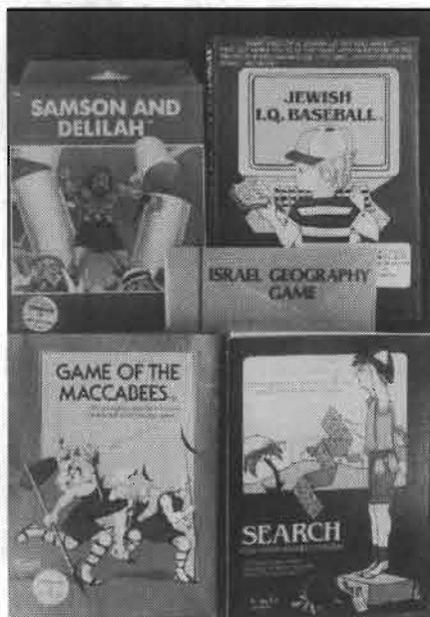
Davka Corporation have until recently been producing a rather extensive collection of 'educational' programs for use mainly in Hebrew schools and running mainly on Apple products (Atari and TRS seeming to follow in lesser emphasis in that order). Well now, Commodore fans, Davka executives must have attended some recent trade shows of the CES variety, for they seem to have discovered the potential of those millions of C-64's out there. Evidence would lead one to believe that, to some extent they have instructed their program developers to convert their favourite Apple programs to run on the C-64, and a few of these are now available (perhaps suffering a bit in translation) for your favourite computer.

SAMSON AND DELILAH

\$33.50 Cdn. (\$25.00 U.S.)
Written by The Software Group, Inc.
Burlington, Vermont

DOS protected — 30 day media warranty (\$5.00 replacement charge after that)
C-64, CBM Disk, joystick.

Donkey Kong in reverse. You are Samson, and it is your task to make it down from the top floor of the temple past temple guards, a lion, scissors (remember Samson's hair and all that?) and the wily Delilah herself. Occasionally you run across a 'jawbone of an ass' which you may for a short time use



to defend yourself. Other means of defence consist of jumping or retreating (usually into the path of another guard). If you do make it to the pillars in the basement, wowie, you get an extra turn to gain more points!

The 'educational' flavour of this arcade game is a few screens of text describing in *very* abridged fashion (albeit, with musical accompaniment) the exploits of our hero, Samson. This text only appears at initialization, so as to not intrude on the seriousness of the 'game'.

The usual beeps and graphics. Skill required — higher than *this* scribe's aging ability. A mild 'nit-pick' — the sprites don't turn off at the end of the game, but hang there suspended on a title screen with the message "1 or 2 players?"

Educationally, forget it. Game value — perhaps a 3 out of 10.

THE ISRAEL GEOGRAPHY GAME

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Written by The Microworks

Unprotected disk, 30 day media warranty.
C-64, CBM Disk, keyboard

Using historical and geographical clues, one attempts to deduce the names of locations (73 in total) marked on the map of Israel. The student may pick one of four regions from an overall map of Israel, after which, the chosen region is drawn to fill the screen. A marker is placed on the map at an appropriate location, and the computer supplies the first of three clues as to the identity of the 'mystery site'. Clues theoretically grow progressively simpler (and your answer value lower), till after three wrong answers, the correct answer is displayed, and we move on to the next site. Naturally, scores are kept, encouraging perhaps a wee bit of classroom rivalry — preferably by splitting the class into teams.

Technically, this program is clean. Reasonable graphics and use of sound both for prompts and as incidental 'background music'. Input is well-protected and prompts are appropriate. A rather excellent touch is the ability to pick up on semi-matches to an answer (for instance, it will accept as correct a Hebrew name, perhaps an 'English' name, and/or an original Biblical name; or partial mixes from any). One slight 'nit-pick' might be the observation that the sites are not really chosen in a random manner — and once your students have memorized the order of selection, there goes any further semblance of 'learning'.

If you have a school budget to draw upon, and Geography of Israel forms part of the curriculum for somewhere in the 7th to 9th grade, buy it — you'll use it! TPUG

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**A HOW TO
COMPENDIUM FOR THE COMMODORE 64**

By Jack M. Wolfe, Ph.D.

The author of this COMPENDIUM is a retired college Professor of Computer and Information Science. He feels certain that the reader will find this booklet an unusually convenient reference guide in using the Commodore 64.

He wishes that such a publication had been available to him when he was first learning the Commodore 64 and even in his more recent use of the system.

The configuration assumed here is likely to be the one possessed by many users of the C-64 system: that is, the C-64 with one 1541 disk drive and a printer, and without a tape unit.

As the reader will readily recognize, in instances where the precise punctuation and inclusion of all the necessary details will be crucial to the successful execution of the desired objective, a reference guide of this type is virtually essential.

The author states that, to the best of his knowledge, this Compendium contains information not available in any one publication in so convenient a form for ready use. Without this Compendium the reader will have to refer to various parts of various other publications and to his own, perhaps somewhat scattered, notes.

This booklet also contains practical suggestions and warnings that will prove very helpful to new users of the C-64 and will serve as timely reminders for experienced users.

The booklet contains the following topics:

- HOW TO FORMAT A DISK
- HOW TO LOAD A PROGRAM FROM DISK
- HOW TO SAVE A PROGRAM ONTO A DISK
- HOW TO PRINT A PROGRAM ON THE PRINTER
- HOW TO MODIFY A PROGRAM ALREADY ON DISK
- HOW TO SCRATCH A PROGRAM FROM A DISK
- HOW TO COPY PROGRAMS FROM ONE DISK ONTO ANOTHER DISK

Copies of this booklet may be obtained by sending a cheque or money order for \$5.00 per copy. Residents of Florida are required to send \$5.25 per copy because of the 5% Florida Sales Tax.

Payment should be made out to Dr. Jack M. Wolfe and mailed to him at:

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The cost of OS/9 to club members will be around \$150 (U.S.), which will include the cost of a hardware modification that will not affect the normal operation of the SuperPET. Two board SuperPETs require a simple hardware modification — we provide instructions. To reserve your copy please mail \$68.09 to TPUG. (1912A Avenue Rd., Suite 1, Toronto Ont., M5M 4A1, Canada). In the unlikely event that TPUG does not proceed with OS/9, your deposit will be refunded.

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- * There will be source code compatibility to versions of OS/9 that are planned for the Motorola 68000.

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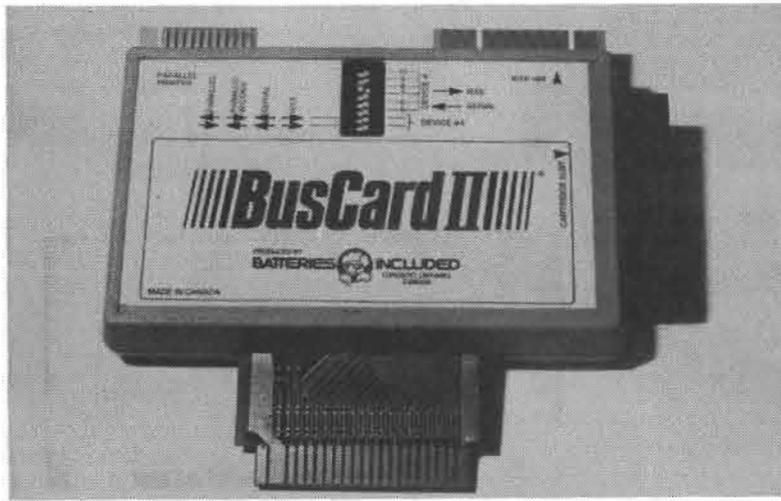
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Alex Fletcher
Toronto, ON

I have owned Commodore equipment since 1980. When the C-64 was introduced in the fall of 1982 I wanted to use this new machine with my existing drive, so just prior to Christmas of 1982 I bought a Commodore 64 and an interface unit with which to hook it to my IEEE drive. The cost was about \$1300 and within three days I had returned the whole system and bought a new printer instead. I was impressed with neither the early C-64 nor the interface unit. The C-64 produced a great deal of sparkle, and the interface interfered too much. I waited another six months before trying to include the C-64 into my system again — this time with a BusCard.

A complete review of the original BusCard was in the February issue of *TPUG Magazine* and the author, Mr. Lever, concluded that it was "highly recommended". Here is a quick summary of the BusCard features. Plug the BusCard II into the cartridge port of the C-64 and you have an IEEE interface, a parallel printer port, and you still have a cartridge port for games. You can type SYS61000 and have full BASIC 4.0 disk commands (it's lovely to load with a shifted RUN), or type SYS61006 to have a machine language monitor with its many features. Mr. Lever also comments on the ability of the BusCard to mix serial and IEEE devices together and to switch between them with ease. His only criticism is the location of these mini-switches; this is one of the few visible changes on the new BusCard II. The switches have been moved to the rear of the box to be more visible, although

many users will not find it necessary to reset them. If you have both IEEE and serial devices you can easily set these mini-switches to fit your current system needs. Another visible change is that the cartridge slot has been moved to the right side of the board. Since you don't pull up or push down on the BusCard II while changing cartridges, there is less chance of bending the C-64 circuit board. The IEEE slot and printer connector are now at the rear of the BusCard II so their wiring is at the back — a much neater installation.

C-64 owners' discussions about interface units usually turn to the problems of loading programs that are extensively copy-protected. Although some interface devices suggest that they are totally transparent, they too will have problems loading some of the latest software that is protected by reading the ROM's of the I541 drive. I have loaded literally hundreds of programs — both public domain and commercial — and I have found very few programs that will not load using BusCard II — but you should ask the vendor to check before you buy any of the most recent programs.

One of the primary purposes of buying a BusCard II is to have the speed of the IEEE devices. Compared to using a I541 I can backup a disk thirty times faster; load and run a program five times faster; save and verify a program four times faster. The IEEE interface is a boon to anyone who requires rapid disk access, whether for program development or for small business use. If the C-64 CP/M catches on, then we will all need IEEE interfaces to cope with that disk-intensive DOS.

Installing the BusCard II is slightly different because there is one clip that has to be connected to the inside of the C-64 now, rather than the two on the previous model. According to Batteries Included this is an indication that the latest version of the BusCard II is even more transparent than formerly. I have found that programs that would not load on the earlier version will load on this one. This new BusCard II also lets you alter the switches without re-setting the machine — no more pressing the RUN/STOP and RESTORE keys. This is valuable for programmers because, if you should decide to change input/output between IEEE and serial devices, you do not lose whatever program you have in memory. The same applies to printers, but with extra features. You can select device 4 to be IEEE or serial printers from Commodore or parallel printers with or without conversion from PETSCII to ASCII, such as Epson or Centronics. To change from a I526 to an Epson means that you throw switches — you don't disconnect and re-connect cords and plugs.

The BusCard II is the interface between my C-64 and 4040, I541 and MSD drives. Friends have their BusCard II's attached to Commodore 2031-1p drives and Gemini, Daisywriter and Epson printers, and they have had no difficulties. I have attached TTX (parallel) and Commodore (IEEE) printers to the C-64 simultaneously and switched the output to either printer — again without problems. Rough drafts are fast on a dot-matrix printer, but the daisy-wheel and bond paper are business pre-requisites. This feature of "switchability" is of great value to anyone who must review programs designed for varied formats, or write programs that are to work on a variety of machines.

The machine language monitor that is built into the BusCard II is not a full-featured assembly-aid like PAL, but it still has many valuable features. Type SYS61006 and the monitor is enabled. After this, SYS8 will jump you into the monitor again unless the monitor is disabled through a reset or a cold start.

The BusCard II allows me to use fast drives, to press one shifted key to load and run, to make simple disk commands, to access a machine language monitor and to switch between various peripheral devices with ease. It's GREAT! *TPUG*

BUSCARD II from Batteries Included, 186 Queen St. W., Toronto, ON Canada M5V 1Z1.

CodePro-64

Janet Sherbanowski
Toronto, ON

The most impressive aspect Systems Management Associates (SMA) has built into **CodePro-64** is their clear identification of each step in learning to program in BASIC.

A disclaimer in the brief introduction to the tutorial assumes that you are interested and dedicated enough to want to learn the language. It tells you right up front that this is not a quick way to BASIC, and they are right. You really do have to learn to crawl before you can run. There is no way to rush through the course, but if you prefer to use your machine, in the comfort of your home, at your own pace, then **CodePro-64** could be the tool you have been looking for.

The course consists of a manual and two diskettes that require initialization with serial numbers before they can be used. Programs loaded from within the main program allow you to save the practice exercises for future use in your own programs.

The **CodePro-64** manual starts with an introduction to binary, hexadecimal and the mathematics involved in programming. From there, you get step-by-step instructions on screen and in the manual concepts, keywords and BASIC functions. Once you have mastered these steps through on-screen exercises and tutorials, you are ready to do some simple programming yourself. The screen tells you at each step whether or not you have been successful in your attempts and allows you to correct the errors as many times as necessary in order to gain the proper sequence and syntax.

Menu-driven screens allow you to choose new concepts, return to previous lessons, or push forward beyond the level you have reached in each area. Each "page" on screen has clear reference back to the manual so you do not become lost in the program.

This product is designed for the beginner, the only drawback to that goal being the occasional lapse into the use of computerese in some parts of the tutorial. On one page I would be enlightened by their total understanding of the beginner's need to have things explained clearly and completely, and then they would lose me two

pages later by explaining other important topics without the same flow. For example, the manual says at times "this screen is self-explanatory". In some cases that's true, in others, I had to go back over two or three pages to get it to explain itself to me. Overall, my reactions to this programming course are favourable.

The sprite creation section and music generator are worth the money in themselves without the extra bonus of learning BASIC. What you actually get are lessons in BASIC, a program to create sprites and a music generator. A nice package.

If you don't have time to spend many evenings at a university or college learning BASIC but do have time at home to learn at your own speed **CodePro-64** could be the right course for you. It helps to have someone you can call on for help occasionally but, all-in-all, it's a good program for a beginner. *TPUG*

CodePro-64
Systems Management Associates (SMA)
3700 Computer Drive, Raleigh, NC 27609,
(919)787-7703
Price: \$59.59 U.S.

messy comment

Editor's Note: I have received several comments about my article "Messy is Beautiful" (TPUG Magazine, March/April 1984). Some were favourable, others less so. Here is one from someone with an opposing point of view. Does anyone else wish to say anything about this?



I would like to comment on the article "Messy is Beautiful", by David Williams in the March/April '84 issue. I am sure that Mr. Williams has the best interests of his students in mind when he teaches his courses, but I must "take up the glove", so-to-speak, on the behalf of structured programming that Mr. Williams bemoans in his article.

I believe that the concept of an "algorithm" is not too hard to comprehend in Grade 11 (when I learned it, and not in the classroom, by the way). I am still studying more things about algorithms in third-year Computing Science at the University of Waterloo, and

I believe the effort to teach structured programming *at the beginning* will be a service to any student that intends to continue in computers. The structured approach is the easiest way to realize simply and efficiently an algorithm. I believe a simple exercise involving the students going *back* to programs they wrote earlier in the year would drive home the point that *messy is a pain* if you have to do any major modification of a program.

I must admit that I am biased in my approach, but this is tempered by some work in the field as well (I haven't been hidden in the halls of "academia"). The students that bemoan a lower mark because their program is messier than friends yet accomplishes the same purpose should be invited to a marking session when you have to mark 80 programs. Sure, 95% of them will produce the required output, but it is a moot point that a neater, well-commented program *is better* from the viewpoint of understanding what the program is *trying to do*, and what modifications might be necessary to accomplish another related task (this being one of the things that a programmer does most often on the job).

The new language COMAL has structures such as IF-THEN-ELSE, WHILE-DO, REPEAT-UNTIL, CASE, etc., that are popular in languages such as Pascal, but COMAL also has some of BASIC's "looseness" as well. The added advantage of Logo-type graphic commands means that students can see a graphical realization of what their programs do. This can be a nice teaching tool, and fun as well!

Michael W. Norman



The Oddsmaker

John David
Etobicoke, ON

Ladies and gentlemen, place your bets! With **The Oddsmaker** you could become rich — or arrested! (Or both!?) You could be the neighbourhood “turf accountant” with this program that turns your C-64 into a parimutuel betting system. However, the creators suggest that it is for entertainment use only.

First, a word on parimutuel betting for the uninitiated. It is a system of betting in which all those who backed the winner, in proportion to their wagers, divide the total amount bet, minus certain fees and taxes. If a parimutuel was held on a seven-horse race, there would be seven betting pools. Suppose you bet \$30.00 on horse #4, and when betting finished there were \$300.00 dollars bet on #4. Your share of the total amount bet would be 10%, since \$30.00 is 10% of \$300.00. If the total amount bet on all seven horses in the race (each represented by a different pool) was \$1000.00, you would win \$100.00 or 10% of the total bet (a tidy profit!)

The Oddsmaker will make the whole, complicated parimutuel procedure process simple. The menu-driven program offers twelve choices that fall into four broad categories. You can establish the pools to be bet on, then take in bets on those pools, print tickets for the bettors and save all the data on disk. The program will automatically calculate odds and payouts. As the numbers change with each and every bet, the excitement grows for both the operator and the bettor.

Playoffs mean excitement for any sport. Imagine using **The Oddsmaker** to increase the tension! First you create the pools — one name (that name can be up to nineteen characters long) for each team. You can create fourteen different pools. They can be edited at any time. Once this task is completed, you can enter a percentage for the house cut of the total pool. With this “fee”, you can buy snacks or prizes for the party you hold in conjunction with your “major sporting event”. Once the pools are established, place your bets! If you want to print tickets for all participants, you can. On each ticket there is room for two lines

each, fifteen characters long. The program prints two copies of each bet — one for the bettor and one for the cashier. Each print-out has the two-line title, the bettor's name, the number of the pool and the amount he bet. While you are taking the bets, you have three options for the bettor. He can see the current odds, based on all money wagered to that point; he can see the payouts owed for each \$1.00 bet; or he can see a screen message created by the operator. This part of the process is very dynamic, as odds and payouts change with each new wager. All of this important information — especially how much you're owed — can be stored on disk until the event is completed and you collect your share of the parimutuel pot.

If there is a competition of any kind, **The Oddsmaker** is a program that will add to the excitement, as the users follow the fluctuations of the purse created by their own scientific knowledge — or hunches. *TPUG*

THE ODDSMAKER from CZ Software, 358 Forest Road, South Yarmouth, MA 02664 (617) 771-4155.

Big Bird's Special Delivery

Rich Westerman
St. Anne, IL

BIG BIRD'S SPECIAL DELIVERY From CBS Software. \$29.95.

System Requirements: Commodore 64, Disk Drive

Any software package that has a *Sesame Street* character on its cover has one-up on its competition. Shown a stack of assorted software packages, I'd bet that the average 6-year-old American will want to see one with Big Bird on the cover first. My theory was confirmed in my own household the other day when just such a stack of educational software arrived for review.

BIG BIRD'S SPECIAL DELIVERY is an object recognition game. When playing it, kids help Big Bird and Little Bird deliver packages to all the correct places on *Sesame Street*.

Loading the software was made more difficult than usual by requiring the user to type `SYS 8 * 4096` instead of `RUN`, once the program is loaded. A simple BASIC loader program would have avoided this problem and made the program less intimidating to new users. Quirks like this are sometimes a

sign of the software developer's haste in translating a piece of software from one computer to another.

The opening menu lists two games to choose from. In the **SAME GAME**, the child must make exact picture matches. For instance, a pear must be delivered to the address showing another pear above it. In the **RIGHT KIND** game, the pear could be delivered to an address displaying a food item. You could deliver the pear to an address displaying a pumpkin, an ice cream cone or a glass of milk.

Game manipulation is made easy by limiting keyboard input to four keys. With these keys, the child moves Little Bird back and forth as he carries packages to their destinations. There are nine categories of objects to deliver, each category having seven items. The categories include such diverse and contrasting topics as: Clothes, Ways To Travel, Musical Instruments and Animals. This large inventory of graphic items should help maintain interest in the game.

Speaking of graphics, those in **BIG BIRD'S SPECIAL DELIVERY** are all hi-res and attractively drawn. . . but unfortunately, very difficult to see on a color TV, even a

high-quality one. A monitor is almost a necessity for **BIG BIRD'S SPECIAL DELIVERY**.

A note on the documentation is in order: It is well-written and intended to be read verbatim to the child. Several pages of the brief manual are given over to encouraging non-computer related activities. These games and activities follow the software's intended purpose: to teach object recognition and add a touch of class to an already fine educational package. *TPUG*



Paperclip 64-D With Spellpack

Ian A. Wright
Toronto, ON

A new **PaperClip-64D** with **Spellpack** is available from Batteries Included at 186 Queen Street West, Toronto M5V 1Z1 (416-596-1405) for \$149.95 Cdn. The original wordprocessor program has been further enhanced and now includes a spelling checker.

What do you do to improve the best wordprocessor available for the C-64? You make it easier to use and expand its capabilities even further and the latest version of **PaperClip**, version **64-D**, has been improved both ways.

PaperClip version **64-D** comes with or without the spelling checker program called "**Spellpack**". Let's first look at the changes to **PaperClip**, then at the spelling checker program. The two programs coexist (since the spelling check takes place within **PaperClip** and there's no need for loading and re-loading) but **PaperClip 64-D** and **PaperClip 64-D** with **Spellpack** are really separate products. The **Spellpack** program itself is also available as a separate package.

DEFAULTS FILE

Is **64-D** easier to use? Yes. Is it expanded? Yes.

The answer to both questions is 'yes' since, for example, there is an additional file on the main disk to let you build a version of **PaperClip 64-D** that's customized especially for you. The addition of a file called "defaults-d" to this new **PaperClip 64-D** means you can also select the printer port, the RS-232 parameters, the printer device number, screen colours, and 80 or 40-column video output so all of these come up automatically when you load. In the earlier versions you could use a program (**merge prtfil**) to have your choice of printerfile built in to your copy of **PaperClip**. That feature is still there, but is now clearly explained in the manual. By using these two "defaults" programs you can by-pass some of the selection process.

A USER'S MANUAL

The latest version of **PaperClip** has a new manual and it's now called a *User's Manual* rather than an *Owner's Manual*. This implies (quite correctly) that the manual has been revised to make it easier to use. Some sections of the manual have been totally re-written — like the printerfile default system mentioned above. Some sections have

been added — like *CNTRL Functions*. Other sections have been deleted — like *Precaution for 4040 drives*. Many of the sections have been re-organized for clarity, and some of the jargon has been re-written into plain English. The summary pages have been revised with headings and sub-headings by function and a stiff divider separates the appendices from the text. A couple of major and much needed changes are the use of a simple page-numbering system and re-setting the whole manual with a clear typeface. To use a computer cliché — a great deal of effort has gone to make this manual more "user-friendly".

OTHER ENHANCEMENTS

Within the **PaperClip** program there have been a few enhancements. For example: CONTROL-Y will set and delete a phrase without using CONTROL-P then CONTROL-K. The search functions have been expanded so you can match any character, match an alphabetic character, match what follows exactly, and match at the beginning or the end of a word. According to the sales staff there have been a number of improvements in the coding of this latest version of **PaperClip 64-D** which make its operations smoother. I haven't noticed any great change, but then it always seemed like magic to me anyway!

PAPERCLIP UPDATES

The new version of **PaperClip** is available from Batteries Included at the above address — but not for free. As Alan Krofchick explains it, the company business is not updates, nor is it losing money: they are simply trying to support their many established customers. Al told me of a customer from Hong Kong who wrote requesting a "free" update (based on an earlier review I wrote). Add up the costs for a disk, mailing and handling charges and that update would have cost the store about \$50.00 and the store was receiving hundreds of requests each month! Needless to say, Batteries Included has had to institute specific policies to deal with **PaperClip** updates. If you come into the store with an original **PaperClip** disk there is no charge for an update to **64-D**, but if you mail the disk it will cost \$5.00 for postage and handling. An update through the mail without returning the ORIGINAL disk will cost \$10.00. A new manual costs an additional \$10.00 and is a small investment compared to the cost of publication.

On a recent trip to the store I bought a copy of **64-A** and the sales staff seemed surprised that someone would "downgrade". I had to confirm I wanted version "A" at least three times. Despite the raised eyebrows, my reasoning was sound because, as **PaperClip** gains features, the available file space decreases. Most users do not write wordprocessor files flowing over 400, 40-column lines very often (babbling is an acquired skill) but if this has ever occurred to you — look out! You will not be able to manipulate a file larger than 424 lines in **PaperClip 64-D** and this is less than half the number that could be written with the original version (**64-A**). I suggest that anyone wishing to update their version of **PaperClip** either keep their original disk or at least back-up the old version and store it safely.

A SPELLING CHECKER

What's this about a spelling checker? How does it work? What makes it special? How fast is it?

Spellpack is Batteries Included's name for an enhanced version of **PaperClip 64-D**. All previous versions of **PaperClip** have used a "dongle" or key (a small gray plastic box that's fitted into port #1 of the C-64) and all versions including **64-D** work with the same dongle. **PaperClip** with **Spellpack** won't.

PaperClip-S (**Spellpack** version) has its own dongle, its own package, its own disk — plus a separate dictionary disk — and an additional appendix in the manual. It's loaded by CONTROL-Shifted Y. That's it. The command line reads: "Insert dictionary disk and press return", when that's done you are asked: "Check user dictionary?". The basic dictionary has 15,000 words which sounds like a lot until you pick up *The Concise Oxford Dictionary* (the standard in local schools) with 40,000 words. This is why **Spellpack** has a "user" dictionary designed to let you custom-build an additional file of your special words.

If you are blessed with an IEEE drive like the 4040 or MSD drives, **Spellpack** is about three times faster than with a 1541 serial drive, since the entire dictionary must be read in from disk. The word checking process, however, is very quick, since it's in machine code — and it's just as fast on 10 pages as on one. When an error is found it is highlighted and at this point you can select from four choices: skip to next word, skip and ignore future occurrences, correct the spelling, or add it to your user

dictionary. This last selection requires that you have answered "yes" to the prompt "Check user dictionary" at the start. The first time I used this feature I blew this and had to re-start Spellcheck because I didn't read over the instructions carefully enough. The Spellpack disk also has six "maintenance" programs to let you view, repair, and update the dictionary, also add and delete words to the user dictionary. The last program? Exit.

Keep in mind that a spelling checker cannot find errors in syntax (like "boat" for "boot" or "baby") since these are also legitimate words. The big advantage to Spellpack is that it does not require you to shut off the wordprocessor, load the spelling checker, and then re-load the wordprocessor to print a corrected copy. I use Spellpack to proof-

read my written material before it goes to my printer. I'm always amazed after four or five edits to find there is still one typo I've missed — every time.

A SEPARATE PROGRAM

PaperClip 64-D with Spellpack costs \$149.00. It is NOT available as an upgrade to earlier versions, since it includes a totally new program, but the Spellpack can be bought separately and costs \$49.95. If you already own PaperClip, the acquisition of Spellpack will give you the latest update, a new dongle, and the Spellpack disk. If you don't own it and you are in the market for a wordprocessor, then you should look over the latest PaperClip version's many features. Along with the all the standard editing, revising, and printing functions, PaperClip 64-D with

Spellpack has many extended capabilities that will mean you grow into the program — not out of it.

I used PaperClip for a recent demonstration of wordprocessing to a group of Outdoor Writers from all across Canada. Some of these authors wrote their material with megabuck dedicated wordprocessors and some wrote their material with a pencil. All of them were professionals and all were impressed with PaperClip. They liked the simplicity of full-screen editing, two-key commands, full printer access, 80-column video output, 40-256 column files, the list of features goes on and on. Now, adding a built-in spelling checker, that's fantastic! PaperClip 64-D with Spellpack definitely sets the standard for Commodore wordprocessors. TPUG

Cardco Cardram 16

Richard Best
Mississauga, Ont

CARDCO CARDRAM 16

The Cardco Cardram/16 is a 16K RAM expansion board which plugs into the VIC 20 expansion port and increases available memory to just under 20K. The cartridge sells for nearly \$50.00 less than the similar board from Commodore, and offers some features not found on the original.

The circuitry comes enclosed in a black plastic case with a cut-out that exposes a set of mini-DIP switches. These switches are used to allocate the two 8K blocks of RAM to one of four available areas inside the VIC 20. (The cartridge is actually two 8K cartridges in one housing.) Memory can be placed in blocks 1, 2, 3 or 5 of the VIC 20. When switched to blocks 1 and 2, memory is expanded by the full 16K. If you already have an 8K expander in block 1, the Cardram/16 can be switched to blocks 2 and 3 for a total of 28K — the maximum for BASIC in the VIC 20. For a more exotic approach, RAM can be put into block 3 or block 5 where it can hold an M/L program while a BASIC program is sitting in lower memory.

The Cardram/16 cartridge comes packed with a 20-page booklet that contains a lot of information about both the expander and the VIC 20. It is written in a friendly style and addresses itself to the pro and beginner alike. It also includes a number of very interesting programs to try with the expander, such as a screen relocater and a program which will load two programs into memory at once. The board is very ruggedly constructed and all contacts are gold-plated for performance and long life.

CARDBOARD/3S ECONOMY EXPANSION INTERFACE

Cardco started a trend with their Cardboard/3 Economy Expansion Interface. The updated Cardboard/3s is basically the same unit, with the addition of a number of switches and a master reset button. This interface increases the number of expansion ports available on the VIC 20 from the normal single slot to a total of three switchable slots. The switches allow cartridges to be assigned to blocks 1, 3 or 5. Each slot is individually switchable to any block by means of tiny rocker switches. The inclusion of the reset button makes it possible to switch from cartridge to cartridge without turning off the computer, although the machine must still be shut off to insert or remove a cartridge — very convenient and easier on the VIC 20, your monitor and your nerves.

This unit is very basic, consisting of just a PC board with a couple of bolts for supports and a minimum of circuitry on top. It is well-built with the same gold plating on the contacts, and it is fused, in case you plug in one cartridge too many. The original Cardboard is still available at a lower price, but will probably lose out to the switched version. I bought my interface from Canadian Software Source in Toronto, and must mention that I am pleased not only with the Cardco product, but also with the price and prompt, courteous service. (Thanks, Mike and Barbara.)

All Cardco products are guaranteed for the life of the original owner, and are available at a wide variety of retail outlets and mail order houses. There are no suggested

list prices in Canada, and prices vary according to store policy. The Cardram/16 ranged from a high of \$120.00 to a low of \$99.95. The Cardboard/3s ran from \$79.95 down to \$54.95. TPUG

Cardco products are Manufactured by Cardco, Inc. 313 Mathewson, Wichita, Kansas.

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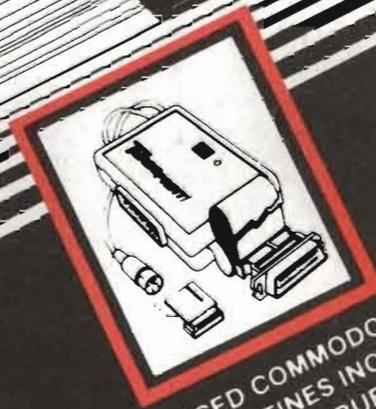
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THREE SPREADSHEETS

Dave Powell

Mississauga, ON

With these three packages, we have almost the entire range available for the C-64. It's possible to get some cheaper sheets in the \$20-\$30 range, and there's a FREE one (COLUMN CALC, written in BASIC) in the TPUG library. I don't think there's anything on the C-64 market right now that can challenge **Multiplan** as 'top-of-the-line'. However, as we'll see, there are other things in life besides being top-of-the-line.

FUNCTION

The easiest comparison to make is on the basis of raw FUNCTION. **Multiplan** wins hands down. (The C-64 version has 99% of the functions of **Multiplan** on an IBM PC). **PractiCalc** is not as versatile, but is probably as powerful as the original **VISICALC** product on much larger machines. **ESP>Calc** offers "just enough" function, and must rely on better documentation, presentation and examples to make up its price disadvantage over the real cheapies which come in with the same rating. Here's a table to give an idea of their relative functionality:

FUNCTION	Multi-Plan	PractiCalc	ESP>Calc
MATH FEATURES			
+ - / *	X	X	X
%	X		X
Sum,avg,min,max	X	X	X
Exponentiation	X	X	
%+, %-, %diff.			X
Trig & log fn.	X	X	
Boolean fns.	X		
Logical expr.	X	X	
Iteration	X		
EXTENSIONS			
IF..THEN..ELSE	X		
Table lookup	X		
SORT	X	X	
Search		X	
OUTPUT			
Graphics	lo-res	hi&lo	no
Variable col width	yes	yes	no
Different col widths	yes	title only	no
Formats	yes	yes	fixed
Automatic wide print	yes	no	yes
Formats, widths, saved	yes	no	no

Naturally, the functions available are only relevant if they are going to be used. I would think that even the simplest home application can benefit from a better presentation afforded by superior output functions. Financial spreadsheets won't get far without either exponentiation or logarithms for calculating com-

pound interest, present value, effective interest rates, and so on. The addition of a SORT function is a great help for analysis. SEARCH (only in **PractiCalc**) helps in large spreadsheets to find a particular row, by searching for a known piece of text. ('GOTO name' is a substitute in **Multiplan**).

My feeling is that **ESP>Calc** doesn't have enough functions for the price (**COLUMN CALC** almost rivals it here), **Multiplan** has too much unless one has the occasional business application, and **PractiCalc** has a well-chosen set.

EASE OF USE

Multiplan

How can I put this? **Multiplan** is easy to use, considering the incredible amount of function available. At all times, every command option is shown at the bottom of the screen and choices can be made directly, or by moving a cursor to one's preference. Formulae can be constructed by 'pointing' to cells with the cursor to get cell references. The downside, if one can call it that, is that there's almost too much choice, too many ways of doing something. However, help is always at hand. Point to the puzzling option, and press '?' to get a screenful of helpful information. If you are going to set up spreadsheets only occasionally, **Multiplan** will probably take too long to relearn, each time.

For the active user, one who has invested the necessary time to learn the ins and outs, **Multiplan** is a dream to use. Advanced functions such as external sheet consolidation; area naming, copying and moving; iteration; logic; table look-up; string manipulation . . . the list goes on and on . . . are all packaged in the one standard format. Wherever possible, **Multiplan** will offer a proposed response. If one copied 12 cols last time, **Multiplan** will pre-enter '12' as a proposed response to: 'number of cols to copy'. If one goes about setting up the sheet systematically, the proposed response will usually be suitable — just hit RETURN.

The manual is excellent. It's looseleaf, with both tutorial and reference sections. There is a good example to follow.

Between sessions, every piece of customization is kept (with one exception — recalculation auto/manual always resets to auto) which makes it practical to set up very nice looking output, and get it every time. Printing wide sheets is accomplished automatically so that one can cut and paste pages to get a wide page. There's no need to specify several partial prints.

Movement of rows or columns (by insert, copy, move, or sort) is simple, as each cell reference is already coded to show that it's either absolute or relative. In addition, a rectangle can be moved or copied, one is not confined to referencing single rows or cols at a time.

continued on next page

ESP > Calc

Multiplan and **PractiCalc** are 'traditional' spreadsheets in the **VISICALC** mold. **ESP>Calc** is not. I have a hard time evaluating which is better, as I became familiar with **VISICALC** first. **ESP>Calc** takes the approach that the first row and the first column are *always* titles, and also names. *All* other cells are numbers. Calculations and title changes are done on a separate screen. Calculation order is determined by the order in which they are specified. I found this more difficult, because I was in the habit of specifying a spreadsheet in a non-procedural fashion, in the order that I thought of things.

Although changes are possible, **ESP>Calc** makes it much easier to specify all the calculations at first. For instance, there is no way of later adding extra calculations at the end of the list, only inserting extras in the middle. Moreover, having to specify calculations on a separate screen makes it difficult to remember which row and column numbers were required.

With fewer options and fixed formatting, there is less to worry about. There is no confusion of relative or absolute references, because there is no copying (replicating) of formulae. Printing is automatic in that if the sheet is wider than 80 characters, extra pages are printed until all the columns are output. Row titles are repeated on subsequent pages. The design is intended to make things as easy to use as possible. In general, it succeeds for simple calculations, but there are major deficiencies that need correction.

In my test exercise, I wanted to see if a proposed budget would stay out of the red in each month. Income was constant each month, and expenses varied. Would net savings in early months cover the heavy expenses later on? (i.e. what was the cash flow?) **ESP>Calc** has no copy function, so I had to type the same number for income twelve times across a row. In data entry mode, it did have a nice feature that moved the cursor automatically (in the direction specified) upon hitting RETURN. I failed to find a way to calculate "(Income - Expense) + previous surplus" except by repeating it physically eleven times, because each calculation is restricted to a single operation, and all references are absolute. (A relative reference might be to the 'previous column'; an absolute reference is to 'col 4', say).

A strange omission is that there is no way to specify a constant. For instance, to add 10% to each cell in a column, one can't say $c3=c2%+10$; the '10' has to go in a cell.

Unique to **ESP>Calc** is a listing of the calculations using the row and column *names* rather than just the numbers (R3, C7 etc.) Unfortunately, this is only available when it's printed, not on the screen.

The manual is comprehensive, well-written and in a loose leaf binder. Only the explanations of the various formats of the mathematical operations could have been simpler. Unfortunately, the manual is printed predominantly in light blue. Maybe someone thought that this looked nice, but more likely it's to stop photocopy artists. In any case, I can hardly read it in a good light. There is the usual step-by-step example, and a very welcome pair of practical examples on the disk, with an explanation in the manual. These examples are an invaluable aid in getting to know a package, allowing one to browse through something that is *known* to work, without having to type it in from the manual.

PractiCalc

This product is very well put together. Good use is made of the primary function keys to help in developing and changing a spreadsheet in minimum time. It doesn't have the extensive help facility that **Multiplan** does, or the simple, one screen help of **ESP>Calc**, but it needs less. The major functions are represented by the initial letter of each command, and these initials are given on the prompt line.

Set-up is done by copying rows and columns, inserting and deleting, and moving. To specify a formula, **f1** is pressed at any time during its input. Row and column references are entered using letters for rows and numbers for columns. Formulae are reconfigured based on the answers to questions regarding each reference - is it relative or fixed?

Practicalc doesn't have a facility for displaying the disk directory before a save or load, which is unfortunate - especially if one's memory for file names is as bad as mine. Printing of wide spreadsheets is accomplished by printing in sections - one has to guess or calculate how much will fit on the paper. Between sessions, **Practicalc** 'forgets' formats and column widths, which have to be re-entered. This is a pain, for models which get regular use.

Despite these faults, I give **Practicalc** high marks for fitting a pile of function into a small package and, on the whole, making it easy to use. The manual is not loose leaf, but does have a good command summary at the end and is generally very readable. A very good, step-by-step example is provided.

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PERFORMANCE

Load time (on a 1541) for each product was as follows:

ESP>Calc.	1:47 (mins: secs)
PractiCalc.	0:25
Multiplan.	2:03

Setting up a simple problem, within the scope of all three, is usually fastest in **Practicalc**, then **ESP>Calc** then **Multiplan**. Of course, once one is working on a model beyond the scope of the two quicker products, the question is academic. In actual time, there's not much difference, but what makes **Multiplan** seem so slow in set-up is the fact that it goes to disk for each command beyond a basic set in memory, unless it was most recently used. All the help is also on disk. After a while, it becomes second nature to do all the copies at one time, then all the blanking, and so on. For this reason, two disk drives become invaluable if one wants to save frequently, to avoid swapping the system disk and data disk all the time.

Quite obviously, for a quick, off-the-cuff modelling session, where I don't expect to have to use anything too fancy, I reach for **PractiCalc**.

BACKUPS

ESP>Calc lets you copy the master and protects its investment with a dongle in the joystick port (either one). The other two are protected. Backups are available to the registered owners for a fee. I'd worry about **Multiplan** more because the disk is in continual use. With **PractiCalc**, one can remove the disk as soon as it's loaded.

SUMMARY

If you have used **VISICALC**, or a clone, and were happy with the result, then forget **ESP>Calc**. If you gave up on spreadsheets in disgust, maybe **ESP>Calc** is exactly what you want.

Choose between **Multiplan** and **PractiCalc** based on your budget and your needs. For most modelling, **PractiCalc** will do the job. For some business applications, you'll need **Multiplan**. If you use **Multiplan** at work, then at least you won't have to learn another spreadsheet.

You choose! *TPUG*

ESP>Calc by New Leaf Inc. \$47.50 U.S. (Disk)

Microsoft Multiplan from HesWare \$75.00 U.S. (Disk)

PractiCalc by Computer Software Associates \$54.95 U.S. (Disk)

(All prices shown are recent U.S. mail order prices, for comparison purposes only).

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VM201-24K

John David
Etobicoke, ON

Does the message 3583 BYTES FREE look all too familiar to you? If so, Personal Computer Specialties has just the treat for you. Instead of 3583, the simple flip of a dip switch will bring 11775 BYTES FREE! Flip again! 19967 BYTES FREE! Flip again! 28159 BYTES FREE! It is, quite literally, just as simple as that. Personal Computer Specialties has created a 24K expander for the VIC 20 that is easy to install and easy to operate.

The VM201 expander board can be used alone, or with other products — the VM101 or VM1000. Alone the expander is supported by four plastic legs that can be removed when used in conjunction with the other boards. These legs hold the board level with the VIC 20's cartridge port. You add the board to your computer by pushing it gently, but firmly into, the slot.

The appearance of the board is familiar to those who have ever peeked inside a computer. It consists of the circuit board, with HM6116P-4 silicon memory chips arranged neatly in four rows of three chips each. Aside from these dominant and magical devices which give the VM201 its marvelous capability, there are two timer chips, some capacitors, the 3-position DIP switch and the edge connector. Instructions advise the user to turn the power off and to exercise extra care during the initial insertions of the VM201. The test board slid slowly, but easily, into place. After that, operation was simple. Turn off the power (as a precaution). Add an extra 8K of memory to the VIC 20 by simply flipping the first of the three DIP switches on the board. For each extra block of memory you want, you need only flip the next switch in sequence. Although the DIP switch is tight under the overhanging VIC 20 case at the back of the machine and therefore somewhat awkward to reach, the problem is really minor since you will probably set the switches once before you power up for each keyboard session.

Aside from ease of operation, the VM201 offers the programmer expanded memory to use with his VIC 20. Since the board uses the edge connector in the back of the VIC 20, there is another mounted on the board. It will work with RAM cartridges only — a feature that limits the use of this board. In other words, there are no places on this board to connect other peripheral devices of any kind. The manufacturer seems to have kept those functions for other parts of his VIC 20 expansion system. The VM201 is strictly for memory expansion. Therefore, when you use the board, you need to know the configuration of the current program. For example, some programs specify an 'unexpanded' VIC 20. In such a case, you must turn off all the DIP switches, otherwise the computer cannot properly locate your program in its memory. Likewise, programs developed for other expansions will operate in different memory locations and should be loaded back into the computer when it is configured in the same manner — i.e. 12K, 19K or 28K.

Despite its deceptively simple appearance, this board has the power to increase your VIC 20's computing capacity by almost 800%! *TPUG*

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Vanderkooy THERMOSTAT Program

Printed in this issue is a short program (below) which accompanies John Vanderkooy's article C-64 Thermostat (*TPUG Magazine*, October 1984), which was not available for publication at that time.

Our thanks to Mr. Vanderkooy for modifying the longer version of his program in order to produce this version for our readers. *TPUG*

```
100 REM --- FURNACE CONTROLLER C-64 (SEE REMS FOR VIC-20)
110 REM --- BY JOHN VANDERKOOPY SEPT'84
120 REM --- THIS PROGRAM USES THE USER PORT MSB FOR CONTROL (PIN L)
130 REM --- DIAGRAM IN ARTICLE SHOWS PB0 (PIN C); SHOULD USE PB7 (PIN L)
140 PRINT"□":HY=1.0;TC=4.0; REM HYSTERESIS AND TIME CONSTANT
150 INPUT"SETPOINT,CELSIUS ";SP
160 PRINT
170 INPUT"TIME(CHMMSS)";TI#
180 PRINT
190 TL=TI/3600;REM INITIALIZE LAST TIME
200 BASE=56577;REM USER PORT BASE MEMORY ADDRESS (37136 FOR VIC-20)
210 POKE BASE+2,128;REM MSB DDR OUTPUT
220 POKE BASE,128;REM TURN OFF FURNACE INITIALLY; USE NORMALLY CLOSED
    CONTACT
230 T2=0
240 TJ=TI; REM CALCULATE JIFFY TIME ONCE PER LOOP
250 FOR I=1TO100
260 T2=T2+PEEK(54297); REM (36872 FOR VIC-20)
270 NEXT I
280 T1=T2/100 ;REM AVERAGE THERMISTOR VALUE (SHOULD BE ABOUT 200)
290 TP=20.0+(175.8-T1)*2.6/12.7;REM THERMISTOR CALIBRATION (USE YOUR OWN)
300 IF (TJ/3600)<TL THEN TL=TL-1440;REM HANDLES TI WRAPAROUND
    (1440 MIN/DAY)
310 TS=TJ/3600-TL;REM TIME SINCE LAST SWITCH (MINUTES)
320 REM TEMP CHECK ROUTINE
330 TT=HY*EXP(-TS/TC); REM TOGGLE TEMP DIFFERENTIAL
340 TR=SP+FO*TT; REM TRIGGER TEMP
350 IF TP>TR THEN FO=-1;REM TURN OFF FURNACE
360 IF TP<TR THEN FO=1 ;REM TURN ON FURNACE
370 P=(1-FO)/2*128; REM POKE TO PORT
380 IF P<>(PEEK(BASE)AND128)THEN TL=TJ/3600;REM RESET TS IF SWITCHED
390 POKE BASE,P ; REM CONTROL OF FURNACE
400 TA=INT(TS+.5); REM ROUNDING FOR PRINTING
410 TB=INT(100*TP+.5)/100; REM ROUNDING
420 PRINT TI#,TA,TB,FO;REM PRINTS TIME,SINCE LAST SWITCH,TEMP,ON OR OFF
430 GOTO 230; REM LOOP BACK,GET TP
```

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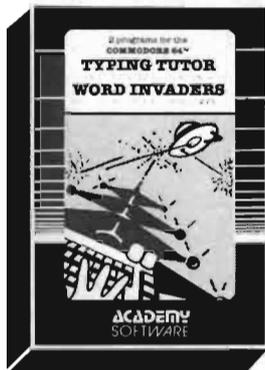
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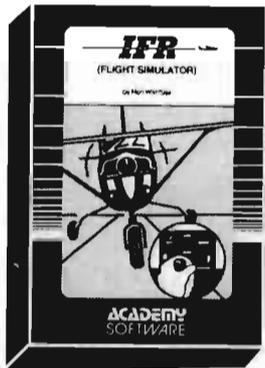
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Telex: 06-955458

Additional textbooks are also available. Seminars on Pascal and BASIC are offered regularly.

TPUG LIBRARY

Reorganized Libraries



The librarians for the PET, Commodore 64 and VIC 20 have been working at taking apart all the monthly disks up to and including June 1984, sorting the programs into categories, and releasing new category disks. The first two disks to be created this way are (C)U2—Utilities 2, and (C)U3—Utilities 3 for the Commodore 64. **Note: If you have all the (C)64 monthlies you already have all of these programs!**



(C)U2 - UTILITIES 2

(disk only)

LIST-ME(C)U2.L	Contains information about the programs and files on (C)U2.
C64.MENU	See a list of what is on your diskette and then LOAD what you want from a menu.
AUTO BOOT.C	See a list of what is on your diskette and then LOAD what you want from a menu.
MENU.C	See a list of what is on your diskette and then LOAD what you want from a menu.
AUTOBOOT.C	See a list of what is on your diskette and then LOAD what you want from a menu.
DOS IN BASIC.C	Allows you to access your disk drive more easily.
DOS.C	Allows you to access your disk drive more easily.
4040 COMMANDS.C	Allows you to access your dual disk drive more easily.
USING 64 WEDGE.C	Contains instructions for "DOS 5.1" and "DOS5.2.D". Be sure and read them so you can make the most of these two good little disk access utility programs.
C-64 WEDGE.C	Loads and executes "DOS 5.1".
DOS 5.1	Allows you to access your disk drive more easily.
BOOT DOS 5.2.C	Loads and executes "DOS5.2.D".
DOS5.2.D	Allows you to access your disk drive more easily.
DOS COMMANDS.C	Allows you to access your disk drive more easily.
ROM EMULATOR.C	Allows you to load any of the four versions of the Commodore 64 into your C-64.
SX 1	Loaded
SX 2	and
SX 3	used
SX 4	by
R1 1	"ROM EMULATOR.C"
R1 2	Loaded
R1 3	and
R1 4	used
R2 1	by
R2 2	"ROM EMULATOR.C".
R2 3	Loaded
R2 4	and
R3 1	used
R3 2	by
R3 3	"ROM EMULATOR.C".
R3 4	

PROGRAM INFO.C	Looks at a program on your disk and then tells you a bit about it.
CHANGE TITLE.C	Allows you to change the name of any of your diskettes.
DISK PRINTER.C	Prints out the directory of any diskette.
BAM.C	Displays the BAM of a diskette.
BLOCK FREE.C	Displays the number of blocks free on a diskette.
DIR READ.C	Reads the directory of a disk into memory.
DIR READ ML.D	Loaded and used by "DIR READ.C".
FAST BAM.C	Displays the BAM of a diskette.
BAMGET.D	Loaded and used by "FAST BAM.C".
TINY DIRECTORY.C	Prints out the directory of a diskette.
DISKPRINT.C	Prints out the directory of a diskette.
GEMINI CHAR.C	Allows you to make your own character set(s) for your Gemini printer.
COMPUTER FONT.D	Can be used by "GEMINI CHAR.C".
NORMAL FONT.D	Can be used by "GEMINI CHAR.C".

(C)U3 - UTILITIES 3

(disk only)

LIST-ME(C)U3.L	Contains information about the programs and files on (C)U3.
SD FILE COPIER.C	Copy some or all of one 1541 formatted diskette to another using one 1541 disk drive.
COPY SOME.C	Copy some or all of one 1541 formatted diskette to another using one 1541 disk drive.
COPY SOME ML.D	Loaded and used by "COPY SOME.C"
SIN DISK COPY.C	Copy some or all of one 1541 formatted diskette to another using one 1541 disk drive.
COPY FILE.C	Copy one program from a 1541 formatted diskette to another using one 1541 disk drive.
COPY FILES.C	Copy some or all of one 1541 formatted diskette to another using one 1541 disk drive.
UNICOPY INST.Z	Contains instructions for "UNICOPY.C".
UNICOPY.C	Copy some or all of one 1541 formatted diskette to another using one 1541 disk drive.
COCKROACH 1D.C	Copy all of one 1541 formatted diskette to another using one 1541 disk drive.

COCKROACH 1.C	Copy all of one 1541 formatted diskette to another using one 1541 disk drive.	TERM.64.2.C	Machine Language program that is loaded, needed, and used by "AUTO-DIAL1650V5.C".
COCKROACH 2D.C	Copy all of one 1541 formatted diskette to another using one 1541 disk drive.	BAUD RATE	Updated & referred to by "AUTO-DIAL1650V5.C".
COCKROACH E.C	Check your diskette for bad spots.	CHECKER	Updated & referred to by "AUTODIAL-1650V5.C".
COPY-ALL V2.C	Copy some or all of one 1541 formatted diskette to another using two 1541 disk drives.	NUMBERS	Contains some BBS numbers from the Toronto Area—can be used with "AUTODIAL1650V5.C".
FAST BACKUP.C	Copy all of one 1541 formatted diskette to another using one 1541 disk drive in four only minutes.	TERM64 BOOT.C	Will load and execute "TERM64".
FILE COPY.C	Copy one file from one 1541 formatted diskette to another using one 1541 disk drive.	TERM64	Terminal program which has a lot of desirable features—one of most useful is a 42K capture buffer.
SD COPY/ALL.C	Copy some or all of one 1541 formatted diskette to another using one 1541 disk drive.	TERM64 DOC.D	Contains instructions for "TERM64". Can be printed using "TERM64".
MULTICOPY.C	Copy all of one 1541 formatted diskette to one or several others using one 1541 disk drive.	PARAMETERS.D	Can be used with "TERM64" as a sample of what you might have on your function keys.
BLOCK MODIFIER.C	Allows you to look at and alter any track and sector on a disk.	VT52 40/80TERM.C	Terminal program which allows you to go on line in either 40 or 80 column mode.
DISKETTE MOD.C	Allows you to look at and alter any track and sector on a disk.	VT52 40/80DOC.D	Contains instructions for "VT52 40/80-TERM.C". Can be printed using "TERM-64".
DISK DOCTOR.C	Allows you to look at and alter any track and sector on a disk.	MIDWEST TERM.C	Terminal program which lets you transfer data between any two computers using this program.
DISK FIDDLER.C	Allows you to look at and alter any track and sector on a disk.	3 MIN BACKUP.C	Will backup an entire diskette much faster than other copy programs. Will not work on all 1541's.
BLOCK MOD.C	Allows you to look at and alter any track and sector on a disk.	1650 DIAL/LOAD.C	Will dial a BBS, & then load in any terminal program you tell it to.
DISKVIEW 3.C	Allows you to look at and alter any track and sector on a disk and much more.	STORY WRITER.C	This word processor will do a lot of things very well, and the price is right!
FILESORT.C	Sorts sequential files.	STORY INST.D	Instructions for "STORY WRITER.C"—may be printed using "STORY WRITER.C".
BIGFILE.D	Sample sequential file that you can sort using "FILESORT.C".	REINFORCER.C	Will read every block of a diskette, one at a time. After a block is read, it is written back to its original position on the diskette. This is supposed to reinforce the data on the disk.
HUGEFILE.D	Sample sequential file that you can sort using "FILESORT.C".	CHESS.C	Play chess against your C-64.
REPORT GEN.C	Sample report generator that is meant to be used on a sorted sequential file.	CHESS-64	Loaded and used by "CHESS.C".
DIR SORT.C	Takes the directory of a disk sorts it, and then writes it back out to your diskette.	CHESS/CLK	Loaded and used by "CHESS.C".
NON EXEC.2	Will tell you what lines in a program will not be executed.	CHS/CHAR	Loaded and used by "CHESS.C".
TOKENIZER.C	Converts sequential file listings of programs back into program files.	SYNTH SAMPLE.C	Contains some very good music!
DISK TIDIER.Z	Allows you to scratch many files at a time so you can keep your diskettes from getting clogged up with junk.	RELFILE COPY.C	Will copy relative files from one 1541 diskette to another using one 1541 disk drive.

To the best of my knowledge all of the above listed programs work. If you find any that does not, please write to me at the TPUG Office and tell me.

David Bradley

(C)TB - SEPT 1984

(1 disk/tape)

LIST-ME(C)TB.L	Contains information about the programs and files on (C)TB.
AUTODIAL1650V5.C	Terminal program which will allow upload & download from Punter bulletin boards. Dial a number or a list of numbers with your 1650 Automodem, & much more

TUNNEL MAZE.C	Search the tunnels for treasures.
TUNN.D	Loaded and used by "TUNNEL MAZE.C".
MUSIC SYS48152.C	Will play the theme from "Mission Impossible" over and over. LOAD it ,8,1 and enter SYS 48152 to RUN it.

(P)TB - SEPT 1984

(1 disk/tape)

LIST-ME(P)TB.L UNICOPY 4.P	Documentation for disk (P)TB. Utility - Copier, single disk (or tape) from Jim Butterfield, BASIC 4 commands - very similar to Copy-All. See "UNICOPY INS T.Z". for more information.
FILESORT 4.P	Utility - Sequential file sort & other features, BASIC 4, from Jim Butterfield.
UNICOPY 2.P	Utility - Copier, single disk (or tape) from Jim Butterfield, BASIC 2 commands - very similar to Copy-All. See "UNICOPY INST.Z". for more information.
UNICOPY INST.Z	Utility - Unicopy program instructions, just LOAD and RUN.
FILESORT INST.Z	Utility - Filesort program instructions, just LOAD and RUN.
BIGFILE.D	Data - Output data file from "FILESORT 4.P" program. Do not LOAD!
PROG LOAD.P	Utility - Loads disk directory (ML code), 27 per screen, press letter to LOAD and RUN a program.
ALIGATOR MATH.P	Educational - Math drill and practice, 8 levels, alligator tries to eat problem before it is solved. Speeds up with correct answers.
ARTILLERY.8	Game - Fire cannon, trajectory of shot shown.
COPY ALL+.P	Utility - Copy utility, changes disk device number, alphabetizes files, and copies between drives.
FRENCH VERBS.P	Educational - French practice on 'ir', 're' and irregular verbs.
NIGHT WAR.8	Game - Turn to see target, estimate angle and fire.
NIGHT WAR DATA	Data - "NIGHT WAR.8" file, lowest and highest scores.
ORBITSTREAK.8	GAME - Dodge objects or fire, but firing costs points.
PROG CHR PRTR.P	Utility - Epson MX80 Printer, programmable characters.
ROADRACE 500.P	Game - Road racing game.
SCREEN INVERT.8	Utility - Inverts lower case characters. Instructions in code.
SEQ SORT EDIT.8	Utility - Sequential file editor, reads, alters and saves files.
6 SORT DEMO.P	Educational - 6 different sort methods are demonstrated.
ULTRASORT ML.8	Utility - Machine code sort, used in "6 SORT DEMO.P" and "COPY ALL+.P".
CATALOG PRT.8	Utility - Prints the disk directory (4 columns). Can also load or scratch a file, using the program number.
PAPER WRAPPERS.P	Miscellaneous - Puts repeated messages on printer like those on wrapping paper.

The "NOS TRANSLATOR" is a program to help transfer software from one brand of machine to another. There are some demo programs, but only in Dutch. If there is interest, I will put them on a category disk.

M. Donegan.

NOS ARTICLE1.W	Language - Word Pro File - article on NOS Translator.
NOS ARTICLE2.W	Language - Word Pro File - article on NOS Translator.
NOS CBM 348.P	Language - NOS Translator for CBM machines.
NOS PET 2001.P	Language - NOS Translator for PET 2001 machines.
WP LIST/SCREEN.4	Utility - can be used to list the NOS Article.w files.

(S)TH - SEPT 1984

TPUG Toronto - SuperPET Distribution Disk for September 1984
25 "describe.sep/84" SEQ This describe file.

* The following material from Avygdor Moise comprises a set of macros designed to facilitate the programming of 6809 assembler programs using the Waterloo Development Facility.

* Also included is a machine language sort merge routine using these macros.

2	"copy.sort.files"	SEQ	A command file to copy the sort program material to its own disk.
27	"procedure.doc"	SEQ	Documents an extensive set of 6809 macros to aid in writing assembly code. These are used in the machine language sort program found on this disk.
18	"sort.merge.doc"	SEQ	Documentation for a machine language sort/merge program using disk as input and output.
29	"procedure.macom"	SEQ	A set of macros designed to assist in 6809 assembly programming. This file is commented so takes more space than 'procedure.mac'. See 'procedure.doc' for more information.
17	"procedure.mac"	SEQ	An un-commented set of the macros. This set should be 'included' in the assembly using them.
7	"sort.merge.for"	SEQ	A fortran routine demonstrating the calling of the sort/merge program from a higher level language.
1	"sort.merge.cmd"	SEQ	The linker 'cmd' file for linking together the various assemblies comprising the sort/merge program.
1	"mem.allocate.asm"	SEQ	One component assembly of sort/merge.
16	"sort.prg.1.0.asm"	SEQ	Main assembly of sort/merge.
32	"merge.io.1.0.asm"	SEQ	Another component of sort/merge.
13	"shl.sort.1.0.asm"	SEQ	And another.
19	"compare.1.0.asm"	SEQ	The last component of the sort/merge.
1	"mem.allocate.b09"	SEQ	Output files from
9	"sort.prg.1.0.b09"	SEQ	the assembler
6	"merge.io.1.0.b09"	SEQ	and input
2	"shl.sort.1.0.b09"	SEQ	to the
2	"compare.1.0.b09"	SEQ	linker
24	"test.srt"	SEQ	A test file for input to the sort/merge program.

1	"example.cmd"	SEQ	A 6809 assembler program		
9	"example.asm"	SEQ	to demonstrate		
1	"example.exp"	SEQ	the calling of		
59	"example.lis"	SEQ	the sort/merge		
6	"example.b09"	SEQ	program from machine language.		
2	"recurse.asm"	SEQ	A sample assembler routine to demonstrate the recursive call capability of the macros described above.		
7	"sort.merge.1.0"	PRG	The load module for sort/merge. The origin of the provided version is at \$78f8.	23	"pits.structure:e" SEQ A pseudo code representation of the structure of 'pits'
3	"example.mod"	PRG	The load module for the machine language example demonstrating linking to the sort/merge routine.	11	"pits.asm" SEQ The assembly language
4	"VC404.S BOOT:B"	PRG	A Commodore Basic 4 routine and two 6502 machine language routines which provide an emulation of the Volker Craig 404 terminal. Only the Baud rate is variable and must be set in the Basic program.	30	"pits_island.asm" SEQ modules
8	" +VC404B.S"	PRG	This program is provided by Gord Campbell.	44	"pits_move.asm" SEQ which comprise
7	" +VC404M.S"	PRG	A curve-fitting program in Micro-Pascal using the Simplex method. Provided by Peter Spencer.	18	"pits_utility.asm" SEQ the game 'pits'
60	"simplex_curfit:p"	SEQ	Some notes on the Simplex curve fitting program by the SuperPET librarian.	1	"pits.cmd" SEQ The linker 'cmd' file for 'pits'
26	"simplex_doc:e"	SEQ		9	"pits.mod" PRG The load module for 'pits'. Load either through the menu or through the machine language monitor and g \$1000.
				15	"pits_instr:e" SEQ Some notes on playing 'pits'
				34	"med_v1.3" PRG Version 1.3 of the microEditor we all know and use. This version, provided by ISPUG, has no new features but is very much faster than than the Waterloo original version (1.1)

* The following material, provided by Brad Bjorndahl, comprises the program 'pits' referred to in his series of TPUG Magazine articles starting in the June 84 issue. To review, 'pits' is a single player game adapted for the SuperPET from a mini-computer game called 'zombies'. The game is set on an island which is strewn with deadly pits. If, as you move around the island, you fall into a pit you lose. If you do not move around the island one of the zombies which also occupy the island will get you. The object of the game is to move in such a way that the zombies, which always chase you, will fall into the pits.

* This September Describe file created September 2, 1984 By Bill Duffield.

Logiciel Français A TPUG

Par Baudoin St-Cyr

Depuis quelques mois déjà, je travaille à la création de logiciel en langue française pour la bibliothèque de TPUG. En effet, il semble qu'un bon pourcentage des membres de ce club proviennent du Québec ou alors sont francophones vivant à l'extérieur du Québec. L'idée de base de la création d'une bibliothèque française est que le club pourrait peut-être mieux servir ses membres francophones en mettant à leur disposition un certain nombre de programmes en français. Évidemment, en faisant ceci, nous espérons encourager ces mêmes membres à envoyer leurs programmes français au club ou alors, si le but est de rejoindre tout le monde, de faire une double soumission. (Copie française et copie anglaise).

A date, nous avons complété un disque en français; il s'agit du (v)f1 que l'on retrouve dans la bibliothèque du VIC 20. Ce disque,

comme les disques mensuels du club n'a pas de thème comme tel. Plutôt il s'agit ou d'une collection de programmes que j'ai choisis de par la bibliothèque du VIC 20 et que j'ai traduit et adapté au français moi-même ou alors de programmes envoyés par la poste par les membres de TPUG

Le critère général que j'utilise en choisissant les programmes pour un tel disque est le fonctionnement du programme. En d'autres mots, si le programme, pour une raison ou une autre ne fonctionne pas bien, il est douteux qu'il soit inclus dans un futur disque.

A l'avenir, j'aimerais pouvoir faire des disques de catégories (i.e. services, jeux, démos etc.) Malheureusement pour l'instant je dois me contenter de regrouper tout le logiciel en langue française qui me tombe sous la main.

Présentement, je travaille à un deuxième disque pour le VIC 20 (v)f2 de même qu'à un premier disque pour le Commodore 64 (c)f1. Plus tard, il y a aura peut-être un disque en français pour le PET et le Super-PET.

Si vous êtes intéressés à aider à la croissance d'une bibliothèque française à TPUG, la meilleure façon de le faire est de nous envoyer vos programmes en français. En retour, nous vous enverrons le disque ou la cassette de votre choix. Qui sait, un jour la bibliothèque française pourrait peut-être rivaliser avec la bibliothèque de langue anglaise en terme de qualité et de diversité.
TPUG

books...books...books...books...books...books...books...

Mapping The Commodore 64

By Sheldon Leemon

Compute! Publications, Inc., P.O. Box 5406,
Greensboro, NC 27403 (919) 275-9809.

268 pages. \$21.50 U.S.

This book is arranged by memory location, and every location has an entry. This makes the book excellent for reference. If you are examining an unfamiliar program, often the *Programmer's Reference Guide* is not enough. For example, if you saw something like POKE 56590,127, you wouldn't know what to look up. Since *Mapping The Commodore 64* is arranged by memory location, you needn't know what a location does before you look it up. In essence, this book is set up much like a dictionary. Instead of words as entries, there are memory locations. Instead of the pronunciation, the location is written in hexadecimal after the decimal number. Just as there is a definition in a dictionary, there is a fairly comprehensible explanation.

However, this set-up has an obvious drawback. It means that the author cannot present the information in what you would consider a logical order. To get around this, there is a fairly complete index and extensive cross-referencing—but it is rather annoying to keep reading: “see location xxx”. For this reason, I would not recommend the book for the beginning programmer. If you are just beginning, or if you want to learn how to do sound or graphics, there are many other books which will explain what memory you have to POKE with what, and the information will be in a more comprehensible order.

Moreover, if you don't use machine language, you really have no use for the detailed maps of the ROM, which take up over half the book. Don't be misled by the front cover, which reads: “...for beginning and advanced programmers...” While the beginning programmer would certainly benefit, he would have to sort through pages of complicated explanations for which he would have no use, before he came to something of value.

If you *do* program in machine language, however, *get this book!* Your programming power will increase tremendously. All the BASIC and KERNAL routines are included (although they are not disassembled). This means you can JSR, instead of having to program things for which the computer already has routines. For example, you need not write a routine to scroll the screen: just JSR 59626. The explanations of all the routines have the machine language

programmer in mind. There are also quite a number of suggestions that can only be utilized by the machine language programmer. The latter are usually little tricks which are quite useful.

In addition, there are excellent descriptions of the use of interrupts. The numerous examples will answer any questions you might have. Moreover, there are explanations of how to combine other features with interrupts—such as CIA timers.

If you have a disassembler, you will have a great time disassembling the BASIC and KERNAL routines. The book does not include a disassembly of each routine, but these descriptions are good enough so that when you disassemble the routines yourself, you will be able to follow what the com-

puter is doing. It's almost exciting to dissect the computer like this. And when you do, you can modify the routines in any way you like. The book even includes a complete tutorial on the various methods of adding new commands.

I find that *Mapping The Commodore 64* is an excellent companion to the *Programmer's Reference Guide*. The latter is tough reading if you are not an expert computerist, and the memory maps are quite undetailed. *Mapping The Commodore 64* fills in these gaps. The explanations are clear, and it is the best memory map I have ever seen for the Commodore 64. I highly recommend this book for those of you who *do* program in machine language. TPUG

—Mathew Shulman

Doctor Aron's Guide To The Care, Feeding And Training Of Your Commodore 64

By Arthur and Elaine Aron

Hayden Book Company, 10 Mulholland Dr., Hasbrouck Heights, NJ 07604 (201) 393-6306. ISBN 0-8104-6450-0. 320 pages. \$14.95 U.S.

This is the sort of book you'd want to give to your mother if she was just getting into computers (and maybe even borrow back again!) It really is the ultimate beginner's handbook.

Doctor Aron's Guide is a fine mixture of principles and practicalities. It contains everything from elementary hook-up instructions to understandable Sprite graphics programming. It includes such items as basic BASIC instruction, practice exercises (with answers in the back of the book), basic BASIC concepts (clearly explained), a character code table (simple but useful); excellent, if concise, glossaries and indexes, an array of useful tips and shortcuts that not only make sense but actually work; and a well-balanced variety of programs that are short, but interesting. There is not a confusing or superfluous sentence in the book. The authors have lovingly pruned, weeded and trimmed their product so that the beginning computerist gets the maximum amount of solid information in a minimum of verbiage. Furthermore, the material is very well-organized and by the time you have worked your way through this book (it took me about ten hours), you will be, too. Most valuable of all, it gives the beginner a good, solid foundation on which to build.

Perhaps the most stunning feature of the book is its layout. It is a large, comfortably-

handled book, with clear, easy-to-read type and large, self-explanatory headings (e.g. *How To Use This Book*). It seems to have been designed specifically to sprawl open at awkward angles on whatever desk surface the practicing beginner has available. The diagrams are clear, the programs easily readable and there is a left-hand margin on each page almost one-third-of-a-page in width, on which the reader can make notes, if so inclined. Occasionally, boxes appear in this left-hand margin, containing tips and error-correction suggestions for the material on the same page—no hunting through an index-full of obscure headings, guessing which one your problem *might* be covered under, before finally giving up in disgust. (It is uncanny how often these “error-proofing” boxes anticipate the peculiar problems beginning computerists are likely to encounter). In summary, this is a book to use!

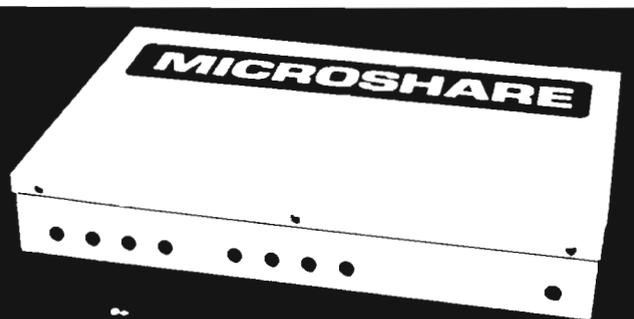
My only criticism: the section on commercial software is generalized to the point of vagueness. I would have liked to have seen actual software described e.g. specific word-processing programs, home accounting programs, etc. . . but this is a minor point against the overall excellence of the book.

Doctor Aron's Guide To The Care, Feeding And Training Of Your Commodore 64 is a masterpiece of simplicity and clarity. I wish it had been around back when I was struggling through all those “beginners' manuals” which promised instant knowledge and left me feeling like a kindergarten dropout. TPUG

Rating: 10 out of 10

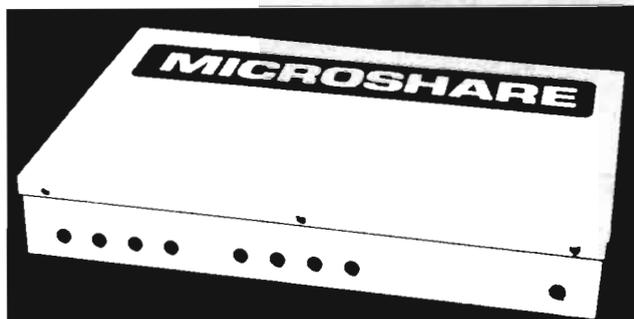
—Marya Miller

MICROSHARE



PET/CBM MULTI USER DISK SYSTEM

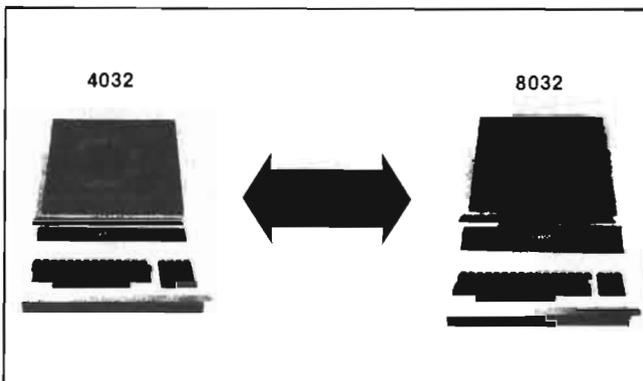
- ALLOWS UP TO SIXTEEN USERS TO SHARE DISK DRIVES AND/OR PRINTERS
- WORKS WITH ALL PET/CBM EQUIPMENT
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- NO ALTERATIONS TO SOFTWARE OR SPECIAL SOFTWARE REQUIRED
- SOFTWARE TRANSPARENT — WORKS WITH ALL PET/CBM SOFTWARE
- LANGUAGE TRANSPARENT — WORKS IN ANY LANGUAGE
- NO SPECIAL COMMANDS USED
- PROTECTS AGAINST SYSTEM LOCKUP



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- NO ALTERATIONS TO SOFTWARE OR SPECIAL SOFTWARE REQUIRED — SOFTWARE TRANSPARENT
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de...product parade...product parade...product parade.



When this issue reaches you, Christmas will be just a few weeks away. . . Perhaps some of you would like to treat yourself to a new software package or get another peripheral for your computer. Maybe you are thinking of encouraging other members of your family to get involved in computing, whether seriously or just for fun. We hope that this month's special issue will inspire you with some gift ideas. As for Product Parade, we tried to select new products so that they include some which should appeal to people of all ages and with a wide variety of interests.



Integrated Visible Memory Board from Micro Technology Unlimited

The **Integrated Visible Memory Board** is the newest member of the MTU series of high-resolution products for the 9 and 12 inch, 40 and 80 column PET/CBM computers. The board offers the user full control over a 320 by 200 dot matrix on the display. Additionally, it can be used as an 8K RAM board when the graphics are not in use. Other valuable features are: 4 types of video image control and 5 bank-switchable ROM sockets. The board is designed to fit inside the PET cabinet for maximum protection and portability.

Price: \$495.00 U.S. For more information write or call: Micro Technology Unlimited, 2806 Hillsborough Street, Raleigh, NC 27605, (919)833-1458

PowerType from Star Micronics Inc.

PowerType, an 18 CPS, bi-directional, daisy wheel printer, is adaptable to almost all personal and business computers, and provides letter quality printouts. **PowerType** special features include: proportional spacing, dual interface, standard printer and word processing mode, 32 easy access format switches, reverse paper feed, 7 or 8 bit selectable interface, self-test, vertical and horizontal tabs, micro-space justification.

Suggested retail price: \$499.00 U.S. For more information contact Star Micronics Inc. 200 Park Ave New York, NY 10166

Alphacom 81 from Alphacom Inc.

Alphacom 81 is a new low-cost "universal" 80-column thermal printer for home and personal computers. The printer can be linked to most home and personal computers by plugging the appropriate interface cable into the printer's cartridge-like slot.

The **Alphacom 81** is priced at \$169.95 U.S. The interface cables have a suggested retail price of \$44.95 U.S. each. For further information, contact Alphacom, Inc., 2323 South Bascom Avenue, Campbell, CA 95008, (408) 559-8000.

OKIMATE 10 Printer from OKIDATA

OKIMATE 10 Printer has been designed for Commodore and Atari computers and supports almost all of the software packages written for these computers. The printer comes with special PLUG'n PRINT packages (sold separately), one for the Commodore computer, and one for the Atari computer. The package contains a Color Screen Print program that automatically puts a complete screen image onto paper. **OKIMATE 10** allows the user to produce all kinds of pictures and graphics in 40, 50 or more colours. It prints out text at 60 characters per second, and graphics at 18 characters per second.

Price: \$238.00 U.S. For the nearest dealer call 1-800-656-3282

GPAD-C — Parallel Printer Adapter for the IEEE-488 Bus from Connecticut microComputer Inc.

The **GPAD-C** allows any printer with a Centronics printer interface to be connected to any computer or controller with an IEEE-488 interface. The computers/controllers include those made by Hewlett-Packard, Tektronix, Commodore, Osborne and most others. Compatible printers range from low cost dot matrix types to high speed letter quality daisy wheel types.

The printer's device number can be selected by operating DIP switches on the adapter. The **GPAD-C** includes two cables and a power supply. The cables allow six feet

between the printer and the GPIB (IEEE-488 bus) connection. The power supply means that power is not needed from the printer or computer.

Price: \$179.00 U.S. For nearest dealer contact Connecticut microComputer Inc., 36 Del Mar Drive, Brookfield, CT 06804, (203)775-4595

EASY PRINT WITH GRAPHICS from Progressive Peripherals & Software

EASY PRINT WITH GRAPHICS, an interface for high-quality graphics, has been specifically designed for use with the Commodore 64 and the VIC 20. It connects to nearly all Centronics parallel printers and does not require any software overhead.

EASY PRINT WITH GRAPHICS can print the full Commodore character set, including all graphics characters. It is also capable of printing sprites, custom character sets, and high-resolution or color bit maps with shading.

Included with the interface is a **FREE GRAPHICS UTILITY DISK** for the Commodore 64. An optional 4K Buffer is available for fast graphics printing. The hardware is switch-selectable to device 4 or 5.

Price: \$119.95 U.S. For the nearest dealer contact: Progressive Peripherals and Software, 2186 South Holly, Ste. 2, Denver, CO 80222, (303)759-5713

FLEXIDRAW from Inkwell Systems

FLEXIDRAW enables Commodore 64 users to draw a whole variety of pictures: business graphs, portrait drawings, architectural designs, games, electronic schematics, music compositions and custom letterheads. The package includes light pen, user's manual, 5 1/4" floppy disk and key overlay. Images drawn with **FLEXIDRAW** can be

product parade...product parade...product parade...product

easily moved, overlaid and replicated using PUT/GET commands. They can also be saved, loaded or deleted. 284 pattern choices are available, for shading and pattern fills. **FLEXIDRAW** allows the user to work on two separate screens and print drawings in two sizes. The disk which comes with the package includes 5 enhancement programs which enable the user to paint pictures, transmit them via modem, create mathematical plots, construct and sequentially display sprites, create music with light pen input.

Price: \$149.95 U.S. For more information contact Inkwell Systems, P.O. Box 85152 MB290, 7677 Ronson Road, #210, San Diego, CA 92138, (619)268-8792

McTERM 64 from Madison Computer

McTERM 64 is a telecommunications package designed for the Commodore 64 home computer. With **McTerm 64**, information is temporarily stored in the computer's memory known as a "buffer". As a result, **McTerm 64** can receive/store/send/print over 10 pages of text at a time. **McTerm 64** can be used with a variety of standard modems, but its unique buffer features are ideal for automatic modems. First, with the built-in telephone directory, the user can store up to ten frequently-called names and phone numbers right in the computer.

McTerm 64's main menu allows the user to control the communication settings and the characters displayed on the screen. It is equipped with a clock which lets the user know how long the computer has been on. **McTerm 64** also gives the convenient word wrap and auto linefeed options.

McTerm 64 is available on disk. It comes with a step-by-step manual that provides an explanation of telecommunication, and complete directions for using **McTerm 64**.

Suggested retail price is: \$49.95 U.S. For more information contact Madison Computer, 1825 Monroe Street, Madison, WI 53711, (608)255-5552

PLUS GRAPH, YOUR PERSONAL ACCOUNTANT, EASY TUTOR from International Tri Micro

All three software packages have been designed for the new Commodore Plus 4 computer.

PLUS GRAPH is a complete graphics program which increases the graphics capabilities of the Plus 4. **PLUS GRAPH** expands the graphing function to include pie charts and multi-variable bar and line charts. Text can be used to label graphs, and all graphs can be printed on any standard Commodore printer.

YOUR PERSONAL ACCOUNTANT, a home finance package, allows the user to budget cash and several bank accounts. Up to twenty-one categories for expenses are available per disk. The program is menu-driven, eliminating the frustration of learning bookkeeping in order to successfully operate it.

EASY TUTOR is for those who are interested in learning more about the computer and the BASIC programming language. It provides separate lesson plans. Each lesson is followed by a homework assignment. This assignment is then reviewed at the beginning of the succeeding lesson.

Prices: **PLUS GRAPH** — \$39.95 U.S.; **YOUR PERSONAL ACCOUNTANT** — \$29.95 U.S.; **EASY TUTOR** — \$29.95 U.S. More information is available at (714)771-4038 from Tri Micro at 1010 N. Batavia, Unit G, Orange, CA 92667

YOUR PERSONAL NET WORTH from Scarborough Systems, Inc.

With **PERSONAL NET WORTH**, the home computerist can:

- set up a budget;
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- document household valuables;
- display or print financial reports;
- record investment transactions;

Documentation for **YOUR PERSONAL NET WORTH** is written in clear, simple language, without technical accounting terms. Special help functions are available on-screen at all times.

Price: Commodore 64 version — \$79.95 U.S. For the nearest dealer contact Scarborough Systems, Inc., 25 North Broadway, Tarrytown, NY 10591

BRIDGE 64 from Handic Software Inc.

BRIDGE 64, on a plug-in cartridge, has been designed for all levels of players. For the novice, it provides a helpful partner; for the advanced partner—a skilled opponent.

BRIDGE 64 offers very good graphics, with thousands of different bids. Basic rules of the game are included in the instruction manual, making it easy for the beginner to learn the fundamentals.

This game is also available for VIC 20.

Suggested retail price: \$39.95 U.S. For the nearest dealer contact Handic Software Inc., 520 Fellowship Road, Ste. B206, Mount Laurel, NJ 08054, (609)866-1001

ANOTHER BOW from Imagic

ANOTHER BOW opens the series of *Time Travelers*, graphic-intensive interactive literature. Themes for this new computer entertainment experience come from great classics. **ANOTHER BOW** is dedicated to Sherlock Holmes. The game takes the player back in time to post-Victorian England to work together with Holmes and Dr. Watson in solving a series of intricate mysteries.

ANOTHER BOW combines text and photo-digitized graphics, uses highly advanced computer intelligence and an extensive vocabulary. It includes a number of cases which would require many hours to solve.

Price: \$34.95 U.S. For more information contact Imagic, 981 University Ave., Los Gatos, CA 95030, (408)399-2200

TRIVIA MANIA from Professional Software Inc.

Computerized version of a popular game to use with almost all personal computers. The package includes game program on disk, as well as question-answer book with score sheets for non-computer usage.

TRIVIA MANIA can be played by up to eight individuals or eight teams. A player is chosen as the "Master of the Game", to control the game's computer activities. Players can choose five out of seven categories of questions to answer. Within each category, questions can be generated at one of three levels of difficulty.

Price: \$39.95 U.S. Available through computer software and game distributors and mass merchandisers worldwide.

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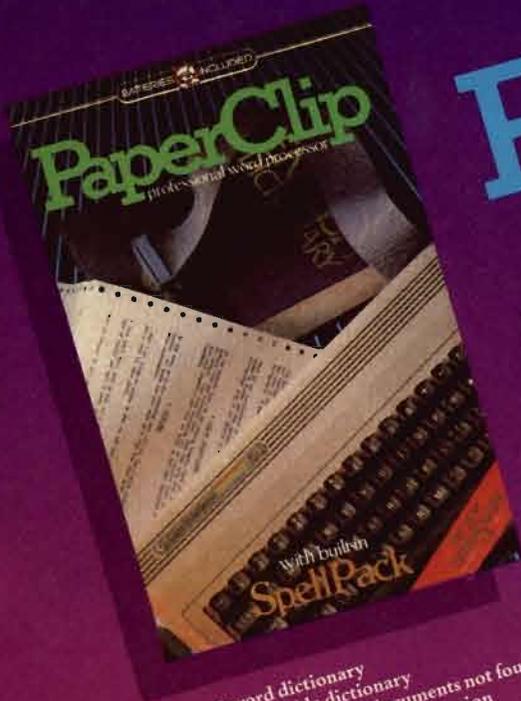
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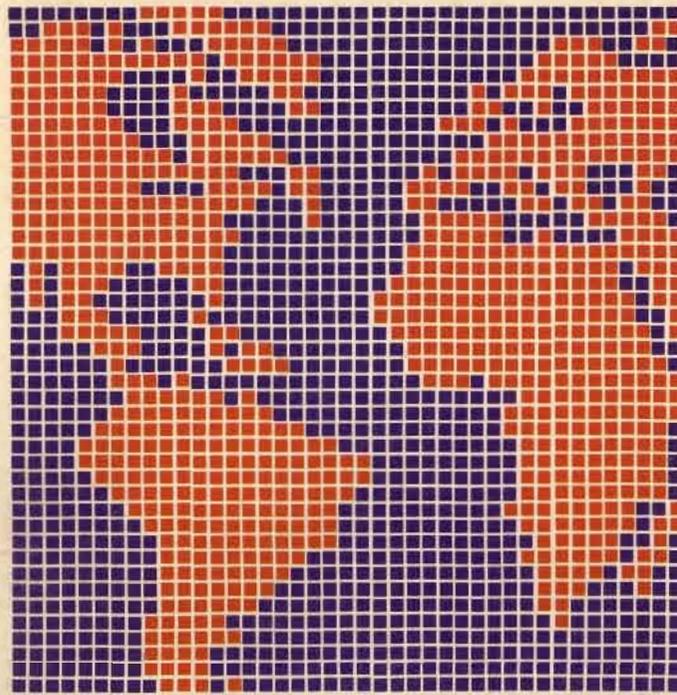
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