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Inside Information

New faces

Two issues ago on this page we welcomed Tim Grantham to the *TPUG Magazine* staff as Assistant Editor. Tim is now a veteran with piles of seniority as two new faces have joined us in the office in the last few weeks.

Most of you will know Adam Herst's name from a spate of articles he has written for us in recent issues. Now we have demoted him from author to Other Assistant Editor. Adam is TPUG's CP/M librarian and meeting co-ordinator — if you visit our office, he will be the one sitting in front of the C-128. Adam also has the distinction of being the only member of the magazine's editorial staff not in the last throes of expectant fatherhood.

The other new name on the masthead this month is that of John Matheson, who will be selling advertising space in the magazine from now on. Extracurricularly, John is an IBM PC freak, but we are trying not to hold that against him. John insists that he has very little in common with WKRP's Herb Tarlek. If you have something you want to sell, give John a call at (416) 445-4524 and find out if he's right.

SG-10C upgrade kit

In the January/Fabruary 1986 issue of the TPUG Magazine, in 'Products Received', we mentioned an upgrade kit for the Gemini SG-10C printer. We also stated that the upgrade kit would be available at no charge to current owners of the printer. Shortly after the magazine was distributed we received a letter from Gilles Paquette of Lorettville, Quebec, an excerpt from which is reproduced below.

I bought an SG-10C in September of the last year and I would like to access the added features provided by this upgrade kit. I contacted the dealer and a salesperson told me that they give the kit, that is free of charge, at the time of purchase only. Because these kits would all go so fast if given away, present owners have to pay $19.95 for this kit.

I also inquired at another dealer who confirmed that the kits were free of charge, but since I had not bought my printer from him, he preferred to sell the kit for half the price.

I would like to have your opinion on this matter. And what should I do, since I am very much interested in having this but free of charge.

Our production manager, Astrid Kumas, contacted the technical support staff at Star Micronics. She was assured that the upgrade kit *is* free of charge to all owners of the SG-10C printer, no matter when it was purchased. Current owners should order their kits directly from the manufacturer. Telephone 714-768-4340 and ask for the technical support department to place the order.

Auto Repairs

Miklos Garamszeghy has notified us of a number of errors in his article 'Autobooting on the C-128'.

Line 20 should read:

```
20 print"boot message":
   input" max 30 chars";me$
   :me$=left$(me$,30):sa=
   2831+le(me$)
```

Line 80 should read:

```
80 bo$=bo$+chr$(34)+bf$+
   chr$(0):open15,8,15,"i"
   :open8,8,8,"#":ifdsthen
   dclose:goto110
```

As well, the memory address mentioned in paragraph one should read 2816, not 2186. In paragraph two, it is incorrectly stated that the maximum message length is 16 characters, while in fact the maximum length is 30 characters.

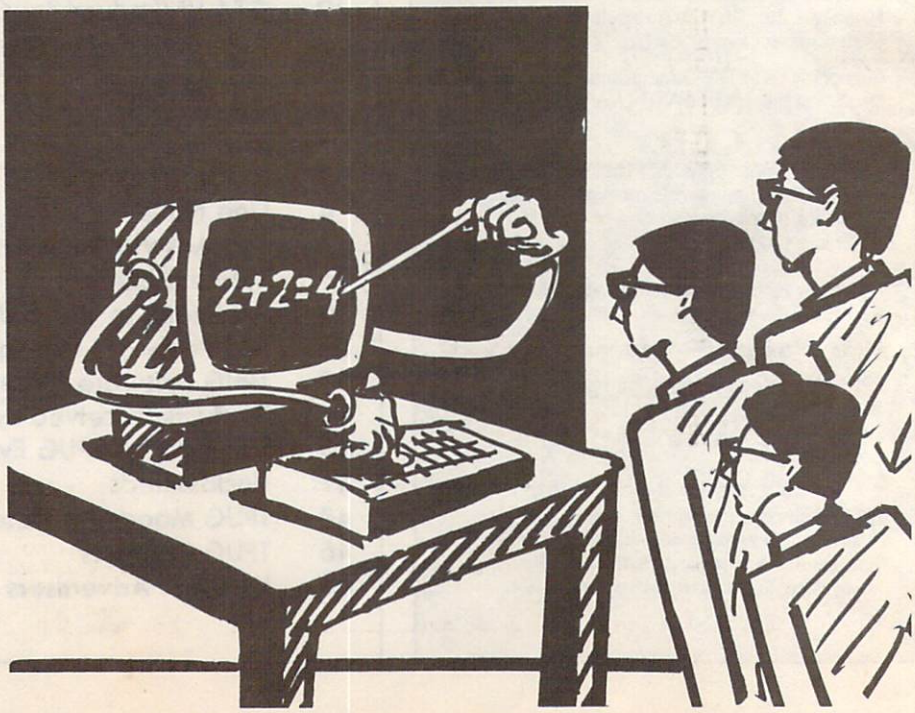
This month

The educational value of microcomputers has been the subject of reams of advertising hype over the years; however, the promise of computers in this area has been largely unfulfilled. There are signs that this is beginning to change, as Adam Herst points out in this issue, and Malcolm O'Brien introduces you in his article to two fine examples of the new breed of educational software.

Frequent contributor Ian Wright takes a different tack, with his contention that many of the best educational programs are those that, paradoxically, have no overt educational intent. Meanwhile, Jim Butterfield shows would-be programmers of educational software how to set up input routines that are appropriate for the level of the user.

Next issue we'll be looking at computer languages, with a timely emphasis on C, which has in recent years emerged as the language of choice for many serious applications, and which is going to see increasing use by Commodore users on Amiga, Commdore 128 CP/M and SuperPET/OS-9 systems. See you then.

The editors □



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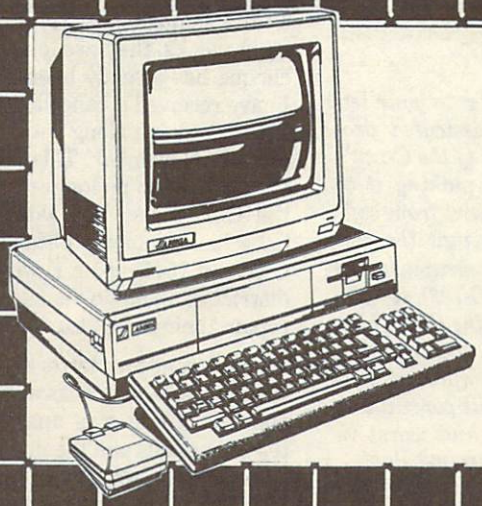

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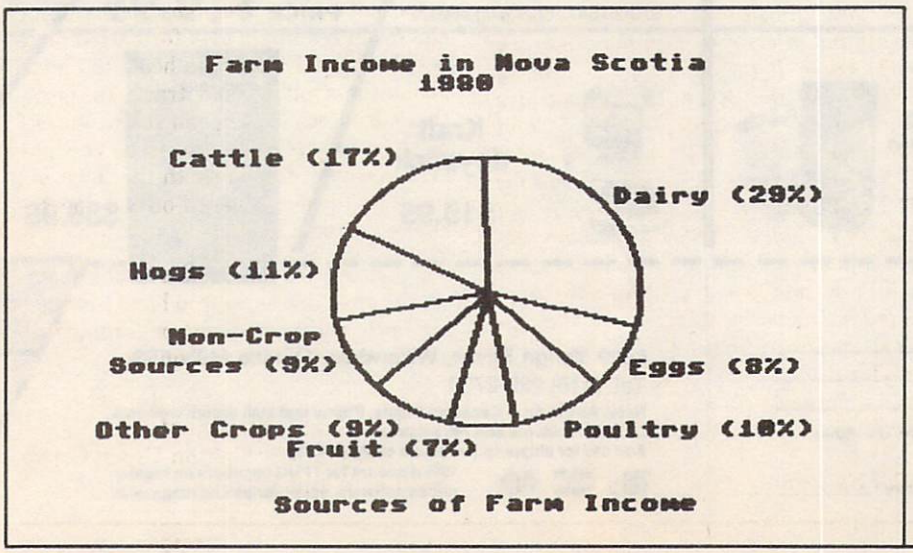
Text and graphics

In the January/February 1986 issue of *TPUG Magazine*, Achim K. Krull of Agincourt, Ontario, asked for advice in this column, as he was looking for a word processor for the C-128 "as sophisticated as Paperclip, but (one which) allows the creation and incorporation of graphs into the text". I suggest he need look no further than the Paperback series — **Paperback Writer 128**, **Paperback Planner 128**, and **Paper Filer 128**, available from Digital Solutions, Inc., Willowdale, Ontario.

Although the word processor by itself will not create graphs, it is easily integrated with the spreadsheet, which does create four kinds of graphs — simple bars, stacked bars, lines, and pies. I own a host of word processors — including **Paperclip**, but this one is the only one I now use. I find it superb!

Here is a sample of a pie graph done with this system.



I would be interested in seeing *TPUG Magazine* do a review on this software in the near future.

Eric Meisner
Coldbrook, Nova Scotia

From the example merged into your letter, it looks like the sophisticated programs that take advantage of the C-128's enhancements are finally making it to market. While the early word from software producers had been that the emphasis would be on C-64 programs (since they would also run on the C-128), it looks like they've been bitten by the C-128 bug. It really is a new machine and requires, even demands, new and improved software. TPUG Magazine *will continue to advise you as to the best and worst in C-128 software as it becomes available.*

Commodore and the C-128

Several years ago when I was in the market to purchase a personal computer I surveyed different models and concluded that the Commodore P-128 was the most suitable. Since the P-128 never went into production, I purchased my second choice, the Commodore 64. When the Commodore C-128 came out a few months ago, I was pleased, for it has most of what I originally liked in a computer. So I purchased it and gave the C-64 to my three year old son. However I am not sure that I made the correct decision on going with the Commodore line.

In the C-128 *System Guide*, there is an advertisement for purchasing additional CP/M items. Naturally, I sent away for these items. This was in September and with a suggested waiting time of six to eight weeks, they are long overdue. The cheque has already been processed and I have received it cancelled and deposited in their account along with my bank statement in November. This and rumor that Commodore is no longer manufacturing the C-64 makes me wonder. We even have had problems obtaining parts for C-64 and 1541 repair. (I work for a school district as an audio-visual technician and repair their computers.)

I have sent four letters to them asking for the items or a reason why the delay and not a one was answered. I made telephone calls and the line was constantly busy for two days. Just recently I wrote to the Better Business Bureau there and am waiting for a reply.

Is there something wrong with the company? Are they moving to rely heavily on the Amiga and discontinue previous lines including the C-128? I have seen more software support for the Amiga then the C-128. Have I made an error in judgement for myself, friends and business (I suggested the C-64's and the C-128's to my employer)? Should I purchase another system which I see as being universal in its usage?

I hope you might be able to give some light on this.

Thomas M. Hejl
Farmingdale, New York

Although long delays have plagued the C-128, it may yet prove to be the sleeper of the year. Even after the interminable delays, the computer was rushed to market and the most visible signs of this are in the CP/M mode. The original CP/M system packaged with the C-128 lacked a number of important features and the infrastructure required to support it was incomplete at the time of release. In Canada, the agent handling the DRI offer seemingly never existed. Responsibility for the backlog of unfilled orders and unopened mail was assumed by Commodore, and from all reports has been eliminated. All future reponses to this offer should be addressed to CBM in West Chester.

It is discouraging to hear of your problems with Commodore. My recent experiences with the company had indicated that they had cleaned up their act and even answered telephone calls. Perhaps this was due to my proximity to their Toronto office. In the same way that a society is judged by the treatment of its most disadvantaged members, a company should be judged on its handling of the least significant complaint. My faith in Commodore is not yet shaken but stories like yours do a lot to weaken it.

As to finding parts, my advice is that you get in touch with the author of the next letter.

Cuss 'n' boots

Sometimes your computer may dispute you about trivial matters. It may insist that you made a syntax error, that there is something wrong with your brillant algorithm, or even that it has somehow run out of data. What's worse is that the computer never backs down, it will just sit there for hours, forcing you to make picky little changes until you finally suit it.

At times like these the urge to heave it through the nearest windoow can be overwhelming. Well, I'm here to tell you, "DON'T DO IT!" The broken glass is a real mess to clean up. Plus around here a broken window means one of two things — swarms of hungry mosquitos, or freezing winter winds.

Instead do like professional programmers do, re-boot it. That's right — open the back door, and lightly hold the computer between the first two fingers of each hand in a horizontal position. Now take a big step with your left foot, release the computer and swing your right foot forward briskly so that your toes strike the middle of the back of the computer as it nears the ground. It's known as BOOTing because you should be wearing shoes at the time, preferably heavy boots with steel reinforced toes. (They may cost a little more, but the first time that you try this with your bare feet will convince you that they're worth it.) Computers being as stubborn as they are, your next one will very likely be as balky as the last one. That is why it is called RE-booting.

Perseverance and determination will eventually get your point across. You'll probably never have a computer that will just run your programs without error messages, but you should get to see the READY prompt at least as often as SYNTAX ERROR.

Incidentally, my dealer is so enthusiastic about my computer training method that he gives me a 5.5% discount when I order in quantities of 20 or more. This adds up to a lot of money and you might want to check with your dealer about a similar deal.

Scott Duncan
Superior, Nebraska

Let us not forget that fundamental differences exist between the hard boot and the soft boot. While often less effective, the soft boot can be accomplished without the use of extra peripherals. The throwing of a loafer or sneaker at the keyboard from distances as great as ten meters can effectively subdue even the most rebellious computer. Unfortunately, this method is not foolproof and the equipment required to hard-boot your system is often required as well.

Thanks for asking

As a teacher of computer programming and literacy, I have found articles in *TPUG Magazine* that I would like to assign to my classes to read. I am a strong believer in the copyright laws for software. It wouldn't be very consistent to have a strong stand on software and illegally copy magazines. My question is this: is it illegal to copy magazine articles for my classes to read? I know Jim Butterfield's articles have a special note about this at the beginning, but what about the other articles?

Jim Aspin
Flint, Michigan

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Nick Sullivan

Life Saver Holes?

The University of Washington (Seattle) reprinted the 'please don't bang the 1541 head when you find a disk error' routine from the *Midnight Software Gazette*, which was, I believe, the original source.

At the next meeting, I was confronted with an irate member who had used the routine. Afterward, his drive failed to respond to *any* commands. Sweating just a bit, we removed the top cover and centered the head manually (power off), then tried reading a directory. The drive came back to life. Being a venturesome soul, the member proceeded to try the anti-knock routine again, with the same results.

The utility has worked for everyone else I know that has tried it. The only reason we could see that it didn't work for our unfortunate member is that he has an 'old' long-board 1541 with (probably) an older version DOS ROM, so perhaps your readers who have older drives should proceed with caution when using anti-knock commands.

Incidentally, a similar routine that hasn't received wide press is 'don't bother to bump the head when you format this disk'. To send that command to the drive, change the '106' to '81' and the '133' (or '197') to '1'. Location 81 ($51) in the drive's RAM holds the current track number to format. It normally starts with '255' and bumps the head. By changing it to '1', the head will simply go to track #1 and start formatting. This also works with many of the 'fast format' routines.

There's good and bad in using this trick. The good is that the head doesn't bump. The bad is that the location of track 1 on the disk you format depends on the formatting of the last disk in the drive, not on how well your drive is aligned. When reading a disk formatted on a poorly aligned drive, the head will hunt about for a bit to find track 18. Once that's located, it then can read the rest of the tracks. When you issue the no-bump/format commands, the head will go to track 1 position based on the poorly-aligned drive's disk.

If you use only disks that came from well-aligned drives, or you have courage and faith, try the no-bump on formatting too... and listen to the quiet!

Noel Nyman, President
University of Washington Users' Group
Seattle, Washington □

The Answer Desk

with Malcolm O'Brien

If you have a question for The Answer Desk, write to us at:

Answer Desk
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C-128 software sources

I'm a new C-128 user, and have a few questions about software. I know that a few (very few) items are now available, but I'd like to get some suggestions before spending lots of money on something I won't like. Of interest would be a database manager (I use **Superbase64**; has anyone tried **Superbase128**?). I would also like a terminal that can take advantage of all that glorious 128 memory (I have a 1064 modem that I currently use with **VIP Term** in 64 mode). A nice big workspace would be nice, maybe 1200 baud as well. And where are the 'thousands' of CP/M programs that Commodore claims are available? I work as a production manager and might have some applications. Any help would be appreciated.

Bryan
Toronto, Ontario

*First, the database: since you're already using **Superbase64**, it would make sense for you to investigate **Superbase128**. This will undoubtedly save you time in file conversions. You may also find some use for the extra memory, although Precision Software may have already done that for you. I'm not really familiar with either product... Of course, you have the option of using **dBase II** now that you have a CP/M machine! It's more expensive than the database managers that C-64 owners are used to, but it's very good, and there are many **dBase** applications available.*

*Second, the terminal programs: I expect that we'll soon see a new modification of Paul Higginbottom's public domain **Term64**. It would make sense for it to be called **Thirdterm**. I would expect this to be similar to **Secondterm** (on TPUG library disk (C)C4) but with a much larger buffer. We may see other protocols as well — Xmodem or Kermit perhaps. The original 128 CP/M did not support telecommunications, but this has been fixed; the update is available through TPUG.*

*Make no mistake, Bryan, there **are** thousands of CP/M programs out there. Until the advent of PC-DOS/MS-DOS, CP/M was the dominant operating system for microcomputers. It is still widely used by owners of Kaypros, Osbornes and other computers (including IBMs). Word has it that anything written for the Osborne will work properly on the C-128. Adam Herst, TPUG's CP/M librarian, has stated that any software that includes an **install.com** file should be configurable for the C-128.*

Prospective C-128 CP/M users should investigate user groups and educational institutions in their locality. In Toronto, contact: Canada Remote Systems, 4691 Dundas Street West, Toronto, Ontario. Their telephone number is 1-416-239-2835.

Canada Remote Systems deals in both public domain and commercial software. Downloading is available for members.

If you live in the United States, you can contact: Lifeboat Associates, 1651 Third Avenue, New York, New York 10128. Their number is 1-800-847-7078, but if you live in New York state call 1-212-860-0300.

1526 pitch perplexity

Since September 1985, I have been using a program developed by Briley Software of Livermore, California, which performs all of the record-keeping functions of a bowling league secretary. More recently, I added an additional program, by the same company, that prepares the recap sheets on which the bowlers enter their scores. This involves printing bowlers' names, averages and handicaps on preprinted forms. It is important, of course, that the printing register reasonably accurately with the spaces on the form.

I found it impossible to adjust the paper positioning so that the print would register properly. The people at Briley determined that the 1526 prints 80 characters in 7.5 inches rather than the standard 80 characters in 8 inches. Commodore service in Phoenix and in Westchester told me that there is no adjustment possible. Your organization is my one last hope.

Warren A. Smith
Sun City, Arizona

Hope may spring eternal, but in this case the spring is only a trickle. You're quite right that the 1526 (and the 802, of course) prints in the thoroughly non-standard pitch of ten and two-thirds, and this is set in stone (make that silicon).

The only solutions to your problem — and neither is very satisfactory — would be to either purchase a different printer, or to design you own form with the spacing set up for the 1526.

PET printer interfaces

I have a Commodore PET 'Fat Forty' computer with a 4022 printer. I would like to upgrade to a better printer — one capable of near letter quality, and so on. I am confused as to what kind of interface I need to add a non-Commodore printer. I thought I needed an IEEE-to-parallel interface, but my local computer store tells me that these are not being made anymore. What advice can you give?

Loran McKelvey
Rockton, Illinois

Computer dealers have to handle what's currently popular, and that's why you'll have little success finding the device you need from such sources. There are two avenues I can suggest to you, Loran. The first is to see if one of the printer manufacturers can supply you with an IEEE-interfaced printer. I understand that Brother will supply their printers with an IEEE interface, although you must custom order. (As an aside, I found out about this in a typewriter store, not a computer store). It may be that the situation is similar with Epson.

If neither of these companies makes the printer you want, your second option is to see if they can supply you with an interface. In the TPUG office there is a Smith-Corona daisy wheel typewriter that has something called a 'Messenger Module'. The Messenger Module attaches between the edge connector on the PET and your PET-to-IEEE cable.

These are just the sources that I'm aware of. There may be more. Another possible path through the printer maze may be found in the world of Hewlett-Packard. The same IEEE-488 bus that's in the PET is known as the GPIB (General Purpose Interface Bus) by HP types. HP is a popular choice among scientists and engineers, so you may be able to find what you're looking for in a store that handles oscilloscopes and the like. □

Educational Software Tools

by Ian A. Wright

How do you select educational software that's suitable for use in the home? Almost any imaginable software can be used to teach somebody something, but 'good educational software' is very difficult to define. You can justify using **Space Invaders** with students who have limited eye-hand co-ordination. Even use it as a reward for behaviour modification... but **Space Invaders** is not usually considered to be 'educational' software.

Are we quibbling over semantics? Is the distinction important to a customer wishing to buy educational software for home use? Absolutely! Buyers who don't understand *why* they buy a piece of educational software may buy a program that's not appropriate for their needs, or even buy a program that impedes rather than enhances learning.

Schools in Ontario must teach specific material as outlined by the Ontario Ministry of Education, and described in detail in the Ministry's curriculum documents. Any educational software must be appropriate to the classroom curriculum and be appropriate for the students. Teachers are expected to carefully screen any software before they use it, to select the most suitable software, and to be able to support its use by their students. This is not the case for educational software used in the home.

I know that teachers have great difficulty selecting, using and applying educational software in schools, because I've watched as software that's terrific in my classroom became 'ho-hum' in another teacher's class — and the reason was neither a function of the teacher's skills nor of their students.

Recent research at The Ontario Institute for Studies in Education (OISE) has suggested that as simple a factor as the accessibility of the computer can affect the success or failure of some educational software. In the home, the computer may be part of the family room or the bedroom, or even be a temporary addition to the TV set. It may be the property of all the family members, or be assigned to one family member and grudgingly lent to the others. The variety of possible scenarios only adds to the difficulty of choosing and using educational software. And the computer's novelty will not compensate for any inappropriate software.

Since 1979, the crowds of students that 'hung out' in the school computer rooms have vanished into thin air. From line-ups before and after school, and near-stampedes to secure a place at a machine, now I see only a few conscientious students who want to finish an assignment. The novelty has worn off the use of microcomputers in education, and poor software is now poorly received by students who are no longer computer novices.

I like to classify educational software into four groups based on its use:

- **Games and Simulations**: these activities use imagination and fiction to cultivate thinking, reasoning and decision-making skills or to develop broad concepts;
- **Drill and Practice**: similar to the old flashcard technique. A tireless instructor of repetitive activities like number facts or keyboard skills;
- **Tutorial and Demonstration**: programs that display materials or activities that cannot easily be shown any other way because they're complex, dangerous, or impossible to capture using other methods;
- **Tools and References**: these programs can simplify a task like writing an essay, calculating and drawing a graph, or accessing a library's card catalogue.

Many educational programs have more than one of these characteristics: tutorials often include a review quiz, a simulation may provide incidental drill in arithmetic skills, and so on. For this article, I will deal only with the latter group — the tools and references — since this area of educational software, I believe, is most suited to use in the home.

How can you tell whether a particular piece of software is 'good' for educational purposes? Here are some tips:

- Good educational software does something that cannot be done as well by any other method of instruction.
- Good educational software puts the student in charge of the program and in control of things like speed, volume and colours.
- Good educational software allows exploration and manipulation rather than insisting that the student follow a prescribed path. The program offers a variety of choices and options.
- Good educational software motivates, interests and reinforces the learning without becoming repetitive and boring.
- Good educational software is open-ended. It can be used for a variety of needs, and is not 'completed', but can be revisited at a later time.
- Good educational software does not need a lot of instruction and supervision. It is 'bullet-proof' and without errors.

Let's look at some examples of educational software tools that are appropriate for use in the home:

Writing tools

A word processor is a software tool. It allows you to manipulate words, change them, edit them, move them around as much as you want — *without rewriting them*. Anyone who finds writing difficult because of lack of skill, or because of learning disabilities, will quickly learn to appreciate a word processor. I have watched primary-school children, students with writing problems, retired businessmen, housewives and others beam with pride at their printouts — each page neatly formatted and free of errors. It did not just 'happen' — it took both time and effort for them to learn how to manipulate the text: to 'cursor around' and to insert and delete, and to edit and revise until they were satisfied. I always suggest starting with a simple word processor program like **Storywriter** or **Textmaster**. The main commands are in five or six menu selections, so there's not a lot of memorizing in order to use these programs. I strongly recommend a disk drive for storage, and you will definitely need a good quality printer. A word processor without a printer is as useless as a kickstand on a horse!

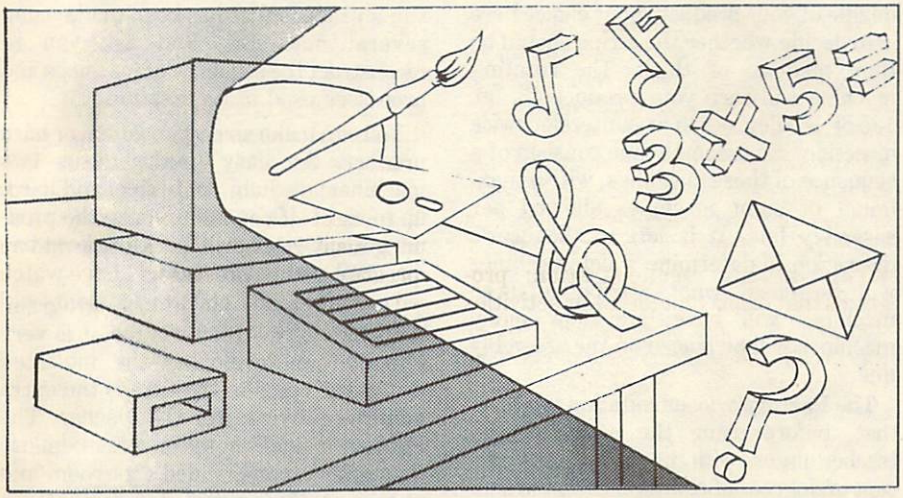
With time and experience, you can upgrade to word processors with lots of additional features. Block moves, footnoting and search-and-replace functions will soon prove irresistible — but don't get bogged down in these complicated features when you start. Some of the additional features, however, are valuable educational tools in their own right.

A built-in spelling checker can actually improve your spelling skills, because

most spelling errors are not from sloppiness or carelessness, nor are they simply typographical mistakes. In many cases the writer does not see any errors until they are pointed out. Learning about word and letter recognition is an essential part of the spelling process. A spellcheck program doesn't correct your spelling, it merely points out words that *it* does not recognize. *You* have to identify the correction and make the change. The spelling checker is infinitely patient, and it is not judgemental. It will correct the spelling of the same word for the one hundredth time and not make a rude comment.

Music tools

Music programs are educational tools because, just as word processors let you manipulate the alphabet, music processors will let you manipulate sound.



You learn what an 'envelope' is, what a 'rest' means, and what changing 'tempo' does. You do this by actually changing a piece of music and listening to the result. You can write your own compositions, rewrite existing music, score an instrument, transpose music to another key — or even create a new instrument that's never been heard before!

Music software can help you with keyboard skills, as well as musical composition and theory — if you have the hardware keyboard. Both the word processor and the music programs need appropriate hardware. The word processor needs a printer, while the music software is best with a keyboard. Some music software, like TPUG's music freeware, requires you to learn a notation system that's different from classical notation, and more suited to the electronic manipulation of sound. Some music systems, however, will produce printouts of complete scores in standard notation when attached to a high quality dot-matrix printer.

Learning music using a music processor is experimental rather than directed. It is free-form rather than curricular. It certainly is fun!

Data base tools

Homes with computers and modems can access on-line data bases at almost any hour of the day or night. You can get up-to-date information on the current state of the minerals industry from on-line news; you can find out about famous people from an on-line encyclopaedia; you can even download references from a library with an on-line index.

Research skills are developed through the junior-school nature project and the middle-school explorers' presentation. The high-school research paper leads to a grade thirteen critical analysis, and so on. All these activities can benefit from improved research skills. The 'educational' software is a terminal program with a built-in capture function, used to access a data base through a modem and a telephone line. Together, the software and hardware can help to build the skills necessary to search effectively and to select material carefully — skills that will increase in value as information becomes even more accessible in the near future.

Printer tools

Educational printer utilities can range from the simple lettering and font-making programs, through menu-driven programs using 'clip-art' pictures, all the way to Computer-Assisted Design and Drafting (CAD/D), which can almost replace the drafting table. Few can afford the software for CAD/D at home, but there are some surprisingly sophisticated printer tools available for home use. Programs that can make banners can be used to print titles and headings for those class presentations. Clip-art programs (like **The Print Shop**) can make cards, signs, letterhead, banners and posters, using inexpensive software and hardware.

Drawing tools

There are a number of special programs that let you pick points on the screen, draw lines, circles or rectangles, draw freehand with a variety of 'pens', and then use a palette of colours to fill or paint what you have drawn. These programs are manipulative tools because you can draw, erase, redraw and save your drawings for future use — just as a word processor does with text.

Children who have difficulty drawing find that they can draw and erase without 'making a mess'. For them, a drawing program is a major asset. I have watched children in kindergarten produce beautiful kaleidoscopic pictures, and I have used this kind of program to create screen displays for professional contracts. Some programs work through a 'touch-tablet' that translates what you draw on its small surface into a full-screen display. Other programs use joysticks, or a trackball (which I prefer) as drawing devices.

Be careful that your program supports your printer and that it will load from your drive. I like to use a 4040 dual drive, but my favourite drawing program will not load because of the disk-protection scheme the manufacturer uses. I also spent almost fifty dollars for a printer utility, specifically designed to print my file of drawings, but it would not support my Epson MX-80 printer.

Before you walk out of the store with what you hope will be a useful home educational tool — *try it out*:

- Have the program loaded into your kind of machine from your kind of drive in the store before you buy. This way you don't get home with a program that's meant for a C-128 and will not run correctly on your VIC-20.
- Check that it will work with your printer and interface unit. If necessary, take your equipment to the store so that you can see a sample of the output. This is especially true of colour printers, or those 'no-name' brands of dot matrix printers.
- Ask the salesperson if you'll need additional input or output devices — joysticks, touch-pads, a modem — for the software to be fully functional. □

Two Good Educational Games

by Malcolm O'Brien

Educational computing has come of age. Sunburst Communications has provided us with products of this maturation process in the form of two exceptional courseware packages. Sunburst's commitment to the educational field is apparent in every detail of these packages. They are not simply games with educational value. Neither are they programs that will be used once or twice in a classroom and then forgotten. They really *are* courseware, and fairly demand that they be included in the curriculum so that their full potential may be realized.

Increasingly, the educational system is focusing its attention on a problem-solving approach to learning. A group of teachers in Rochester, Minnesota have developed a Problem Solving Skill Matrix that breaks down problem-solving skills into four categories: memory, cognitive skills (discrimination, rules and attributes), strategies and creativity. Sunburst has used this matrix as a springboard for their development of problem-solving courseware.

It is the third category, strategies, that we are specifically concerned with here. **The Factory** and **The Incredible Laboratory** are designed to teach several aspects of problem-solving strategy. One of their most valuable aspects is their ability to help the student recognize these strategic skills within himself in the course of solving problems. With this recognition comes the ability to exercise and develop these skills.

The Factory
from Sunburst
Communications
Educational Software
for Commodore 64

The Factory addresses itself to the following four areas: working backwards; analyzing processes; looking for (and hopefully finding!) a pattern or sequence; and openness to insight and flexibility, that is, applying creativity. The program has excellent credentials, having been named 'Best Microcomputer Software of the Year' by the Learning Periodicals Group, and having received Honourable Mention in the 1983 National Software Contest of the Council for Exceptional Children. These awards are well deserved, and are fitting testimonial to the calibre of the product.

The Factory simulates a factory in which you install an assembly line to create products using three machines — a punch press, a striping machine and a rotating machine. The punch will punch either round holes or square holes. You can choose how many such holes (one, two or three) will be punched into your product (which appears as a square piece of sheet metal). The stripe machine will etch an end-to-end stripe across the middle of your product. Your choice here is to decide whether the stripe should be thin, medium or thick. The rotating machine will turn your product 45, 90, 135 or 180 degrees in a counterclockwise direction. An assembly line consists of a sequence of these machines, with a maximum of eight machines allowed per assembly line. It is left to the user's discretion to determine which machines will be used, what attributes those machines will have, and how many machines will be placed on the assembly line.

The Factory's documentation suggests that, before using the program, the teacher discuss with the students the concept of degrees of rotation. It should also be made clear to the students that rotation in **The Factory** happens in a counterclockwise direction.

The Factory begins with a menu that offers you five choices. You can test a machine, build a factory, make a product, get instructions, or end the program and return to BASIC. When you select Test A Machine, you have the opportunity to examine each of the three machines in action. You choose which machine you want to test, assign it attributes, and observe the effect that such a machine will have on your piece of sheet metal.

After trying out all the possible combinations, you return to the menu and choose Build A Factory. This entails putting a variety of machines on the assembly line by following a very simple, menu-driven process. When you've finished installing machines, the assembly line starts to roll! Programmer Eric Grubbs has made good use of sprites, animation and sound to make this a very entertaining procedure. When the last machine has done its work, **The Factory** will display the finished product for your perusal. It is at this point that you can employ the technique of working backwards to discern how each machine, its attributes and position in the sequence, has contributed to the development of the final product. At this point you are offered the option of challenging another student to recreate your product from scratch.

After building several factories, understanding of the concepts involved deepens, and the corresponding skills become more acute. Now you (or your students) are ready for the tricky part, Make A Product. **The Factory** will show you a product that has been made using several machines, and ask you to reconstruct the sequence of machines and processes used in its creation.

You can make an easy, medium or hard product. An easy product uses two machines; medium, up to five; and hard, up to eight. If you fail to make the product initially you can go back and keep trying until you get it right.

That's the extent of the program. Although it may seem simple, it is very effective in developing the indicated skills. The icing on the cake is the extra material provided for the teacher. **The Factory** includes notes on classroom use that offer recommended classroom and at-home activities designed to reinforce the learning process and to apply the skills creatively. My son, Sean, was as intrigued by these activities as he was by the program, a sure sign that the concepts are being presented in such a way as to encourage the student in the learning/discovery process.

One of the activities is a game called I'm in Charge. One student (the supervisor) determines what the product will look like and the second student (the worker) must attempt to duplicate the product by using the Build A Factory activity. If the worker fails, the supervisor must try to duplicate the product. If the supervisor fails too, the students exchange roles. As you can see, the designers at Sunburst — Marge Kosel and Mike Fish in this case — know what kids like, and have applied their knowledge well.

They understand teachers' requirements too, and have included three extra

pages that will be appreciated by the instructor. Two of these are Factory Challenge Sheets, which are used in the classroom to expand the scope of the program's utility. The third sheet is a Factory Product Sheet, which is used by the student to record the assembly lines and products created. This allows the teacher to monitor the student's use of and progress with **The Factory**.

The Incredible Laboratory
from Sunburst Communications
Educational Software for Commodore 64

In **The Incredible Laboratory** students have the opportunity to become Dr. Frankenstein! Various chemicals are combined to create colourful and unusual monsters. Students begin by concocting different chemical 'soups', by selecting chemicals to use from a list of five. Students can elect to use all five chemicals, only one, or any number in between. On the screen there is a beaker filled with a bubbling liquid that changes colour each time a new chemical is added to the mix. This beaker sits over a gas flame that looks and sounds amazingly realistic.

When the student is finished selecting chemicals, the liquid is evaporated into a dazzling, sparkling steam that moves into a larger vessel where it is condensed into the monster. Each monster is composed of five body parts: head, arms, legs, body and feet. Each of the chemicals chosen is responsible for one of these body parts; but which chemicals correspond to which part? The experimenter must infer which chemical was responsible for each aspect of the resulting monster. Does Black Ice make the snake body? Does Alien Oil ensure that your monster will be wearing sneakers? Maybe Super Acid yields three heads...

That describes the Play option of Novice level of **The Incredible Laboratory**. There are three levels of play: Novice, Apprentice and Scientist. The latter two are further divided into two sub-levels each. After performing a number of experiments in the Play mode, the student can switch to Challenge mode and test another student's ability to create monsters with prescribed features. In Challenge mode, **The Incredible Laboratory** will ask for each student's name. Players then take turns choosing chemicals. When they are done, the program will display three monsters, only one of which is 'correct'. Each player is asked to identify which of the three monsters was created by the chemicals that they used. After the selections are made, the 'real' monster is revealed and the 'impostors' melt. This is a super effect brought to you courtesy of Eric Grubbs, programmer.

Every level has Play and Challenge modes, and they are always implemented in the same way in terms of play mechanics and visual display. However, the play parameters change as you advance through the various levels. At the Novice level, students work with only five chemicals. These chemicals have the same effects each time the program is run.

At Apprentice level one, students select from five groups of three chemicals each. Each grouping corresponds to a particular body part. Chemicals have the same effects as they did in the Novice section. At Apprentice level two, the plot thickens. Students may now choose two chemicals from each group. Since every chemical in a group relates to the same body part, selecting two creates a new combination that has an entirely different effect on that part!

At the Scientist level, things get very difficult. Play is more or less the same as in the Apprentice section; in level one play, you can choose up to one chemical from each of the five groups; and in level two play, up to two. The difference is that, at the Scientist level, the chemicals have different effects each time the program is run! Just when you thought you had it licked by memorizing what each chemical did.... No refuge for the mentally lazy here! Scientist level demands that students apply the problem-solving strategies each time the level is achieved.

As you have no doubt determined, **The Incredible Laboratory** is somewhat more complex and sophisticated than **The Factory**. It involves performing many experiments, recording the data, and making extrapolations from those data. Consequently, the documentation is more extensive, as is the 'up-front' work of preparing the students. While a greater degree of instructor support is required, the documentation simplifies this work somewhat by including both Classroom Lessons and Software Lessons.

The Classroom Lessons include worksheets and transparencies that are used before the students begin to work with the program. The Software Lessons are intended to follow up on the Classroom Lessons by making the students apply their skills creatively. You can tailor these lessons to a particular group of students or grade level by determining the extent to which you want to structure the students' thinking.

The Incredible Laboratory was designed by Marge Kosel, Jay Carlson and Melissa Verber. Ms. Verber is also responsible for the design of the monsters, who are actually more charming than frightening.

The Incredible Laboratory addresses seven problem-solving skills: successive scanning, or trial and error; making organized lists — that is, structured note-taking; information gathering, through research or experimentation; looking for a pattern or sequence; analyzing — subdividing a problem and solving it in parts; scanning for clues and hints, seeking out critical information; conservative focusing, varying only one aspect or value at a time to eliminate non-critical attributes; and focus gambling, varying more than one aspect at a time. The main thrust of **The Incredible Laboratory** is the first two of these, successive scanning and making organized lists.

Sunburst Communications have two excellent products on their hands. You'll want them in your hands, too! And in the hands of your students (or children). These courseware packages are too good to pass up. The design, programming and materials are all excellent and so is the support. The Sunburst warranty guarantees replacement of any program component that becomes lost or damaged during normal use. Very impressive. What's more, that's a *lifetime* warranty!

Both packages include a backup disk, an absolute necessity in a school environment. Teachers are usually up to their necks in paper, and will appreciate the full-sized, three-ring binders. What more could you ask for? A toll-free phone number? You've got it!

You say your school board doesn't use Commodore 64s? No problem. Both programs are available for the Apple II series and the CoCo. Additionally, **The Factory** is available for the Acorn and the IBM PC/PCjr.

Of course, these programs were subjected to intense scrutiny by my regular panel of expert software evaluators — my children, Grace and Sean. Grace got the upper hand in Challenge mode when she discovered that Red Dust makes... well, maybe I should let you figure it out yourself.

***The Factory** and **The Incredible Laboratory**, Sunburst Communications Inc., 39 Washington Avenue, Pleasantville, NY 10570.* □

Educational Software's New Wave

by Adam Herst

In the rush to market the 'home' computer, most major manufacturers stressed its educational value and blatantly played on parents' fears of their children's academic failure. Unfortunately, the quality of the educational software tended to fall far short of its glowing promise.

These early educational programs failed for many reasons. Thrust hastily upon the market, with little or no input from educators, they failed to exploit the unique capabilities that can make computers a valuable educational tool. The programming was usually unsophisticated — perhaps because the best programmers were busy churning out word processors and arcade games!

It was often difficult to determine exactly what was educational about many of the educational programs. It didn't take long for the consumer to realize that educational software was rarely what it advertised itself to be, and even more rarely worth the price. With this combination of factors, the educational software market has lain dormant while other software markets have been more fully developed.

Recently attention has returned to the potential of educational software, partly because of the exhaustion of other markets. Fortunately, the respite has allowed educational software concepts to be refined, not just by the programming community but by educators as well.

Not surprisingly, this renaissance is most vigorous in the United States — an example of the incentive a large market provides. Nonetheless, at least one Canadian company is poised to play a vital role. Ingram Software Limited of Canada, formerly Aviva software, has committed itself exclusively to the educational software market. A recent partner in a joint venture with Ingram Software Limited of Buffalo, New York, Ingram of Canada distributes educational software, from a variety of manufacturers, across Canada.

Originally an independent distributor of general software for the Commodore 64, Ingram feels that its partnership with the American office can help them overcome the limitations inherent in the Canadian marketplace. While hoping to consolidate the Canadian marketplace, Ingram also feels that this partnership will be beneficial to Canadian software authors by offering them access to a continent-wide distribution network.

To stimulate the still sluggish Canadian market, Ingram recently held a day-long show and forum for educators and retailers. The exhibitors were companies who manufacture the packages in the Ingram product line, including big names like Ashton Tate, Batteries Included, Broderbund, Borland, Digital Research, and Micro Pro.

. . . current packages demand creative input . . .

The well-attended show provided a good overview of the current state of the educational market, an overview that is both encouraging and disappointing. On the one hand, the amount of educational software has dramatically increased, as has the level of sophistication and polish in the final packages. On the other hand, while these packages represent slick programming efforts, educational content still seems to take a back seat.

Educational software is currently evolving towards an unstructured, interactive learning environment. While early efforts tended to make use of the computer as an automated drill master, some current packages demand considerable creative input from the user. This has taken the form of the so-called 'construction kits' in which students are able to construct their own programs, games and tutorials. In so doing, they learn about project planning and goal-directed problem solving, while simultaneously acquiring the factual knowledge necessary to build their 'environment'. Unfortunately, drill-based programs still seem to predominate. In addition, very few packages address the academic needs of students beyond the elementary school level.

Ingram's Executive Vice President, Dennis Bennie, admits that the full potential of computers for education has barely been tapped, but feels that Ingram can contribute much to its development. While acknowledging a dearth of software for adult education (pretty much limited to drill programs for Scholastic Aptitude Tests and Graduate Record Exams), he hopes that growing interest in that area will stimulate the necessary research and development.

Dennis was also quick to point out that those who are doing the most to discourage the development of sophisticated programs are those whom it would benefit most. Piracy in the schools is rampant, according to Dennis, and is not limited to a reputedly immature and irresponsible student body. Financially-pressed educators are among the worst offenders as they attempt to provide the best possible learning environment for their students. Illegal copying of programs robs the software producer of the profits necessary to support the extensive development required for high-level programs. While Dennis admits that it is unlikely that a quick fix will ever be found, he is hopeful that by educating the educational software consumer, a mutual sense of responsibilty can be developed.

Meanwhile, back in the classroom, the educational use of computers hasn't changed much since the supposed revolution. Through informal, round the computer discussions and a short question and answer session, teachers and educators at the Ingram show described a familiar picture. Computers and educational software aren't making it into the classrooms. Underfunding is a major culprit, but educator ignorance is also cited. Unfamiliarity with the available machines and software precludes their extensive use in the classroom. The lack of an organized plan for implementation has left the use of computers in the class up to the initiative and expertise of individual teachers.

Through the efforts of companies such as Ingram, the picture is likely to change. The potential for computers as educational tools can't be denied. At a time of increasing rigidity in curriculum requirements and concentration on rote learning of fundamentals, educational software can provide an unfettered environment for creative exploration. A commitment to sophisticated, high quality programs, comprehensive distributor support, and a willingness to listen to end users and tailor products to their needs, can't help but improve the situation. □

Education and The Feedback Loop

by Jim Butterfield

It's always seemed to me that good teaching is good feedback. Whether we are trying to teach ourselves or someone else, the key to the whole business is how the feedback is paced to the job. Some tasks require fast, tight feedback: an instant message that the learner is right or wrong. Others call for a long slow loop back to the student.

Let me try to explain myself. Many years ago, I wrote a program called **What Goes?** to illustrate my point. The program contrasts poor feedback with better feedback. But it also illustrates in a simple fashion the difference between tight and loose feedback. Both have their uses.

Bad feedback goes along these lines: ask a question, receive the response, and respond: right or wrong. The student finds this sort of thing tedious. Worse, attempts to 'enrich' the answer ('Great! You got it!', or 'Not quite, let's try again.') quickly become fatuous, especially after the student has seen such a response a dozen times or more. The same is true of sound or visual effects: they lose their novelty very quickly.

Computers are quite flexible things, if you want them to be. Allow a student more interaction and learning is enriched. We'll come back to this theme in a moment.

The theme of program **What Goes?** was to show the manner in which a student could react to questions such as 'What goes moo?', 'What goes oink?' and 'What goes meow?' Most of us know the answers to these simple questions; write to the editor if you're not sure. But there are various ways to ask, and varying styles of program to receive the answer.

Beginners — especially keyboard beginners — need instant gratification to help build their self-confidence. I would argue that, for them, feedback should be on each character typed. Thus, if the correct answer to a question is 'cat', the user should perceive a response to each key that is touched. Assuming that our program has already asked the question, here's how we might handle the user's attempt to answer:

```
100 r$="cat":rem the answer
110 c=1:rem check first
    character
120 get x$:if x$="" goto120
    :rem get a key
130 if x$<>mid$(r$,c,1)goto
    120:rem wrong key!
140 print x$;:rem right key
150 c=c+1:if c<=len(r$)goto
    120
160 print
```

Here's what happens: if you press the correct key, the corresponding letter will appear on the screen. If you press the wrong key, nothing happens — that's valid feedback, too. The reward — a character on the screen — is instant. The penalty is not noticeable except that the student has wasted time and effort on the wrong key.

Are there variations to this feedback scheme? Yes: one of the best is to print the correct character (say, in reverse font) even when the wrong key is pressed. Now the computer not only recognizes a wrong key, but offers the student a correction or a hint. The above program might be modified so that line 130 reads:

```
130 printchr$(146);:if x$<>
    mid$(r$,c,1)thenprintch
    r$(18);:x$=mid$(r$,c,1)
```

The **chr$(146)** clears the screen reverse mode (in case the previous character was shown reversed). Then, if the character has been typed incorrectly, the screen is set back into reverse mode with **chr$(18)** and the input character is changed to the correct one. Don't forget that both **print** statements must be followed by both a semicolon and a colon.

Other combinations? Correct keys could be rewarded with a bell-like tone; alternatively, wrong keys could get the buzzer. Such audible feedback could be useful to a supervising classroom teacher who could detect problem areas by sound... at least until hearing impairment set in.

It seems inadvisable to have the computer draw explicit attention to high error rates ('You made 4 mistakes in spelling CAT!!'). The computer can be a laid-back friend to the student. If desired, it can repeat a question later that was wrongly answered.

As our skills become less mechanical in nature, the feedback loop must be loosened. The student must be allowed to type words, phrases, sentences or perhaps even paragraphs before the computer comes back with advice. More discretion can be allowed in the way an answer is composed: it may be typed and then revised before **return** is pressed. Hints and other support mechanisms can be provided. For example:

```
100 r$="cat":rem the answer
110 t=0:rem count the tries
120 t=t+1: input
    "your answer";x$
130 if x$=r$ then print
    "right!": goto 180
150 if t=2 then print
     "answer: ";r$:goto 180
160 print"the answer begins
     with: ";left$(r$,1)
170 goto 120
180 print
```

In the above coding, the student is given two tries. If the first is wrong, a hint is offered. Two mistakes, and the correct answer is given. The feedback loop is slower, as befits a more advanced student. The learning path calls for more effort from the student.

My original **What Goes?** explored other areas. More sophisticated hints could be provided. Further along the instruction set, the program used its data base to enrich the answer (or wrong answer) with more information. The sequence: 'What goes meow? Response: PIG', would be followed by, 'No — a pig goes oink.'

More features can and should be added to increase the students' options. A student should be furnished with commands such as: Help, Give me an example, I give up, Explain <word>, Too easy, Try that last one again. The commands could be on function keys or menus, or even presented in icon (pictorial) form.

It's best to feel that you are in control of a computer, rather than a 'victim'. A student — or a user — with more control options can set his or her pace, and will learn more effectively.

I often think that the most powerful educational programs are those that don't look educational. I've learned a great deal about flight from **Flight Simulator II** (Sublogic). I've learned quite a bit about the heavens with **Sky Traveller** (Commodore/Deltron). Yet neither of these programs has ever presented me with a quiz, or awarded me a score. □

Amiga Dispatches

by Tim Grantham

Now that Amiga users are no longer biting their nails over CBM's financial future (I was never worried. . . really), they are free to start exploring in depth what some are calling the first supermicrocomputer. The character of the messages on the Amigaforum has changed completely from frantic arm-waving ('I found a pre-release, pre-production, prototype copy of **Amigizmo v0.999** in Tuscaloosa!') to intense debates on the relative merits of programming languages, the eccentricities of AmigaDOS, and the multitude of hardware expansion options. The days of the total-machine expert are' gone. The machine is just too intricate. The Amiga is really, in my opinion, the first personal mainframe computer.

Blits and Pieces

We have had some marvelous public domain software uploaded to the Amiga section in the Commodore Music and Graphics forum operated by TPUG on CompuServe (go pcs-155). They include a series of digitized pictures produced with the **Digi-View** system. Using the Amiga's HAM (Hold And Modify) video mode, all of the 4096 colours that the copper (graphic coprocessor) can generate can be put on the screen at once, producing stunning still images that are hard to distinguish from television pictures, even though they use the lo-res mode.

Two other files recently uploaded are sound digitizations produced with **Futuresound**; one a recording of a helicopter, the other of the dying screeches of the Wicked Witch of the West. Jaws dropped here at the magazine office when Margaret Hamilton's voice cursed us from the 1080 monitor!

It looks like CBM is lowering the price of the Amiga 1000, as the current model is known. Larry Miller of FAUG reports that Priority One Electronics is now selling the system unit for $999 (US), $300 less than the original retail price. More incredibly, they are selling a packaged system consisting of the Amiga 1000, the RGB monitor and cable, the 256K RAM cartridge, and an Epson JX-80 colour printer with cable, all for $1199!

Paul Higginbottom has finally left CBM 'for good'. Paul, well known to TPUG members, was formerly the Amiga Product Manager for CBM. Our best wishes to Paul in whatever his next endeavour may be.

Infoworld has come under fire recently for its non-coverage of the Amiga. Despite the fact that many programs are now available, they are still running a capsule review stating there is no software for it. Their only acknowledgement of CBM in the last two months has been in reports of its financial condition. After some, shall we say, vehement complaints, the following message dutifully appeared:

#: 11056 S0/Forum Bus/News/HELP
08-Mar-86 17:10:29
Sb: InfoWorld coverage
Fm: — J Forbes/InfoWorld 73267,1537
To: [F10] All

Hi, Jim Forbes from InfoWorld. I'm real curious about message #10777. We don't cover the Amiga, Hogwash. What do you think Scott Mace and I have been doing for the last two years, hanging out in Cupertino, California fern bars?

One more thing. I was pretty deeply involved in AmigaWorld way back when. Not interested in the Amiga? What do you think this is being written on, a Xerox Star? Get your facts straight.

Jim Forbes-InfoWorld Staff

The media coverage of the Amiga has been wildly erratic, varying from absolute raves to savage pans. The most even-handed evaluation of the Amiga as it compares to the ST and the Mac is, in my opinion, Bruce Webster's '68000 wars' column in *BYTE*. He gives the Amiga high praise in particular for its expandability, graphics, sound, documention, and the multitasking Kernel. He turns his thumbs down on AmigaDOS, calling it awkward and poorly thought out.

EA refuses to drop copy protection on its games for the Amiga, insisting that CP on these products is essential to its financial well-being. However, they are providing non-CP versions of their productivity/creativity software, usually for an additional fee. Meanwhile, Batteries Included have made their policy clear:

#: 8262 S8/Community Square
15-Feb-86 09:19:19
Sb: #8181-#Commodore Show Report/3
Fm: Michael Reichmann 76703,2007
To: Mark Fulton 75776,3037 (X)
BI adopted a policy quite a few months ago of not copy protecting any of our products in the future. In fact we have started to remove the copy protection on some of our existing products!

We feel that any form of copy protection is counterproductive to the needs of the user, creates a 'game' for hackers in breaking the protection and should be regarded as part of this industry's past, not its future.

The solution to piracy is to make software as inexpensive as possible, put it in an attractive-useful package, produce a good user manual with decent customer support to registered owners and remove the "game" of breaking protection.

[Michael]

Software News

Commodore-Amiga has still not released the **Emulator**, though various new-and-improved beta versions keep popping up. The following messages (edited) sum up the current scuttlebutt:

#: 8192 S9/SoftwareDevelopment
14-Feb-86 22:03:43
Sb: #8015-#5-1/4 DISKS,MSDOS,ETC.
Fm: scott drysdale 72127,1510
To: FRANK SCHWAB 73137,3142 (X)

The **Transformer** can be operated with an optional 5.25" drive that plugs into the daisy chain with your 3.5" drives. It writes standard PCDOS disks (i.e., 360K double sided, 40 track, 9 sector, 512 byte sectors). I was told this morning by Commodore that there would be utilities to convert AmigaDOS format files to MSDOS files. Also, you can run the transformer with your 3.25" drives, but you do need a format program capable of formatting the 80 tracks on the disk if you want to use them to full capacity. The standard IBM **FORMAT** and **DISKCOPY** work correctly on the **Transformer**, on either size drive (you can diskcopy 3.5 to 5.25 and vice versa). It seems pretty well thought out. Even programs that make heavy use of interrupts seem to work (**Crosstalk XVI**, for example). I am also told that the final release will run most copy protected packages (from the 5.25" drive, I would imagine). As far as graphics go, it doesn't look like the software-only **Transformer** will do them. It emulates the blah monochrome text card.

Also, the version I have played with doesn't support flashing video (annoying in things like **Multimate** that highlight by flashing). —Scotty

#: 9302 S1/Hardware
25-Feb-86 00:19:37
Sb: #8999-#transformer?
Fm: RICH MEDVED 72366,540
To: RON TROY 76064,252

You're correct about 3.7 not supporting color or graphics. Rumor was that that was (is?) to be added prior to releasing the **Emulator** — I wouldn't count on it.

Some of the programs that do run include **Wordstar**, **The Word**, **PC Write**, **DB II** and **III**, **Friday!**, **Procomm**, **Fancy Font**, **Control C Basic Int.**, and **Open Systems Accounting Packages**. Also **Symphony** and **Rbase 5000**. I was glad to see that the PD LAR+SQ (can't recall the name) runs on 3.7 — it did NOT run under 3.5, nor did several of the programs mentioned above.

Multitasking is supposed to be added to the **Emulator** at a later date. AND, you can format to over 720K right now. I've switched over to Kay Pro DOS and it formats the 3 1/2" disks to 730+K and will run disks formated to 360 by IBM DOS. (However, you can't run the 730K disks under IBM DOS).

Everything runs faster under 3.7 than 3.5, but it is still too slow. **PC Write** is almost acceptable, **The Word** is a little slower but **Word Star** still drags. Word processing types seem to be slower than other software. The hardware accelerator is going to be a MUST.

Yes, I too want to see some software that will allow reading/writing to DOS from AmigaDOS. In fact the local dealer would like to see it too. He's getting tired of me tying up his demo Amy by copying from 5" to 3" all the time.

Rich M.

Addison-Wesley has released the preliminary *ROM Kernel Manual* (a misnomer, of course, since AmigaDOS is written into the Writable Control Store RAM at boot-up). I can't imagine what the full set will look like; the preliminary *RKM* apparently consists of two huge tomes, each reminiscent of the Toronto telephone directory. Bruce Webster, has pronounced that the documentation for the Amiga may be the best he's ever seen for any computer: "...well written, well organized, and amazingly complete...". Addison-Wesley's order number is 1-617-944-8660.

Ultima III and **Ultima IV** will soon cast a spell over the Amiga, as well as **Moebius**, **Auto Duel**, and **Orge**, all from Origin Systems... **Brattacus**, an 'Interactive Video' style adventure game with 'impressive' graphics has been ported over from the Atari ST. Unfortunately it is copy-protected and takes over the machine, preventing multitasking... Michael Reichmann of BI has announced, for release between May and July, the development of a number of products for the Amiga including a "high-end word processor, spreadsheet, and graphics package. In addition, there will be an investment portfolio package and a professional time and billing program."

EA founder Trip Hawkins has gone on record saying that the company has more than recovered its development costs in its first month of sales of Amiga software. Their gamble has also paid off in four nominations from the American Software Publishers Association for **Deluxe Paint** for Best Creativity Product, Best Technical Achievement, Best User Interface and Best Graphics. Other Amiga products to receive nominations were EA's **One-on-One** (Best Sound) and Activision's **Mindshadow** and EA's **One-on-One** again(Best Adaptation to a New Computer Format). I feel quite safe in predicting that next year Amiga software publishers will be grabbing a significant number of the awards as the lengthy development process reaches fruition.

The following is a report on another Micro-Systems Software product, **Analyze!**, a spreadsheet:

#: 7576 S1/Software
/ 08-Feb-86 22:48:09
Sb: #7542-Analyze
Fm: Rick Rodriguez 74456,3054
To: JIM PRITCHETT 72767,2216

I began using **Analyze!** last week. It is very easy to use, although the docs are somewhat disorganized (like **Online!**). Most spreadsheets, like **Unicalc** will guide you through a sample session that touches on most of the commands you'll use. **Analyze!** leaves you on your own. I've had some problems with the program and my Brother printer. I'm awaiting a reply, but I suggest you make sure it works properly with your printer before making a purchase. I also think future versions of the program will have to offer complete keyboard control. Once you get into a long spreadsheet, using the mouse and menus becomes a real drag <har, har>. Hope this helps!

Jason Goldberg reports that **BBS-PC**, also from MSS, is really a BBS programming language and is very good. The beta version of **Scribble!** appeared to be of the same high calibre, with a built-in spelling checker, mail merge, multi-tasking, and so on. When you include BI's planned products, it seems that quality business software is on the way. Jason also reports receiving version 3.0 of the much-maligned **Maxicomm** terminal program, distributed by EA. He says it has been considerably improved. An unprotected copy of the program can be obtained provided you are willing to have your Mastercard number included in the program's menu.

TDI's **Modula-2** compiler is selling for $149.95 for the developers package, $89.95 for the regular package. Modula-2 is an enhancement of Pascal (they were written by the same person) and features totally independent program modules... Micro APL in England claim to have a beta version of **APL** for the Amiga... Thomas Holaday reports that a version of the **ARC** archiving utility for MS-DOS systems is being developed by RSBX (c/o Lido Hotel Fido) for the Amiga with assistance from SEABoard, the original developers... Bela Lubkin, sysop of the Amigaforum, is developing Amigabinary, a file format that will standardize transmission protocols, multiple-file transmissions, squeezing and unsqueezing, and so on, in a manner similar to Macbinary... William Volk of Aegis Development says he will be working on getting 68881 FPP chip support into **Aegis Draw**, which should be out when you read this. He describes **Draw** as "a generalized drafting program ... sort of a cross between **Mac Draft** and **AutoCad**... It has a parts system, allowing you to create/use parts libraries. It is multi-window and multi-drawing..." All of the Aegis products will use the IFF format jointly developed by C-A and EA. Dale Luck of C-A says that v1.2 of AmigadDOS is entering alpha test in house and at selected developer sites, though Randy Weiner, of CBM, says it is primarily intended to provide support for the PAL version of the Amiga for the European market. It may actually be released in the North America as v1.3, with more fixes and updates. And in case you're worried, it will also be completely compatible with all v1.1 software... Steve Ahlstrom reports that the **Calculator** in **WorkBench** will not run when when a 68010 has been installed. It seems the **Calculator** slipped past the upgrading of **Workbench** to v1.1... Ben Blish is getting favourable response from his beta-test sites for **PCLO**, his company's printed circuit-board design software. He is soliciting feedback for a hobbyist version of the program.

Hardware news

Tecmar says that the FCC has refused to approve the current design of their hard drive for the Amiga. However, they say they will be shipping the new version in six weeks. Six weeks to re-design, get approval, and ship? Hmmmm... Microforge, meanwhile, is already selling its 20 Meg and 40 Meg 3 1/2" hard-drives, which have a number of features in common with the Tecmar machines: noisy fans (sounds like an F-14 revving up), speed (roughly seven times faster than the micro-floppy drive), and software interface (each comes with a special version of **Workbench**, from which the configuration files can be extracted for your work disks). Current owners report no reliability problems. It is unclear whether the Microforge drives interfere with multitasking, as one owner was able to format the drive while using **Preferences**. The Tecmar machines definitely do halt all Amiga tasks during file transfers. The support software for the Microforge drives provides support for a streaming tape backup system. Up to four of the machines, including the 60 Meg drives still in development, can be chained together. Other Microforge products include a 7-slot expansion box, and 2 Meg RAM cards. If you had the bucks you could give your Amiga 8 Meg of RAM and 243.25 Meg of disk storage!... Comspec Communications in Toronto will also be manufacturing a 2 Meg RAM card for the Amiga. These will be stackable, and up to three of them can be attached to a single-drive Amiga before an external power supply is needed. Price is still undecided, but should be somewhere between $1200 and $1400 Canadian... StarPoint is selling a 256K card to install in the front of the Amiga for $120 (US)...

Randy Weiner of Amiga Engineering at CBM is recommending that DSDD micro-floppies stamped MADE IN USA be avoided, as tests in their labs indicate potential problems with the packaging of these disks... The A-Time clock-card will not work with current versions of the **Emulator**. The people at Akron Systems Development are in discussion with C-A on this matter... C-A will soon be releasing a custom printer-driver maker that will be available only to dealers at $150 (US)... Ben Blish is soliciting response to a product that his company, Soft-Circuits Inc., would like to market: a small pcb that plugs into the back of the computer or your external drive and that allows you to plug a 40 or 80 track 5 1/4" drive into it, using the industry standard cable and a power supply. He estimates end user cost to be about $50 (US)... Bose, the renowned manufacturer of speaker systems, is selling a compact stereo amplifier and speaker system intended just for the Amiga; naturally it can be used with other audio sources. Just plunk down $299 (US) and it's yours...

Richard Rae reports that Cherry Lane, the developer of a range of music and MIDI soft/hardware products such as **Harmony**, **Texture**, and **Pitchwriter**, are getting out of the Amiga business. It seems they are arranging to sell the products they developed to EA. C-A will also be selling **MusiCraft** and a MIDI interface, perhaps by the time you read this. Those whose interest in computer generated music goes back to the days of the Mountain Hardware Mountain Music System for the Apple][+ will be excited to know that Bob Hoover, the designer of the afore mentioned system, is the mastermind behind Mimetics, a company producing a number of musical products for the Amiga. These include a sound digitizer for about $100 (US) which, with the accompanying software, will convert a digitized sound into an instrument for **MusiCraft** or any of the other music programs. For $150 (US), you can get a sequencer program to record and playback from any MIDI source, or the Amiga's built-in sound capabilities...

The consensus is that the Atari RGB analog monitor is not only superior to the 1080 in picture quality, at $399 (US), it is also cheaper. The Amiga computer provides a much better video signal than the Atari ST, making the two an ideal combination. You have to kludge a cable because the Atari monitor uses a non-standard 13-pin DIN cable. Pete Jordan posted a pin-to-pin table that worked for him, though he makes no guarantees for anyone else.

Amiga end	Atari end	Pin name
4	6	green
3	7	red
16	8	ground
11	9	hsync
5	10	blue
12	12	vsync
17	13	ground

Amiga vs. Atari ST

The Jack Tramiel style can still be seen in the tacky advertising for the Atari ST, with its non-comparisons and blatant inaccuracies. I'm surprised that Atari and JS&A, a high-volume, mail-order enterprise selling the 520 ST, have not been sued for false advertising. Nevertheless, the debate about the relative merits of these machines rages on, especially now that the 1040 ST has been released, heralding the start of the 1K RAM per consumer dollar era.

Thankfully, CBM is maintaining a class act in its approach to selling the Amiga. Indeed, one full page ad in major newspapers said, "Some people say that Commodore is staking its entire future on one machine. Damn right." CBM seems to be carefully avoiding falling into the bottomless pit of a price-war, similar to the one that Atari fell into in the days when Jack Tramiel would rather fight than switch. That kind of industrial game of 'chicken' may have a short-term benefit to the consumer, but is very unhealthy for the industry, and ultimately results in *less* competition and *less* choice for the consumer.

The fact is that the Amiga is a very different machine than the ST, and one with far more potential. Questions posed to Atari about its expandability bring only vague promises. Still, I think Timothy K. Doherty says it best in his letter to January issue of *INFO*: "The Atari [ST] is a very good computer at a terrific price, while the Amiga is a terrific computer at a very good price."

I'll close this month's Dispatches with a message from Jim Meyer. It sums up my view of the future of the Amiga.

#: 9087 S8/Community Square
23-Feb-86 11:15:50
Sb: #State of Amiga
Fm: Jim Meyer 75475,456
To: All

...In My Humble Opinion, the Amiga is quietly fostering a revolution. Despite the pronouncements of the media, people are buying. Every machine sold helps to sell another, as friends get to see the 'miracle' of multi-tasking and other goodies. The steady sales of the C-64 and C-128 give CBM improved cash flow, and allow Amiga more breathing room. Sure, things are starting off slowly. Ever roll a tiny snowball down a tall, snow-covered mountain?

The head of Borland, Mr. Kahn, is quoted as scoffing at the Amiga. (On Line, by Lisa Raleigh, Knight-Ridder Newspapers.) Yet he has an Amiga on his desk, endlessly running Kaleidescope. The Amiga revolution has started, led by you and me and everyone else who bought one. Versatility, expandibility, power, speed and graphics will ultimately propel our infant into the forefront of computing. Not to worry!!

- Jim Meyer □

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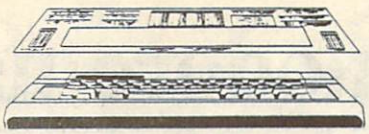

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Magazines for Commodore users

by Donald Dalley

After the 1982-84 flurry of new Commodore computing magazines sorted itself out, there were some newcomers, some old hands, and some diehards waiting for your attention. Today there are about a dozen strictly-Commodore journals and, about a third as many with me-too sections.

You are witnessing the last growth of the present 'family' of magazines. From now on, a new group of publications will appear to support the next generation of Commodore computers. The first is *Amiga World*; more will crop up in the months to come. Some magazines have changed their content to include the broader range of computers. The new hardware will be supported, in varying degrees, by the journals listed here, or new ones.

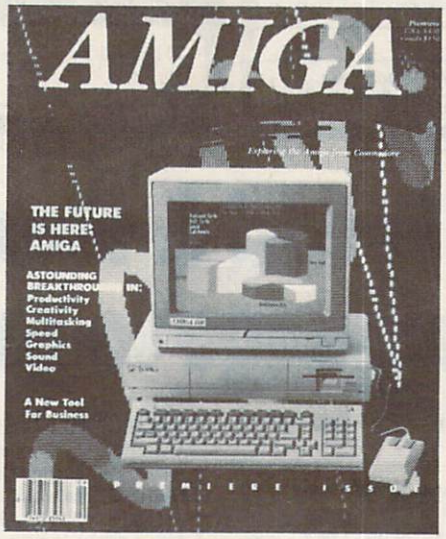
Here then are the magazines that contend for your allegiance, as of December 1985. These reviews are biased — we all have our favourites — but I have tried to be fair. The magazines reviewed are those readily available in Toronto, although some can be obtained here by subscription only. Prices are given in Canadian dollars per issue, or US dollars per subscription year for Canadian readers.

Strictly Commodore

Ahoy!: $26.95/12 issues

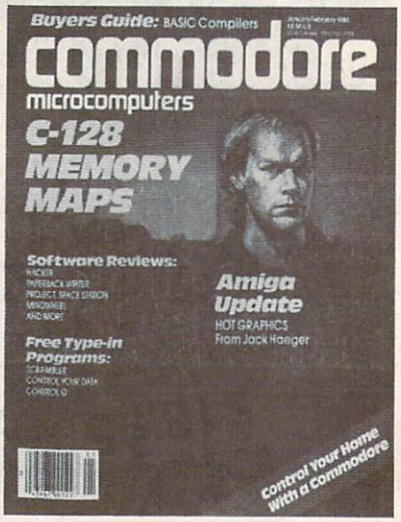
This is a semitechnical publication, going into hardware deeper than most. There is good 'inside' gossip, lots of 'firsts' show up, and matter-of-fact reviews. The cover has an unusual contents-like display of inside features. The magazine features a better than usual display of new products, with reader service numbers included with the product for easy reference. The quality of features by regular editors like Morton Kevelson and programmers like Bob Lloret make *AHOY!* worth a subscription. One winning program for me links up to four screens and prints them out on an MPS-802 or Gemini printer. A column for new 64 owners, quality artwork, close-up photos, programming contests, cartoons and a help column fill in between the covers. Some advertisers otherwise not seen show up here.

Amiga World: $22.97/6 issues



Not to be outdone, *Amiga World*'s premier issue was produced before the hardware hit the market. It is rumoured that Commodore funding played an important role in the financing of the early issues. The decidedly uncritical tone of the articles doesn't dispel my belief in these whispers. The high level of hype palls rapidly. The best articles are those with the most substance, like the informative review of the 68000 chip in issue #1. The artwork so far barely scratches the Amiga's ability, but is outstanding all the same. In its present form, *Amiga World* won't be a programmers' publication, but I'm told this is to change. Although there are a few goofs — like the picture of the keyboard with no cursor down key, and the occasionally slipshod writing, things will get better. *Amiga World* is reminiscent of the early Macintosh magazines. It's hard to write constructively when dealing with esoterics. Who will be the vital competition?

Commodore Microcomputers: $20/6 issues



After many changes, Commodore's own magazines have increased in quality to their present glossy appearance. Basically an advertising medium for the hardware manufacturer, *Commodore Microcomputers* includes *lots* of ads from third-party companies as well. Originally meant for educators and techies, *CM* now concentrates on the 64 and on reviews, though it is one of the few publications still giving token support to past CBM computers. Showing off what computers can *do* is what *CM* does best now. Languages are introduced and supported to varying degrees. Useful utilities and other programs are usually present, but not many coups. Although the Commodore publications *could* have the best of any gossip and inside news, no boats are rocked.

Commodore Power/Play: $20/6 issues

Commodore Power/Play is designed to support both the VIC-20 and the C-64 in the games/home aspect of 'home' computing. Whereas the previous magazine is for adults, this one is for the younger generation. You want games and fun? You'll get it here. Done seriously, this is not a bad thing. *Power/Play* offers simple programming features, lots of reviews

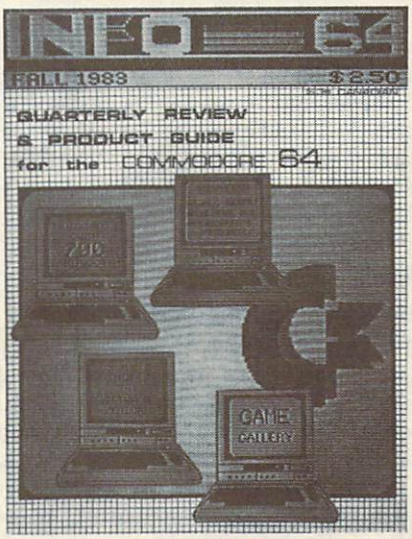
(you guessed it — games), alternative language support (mostly LOGO), Christmas product lists, hardware comparisons, a somewhat different set of advertisers. As is true of several of the other magazines as well, *Power/Play*'s published programs are set up to run on as many Commodore machines as possible, with trivial changes or none. A listing entry program helps too. Depending on your interests, both of Commodore's publications offer something for someone, although both are a little pricy.

Midnite Software Gazette: $2/issue

Although I've personally run across only a few issues in my lifetime, Jim Strasma's *MSG* is one of the oldest Commodore-only publications. Devoted mainly to reviews, information, help, news and other articles make up the rest. Reviews are brief and to the point, and likes and dislikes are made clear. Recent changes include a switch to two-column format, monthly issues, smaller content (and price).

Info: $18/6 issues

"Who's that?", you say? This, bar none, is my favourite magazine. Innovative, hard-hitting, opinionated, informative — the banner says 'useful'; I say 'unusual'! The magazine is entirely put together with a Commodore 64 and related equipment, except for paid ads. Theoretically printed 6 times a year, it seems an eternity between issues. The 'gallery' of game reviews is in a unique format, with screens on one page and text opposite. This is essentially a review publication (no program listings or how-to-do-its), with 'How well does it work?' opinions. Although the *Info* reviewers are not infallible, if they say it's junk, don't waste *your* money on that product. Lots of 'firsts' show up here. Three IEEE hard drives for the C-64, one reviewed, with cost comparison, were mentioned in #6.



The first real photos of the finished C-128, the 1572 disk drive (now apparently shelved), and the C-128D business model were showcased here. Semi-annual product issues review *lots* of C-64, and now other Commodore, equipment — hard, soft and otherwise! Another feature is the series of 'Erg-Cards' — reference cards for popular commercial software that fit over the computer keyboard. Stapled into the centre, each issue of *Info* has up to three different cards. Issue #7 covers CP/M 3.0 and BASIC 7.0, both for the C-128. Before now, *Info* dealt only with the 64. Now that they are branching out, it is to be hoped they bring the same level of coverage to the new machines. A must on everyone's shelf.

The Transactor: $15.00/6 issues

Karl Hildon has made *The Transactor* what it is: an inside look at Commodore computers. Although some articles are written above the beginner's level, each

issue is *packed* with helpful, logical, technical, let's not forget humourous, Commodore insight. 'Bits and Pieces' is full of the bizarre things people have found computers are capable of doing. The 'save with replace' bug has been exposed. Jim Grubbs is back in print with an article on using computers with shortwave listening equipment. Each issue as far away as the summer 1987 has a preassigned theme. First class writers and subjects, little advertising, variety, (and humour). Not to be forgotten is another *Transactor* publication, the Commodorian 'bible': *The Complete Commodore Inner Space Anthology*. If you own *any* Commodore computer, the *Anthology* has something you will need.

COMPUTE!'s Gazette: $30/12 issues

Who hasn't noticed the *Gazette*? It came in number one in a recent TPUG readership survey, and second among the VIC/64-only releases. Big and powerful, the *Gazette* gets lots of good program writers into circulation. Issue #7 featured

Speedscript, a popular word processor that has won many adherents even among those with access to full-featured commercial programs. Issues #17 and #18 introduced one of the first *colour* terminal/BBS programmes ever (Toronto had had a colour IBM BBS running before this). Later issues feature turbo-loaders for tape and disk, regular upgrades to **Speedscript**, and more — all in all a feature-packed repertoire. Nearly every issue features a new extension, or fix, to BASIC, though the editors generally ignore the presence of more up-to-date languages. For instance, unless it is mentioned by someone of Jim Butterfield's stature, COMAL (the C-64's most widely used non-BASIC language) gets no coverage. Besides useful utilities and applications, there are interviews, software and hardware reviews, the insights of the d'Ignazio family, questions and answers, and plenty of columns.

RUN: $22.97/12 issues

Wayne Greene started an empire of magazines, of which *RUN* was one. Fortunately, it survived Greene's retirement. An excellent selection of writers, from Louis F. Sander, Colin Thompson, Jim Strasma and Jim Grubbs, to other lesser-knowns, provide articles featuring the only inside photos I've seen of Commodore's factory, the 'Magic' series, utilities, feature programs and editorials. Listings finally have an error-catching entry program. There have been numerous reviews of selected products, notably word processors, joysticks and monitors. A popular feature program is **Datafile**, with some up-dates and other support. There is a large Christmas selection of products, as in Commodore's *Power/Play* magazine. A 'best of' issue is released annually.

Commodore Included

COMPUTE!: $30.00/12 issues

An institution in the Commodore world, *COMPUTE!* has grown and shrunk with the market fluctuations. Using competing brands of computers to unite readers under one banner has been this magazine's route to success. The different brands have their individual columns; otherwise you won't find much machine-specific information here. Programs are generally available for most or all machines, though. The Commodore family gets the most coverage. There are more general articles on computing than in the *Gazette*. With less advertisers, there is now less colour and more serialized articles, as in the *Gazette*. Content is still of high quality. Jim Butterfield appears here regularly, along with timely new hardware reviews, an explanation of X-Modem, editorials, features and tutorials. *COMPUTE!* has lately been capitalizing on the *Gazette*'s success with **Speedscript** by presenting updates for the C-64, and versions for other computers as well, and a compatible spreadsheet is in the works. Alternative languages were hardly mentioned until recently, and do not appear in the program listings.

Family Computing: $25.97/12 issues

The title says it all. The articles in this magazine focus on children and parents, home (including home business), and school. Nine computer brands are supported, including the VIC 20 and the C-64. *K-Power Magazine* was combined with *FC* to continue supporting teens. Material includes interviews with people from professional programmers to Mister Rogers, along with the usual product reviews and features, and simple BASIC program listings. Comparison-style are popular. Educational advertisers show up here in force. How to *live* with a computer is a popular theme of the writers, including the care and feeding of your cybernetic friend. The content is varied and informative, but after a meal of *Family Computing*, I usually prefer a plate of *The Transactor*.

Home Computer Magazine: $36.00/10 issues

Another unusual favourite, "focusing *exclusively* on * Apple * Commodore * IBM * Texas Instruments". Where's Atari? With few exceptions, the programs are written generically, to run on more than one computer. The BASIC software and documentation is very good, with variety and usefulness. Programs fill about half the pages. Among those featured have been **Snap-Calc** (a spreadsheet in LOGO!), **The Organizer** (a thought processor), game and educational programs, but not many utilities or ML programs. Tutorials, reviews, new products announcements, rumours and gossip, and tech-notes on individual computers round out the presentation. There is some material on languages other than BASIC, especially LOGO, and in the past, **Simons' BASIC**. The program listings are in an unusual format, designed to make entry easier; an entry program is needed instead. Programs are constantly being updated, sometimes extensively.

Newspapers and newsletters

Computer Shopper: $2.25 each, $45.00/12 issues

Ads galore! This is where to shop by mail for just about anything related to computing (except furniture), though Commodore coverage is weak. There are columns for various computer brands by some of the outstanding pioneers: Stan Veit (editor), Les Solomon (from *Popular Electronics*) and Don Lancaster (an Apple fan). The Commodore section, led by Ted Drude, has a parallel printer driver developing for the VIC and 64. Recent issues had reviews of 1541 drive alternatives, and two 1541 accelerators. A catalogue of C-128 compatible CP/M software, as well as a five-dollar editor/assembler were noted. The Amiga has a home in *CS*, and the public domain, open architecture 'Hacker's Mac' is to be developed before your eyes by Lee Felsenstein, designer of Osborne computers.

Input: $5-8 Cdn., $10 US/12 issues, or free

A fine Canadian Commodore newspaper from Alberta. It comes in two parts: one for the west, one for the rest. The Atari ST is getting some coverage also. Here you'll find timely, interesting gossip, hints and advice, and western BBS numbers. The ads and outlook are Canadian. A real bargain!

Toronto Computes!: $11.00/12 issues, or free

Toronto's free paper is similar in idea to *Input*, but smaller. Here you'll find Toronto-area BBS numbers, news and ads. There's no regular Commodore news, but a fair amount of spot coverage. Recent articles include a Steve Douglas (**PaperClip**) interview, sources of free or cheap software, a centrespread on robots, and RCMP comments on pirated software (the most costly programs of all!).□

Educational software for C-64

The following list of educational software is drawn from a very extensive catalogue compiled by the Etobicoke Board of Education, for which we gratefully acknowledge Gordon McKay and Robert McNaughton, the computer consultants for the Etobicoke Board, and Don Whitewood, a computer consultant for the Toronto Board of Education. Please note that this list contains only commercial educational software available to the general public. Teachers are advised to consult their computer departments for availability of programs from such sources as the Ontario Educational Software Project, and other boards of education.

Alphabet Zoo

Spinnaker
C-64, disk drive

Alphabet Zoo helps students develop letter recognition and spelling skills. Letters of the alphabet are associated with the pictures and sounds of animals.

Whiz Kids Computer Course

Whiz Kids Educational
C-64, disk drive

The disk contains a series of programs designed to introduce a student to the C-64. A manual provides a guide to programming in BASIC and word processing with **Textmaster**. The disk has quizzes and games.

Hey Diddle Diddle

Spinnaker
C-64, disk drive

Hey Diddle Diddle presents thirty rhymes with words, pictures and music. Each rhyme is formed in slow motion. Rhyming game provides two levels of difficulty as students play against the clock.

Mastertype

Scarborough System
C-64, disk drive

Mastertype presents typing instruction and practice in an arcade-type game format. After each game,the student's score, average speed in words per minute, number of words typed and number of mistakes appear. To improve typing speed and accuracy, **Mastertype** includes finger positioning drills and sentence typing lessons. A flexible lesson system allows the creation of custom drills.

Blazing Paddles Illustrator

Baudville Software
C64, disk drive, printer (optional), joystick

Blazing Paddles is an easy to use drawing program. It allows the use of a touch tablet, paddles, joystick, trackball or light pen input devices to create drawings, diagrams, and text. It is easy enough for young children to use but sophisticated features are included for the computer artist and programmer. A graphics dot-matrix printer is required for creating hard copy.

Bank Street Writer (V.2)

BSC/Scholastic
C-64, disk drive

This word processing program has three writing modes: write, edit and transfer. The disk contains a utility program for changing the text format and a tutorial program for student instruction.

Story Machine

Spinnaker
C-64

Story Machine (on cartridge) helps children learn to write sentences, paragraphs and simple stories. The stories are created with nouns, verbs, adjectives and other parts of speech chosen by student.

Up For Grabs

Spinnaker
C-64

Up For Grabs provides practice with spelling and vocabulary skills. Children visualize words and arrange them spatially. The program (on cartridge) develops decision-making skills.

Math Maze

Designware
C-64, disk drive

Student practises addition, subtraction, multiplication and division skills in a spider game format. Multiple skill levels and the ability to create individualized mazes add to the program's interest.

Creature Creator

DesignWare
C-64, disk drive

The student creates creatures from a selection of heads, bodies, arms and legs. The concepts of computer programming are presented at a simple introductory level.

Spellagraph

Designware
C-64, disk drive

Students are challenged to solve rebuses (word/picture puzzles). Over 400 words are included in the program and new word lists can be added. The skill level may be changed to provide a suitable challenge.

Spellicopter

Designware
C-64, disk drive

Spellicopter is an action spelling game with 400 words in forty lists. A context clue is given for each word. Points are gained or lost according to spelling. New word lists and clues may be added.

Donald Duck's Playground

Sierra On-Line
C64, disk drive

This program presents an amusing way for children to learn about money. Students work at four different jobs, earning money to buy playground equipment. Children are challenged to recognize and match shapes, colours, and letters. Logical thinking skills are exercised in the operation of railway switches. With their earnings, children may buy equipment to design and construct a playground.

The Print Shop

Broderbund
C-64, disk drive, printer

The Print Shop enables the design and production of signs, banners, greeting cards, personal stationery and posters. A selection of eight different typestyles, three type formats, nine border designs, a graphics editor, and text editing features are available. A special 'Screen Magic' function enables the presentation of kaleidoscopic patterns.

Graphics Library 1 (Print Shop)

Broderbund
C-64, disk drive, printer

The **Graphics Library** disk 1 expands the graphic elements capabilities of the **Print Shop** program. Disk 1 is a collection of dozens of new graphics designed by top computer artists. Themes include sports, education, zodiac signs, special occasions, animals, creative patterns and more.

The King's Rule 1229A&B

Sunburst Communications
C-64, disk drive

This program helps students build skills which are important to scientific reasoning and math logic and problem-solving skills in recognizing numerical patterns, and basic operations. Ten to twenty minutes of computer time is required to solve each level in the game. Students must form and test various hypotheses and develop skills in critical thinking.

Mr. Pixel's Program Paint Set

Mindscape
C-64, disk drive, joystick, printer

With the **Programming Paint Set**, students develop computer literacy skills and use the computer as a creative tool to work with the elements of programming languages such as commands, cursor control, and program listing. Students draw or edit pictures by choosing commands from a screen menu or by listing and editing a program.

Mr. Pixel's Cartoon Kit

Mindscape
C-64, disk drive, joystick (optional)

As students enjoy altering and creating cartoons and characters with **Mr. Pixel's Cartoon Kit**, they learn to sequence ideas, analyze the steps needed to complete a complex task, use simple animation techniques, and implement their solutions within a computer environment. By choosing from a menu, students can play, edit, add to or change a cartoon and players.

The Grammar Examiner

DesignWare
C-64, disk drive

The Grammar Examiner is a newspaper editing game. Players land on a grammar square, edit paragraphs, answer multiple-choice grammar questions and earn salary raises and promotions. Four colourful gameboards and animated characters are available but players may design their own game boards. There are multiple skill levels of grammar problems and game play can be varied to maintain a challenge.

Keyboard Cadet

Folio/Mindscape
C-64, disk drive

Keyboard Cadet enables novice typists to learn typing fundamentals based on a step by step course. The program has fifteen lessons. As a space pilot, the student must fly a spaceship through a galaxy. Each lesson introduces new keys and reinforces previously taught keys. Students move on to two-letter combinations (digraphs) and to words, sentences and paragraphs. Program gives wpm scores.

Treasure Island

Windham Classics
C-64, disk drive

This is a unique adventure game where you're the hero and it's up to you to find the secret treasure. You'll meet and talk to characters and you'll have to decide whether they are friends or enemies.

Magic Spells

The Learning Company
C-64, disk drive, printer (optional)

This program includes: **Scramble Spells** (students unscramble spelling words), **Flash Spells** (students recall words by spelling and entering words correctly), and **Spells Writer** (with options to enter a new list of words, delete a list, set up new data disk for words, view a list and copy a list to another disk or printer).

The Game Show

Advanced Ideas,
C64, 1541 drive

Animated partners motivate learning in this educational game of word clues and target concepts. Questions start with general clues, then home in on more specific facts, encouraging the use of logical thinking and deductive reasoning. A right answer wins points and applause. An option allows the students to create individialized question/answer database.

Adjectives

Scholastic
PET/C64, datasette

A brief tutorial on adjectives is displayed. Students can choose the number of sentences. As each sentence is displayed, the student identifies the adjectives. A summary follows. Data statements can be changed.

Dragon Mix

DLM Learn Resources
C-64, disk drive

The software and student worksheets develop skills in recalling the multiplication tables (0 to 9). The dragon uses correct answers entered by the student to defend a city from alien invaders.

Cave of the Word Wizard

Timeworks Inc.
C-64, disk drive

This adventure game provides spelling practice at ten skill levels and includes 500 spoken words. There are four game levels. The scoring system is based on spelling ability and game skill.

Stickybear Numbers

Xerox Education
C-64, disk drive

Stickybear Numbers is a counting and number recognition program for primary children. When a number is pressed, a like number of objects move about the screen. The spacebar is used for counting objects.

Muppet Learning Keys

Koala Technologies
C-64, disk drive

A large, easy-to-use keyboard suitable for young children is attached to the computer. The software includes three programs: **Discovery Stage**, **Letters Stage** and **Numbers Stage** develop math and language skills.

Letter Go Round

CBS Software
C-64, disk drive

Letter Go Round provides a playful setting with Sesame Street characters in which children practice early reading skills. Activities involve letter-matching and spelling on a simplified keyboard.

Argos Expedition

CBS Software
C-64, disk drive

The adventure game simulates a space mission. The objective is to retrieve specific space artifacts. Through group-decision making and problem-solving, members must decide what is best for the group.

Animal Crackers

Futurehouse
C-64, disk drive, light-pen

Using voice synthesis, the students work in five different language activities: matching animal shapes, shape and colour recognition, alphabet letters, numbers and words.

Success With Math: Decimals: + & -

CBS Software
C-64, disk drive

One of the **Success with Math** series, this program provides remedial assistance, drill and practice in adding and subtracting decimal fractions.

Bumble Games

The Learning Company
C-64, disk drive

The program playfully explores basic math concepts and plotting numbers on a number line and grid. Six games are **Find Bumble**, **Find Number**, **Butterfly Hunt**, **Visit from Space**, **Tic-Tac-Toc** and **Bumble Dots**.

Word Spinner

The Learning Company
C-64, disk drive

This complete-the-word game challenges the student to discover as many words as possible by changing a letter in a word. Skill levels are set by selecting the number of letters and a time limit.

Spell It!

Davidson & Associate
C-64, disk drive

The package includes a program disk and a data disk. The data includes 1000 of the most commonly misspelled words grouped into five levels of difficulty. There are six different activities.

Peripheral Vision

Futurehouse
C-64, disk drive, light-pen

Peripheral Vision is a graphics program which uses the Edumate Light Pen to create drawings on the screen and printer. A student may draw in fifteen different colours using six brush widths and characters.

Learning With Leeper

Sierra On-Line
C-64, disk drive

The disk contains four games: **Dog Count** (drills counting 1-10), **Leap Frog** (maze game), **Balloon Pop** (shape matching) and **Screen Painting** (draw/paint a picture). These are suitable for kindergarten.

Success With Math: Multiplcation and Division: Decimal

CBS Software
C-64, disk drive

Disk A provides a tutorial and practice with multiplication of decimal fractions. Disk B provides instruction and practice for dividing numbers with decimal fractions.

Monkey Math

Artworx
C-64, disk drive

Monkey Math's animated graphics provide an amusing math game and the opportunity to practice number placement, addition, subtraction, multiplication and division skills. There are three skill levels.

Spelldiver

Scholastic Wizware
C-64, disk drive

This program consists of three hidden word games. In **Gabdoc's Notes Home**, students uncover letters to guess a word. In **PowerSpelling**, students explore 2000 commonly misspelled words. **Do It Yourself** adds new game word lists.

Operation: Frog

Scholastic
C-64, disk drive

The package contains a laboratory simulation tool to be used as a resource in teaching dissection of a frog. A second option allows the students to reconstruct a frog. The set contains an excellent guide.

Wiztype

Sierra On-Line
C-64, disk drive

Wiztype presents instruction and practice in keyboarding skills. The cartoon character, the Wizard of Id, is the central character in this amusing educational game. Skill levels may be selected.

Elementary Math Games

Plato Educational
C-64, disk drive

Three disks contain fourteen games which use various math skills including counting, addition, subtraction, multiplication and division with whole numbers. The programs are selected from a menu.

Advanced Elementary Math Games

Plato Educational
C-64, disk drive

These four disks contain fourteen games which provide for various math skills including order of arithmetic operations, prime numbers and factors, fractions, decimals and percents. A menu is used to make the selection.

Algebra Arcade

Wadsworth Electronic
C-64, disk drive

Algebra Arcade, a game for one or two players, combines careful calculation with plotting skill. The screen displays the X and Y axes and players must plot a path to touch Algebroids and Whirlwinds.

Word Magic 64

Merlan Scientific
C-64, disk drive

This word processor permits easy entry, modification and formatting of text. A user-friendly design utilizes on-screen commands in a menu format and one keystroke implementation.

Calc Master

Merlan Scientific
C-64, disk drive

Calc Master 64, an electronic spreadsheet, is a pattern of 20 columns and 30 rows. Each cell in the grid may contain a label or value. It is a learning tool for mathematics, science, and business.

Word Scramble

Hi-Tech
C-64, disk drive, printer

Word Scramble generates anagrams (word puzzles). The student or teacher types in the words and the computer scrambles the letters. Print-out includes the puzzle (with or without clues) and an answer key.

Word Match

Hi-Tech
C-64, disk drive, printer

Word Match allows the teacher or student to generate matching-type tests, fill-in-the-blanks tests, true/false tests and math problems tests. The computer-generated materials can be output to a printer.

Big Bird's Funhouse

CBS Software
C-64, disk drive

Big Bird's Funhouse program is a game of concentration which develops memory and sequencing skills. Muppet characters play hide and seek and help Big Bird find his Sesame Street friends. The package includes a vinyl keyboard overlay to simplify keyboard input.

Song Editor

Sequential Circuit
C-64, diskdrive

Song Editor requires the MusicMate Keyboard. This program permits the student to edit songs recorded with Song Builder. One measure is viewed at a time and each note can be edited individually.

Bank Street Musicwriter

Mindscape
C-64, disk drive, printer

The **Bank Street Musicwriter** allows students to see, hear, write, edit and print music. A tutorial section is available and a manual provides instructions. A library of sample selections is included on the second side of the disk. The package is similar to **Music Construction Set**.

Pic Builder

Weekly Reader Software
C-64, disk drive, printer

Pic Builder enables students to create colour pictures with blocks or sections of pictures. These are placed side by side, above, below or diagonally beside other blocks. Transportation, animals, space, and buildings are some of the themes included in the graphics library.

MIMI for creative writing

Logidisque Inc.
C-64, disk drive

MIMI is an interactive program which can be used with students to create and animate a story. After the computer activity, the student may express the story using oral and/or written French/English language.

Mark Book Vol. 2

Saga Software (Adams)
C-64, disk drive, printer

Mark Book simulates a teacher's daily record book. Term files correspond to daily test records, quizzes and assignments. Report file keeps a record of term marks, exam marks, and report marks.

Imagination

Saga Software (Adams)
C-64, disk drive

Imagination enables the student to create and save motion pictures. The master disk contains seven pre-drawn screens and a catalogue of over 350 pre-drawn sprites. Original sprites and screens can be created and used in the animation program.

Stickybear: Opposites

Weekly Reader Family Software
C-64, disk drive

Students learn to use antonyms: up/down, stop/go, tall/short, full/empty, in front of/behind and more. Each pair of opposites features animation, colour and sounds.

Animation Station

Suncom
C-64, disk drive, printer

This graphics tablet and software package allows the student to create drawings, graphs, maps, and diagrams using a menu selection. The graphic designs may be labelled with text, saved and printed.

Computer Crayons

Futurehouse
C-64, disk drive, light-pen

The light-pen is used to colour pictures representing the letters of the alphabet. Sound and animation add interest and stress word and letter recognition.

Bedtime Stories

Futurehouse
C-64, disk drive, light-pen

The 'Little Red Riding Hood' story is animated while a frog narrates the story and game (using voice synthesizer). Student activities include word/letter games.

Alphabet Construction Set

Futurehouse
C-64, disk drive, light-pen

Robo, the alphabet builder, instructs students how to use the light-pen to draw the capital letters of the alphabet. After each level, Robo builds a picture part.

Techsketch Light Pen

Tech Sketch
C-64, disk drive

The light-pen and computer graphics software may be used to create drawings on the colour monitor. Also included in the software is a tic-tac-toe game and music composition program.

Sea Horse Hide'n Seek

CBS Software
C-64, disk drive.

Children practice matching colours and shapes by helping to camouflage and protect sea horses. Spatial and size relationship skills are practised. *Hide Guide* explains how animals are camouflaged.

Ducks Ahoy!
CBS Software
C-64, disk drive

Players guide canal barges using a joystick to catch ducks and avoid hippos. The game helps develop fine motor coordination, counting skills and problem-solving skills (through the formulation of predictions).

Chatterbee
Tronix
C-64, disk drive

Chatterbee utilizes a voice synthesizer to dictate words in a spelling bee game. Spelling skill levels increase in difficulty as the game progresses.

In Search of the Most Amazing Thing
Spinnaker
C-64, disk drive

This adventure game will sharpen student's reading skills and ability to estimate distance, direction and time. Economic and monetary problems must be solved as the student progresses in the adventure.

Trains
Spinnaker
C-64, disk drive

Trains teaches many business principles. A railroad owner must decide how to schedule deliveries nd make enough money to meet payroll requirements. There are eight levels of difficulty.

The Game Show
Advanced Ideas
C-64, disk drive

The **Game Show** provides opportunities to increase vocabulary and general knowledge related to a wide variety of topics including biology, famous cities, nursery rhymes and fifteen other subject areas.

Software For

by Efraim Halfon

As a proud father of two young girls, I have always been interested in children's software, especially if it was both educational and fun to play. After four years of collecting games and educational programs for my kids, I have realized that, in general, children up to 12 years old like slow-paced programs where thinking is required, rather than the faster-paced shoot'em-up games preferred by teenagers.

In this article I review what I think are some of the best children's programs for the Commodore 64 and 128. All of this software has been tested by lots of children (and parents too), none of whom has ever become bored with the programs presented in this review. This review is limited by the number of programs I have had access to. I have left out a number of programs I found interesting but not worth buying. Consequently,all of the reviews are good; the bad ones are not here.

A note — a large number of programs I own were developed by Spinnaker, and a few by the Learning Company. I did not try to cover the public domain Commodore Educational Software. These programs, contained on over 50 disks, are available from the TPUG library.

Here are some programs I consider the best:

Face Maker: probably the most successful game ever produced for children. The purpose of the game is to add features to a face: eyes, noses, mouth, ears and hair. The program is very easy to use, since only two keys are needed: the **return** key and the space bar. This simplicity opens a world of fantasy, since a large number of combinations are possible and expressions are almost limitless. I have seen children play this game for hours on end. Certainly a very successful Spinnaker. Another game that introduces children to the computer keyboard is **Kids On Keys**; yet another is **Logic Levels**. Neither are special: pleasurable but not worth the $29.00 (Cdn) selling price.

Pizza: a public domain game available from TPUG. Here a child has to identify X and Y coordinates to deliver a pizza to a given location. The game is very elementary, but it provides an excellent introduction to analytical geometry and x-y cartesian spaces. Despite its simplicity, children have played this game over and over again. Most suitable for children 7 and under.

Baby Care is another public domain program. This one is suitable for children 9 and over, simply because of the fast reaction times required to play the game. Nevertheless, younger children seem to enjoy watching others play the game. The object is to feed a baby and keep it dry and clean without having the mother, or the player, go crazy. The game is instructive for older brothers and sisters, making them realize the difficulty of caring for a young baby. It is also pleasurable for seasoned parents to remember diaper days long gone. The graphics are elementary, but the game is fascinating.

Viduzzles: This one is a game from Commodore. The purpose is to reconstruct a picture puzzle of a clown, a dog or an owl. The picture is split into 25 or 50 random pieces in a five by five matrix, and the child must reconstruct it. A good introduction to spatial relationships. The program is easy to use with a joystick. It is suitable for children 5 and older.

Rocky's Boots: A program for children 7 and up from The Learning Company. This is one of the best introductions I have seen to cybernetics and boolean logic. The purpose of the game is first to learn the meaning of **and** and **or** gates, and second to build a cybernetic machine, able to sense the world around it and act in accordance with predetermined instructions. The machine has sensors to detect the shape of a metal piece and its colour. The child must build a machine that identifies a piece given information from its sensors. For example: find a piece that is round and blue, or a piece that is any color but blue with a triangular or square shape. The combinations are almost infinite.

Factory: Another great program from Sunburst Communications. The purpose of this program is to shape a piece of metal according to a blueprint. Three basic machines are available in the factory: one punches one to three holes, square or round; another engraves a line of different thickness; yet another rotates the metal piece 45, 90, 135 or 180 degrees. Up to eight machines can be put in an assembly line to create easy or difficult patterns.

Rock 'n Bolt: An Activision game, this one develops spatial relationships. Several domino pieces move back and forth on the screen, and the player has to nail them down to copy a predetermined pattern. The problem is that since the pieces move, a certain strategy must be followed to catch the pieces in the right position. The player jumps from piece to piece and nails them down when necessary. As the player advances to higher levels, the patterns can only be duplicated by moving horizontally to other screens. Thus the player must keep in mind the position of all dominos as he moves from screen to screen. The software is difficult to describe, but very interesting to play and quite challenging. One of the best.

Doodle: This great graphics program, which can be operated from either a joystick or the keyboard, opens up a fantasy world for children by letting them create drawings, then colour them in 16 living colours. For some applications, such as drawing ovals, it is even better than the famous **KoalaPad**. Detail can be added using zoom mode and geometric figures; boxes and circles are

How to Operate a C-64

Fliptrack Learning
C-64, datasette

A data cassette and two audio cassettes instruct the student how to operate a Commodore 64 computer. Note that a data tape recorder and an audio tape recorder is required for these lessons.

Exploring C-64 LOGO

Sunburst Communications
C-64, disk drive

This package of software and manual is intended to supplement the **LOGO** program produced by Commodore. The LOGO activities and demonstrations cannot be used without loading **LOGO** first.

Getting Ready to Read and Add

Sunburst Communications
C-64, 1541 drive

The package contains six interesting game activities for young children, including: **Beam Up** — shape recognition and visual discrimination; **Alphasaurus** — recognition of lower-case letters; **ABC->** — recognition of upper-case letters; **Letter Getter** — association of upper- and lower-case letters; **Moon Math** — beginning numbers; and **Number Chick** — counting skills.

The Incredible Laboratory

Sunburst Communications
C-64, disk drive

The **Incredible Laboratory** program is designed to teach children strategies for problem-solving. It places each student in the role of a chemist creating monsters in a laboratory. By selecting from a list of chemicals, a monster is created with features such as a green head, cowboy boots, or a scaly body.

Kids: A Survey

easily drawn. **Doodle** and **KoalaPad** complement each other, and are suitable for children 5 and up. The package includes preprogrammed pictures that the child can modify.

Dream House: An everlasting favourite from Joyce Hackanson Associates Inc. Here the purpose is to decorate and paint a series of houses: a Colonial farmhouse, a Manhattan penthouse, a hideaway cottage, or a San Francisco Victorian townhouse. Each house has a large selection of rooms, and each can be decorated according to the child's tastes. Furniture is available for bedrooms, livingrooms and kitchens. A number of pets can also live in these houses along with the parents and kids. A small workshop allows a child to create patterns not present in the menu. The pictures can also be animated: the dog barks, the fireplace roars, the bird chirps, the water flows, the piano plays, the computer displays a word processing program, and so on. As in other graphic programs, the houses can be saved for continuous improvement. The outside landscaping can also be changed. The only problem I found is that the frequent loading of subprograms takes so long that some children might lose interest

English Programs

Rhymes and Riddles: This is another excellent product by Spinnaker. The emphasis is on spelling using familiar rhymes and songs. Great for learning spelling.

Text Analysis: A public domain program used to analyze the grade level of a child essay. A child types in his essay and the program uses two different methods to assess at which grade level the child is writing. Great for parents and for teachers alike to give an independent assessment.

Math Games

The Playful Professor: Emphasis is on learning arithmetic through testing on simple problems. Graphics are excellent, and the reward for answering questions correctly is the oportunity to catch a ghost in a haunted house.

Kindercomp: A Spinnaker offering, this game is very good for the younger crowd; 6 and under.

Algebra Dragons: This is an adventure game that tests math skills. To advance in the game, correct answers must be provided to questions asked. This one is for children 12 and over.

Typing Tutor And Word Invaders: A touch typing program suitable for children 9 and up. If children can play piano they can also learn to touch type early in their life. The program teaches one line at a time, and after every ten exercises an exam is given. If the child does not pass, exercises are repeated until a satisfactory mark is reached and the child is promoted to the next level. The advantage is that the computer is very patient while the child paces him/herself. **Word Invaders** is part of the same package and is a good practice program.

Fax and **Trivia Fever**: Two trivial pursuit games, from Epyx and Professional Software respectively. **Fax** is the better package. Children seem to like its format better, and appreciate the option of having the answers provided. Several classes of questions are available: history, geography, science and math. Suitable for children 7 and up, possibly led by a 9 or 10 year old child who can read well.

Music programs: A child does not need the sophistication of complex music programs such as the **Kawasaki Synthesizer**; public domain programs such as **Organ**, **Piano** and **Music Master** provide hours of pleasurable music. Commercial programs such as **Music Machine** by Commodore are also pleasant, since they show notes on the screen as keys are pressed. My children like **Piano** best, since they can play music on the keyboard at their own speed, save the notes, play them back and even save them to disk. Throughout, the screen displays two hands playing on the keyboard.

Astronomy Programs: Three programs come to mind, **Benji's Space Rescue**, **Solar System** and **Sky Travel**. The first two were developed for children. They show the solar system and give information about each planet. The last one is a professional package and has been previously reviewed in *TPUG Magazine*. All of these astronomy programs are good but they need to be run with adult supervision; they would be too difficult for the average 8-12 year old.

Mystery: I have not seen many programs in this area for children, but one of the best is surely **Snooper Troops**. The child is an investigator, and has to find the murderer by visiting appropriate houses, making telephone calls and asking the right questions. The whole game may take several hours in separate sessions, and the child has to learn to take accurate notes and consult them. The game is very good for those eight and up. Another successful game from Spinnaker.

I hope these reviews will help parents interested in purchasing programs suitable for their young children. In general, I have avoided tutorial or drill programs in favour of programs that let children use the computer to learn logical concepts and visualize spatial relations. Most of the programs mentioned are commercial packages that can be purchased or ordered at any store; some are public domain programs that may not be available everywhere. If requested, I will mail a copy of the public domain programs for a nominal service charge of $8.00, including a floppy disk and mailing expenses.

Write to: Efraim Halfon, 543 Limerick Road, Burlington, Ontario, Canada L7L 2K5. □

Word Attack

Davidson & Associates
C-64, disk drive

The program contains 675 words with sentences illustrating usage. There are nine skill levels. Included is an editor for adding individualized word lists. **Word Attack** is designed to improve vocabulary skills.

Bigbird's Special Delivery

CBS Software
C-64, disk drive

In the **Same Game**, the learner makes exact picture matches. In **Find the Right Kind**, the student looks at a picture and matches it according to its category. There are 2 skill levels for each game.

Ernie's Magic Shapes

CBS Software
C-64, disk drive

Ernie's Magic Shapes provides visual discrimination practice for pre-schoolers. Ernie points out the mistakes and his magic rabbit provides positive reinforcement when the matching answer is correct.

Success With Math: Multiplying and Dividing Fractions

CBS Software
C-64, disk drive

Success With Math builds skills in multiplying and dividing common fractions. A tutorial section teaches the sequence of operations and a practice section provides drill and reinforcement.

Music Construction Set

Electronic Arts
C-64, disk drive, joystick

Music Construction Set provides the opportunity for the student to create and listen to computer music. The elements of music, represented by icons on the screen, can be moved to a staff to create music.

Crypto Cube

Designware
C-64, disk drive

Crypto Cube is a word puzzle game with fifty puzzles available on four sides of a cube. A word-puzzle generator uses words entered by the student. The program develops spelling and vocabulary skills.

Spellakazam

Designware
C-64, disk drive

In this spelling game, the student races against a magician to release hidden animals. The spelling vocabulary levels range from grade two to grade eight. Skill levels adjust automatically.

M-ss-ng L-nks: Young People's Literature

Sunburst Communications
C-64, disk drive

Short reading passages are related to children's classical stories. The student or teacher can delete letters and words from the passages. Students reconstruct the original passages by filling in the missing letters or words (similar to a cloze test). The activity aids in developing skills related to reading comprehension, writing styles, punctuation, and spelling.

Robbers of the Lost Tomb

Timeworks
C-64, disk drive

This adventure game simulates the work of an archeologist attempting to recover lost treasures from a one hundred-room Egyptian tomb.

Square Pairs

Scholastic Wizware
C-64, disk drive

Square Pairs presents matching games which help to develop memory and concentration powers. A few computer programming concepts are introduced. **Gamemaker** allows students to create their own games.

Print Shop Library

Broderbund
C-64, disk drive

This is the new graphics disk to go with the **Print Shop** program. It has new graphics in the categories of Jobs, Hobbies, Music, Health, People, Places, and more.

Snooper Troops: Case One

Spinnaker
C-64, disk drive

The Granite Point Ghost is an interactive mystery game. Players are private detectives trying to discover clues which will indicate a motive for the crime and lead to the solution of the mystery.

Snooper Troops: Case Two

Spinnaker
C-64, disk drive

In **The Case of the Disappearing Dolphin** players must use clues to solve a mystery.

Fraction Fever

Spinnaker
C-64, cartridge

Fraction Fever (on cartridge) develops an understanding of the parts of fractions and the relationships between different fractions. Concepts of numerical and visual representations are presented.

Koala Pad Touch Tablet

Koala Technologies
C-64, disk drive

This graphics tablet is supplied with the Koalapaint software. With this software and the Koala Pad,the student may create high resolution drawings which may be manipulated, saved and printed.

The Seven Cities of Gold

Electronic Arts
C-64, disk drive, joystick

This is a simulation game of discovery, exploration, and conquest in the late 15th Century. In the simulation, students set sail from Spain after outfitting their expedition. The object of the game is to obtain gold and maps of new territories. After crossing the ocean, students can choose to explore rivers, meet Aztec and Inca natives and solve problems faced by the conquistadors.

Trap-a-Zoid

Designware
C-64, disk drive

This program presents geometric concepts in a game format. Squares, triangles, and other polygon shapes are introduced. Multiple skill levels provide increasing challenges for students.

Paint Magic

Datamost
C-64, disk drive

This graphics/computer art software presents opportunities to create, save and display original art designs and drawings. The artist uses a joystick to draw, fill, or colour the computer art.

Alien Addition

DLM Arcademic Skills
C-64, disk drive

This arcade-type math game develops addition skills using numbers from 0-9. The skill levels can be adjusted for run time, content, and level of difficulty. Program accepts joystick or keyboard input.

Alligator Mix

DLM Arcademic Skills
C-64, disk drive

In this math activity, the object is to feed apples to alligators. The game provides practice with addition and subtraction skills. A teacher menu permits options for skill levels, speed, and time.

Demolition Division

DLM Arcademic Skills
C-64, disk drive

Demolition Division presents practice with short division skills as tanks advance toward cannons. All the divisors are between 0 and 9. A teacher menu provide skill level, speed and time options.

Meteor Multiplication

DLM Arcademic Skills
C-64, disk drive

Meteor Multiplication helps build speed and accuracy with multiplication facts. The multiplication skill levels in the game can be changed to provide increasing challenge as students' skills improve.

Minus Mission

DLM Arcademic Skills
C-64, disk drive

Minus Mission helps build speed and accuracy with subtraction facts. Skill levels, game run time, and the question content may be altered to provide individualized challenges for the students.

Edumate Light-Pen

Futurehouse
C-64, disk drive

The light-pen plugs into game port #1. The student is able to interact with the computer by pointing the pen to the screen. The disk contains an art program, a tic-tac-toe game and computer music.

M-ss-ng L-nks: Microencylopedia

Sunburst Communications
C-64, disk drive

Short reading passages are related to encyclopedia subjects and are of interest to children. Student or teacher can delete letters and words from the passages. Students reconstruct the original passage by filling in the missing letters or words (similar to a cloze test). The activity aids in developing skills related to reading comprehension, writing styles, punctuation, and spelling.

Fay: That Math Woman

Didatech
C-64, disk drive

The program is designed to be used with math lessons taught in the primary classroom. Students improve their addition, subtraction, multiplication and division skills by solving simple arithmetic equations. The largest number used in the program is 19. Students must be able to recognise numbers up to 99 and have a working knowledge of number lines.

Reader Rabbit

The Learning Company
C-64, disk drive, colour monitor

Reader Rabbit provides children with an interesting way to develop important reading skills and increase their vocabulary. Using over 200 three-letter words, each of the three games builds on skills from the previous game. The fourth game provides a review of the skills. Children learn to recognise patterns with vowel-consonant-vowel combinations and use logic and visual discrimination to achieve this.

Crossword Magic

Alert/Mindscape
C-64, 1541 drive, graphics printer

With **Crossword Magic**, students and teachers can, with speed and ease, create and play original crossword puzzles. Words and clues are entered and edited. The puzzles may printed on a dot matrix graphics printer.

Fraction Factory

Springboard
C-64, disk drive

Fraction Factory provides multiple skill level games which help students develop skill with common fractions. Fractions are represented in graphic and equation form. Fractions concepts include addition, subtraction, and multiplication of fractions, multiplication of a fraction by a whole number, and finding equivalent fractions. Students progress at their own rate. A useful manual is included.

Piece of Cake Math

Springboard
C-64, disk drive

The program contains five games designed to develop speed and accuracy in recalling arithmetic facts: **The Bakery** — addition and subtraction word problems; **Multicake** — multiplication word problems; **Dividacake** — division word problems; **Flashcards** — skills with the four basic operations; and **Catchacake** — drills addition, subtraction, multiplication, and division facts.

Rails West!

Strategic Simulations
C-64, disk drive

This is a game of railroad financing *circa* the 19th century. It has four levels of difficulty. The game manual includes historical background, winning strategies and a business terms glossary. The goal of this game is to have the most money and to control most of the railway at the end. You may print hard copies of reports if preferred; you may save a game in progress for play later.

Mr. Readwell

Micrograms
C-64, disk drive

The **Mr. Readwell** program presents several reading selections and corresponding reading comprehension questions. The student can choose a reading speed skill level (1-5). The student has an opportunity to re-read the selection before questions are presented. The computer keeps track of student errors and letting the child re-read the selection before proceeding with the questions.

Sequencing Sam

Micrograms
C-64, disk drive

Sequencing Sam contains several reading selections and corresponding sequencing exercises. The student chooses a reading speed skill level (1-5). The student has the opportunity to re-read the selection before questions are presented. The computer keeps track of student errors and requires the child to re-read the selection before proceeding with the sequencing exercises.

Animal Stories I

Micrograms
C-64, disk drive

Animal Stories I contains twelve one-page stories for the remedial reader. The child may control the reading speed and has an opportunity to re-read the story before answering questions designed to build reading skills. Skills are related to literal and interpretive comprehension, sequencing and recognizing the main idea.

Tonk in the Land of Buddy-Bots

Mindscape
C-64, disk drive, colour monitor, joystick (optional)

In this adventure-learning program, students pilot the character, Tonk, through Buddy-Bot land in search of parts of a friend. Students help Tonk win parts by successfully discovering and completing five different learning games. The activities reinforce skills such as visual discrimination, critical thinking, and map reading. Each activity has four different skill levels.

Kids At Work

Scholastic
C-64, disk drive

Students may construct rural and urban scenes by selecting buildings, scenery, animals and people shapes. The pictures may be saved on disk or printed as hardcopy. The program sharpens spatial awareness, encourages creative thinking, and introduces students to computer graphics.

Show Director

Mindscape
C-64, disk drive, joystick (optional)

With **Show Director**, students can sharpen language skills while exercising their imaginations to build theatrical presentations. Shows are created by using a simple word processor to write a script and by combining predefined characters, music, and sound effects to accompany the script. Using a joystick or the keyboard, children may program selected characters.

Bank Street Story Book

Mindscape
C-64. disk drive, graphics printer, joystick

With this program, the student can use the computer to create, print, and read illustrated stories. Pictures may be drawn on the screen using a joystick. A built-in word processor can be used to place words or text anywhere on the screen. the drawings can be animated and coloured with ten colour mixtures. The two-sided disk contains demonstration and tutorial files.

Story Tree

Scholastic
C-64, 1541 drive, printer (optional)

This is a program for writing and reading interactive stories. An interactive story allows the reader to make choices about the way the story unfolds. There are four main activities: reading stories, writing and editing stories, printing stories or working with story disks. Each activity is menu-driven. A comprehensive teacher guide is included with the story disk and the master disk.

Phi Beta Filer

Scarborough Systems
C-64, 1541 drive, printer (optional)

This database program allows children to organize lists and use that information on any topic of interest. It stores, organizes, sorts, displays, tallies, and prints information. A unique quiz-master mode develops games and exams. A second data disk provides ready-to-use forms and quizzes.

Winnie the Pooh: 100 Acre Wood

Sierra On-Line
C-64, disk drive

Winnie the Pooh in the Hundred Acre Wood helps students develop map skills, reading skills and logical thinking skills through an adventure game/reading activity. All the residents of Hundred Acre Wood are waiting for someone to return their missing belongings. The students play diiferent games to find different groups of ten objects which belong to specific characters.

Sum Ducks

Spinnaker
C-64, disk drive

Sum Ducks combines colourful, animated graphics and sound with mathematics to develop arithmetic skills for young children. Jenny and her animal friends play a game by a pool and toss rings around the necks of ducks swimming by. Each duck is marked with a number. Beginners may select addition or subtraction games while an advanced student may select multiplication or factoring processes.

Stickybear Shapes

Weekly Reader Family Software
C-64, disk drive

Students using **Stickybear Shapes** learn to identify five common shapes: circle, square, triangle, rectangle, and diamond. The program presents colourful, animated graphics and lively music in three different learning activities: **Pick It** — identify the missing shape in each picture; **Name It** — students match shapes with names of the shapes; **Find It** — match shapes hidden in the pictures.

Kermit's Electronic Storymaker

Simon & Schuster
C-64, disk drive, joystick

Kermit's Electronic Storymaker invites students to read by showing correspondence between words and pictures (meanings). Students place pictures on the screen with a joystick. The sentences and words are illustrated, animated, and accompanied by music. The program will permit the creation of many different sentence combinations. Stories can be saved to a data disk. A dictionary/guide is included.

Wall Street

Timeworks
C-64, disk drive

This program simulates investment and speculation with stocks, real estate, precious metals, and high-risk ventures. Up to four students can participate in a given simulation.

Challenge Math

Sunburst Communications
C-64, disk drive

Challenge Math is a series of three programs designed to provide drill and practice in the basic arithmetic operations. The programs are **Alien Intruder**, **Digitosaurus** and **Math Mission.**

The Pond

Sunburst Communications
C-64, disk drive

A frog, lost in a pond of lily pads, helps students recognise and describe patterns, generalise from raw data and think logically. A practice option allows the child to develop skills before playing the game.

Survival Math

Sunburst Communications
C-64, disk drive

Survival Math contains four programs which simulate real-life situations. The programs are: **Travel Agent Contest**, **Smart Shopper Marathon**, **Hot Dog Stand** and **Foreman's Assistant.**

The Halley Project

Mindscape
C-64, disk drive

To play this game you need to use your knowledge of the Solar System to locate planets and moons. Comes equipped with a tape detailing your mission before you begin to explore the Solar System.

Stickybear: Reading

Optimum Resource
C-64, disk drive

This program is used to build up vocabulary and reading comprehension skills with three fun activities. It has a Match The Words game, Find The Word, and a Build A Sentence game.

Arith-Magic

Quality Educational Designs
C-64, disk drive

The object of this game is to find four numbers that will reduce to zero in as many moves as are specified. This game gives the user subtraction practice in a game situation.

Typing Tutor III

Kriya Systems
C-64, disk drive

This is a quick and easy to learn typing instruction program that lets you learn at your own pace. This program analyzes the results of each lesson and practice test, then posts your speed. This program also has a game called Letter Invaders which sharpens your speed skills.

Print Master

Unison World
C-64, disk drive

This is a graphics program with over 100 borders and styles to choose from. You can print your own cards, signs, invitations, stationary, banners, and calendars.

LOGO Robot

Scholastic
C-64, disk drive

This is a computer programming language designed especially for kids. By using LOGO-like commands you can make the **LOGO Robot** draw pictures or go through mazes. **LOGO Robot** teaches programming, problem-solving, computer literacy, and art and design skills.

Body Man I

Nanosec
C-64, disk drive

This is a textbook graphics program that explores the unknown and inner workings of the human body. It has fifty multi-color hires screens on multiple disks which makes this a surgical adventuure. You may use a pointer for a specific location to get an explanation while seeing the organ. It has multiple choice quizzes for you to test your knowledge about the human body.

The Music Shop

Broderbund
C-64, disk drive

This program lets you write, edit, play and print original musical compositions. It displays music one page at a time, produces standard sheet music and has all necessary musical features.

Tiger's Tales

Sunburst Communications
C-64, disk drive

This is a reading adventure with a collection of five stories about a cat named Tiger. Written for beginning readers, the reader has to make decisions to maintain the story flow.

Alice in Wonderland

Windham Classics
C-64, disk drive

This is a unique adventure game putting the player in the role of Alice. You take a journey through Wonderland and meet its inhabitants, deciding how to talk to them. The inhabitants can help you if you are kind to them and know what to ask.

Below the Root

Windham Classics
C-64, disk drive

This is a unique adventure game that challenges you to find the secret of 'Green-Sky'. You'll probe through mazes of mysterious tunnels and talk to the inhabitants, who's advice will help.

Delta Drawing

Spinnaker
C-64

Create pictures using single key commands to control the Delta cursor. **Delta Drawing** is similar to LOGO and may be used to draw simple or complex designs. These may be saved on disk or printed.

MacMusic

Passport Designs
C-64, disk drive

This is a piece of musical software that lets the user explore their musical ideas. It has a main menu where you can choose to edit, compose, listen to songs, and so on.

Getting Ready to Read and Add

Sunburst Communications
C-64, disk drive

Getting Ready to Read and Add is a program that contains six computer programs designed to give children practice in discriminating shapes, upper- and lower-case alphabet letters, and numerals. □

Speedy Simons' BASIC

by Phil Kemp

Since the Commodore 64 became popular, several magazine articles have discussed the limitations of the built-in BASIC interpreter. Others have dealt with how to make 'standard' BASIC programs run quickly. Many of BASIC's limitations can be overcome by the use of **Simons' BASIC**, which adds lots of useful features to the language. But how fast do **Simons' BASIC** programs run, and how can we get the best speeds?

First, a general observation. This world provides few free lunches. **Simons' BASIC** appropriates some memory (8K bytes of RAM) otherwise available to us. Also, we have more valid keywords (**EXEC**, **CALL**, **PLACE**, for example). When we run a program, there is extra code to check for the extra keywords (actually, for the 'tokens' representing them). If the new keywords are not found, the standard BASIC ROM code is used. There is some extra processing here, hence any standard BASIC program will run slightly (a percentage point or two) slower when **Simons' BASIC** is active in the computer. So much for 'standard' programs.

But what if we use the new keywords? Here we find a mixed bag of news, mostly good. We have new functions; many statements can be shortened. For example, **A = MOD(X,Y)** can replace the standard **A = X-Y*INT(X/Y)**. To check for one character string in another, **I = PLACE(A$,B$)** replaces at least two lines of standard code. The simple **HRDCPY**, to print a low-resolution screen image, saves even more. So there is plenty of opportunity to write shorter, faster-running programs.

Usually, there is another important benefit — our programs become more readable. Another important means of making readable programs is provided by the so-called 'structured programming' keywords. Using **CALL** and **EXEC** (equivalent to **GOTO** and **GOSUB**) we can write programs that have no references to line numbers. This is mentioned in the manual, but not well demonstrated. From the point of view of making our programs more readable, this is good news; certainly **EXEC READ RECORD** is easier to understand than **GOSUB 500**.

But what about execution speed? In the past, much has been written about **GOTO** and **GOSUB**. We know that, to get fast execution, we must place a frequently-used routine either near the start of the program or a little after the **GOSUB** call. A little experimentation shows that the rules for placing **PROC**s (routines invoked by **EXEC** or **CALL** statements) are similar. It turns out that when we use **EXEC procname** a search is done to find the target **PROC procname**, *always* from the *start* of the program. So, often-used **PROC**s must be near the program start.

. . . there is plenty of opportunity to write shorter, faster-running programs . . .

The consequences of ignoring this rule are severe. When we use **GOSUB 1111**, each line is checked to see if its two-byte line number field contains the hexadecimal representation of the number '1111'. When we use the functionally equivalent **EXEC procname**, no line numbers are checked. Instead, each line is checked to see if it begins with the two-byte token for the keyword **PROC**. When this is found, then the **PROC** name field is checked. We end up checking extra bytes, which takes longer. So, it is much *more* important to place routines correctly in **Simons' BASIC**.

A related issue is the choice of names for **PROC**s. Since they are searched for by name, the process is faster if the names begin with unique first letters. There is a small twist to this. Since names (and, for that matter, **REM** statements) are stored in tokenized form, it follows that the names **READ ONE** and **REED ONE** (for example) begin — in their stored forms — with unique first stored characters!

There are some nice added features for programming loops. We may, for example, have: **LOOP . . . EXIT IF "expression" . . . END LOOP**. Logically, this is attractively 'clean' and readable. But there is a pitfall. When the 'expression' is true, and we wish to exit from the loop, *all* the statements following the **EXIT IF** statement must be checked to see if they contain the two-byte token for **END LOOP**. If there is a lot of code in the loop after the **EXIT IF**, then a fair amount of time may be frittered away.

So what's the bottom line? Do we win or lose? If we take advantage of the extra functions to shorten our programs, and if we use and place our **PROC**s with care, we can have efficient programs in **Simons' BASIC**. If not, if we were simply to replace each **GOTO** with a **CALL**, and each **GOSUB** with an **EXEC**, we would most likely create a slow-running monster. Like most sharp tools, **Simons' BASIC** needs care to get the best results.

This brief note, of course, has just scratched the surface of the topic of **Simons' BASIC** run-speed factors. It is, however, a start. I believe that **Simons' BASIC** is a tool valuable enough to be studied and made the most of. □

ESC G 2

by Adam Herst

It used to be easy being a Commodore computer fanatic. You knew that using **save@** was hazardous to your mental health, although waiting for programs to load provided ample opportunity to attain satori. Nonetheless, a certain camaraderie among users (most likely since no one else understands PETSCII), and a surprising compatibility between machines and peripherals prevailed. Well, the times they are a-changing.

In the last few months, after long delays and predictions of corporate death, Commodore has given life to three totally different incarnations of the personal computer: the Amiga, the PC series and the C-128. Most familiar in style is the C-128, the culmination of Commodore's years of producing eight-bit computers: if you adored your 64 then you'll appreciate your 128. On top of that, most of the programs and peripherals that you already own will work with the C-128. Every day brings some new discovery of its potential, problems and personality. ESC G 2 will keep you abreast of the latest discoveries and act as a clearing house for any and all C-128-related information.

From the ashes

The rumours of Commodore's death have been greatly exaggerated. After a poor start, 1985 finished in grand style for the company. To some degree of corporate astonishment, the supply of C-128s can barely meet demand. Nearly 500 thousand C-128s were sold by the end of the year. If the C-128 follows in the C-64's venerable footsteps, 1986 should be even better. And let's not forget the old work horse: with a million units sold in 1985, the 'obsolete toy' shows no signs of fading away.

System status

The C-128 is a great computer to unpack. Have you ever seen such a nice carton? The benifits of higher intelligence don't stop at the packaging. Open the box and other delights appear. Look at that — a thick user's guide (hardly complete, but chock full of information). And Martha, they gave us two disks as well.

On one of those disks are the files necessary to run the CP/M operating system on the C-128. In the manual are five sections devoted to CP/M. Booting the system is a simple matter of inserting the disk and turning on the computer. Using the system is a simple matter of reading the manual and tearing your hair out by the roots.

You will quickly find that the information contained in the CP/M sections of the user's guide do not pertain directly to the C-128. It is a good elementary introduction to CP/M, but it does not detail the quirks and capabilities of the system on the 128. Your best source of machine specific information is the help files contained on the systems disk. (Look in last issue for detailed information on how to print a hardcopy of these files.)

Contained in the *C-128 User's Guide* is an offer to purchase a CP/M manual and two utilities disks from DRI. Since he who hesitates is lost, here is some information to prod you along.

The manual you will receive contains the *User's Guide*, the *Programmer's Guide* and the *System Guide*, bound together in a 700-plus page book. The *User's Guide* details the operation and commands for the various CP/M Plus utilities. This was the source of most of the information presented in the *C-128 User's Guide*, complete with the identical diagrams.

The *Programmer's Guide* and *System Guide* contain information on the components of the operating system, how they are organized in memory and how they function with respect to each other. Included are example Z80 assembly language programs. This is advanced stuff, and definitely not for the beginner.

With the manual, you will receive an additional two disks. These contain the system source code, as well as additional utilites. The utilities provide a complete Z80 assembly language programming environment, and are a must if you have assembler on your mind. These utilities will also be useful if you plan on tailoring to the 128 some of the many public domain programs available.

If none of this convinces you to respond to the DRI offer, consider this final point. A source at Commodore has indicated that future upgrades to the CP/M system will be sent free of charge only to registered users. "How do you become a registered user?" you ask. "Sending in the CP/M registration card" is the answer.

Upgrade update

The value of becoming a registered user appreciates quickly. The CP/M system that came with your 128 has a marked deficiency. No support was included for the expansion port or the user port. Since these are the ports on your computer to which modems and non-standard printers and disk drives are connected, this has meant that using these peripherals from within CP/M mode was impossible.

Since the original release, though, an upgraded system has been developed that provides user and expansion port support, along with a number of other enhancements. This upgrade, dated December 6, has not been officially released by Commodore, and new C-128s are still being packaged with the old CP/M system. A source at Commodore has indicated that, while no date has been set, the official release of the upgraded system will be sent free of charge to all registered users.

In the meantime, it is still possible to upgrade your system with the unofficial version of the update. Von Ertwein, a Commodore engineer (type **sys 32800,123,45,6** in 128 mode to find out more about him), has placed **newsys.com** in the public domain. This is not a new **cpm+.sys** file, but will modify your existing one.

An end to head banging

The method behind this circuitous route of modifying your system is worth mentioning, since it touches on an important issue in the computer industry. As you acquire commercial CP/M programs, you will notice that the copyrights are not enforced by asinine, destructive, disk-based protection schemes. Copyright of CP/M programs tend to be enforced by lengthy, verbose and convoluted licensing agreements. By breaking the seal or wrapping, you become party to a 'shrink-wrapped' licensing agreement.

When you removed your system disk from its envelope you broke just such a seal. Distributing any of the programs on the disk in any form is forbidden and, if DRI had its way, punishable by death or worse. Consequently, modified files cannot be distributed while the files that do the modifying can. The files necessary to upgrade your system are currently available on TPUG CP/M disk (Z)AA.

Whatever happened to...

Expandable to 512K? Not yet but soon. Prototype expansion modules have been floating around, and a release date is fast approaching (although no definite one has been given). *TPUG Magazine* was given a brief preview courtesy of Commodore Canada — just long enough to start us drooling.

In CP/M mode, the system is preconfigured to use the extra memory as a RAM disk designated drive M:. If you thought the 1571, was fast wait till you try the RAM disk. Since the expansion port is not supported in CP/M mode on the original system, you must have the upgraded system for it to work.

C-128 mode allows access to the extra memory via the BASIC 7.0 commands **fetch**, **stash** and **swap**. No RAM disk drivers will be included with the module, but third party manufacturers are already hard at work. More news on this as it develops.

Perhaps the best surprise is the ability to address the extra memory from 64 mode. A bit of bit-toggling is all that is needed (see Tim Grantham's article in this issue.) Even better news for those 64 owners is the fact that a C-64 can use this expansion cartridge as well. Imagine, a 512K C-64.

As with most new products, a few bugs need extermination. An incompatible resistor in the first five thousand production units will not let the expansion module work on a C-64, although it *will* work in the C-128's 64 mode. This is being corrected on subsequent units. More disturbing is the news that the expansion module will not work with some of the early model C-128's. Affected units have serial numbers CA1044001 to CA1046880 and CA1127321 to CA1127680. Commodore has not revealed what its policy on this matter will be, but the problem will not be ignored.

Just received

Don't junk your IEEE and parallel peripherals just yet. The necessary interface can be had from Rich-Hill Telecom International. A beta-test model has been installed at the TPUG office, and has succesfuly linked an 8050, 4040 and Mannesman Tally printer to the C-128 system. More news on this product as we put it through its paces.

That wraps up this month's column save for a single postcript. Honourable mention will be given for the first correct interpretation of this column's title. If its worth $0.34 to see your name in print take a chance: I'll enjoy hearing from you. □

Marketplace

I adore my C-576!

by Tim Grantham

It all began with a report from Jim Strasma saying that an unnamed source at Commodore had told him that the 1750 RAM expansion unit for the C-128 would also work on the C-64. I left a plaintive message to CBM on CompuServe, asking for confirmation, which I duly received, but details were tantalizingly sketchy. Fortunately, Dealer Support at CBM Canada kindly lent me a copy of the user manual, though they expressed some skepticism about using the RAM expansion with the C-64.

Indeed, the manual makes no mention of this capability. However, after poring over the section describing the RCU (RAM Control Unit) chip, it seemed to me that there was no obvious reason why it shouldn't work on the C-64, barring some incompatibility with the C-64's power supply. The expansion port on the two computers is very similar, and the RAM expansion unit maps onto precisely the same area of memory, ($DF00, one of two areas reserved on the C-64 for expansion, the other being $DE00, where the ill-fated CP/M option was accessed). I wrote a short BASIC program, adapted from an example program in the manual, to test my hypothesis.

When I relayed my theories to CBM Canada, they were intrigued enough to call the engineers at CBM's head office in West Chester, Pennsylvania. They stated unequivocally that the unit would work in 64 mode on the 128, although it would have to be controlled with ML (machine language). Furthermore, they stated that it would also work on the C-64 provided one pull-up resistor was removed from the expansion unit. Finally, they said that, while they could make no guarantees about the first 5000 units, all subsequent units would be able to work on both the C-64 and C-128 without modification.

What follows are the two short BASIC programs I wrote and ran on a C-128 in 64 mode to confirm the viability of the unit as a C-64 accessory.

```
10 re=57088
15 for i=re to re+10:poke i
   ,0:next i
20 pokere+8,3:pokere+7,232
30 poke re+3,peek(648)
40 poke re+1,16:poke re+1,p
   eek(re+1) or 128
```

If you are familiar with the way the SID chip works, you'll have no trouble understanding the RCU on the RAM expansion. In order to produce a sound on the SID, we set the pitch, envelope, and waveform by writing the appropriate values into the corresponding registers. When we want to actually trigger the note, we set the gate bit in the control register for the voice.

The same approach is used to program the RCU. (See accompanying diagram.) Line 15 above, initializes the RCU by clearing all but the read-only status register. Line 20 sets the length of the block of memory to be transferred, in this case 1000 bytes. Line 30 sets the start address of the block of memory to be transferred: in this example, it is the start of screen memory. Line 40 sets two bits in the control register: the fourth bit, which disables the feature that allows the RCU to be triggered via the MMU (Memory Management Unit) on the C-128; and the seventh bit, which is the execute bit. As soon as this bit is set, the RCU will halt the CPU (Central Processing Unit), so that the RCU can directly access the memory in the computer. In the above example, it transfers or 'stashes' 1000 bytes of memory, starting at the screen base address (normally 1024) in the computer, to the RAM expansion unit, starting at address 0, bank 0. (There are 7 banks of 64K in the 1750 RAM.)

If, after loading this program, we then list and run it, the listing will be stored with the screen memory contents to the RAM expansion. Pressing the **CLR** key will clear screen memory. Now we can load and run the following program:

```
10 re=57088
12 for x=1to25
13 for i=re to re+10:pokei,
   0:nexti
20 pokere+8,3:pokere+7,232
30 pokere+3,peek(648)
40 pokere+1,peek(re+1)or17:
   pokere+1,peek(re+1)or128
45 fort=1to50:nextt
50 print"<clr>":printx
55 fort=1to50:nextt
60 nextx
```

After re-initializing the RCU, line 20 sets the transfer block length to 1000 bytes again. Line 30 sets the starting location of the transfer to the beginning of screen memory. So far, everything is the same as the first program. Line 40, however, contains the crucial difference. **OR**ing the previous contents with 17 sets bit four (preserving the MMU disable), and bit zero, defining the type of transfer to be *from* the RAM unit *to* the computer. Bit seven, the execute bit, is then set and the transfer, or 'fetch' takes place. Line 45 waits for a moment before line 50 clears the screen, and prints a counter. After another brief wait, the program fetches the previous screen memory contents from the RAM unit again. This takes place 25 times in all.

What we see, therefore, is the screen rapidly flashing between the listing of the previous program, and the blank screen containing the counter.

The RCU has a couple of other nice features. Normally, the unit's address registers will contain the address of the last byte plus one of the block of memory transferred. With the 'autoload' configuration, the address registers will be reset to the address of the *first* byte transferred. This is very useful if we want to perform several operations on the same part of memory, restashing the memory after each operation. It works just as well with fetches. In the second program listed above, for example, we would not have had to rewrite the addresses every time we fetched the screen we had stashed in the first program.

The RCU also has a Verify option that compares what is in the RAM unit with what is in the computer's memory. If an error is detected, an interrupt is generated, and the RCU hands back control to the CPU. The address registers will have been frozen at the byte where the error was detected.

The RAM unit is very fast, stashing and fetching at one million bytes per second! A swap cuts this speed in half.

It is doubtful that, at this stage of the game, software developers will adapt or create programs that will take advantage of the RAM unit for the C-64. But ML hackers could have a lot of fun with it. Just think, you could have a 552K buffer on your favourite terminal program! □

Amiga Screen Magic

by Chris Johnson

You can do far more with the Amiga screen than you are told in the manuals that come with it. For example, enter **ABasiC** or a window. If you press the 'cursor up' key, nothing happens. Now hold down **CTRL** and the left-hand **ALT** key; press **M**. The cursor moves up.

Keep doing this until the cursor reaches the top of the screen — but don't stop now! Keep going, and the entire screen will scroll down. This is just one of the screen commands that the Amiga supports. They work in **ABasiC**, but not in AmigaBasic, which is a much more powerful language, and has its own commands to do most things.

The following lines set up screen-control strings, using the abbreviations in the AmigaDOS Manual. Most of these codes are preceded by an escape character or Control Sequence Introducer — **CHR$(155)**.

```
100 rem make cursor, screen
    management strings
110 csi$=chr$(155): rem ctr
    l sequence introducer
120 ich$=csi$+"@": rem inse
    rt character
130 cuu$=csi$+"a": rem up
140 cud$=csi$+"b": rem down
150 cuf$=csi$+"c": rem forw
    ard (right)
160 cub$=csi$+"d": rem back
    ward (left)
170 cnl$=csi$+"e": rem csr
    to start of next line
180 cpl$=csi$+"f": rem csr
    to start of prev line
190 home$=csi$+"h": rem csr
    to top left of screen
200 ed$=csi$+"j": rem clear
    screen to bottom
210 el$=csi$+"k": rem clear
    to end of line
220 il$=csi$+"l": rem inser
    t blank line above csr
230 dl$=csi$+"m": rem delet
    e current line
240 dch$=csi$+"p": rem dele
    te char under cursor
250 su$=csi$+"s": rem scrol
    l entire screen up
260 sd$=csi$+"t": rem scrol
    l entire screen down
270 cls$=chr$(12): rem clea
    r screen
```

The following section dimensions an array for later use, then prints the words 'Screen things' in reverse video in the centre of the screen. It works whether the screen is in 40 or 80 column mode — or even if you have defined a smaller window. (By changing line 300 to **SCREEN 0,2,0**, the display can be changed to 40 column.)

Line 320 finds the width and height of the current screen in pixels. Since there are eight pixels to each printing line, and we want to find the middle line of the screen, we divide the number of pixels by 16. The column on which to start printing (half the difference between the width of the screen in characters and the length of the string to be printed) is set in line 340.

Line 350 concatenates the screen-positioning command, (which has the same effect as a **PRINT AT** command) with the message to be printed. The syntax is **CSI + "y;xH"**, where **y** is the row and **x** the column.

```
280 rem centre title
285 letter%=50: dim letter$
    (letter%)
290 print cls$;
300 screen 1,2,0: rem use 0
    ,2,0 for 40 columns
310 titl$=" screen things "
320 ask window wide%, high%
330 row%=int(high%/16): rem
    centre vertically
340 column%=(int(wide%/8)-l
    en(titl$))/2
350 centr$=csi$+str$(row%)+
    ";"+str$(column%)+"h"+t
    itl$
360 print inverse(1) centr$
370 sleep 750000: rem 3/4 s
```

Now we move the message up and down on the screen by using the **SU** and **SD** sequences.

```
380 rem move title up, down
390 print home$
400 for i=1 to row%-1: prin
    t su$;: next
410 for i=1 to (row%-1)*2:
    print sd$;: next
420 for i=1 to row%-1: prin
    t su$: next
430 sleep 250000: rem 1/4 s
```

Next, the **ICH** and **DCH** ('insert character' and 'delete character') sequences are used to move the message to the left and right across the screen.

```
440 rem title left, right
450 print csi$ str$(row%)+"
    ;1h";: rem position csr
460 for i=1 to column%-1: p
    rint ich$;: next
470 for i=1 to (column%-1)*
    2: print dch$;: next
480 for i=1 to column%-1: p
    rint ich$;: next
490 sleep 500000: rem 1/2 s
```

By inserting and deleting a line on the screen, the remainder of the screen can be scrolled down and up respectively.

```
500 rem scroll part of scrn
510 print cls$
515 hbar$=string$(wide%/8 -
    1,"=")
520 print "partial scrollin
    g of the screen": print
530 print hbar$: print
550 for i=1 to letter%: let
    ter$(i)=str$(i)+"  "+st
    ring$(wide%/24,i+64): n
    ext
560 for i=letter% to 1 step
    -1
570 print at (wide%/24,6) l
    etter$(i);: sleep 10000
    : print at (0,6) il$;:
    next
580 for i=1 to 25: print at
    (0,6) il$: next
590 print at (0,6) ed$
600 for i=1 to letter%
610 print at (0,6) dl$: pri
    nt at (wide%/24,24) let
    ter$(i);
620 sleep 10000: next
630 for i=1 to 20: print at
    (0,5) dl$: next
```

CUP (cursor position) is not the only one of these commands that can take a parameter. Inserting a number **n** between the CSI and the command will cause that command to be repeated **n** times.

```
640 rem adding parameters
645 print at (0,7) "press a
    ny key to continue": ge
    tkey a$
650 scnclr: for i=1 to 25:
    print letter$(i): next:
    sleep 500000
660 print at (0,0) csi$; st
    r$(10);"l":sleep 500000
670 print at (0,24) csi$; s
    tr$(10); "b"
```

□

Personal computers and the handicapped

by Malcolm J. MacArthur

Today's personal computer technology can provide great benefits to the handicapped individual. As prices continue to drop, economic considerations become less and less prohibitive. The Commodore 64 and the VIC 20 are prime examples. In this article I will describe just a few of their many possible uses, including applications both for environmental control of a handicapped person's immediate surroundings and for personal productivity.

Personal computers can be used by the handicapped in a variety of ways and for a number of purposes. Some ailments can leave a person paralysed but capable of speech. For such people, voice controlled computer systems are a natural choice. Other diseases such as stroke, amytrophic lateral sclerosis (Lou Gehrig's Disease) and cerebral palsy can leave a person physically helpless and speechless, while retaining normal mental functioning. If even a single muscle remains functional, it may be possible for these people to operate a contact closure. Finally, for victims of stroke and multiple sclerosis, and for spastic and brain-damaged individuals, rehabilitation of damaged muscles can be facilitated through the use of video games.

To illustrate the principles involved, I will describe several programs written to demonstrate the use of voice-controlled aids for a person who can speak but lacks the motor control to operate even simple appliances. The programs have been submitted to the TPUG library and are also available from me. The circuit diagram for the control circuit is included with this article. Components are readily available from Radio Shack or other sources. The examples I give here by no means exhaust the potential of this approach: a great many other possibilities have been and will be pursued.

The voice control for these applications is made possible through the use of the Lis'ner 1000. This unit was the subject of an article by Steve Ciarcia in the November 1984 issue of *Byte* magazine, and is available from:

The MICRO MINT
561 Willow Avenue
Cedarhurst, NY 11516

The Lis'ner is a small printed circuit board that connects to the expansion port of the Commodore 64. (There is also a version for the Apple II). The cost of the Lis'ner is $150.00 (US) assembled, or $119.00 in kit form. For the intrepid builder, the *BYTE* article includes the circuit diagram and enough information to assemble the Lis'ner 1000 from scratch.

The software for the C-64 — included with the purchase of the Lis'ner — normalizes the length of the speech segment and generates a 128-byte representation of the spoken word or phrase. This representation or template is compared to the templates created during a training session. Recognition is speaker-dependent; a utility is included to train the recognizer to a particular voice.

The integration of voice recognition into programs has been made simple by the designer of the Lis'ner 1000 software. The program allows templates to be generated for up to 64 words or short phrases at a time. When entering the words, two parts are required. You must first enter the actual word that will form the system's vocabulary. Some care is required in choosing words, since similar-sounding words such as 'accept' and 'except' are likely to cause problems. You then supply for each word a corresponding command string of up to sixteen characters. When recognition takes place, the command string characters are inserted into the keyboard input stream, just as if they had been typed on the keyboard.

The BASIC **get** and **input** statements work normally. The technique of fetching a character directly from the keyboard scan locations (197 and 204 on the C-64) does not work with the Lis'ner 1000 software. The time required to make a recognition decision varies with the number of words, and can take up to about 3 seconds if 64 words are active. Experience indicates that better accuracy and decision-making times are achieved with a vocabulary of about 20 words or less. With menu-oriented software, 20 words is more than adequate.

With the voice-recognition system as the input device, it is possible to provide a flexible system that will enable people confined to a bed or wheelchair to control items in their immediate environment. These items include lights, radio, television and telephone, and could include many others in particular situations. It is also desirable to provide normal computer functions: word processing, data management, entertainment and so on.

Implemented applications include environmental control, telephone control and simple word processing, as well as voice-recognition tutorial and practice programs. I have also submitted an environmental control and communications program for the unexpanded VIC 20 to the TPUG library. These programs are described briefly below. Except for a short machine language routine that was needed to control telephone dialling, all are written in BASIC.

Telephone

The **Telephone** program displays a list of names and telephone numbers on the screen. The list is displayed eight numbers at a time, and a selection can be made by speaking a digit from 1 to 8. The program displays the item selected and asks for confirmation of your choice. If you confirm your selection the speaker-phone will be dialled. Choosing a blank entry will allow you to compose a number.

As with all the programs in the set, the tenth and last menu entry on each page selects the next menu screen. The ninth menu entry allows exit from the **Telephone** program. Selecting this item changes the screen display to a menu listing all the programs that can be called. Again a digit is spoken to select the next program.

Included in the **Telephone** program — and all the others — is the ability to answer an incoming call using the word *Answer*. Once a call is in progress, the voice recognizer can get very confused. To combat this problem, a simple solution was adopted. The program waits for the phrase *End of call* to be spoken twice within five seconds. This will terminate the call, either incoming or outgoing. Note that the telephone program automatically loads the machine language program **Dial.ml** when it is started.

Control

The **Control** program allows control of relays that are connected to standard AC outlets. The relays used are inexpensive (five dollars) and will handle up to 3 amps, adequate for most applications. The program displays a menu cataloguing the items to be controlled. An item is selected by speaking the digit associated with it. Once a selection is made the computer

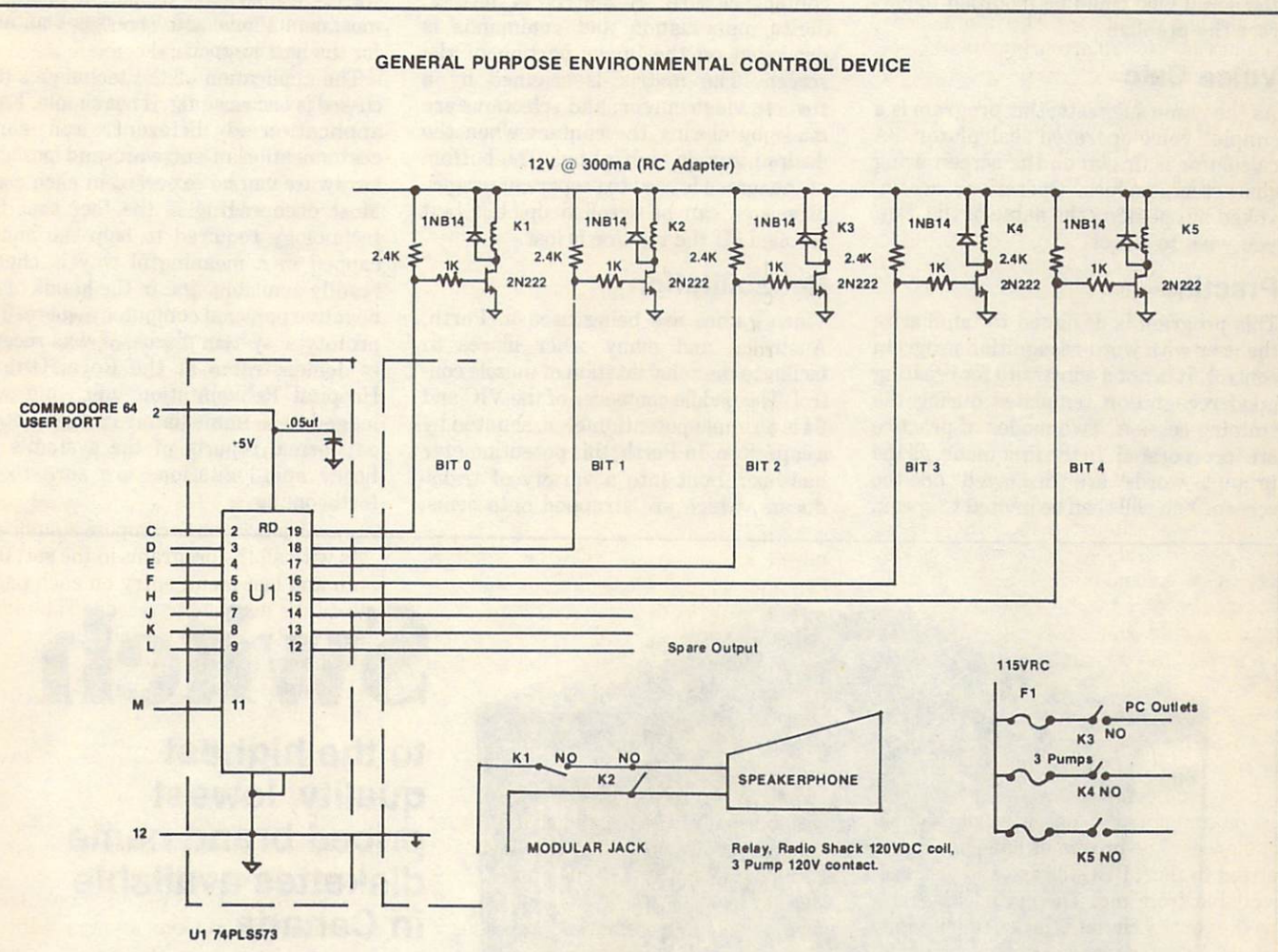
describes the current status of the selected item, and invites you to speak a digit to change the status or to make another choice.

Typer

This program is an adaptation of a freeware program by Don Peterson of Tempe, Arizona. Mr. Peterson's program (**Talker Typer**, also submitted to the TPUG library) incorporates a 1300-word lexicon, and is designed to allow text to be prepared on the screen, then printed or spoken. The spoken output is optional, and requires that the **Software Automatic Mouth (SAM)** program be loaded. The control mechanism for **Talker Typer** is a contact closure or the joystick fire button.

Renamed **Typer**, this program has been substantially rewritten for use with voice control. A 10 by 10 matrix containing characters, word list selections and commands is displayed on the screen. Items are chosen from the matrix by speaking the coordinates of the row and column. Text is assembled on the screen by spelling words of 5 characters or less, or selecting from the screen words longer than 5 characters. Word lists are included for

Continued overleaf...



Components

The interface is based on the use of an 8-bit TTL latch to store the output of the C-64 output register available at the user port. This latch is powered by the computer's 5-volt power supply, and should be located close to the computer. A small piece of vector board can be mounted on the edge connector that plugs into the user port. The 24-pin connector required is not readily available; however, Radio Shack has a 44-pin connector (#276-1551) that can be cut to fit. Connect the output from the latch to the main interface assembly using a piece of ribbon cable or other multiconductor cable. The relays (K3, K4, K5) that control the AC outlets should be physically separated from the rest of the circuit to provide good isolation of the AC connections. The prototype unit uses standard AC outlets in standard steel boxes, powered by a normal 3-prong cord.

Construction

If 5 VDC coil relays (available at some Radio Shack outlets) are used, then substitute a 1K resistor for the 2.4K in the relay driver circuit, and substitute a 6 VDC AC adapter (300 ma) for the 12 VDC adapter specified. The latch can be replaced by any TTL unit that will sink 5ma in the logic O state (CMOS not recommended). The latch is not required for the VIC 20 application: simply connect the relay drivers directly to the user port. The speakerphone connections are made by inserting the relay contacts for K1 and K2 into the two wires coming from the modular plug to the speakerphone. The speakerphone is left in the off-hook position, and answering and dialling are done by K1 and K2. Radio Shack speakerphone #43-278 at about 40 dollars, or #43-277A at about 90 dollars, will be satisfactory.

the letters of the alphabet and for cities, states (provinces), dates and countries.

After being assembled, text from the screen can be printed. The prototype uses a Cardco G-Wiz printer interface, which works well, although there is a problem when the program is used with a 1525 printer. This problem can be solved by turning the printer off when not in use. Alternatively, the relay control subroutine, which uses registers shared with the serial bus, could be modified to correct the problem.

Voice Calc

As the name suggests, this program is a simple voice-operated calculator. A calculator is drawn on the screen using character graphics. Operations are invoked by speaking the name of the 'key' you wish to select.

Practice

This program is designed to familiarize the user with word-recognition program control. It is not a substitute for creating good recognition templates during the training session. Two modes of practice are incorporated. In the first mode, all the prompt words are displayed on the screen. You will then be invited to speak. The word recognized by the computer will briefly change colour. The second mode of the **Practice** program will display a random sequence of 25 prompt words, and invite you to speak the words as they are presented. Performance is indicated by a score out of 25.

Write

Write is a 90-line BASIC program for the unexpanded VIC 20, operated by a single contact closure. A matrix of letters, digits, punctuation and commands is displayed on the upper portion of the screen. The matrix is scanned by a reverse video cursor, and selections are made by closing the contact when the desired item is highlighted. The bottom of the screen is used to prepare messages. Messages can be scrolled up, but text scrolled off the top line is lost.

Rehabilitation

Video games are being used in Perth, Australia, and many other places to facilitate the rehabilitation of muscle control. The paddle controller of the VIC and 64 is a simple potentiometer, shunted by a capacitor. In Perth, this potentiometer has been built into a variety of transducers, which are strapped onto arms, legs, wrists, hips, knuckles and even jaws.

The Perth hospitals use custom-designed computers and custom video games. Other applications in this country use standard personal computers. The use of personal computers with commercial software is desirable, but presents two problems. First, the transducer must provide for adjustments that will translate a patient's restricted range of motion to that expected by the commercial software. Second, the execution speed of most commercial software is not suitable for the handicapped.

The application of the techniques discussed is encouraging, if not simple. Each application is different, and some customization of software and possibly hardware can be expected in each case. Most encouraging is the fact that the technology required to help the handicapped in a meaningful way is cheap, readily available, and in the hands of innovative personal computer owners. The prototype system discussed was recently demonstrated at the Royal Ottawa Hospital Rehabilitation unit, and was judged to be immediately usable. Detailed, formal reports of the system's efficacy and limitations are sure to be forthcoming. □

Doublesiding paper: the true facts

by Reggie Ramloose

Reprinted from the newsletter of the Nashville Commodore Users Group.

The good news is that, due to the rising sales of computers, the price of diskettes is falling. The bad news is that the near future is likely to bring higher prices for paper supplies. However, if you still use the old No. 2 bonded lead word processor, I have some useful information: you can double-side your notebook paper!

Although paper manufactures only certify the 'front side' of a piece of paper, it is a little-known fact that the back side is capable of holding the same amount of written information. You, too, can use the back side of your paper, but before you do, I must inform you that there are mixed feelings about doing so.

Paper manufacturers are quick to warn that writing on the back side of the sheet can cause problems for the data on both sides of the paper: they will not honour warranties if the back side has been used. The biggest problem is 'write-through'. This occurs if the wrong pencil or pen is used, or if too such pressure is applied during the writing process. There is a problem with standardization, also. Some users turn the paper upside-down when writing on the back, while others leave it right side up. (If the paper is held upside-down during the reading process, it will be in the wrong orientation to the 'head', and a read error will occur). Also, many public school teachers, publishers, and governmental offices frown upon the practice of using the back of the paper, and will not accept material if both sides of the paper have been used.

Students and other paper users, however, claim that they have used the backs of many thousands of pages with little or no loss of data. A few go so far as to claim that there is a conspiracy among paper manufacturers, merchandisers, and public officials to discourage the use of the backs.

You must yourself decide if you will use the backside of your paper. But if you decide to give it a go, here's how:

Look at a sheet of paper. You can tell the front by several methods. First, the row of alignment holes goes toward the left. Secondly, the watermark (if present) can be read if you hold the paper up to a light. To double-side a sheet, turn it over. Examine the back, looking especially for obvious flaws and defects. If the overall appearance is satisfactory, then with a ruler and pen mark locations on the right side. (You should try this initially with paper conataining no valuable data). Use a regular hole-punch to make the holes. (You can purchase one at a department store, but I don't recommend that you tell them what you intend to use if for).

Your paper is now double-sided. Good luck, if you decide to try it. □

Library Additions

TPUG's library of public domain software grows month by month. Hundreds of disks containing thousands of programs are available to TPUG members at the nominal cost of ten dollars per disk. Considering that each disk is packed with good programs, at today's software prices, this is a fantastic value.

In order for the library to keep growing, our librarians need a constant supply of new programs. If you have written a program or a collection of programs that you think might be an asset to the library, please send it to: TPUG Program Library, 101 Duncan Mill Road, Suite G7, Don Mills, Ontario M3B 1Z3, Canada. If your contribution is accepted, you will be sent the library disk of your choice. If, for some reason, your contribution is not needed, your original disk will be returned to you.

This month we present an abbreviated Library Additions column. Next issue's instalment will be correspondingly expanded, and should bring you up to date on all recent TPUG disks.

C-128 Disk (Z)AA, (Z)AB

Presented by Adam Herst

March is the month for CP/M on the 128! This month we've released our first official CP/M disks: (Z)AA, the upgrade disk, and (Z)AB, the telecommunications utility disk.

(Z)AA is called the upgrade disk because it contains the files necessary for you to upgrade your **CPM+.SYS** systems file. Largely the work of CBM engineer Von Ertwein, these programs were placed in the public domain for distribution. The new systems file is called, would you believe, **NEWSYS.COM**. This is not a new **CPM+.SYS** file, but will upgrade your **CPM+.SYS** file.

The procedure you must follow is well documented in **C128.DOC**. Since you already have **NEWSYS.COM** on a CP/M disk, you can skip the first few steps. Among other modifications, your new CP/M system will support the RS232 port, allowing communications via modem.

Also on this disk is **CONF.COM** and **CONF.DOC**. While not system upgrades, they allow you to configure your system after you've booted up. Useful things such as setting the colours, poking memory and shutting off the 40-column screen to increase system speed are now possible.

C1571.COM is a disk utility that does one straightforward thing: it shuts off write verify on the 1571. Consequently, write speed is doubled — at the risk of grave consequences.

Finally, **SWP.COM** is included. Though not a system update, it is a very popular CP/M file copy utility. It is menu driven and very effective.

Now that your system supports the RS232 port, (Z)AB contains the files you will need to successfully download all that public domain software. **IMP-C128.COM** is a very good modem program. It supports both XModem and buffer upload and download at 300 and 1200 bits per second. There are many other options too numerous to list here. Very good documentation is contained in **IMP.DOC**.

Many of the programs you will download are contained in **.LBR** files, in which the many files required by a program are merged and crunched into one file for easy and quicker transfer. **LU310.COM** will extract files from a **.LBR** file. **LDIR22** will give you a list of the files contained in a **.LBR** file. Finally **TYPL35.COM** will list the contents of a file before it has been extracted from the **.LBR** file. Relevant documentation is contained in **LU310.UPD, LDIR22.MSG** and **TYPL35.DOC** respectively.

Another space-saving utility is **SQ.COM** (the **SQ** stands for 'squeeze'). Squeezed files are usually designated by a filename of **.xQx**. **USQ20.COM** will unsqueeze a file for you, while **SQ17.COM** will squeeze it. Both programs are documented in **SQUEEZ.DOC**.

I would recommend obtaining the files on this disk if you intend to purchase other TPUG CP/M disks. To make the best use of the limited space on a single-sided disk, many of the programs will be squeezed and turned into **.LBR** files.

Finally, a word on the disk documentation. As CP/M lacks a list command, a **list-me** file will not appear on the CP/M disks. In its place is a **type.me** file. To view this file, put the disk in your drive and type **TYPE TYPE.ME** at the CP/M systems prompt. Good luck getting used to your new system and remember to donate any public domain programs you may have collected or written. □

```
zaa/type me  : newsys   com
c128     doc : conf     com
conf     hlp : c1571    com
swp      com

zab/type me  : imp      doc
imp-c128 com : lu310    com
lu310    upd : ldir22   com
ldir22   msg : typl35   com
typl35   doc : sq17     com
squeez   doc : usq20    com
```

Software order form

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STREET ADDRESS _____

CITY/TOWN/P.O. _____

PROV/STATE _____ POSTAL/ZIP CODE _____

TELEPHONE _____ MEMBERSHIP NO. _____

TORONTO PET USERS GROUP, 101 Duncan Mill Road, Suite G7, Don Mills, Ontario M3B 1Z3 416-445-4524

disks

To order club disks by mail, send $10.00 for each 4040/2031/1540/1541 disk (4040 format), discount price 5-10 $9.00 each, 11 or more $8.00 each; and $12.00 for each 8050/8250 disk (8050 format). We do honour purchase orders from school boards.

These disks are for use with a _____ computer and a _____ disk drive.

Please send me the following:

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Total $ _____ .00

tapes

To order VIC 20 or Commodore 64 library tapes, send $6.00 for each tape.
To order PET/CBM or Commodore Educational Software, send $10.00 for each tape.

These tapes are for use with a _____ computer and a datasette.

If for a PET computer, what model - _____ - BASIC - 1.0( ); 2.0( ); 4.0( )?

3 Letter/No. Code	Description	Price

Total $ _____ .00

The prices indicated include postage and handling as well as Ontario Provincial Sales Tax (if applicable)

☐ Cheque/money order enclosed (payable to TPUG)

☐Visa/Mastercard # _____

Signature _____

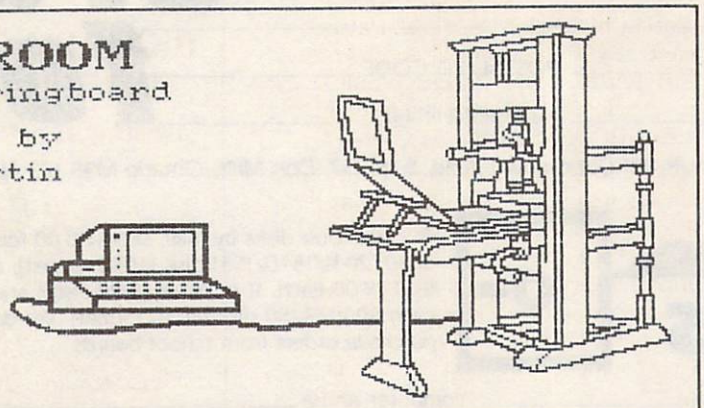
Expiry date _____

Reviews

NEWSROOM

from Springboard

a review by
Mike Martin



First released for the Apple Computer, **Newsroom** is now available for the Commodore 64/128 and IBM computers. This most interesting combination of program modules must have been a three-bottle Aspirin project for the programmer. It is somewhat complicated, and requires a great deal of disk swapping, but it works. The results are worth it.

As a former television journalist, I was told by both coworkers and management that I would be most successful if I wrote in a style that could be easily understood by a 12 year old. This program is written for that age group, but contains information that will interest adults as well. This is a *theme* package that gives both insight into the operations of a newspaper and the tools to produce one.

While the program is complicated, lavish use of icons makes it manageable. After half an hour with the program, you won't need to refer to the manual again. All of the features are well organized and easy to grasp. Each operation is departmentalized, so that the production of a newsletter follows a flow through the various departments of a newspaper.

The opening panel offers the choice of Photo Lab, Press, Wire Service, Banner, Copy Desk or Layout. You start by entering the Photo Lab, and accessing a library of 600 pieces of 'clip' art. These cuts are combined into 109 panels on the disk. An additional disk is available with 600 more cuts. The included disk seems to be mostly for kids with cartoon-style drawings. The second disk is oriented towards adults.

A panel usually contains five or six drawings, any one of which can be selected by moving the Hand Icon onto the drawing, then hitting the fire button on the joystick or KoalaPad. The program flips you back to the workspace, and displays the drawing and hand. The drawing may be dragged into position and dropped anywhere desired. The hand will continue to drag the drawing over the page, and may drop it into as many additional places as desired.

The composite can be changed using a powerful drawing program with all the usual features of a good art program, except colour. Various brush widths, zoom, flip, and multiple fill patterns are provided. The Zoom feature works better than on most other similar packages, as you don't need to set it to erase or draw. If you start on a white block, and press the fire button, every block you pass over turns black. If you start on a black block, every block you pass over turns white. It is easy to draw without accidentally reversing blocks that you didn't want to change. The drawings may not be enlarged or reduced in size. Text may be added as captions in two sizes and three styles. The drawing is then cropped to size and stored as a photo file on your data disk.

In the Copy Desk area, the photo file is recalled, then placed in one of the five to ten panels used to make up a page. The copy desk is a simple but effective text editor, used to write the articles and fit them around the photos. Unlike **The Printshop**, you can see and work with the placement of text and graphics. The individual panels are saved to disk, organized by the Layout Room, and recalled in the Press Room for printing.

The program supports 34 printers and 7 interfaces. Text and photos may be transferred by modem to other **Newsrooms**, even between different computer brands. The program comes in a sturdy plastic library case for storage. Extensive information is included on operating a newspaper, interview techniques, and standard proofreading notation.

The resultant program is excellent, but there are limitations. I tried about 15 different combinations of printers and interfaces but, in each case, the printed version was vertically compacted in relation to the screen version. While it is possible to exercise more control over the placement of art cuts and text than with **The Printshop**, you are still limited to certain formats for your newsletter.

More than one art cut may be used on each page, but they must be placed within the boxes that divide each page. A standard page contains a banner, or header, at the top of the page, and two columns of 3 blocks each. You edit and save the newsletter 1/8 of a page at a time. You could use up to 50 different art cuts on a page if you could fit them all in. However, composing a page on **Newsroom** would take two or three hours — considerably more than the three or four minutes necessary to produce a page with **The Printshop**. The choice of typefaces is limited and, while of good quality, do not compare to a standard printout or near letter quality printout from your printer. The printout is single pass, single density, and will leave a noticeable dot pattern if you have an old ribbon.

As in all 'write-downs' from other computer formats, there are sacrifices. The instruction manual is written for all three formats, and the differences stand out sharply. Instructions are given in the Apple section on how to back up your disk. The IBM section tells how to run the program on your hard disk. The Commodore section warns against trying to back up the disk, and offers a backup for 12 dollars a disk.

All things considered, the program is a monumental achievement. It fills a need for the home computer and is well worth the purchase price. More importantly, it works. While comparisons with the features of **The Printshop**, **Doodle** and **Blazing Paddles** are useful, this program is not really all that similar to any of them. It is a much needed middle ground between them. Also, a disk will soon be available offering some of the graphics from this package for use with **The Printshop**. □

Crusade In Europe
from Microprose
WW II simulation game
for Commodore 64

Review by Dave Dempster

Crusade In Europe (**CIE**) is a large-scale simulation of the war in Western Europe from the June 1944 invasion through the Battle of the Bulge in the following winter. The game system, similar to that of **Decision In The Desert** is superb, and the developers, Sid Meier and Ed Bever, deserve a cold frothy one for their efforts — on me if you guys get to Ottawa.

The game has 13 scenarios, based on four main battles, plus a campaign-length 'Battle For France' dating from June 6 through to October. I believe you'd use the Save Game option on the latter. The game can be played with 1, 2 or 0 players. Normally, watching the machine play against itself (the 0 player option) is a good indication of how the cunning beast thinks, but I was unable to figure it out in this case. The game is free-running rather than structured in turns. The pace of the game can be set on start-up, and you can freeze the action to think your way out of particularly sticky situations. There is also a mechanism to adjust play balance, so both neophyte and veteran can play and enjoy.

The rule book is clean and descriptive, and contains a considerable amount of useful historical data and even some tactical notes. A Command/Unit/Terrain sheet is included to facilitate play.

There are 16 types of terrain, and 20 types of units ranging from air support units, airborne units, and armour to static German coast-defence units. The display on my 1701 monitor is superb. For most scenarios, the window must be scrolled to see the whole map. Terrain can be clearly discerned and, if you want, all units can be removed to see only the map.

Units are displayed as either little icons or military type symbols — your choice. Information on individual units includes type, strength, supply state, and orders: whether and where they have been directed to move, attack or defend, as well as their active or reserve status. You can also get considerable information on enemy units once you've engaged them.

Commands are entered through keyboard or joystick; I much preferred the former. Units respond to action commands in accordance with delays to reconfigure their formation to follow your directions. Those in defensive positions take longer to prepare for a move but, once in mobile formation, are much more vulnerable to attack. Units in assault formation move slowly, but can attack on contact with their objective. A unit left in defensive position will continue to dig in, considerably increasing its defensive strength as time passes.

Computer response to input isn't always immediate — I guess that little 6510 is spinning around pretty busily in there. You can play a limited intelligence option where enemy units only appear when you might perceive them and, we're to believe, your computer doesn't peek at your positions. The game system is easily mastered, and permits you to think about the strategic plan, to change orders to respond to enemy moves, failed attacks and so on.

What didn't I like? There is no resign utility to legitimately end a game short of dumping the computer. More seriously, I couldn't find a way of launching a coordinated attack. The paper map, which shows a sinking (at least it looks like it's sinking) invasion fleet and suspiciously 'American'-looking tanks attacking in the Ardennes, could have been more useful. When in limited intelligence mode, one can still change sides to get the full intelligence story — a tempation that perhaps we should not be led to. More tellingly, there is a design feature that, if discovered, permits an Allied win every time — I'm a little surprised that the play testers missed it.

Would I buy it again? Perhaps not. Although I very much enjoyed the game system, I found it a bit large for my little mind. Scrolling accross nine maps, trying in vain to answer questions like "Where were those Germans?", "Was that noise me moving, or him?" and "Where was the action?" became a chore. Furthermore, as in real life, most battles quickly became slogging matches — after all, it's a good simulation. **Decision in the Desert**, **CIE**'s little brother, uses the same system, but more space and fewer units permit more latitude for manouevre — it's a classic. It also doesn't have the 'easy win' flaw.

If you're looking for a war simulation, don't pass this system by. If you can handle the large number of units, by all means acquire **CIE** — it's very good. Otherwise get **D in the D**. You owe it to yourself to own at least one of these excellent games. □

GT4 Hi-Productivity Cartridge

from Pro-Line Software

Fast load/save cartridge with BASIC 4.0 for Commodore 64

Review by Adam Herst

The weakest link in my daisy chain is definitely the 1541 disk drive. The MPS802 has always pulled its weight, although it's beginning to show its age — two years (that's 140 in printer years) — and the new 1571 is a delight, having knocked the 1541 off the pedestal it occupied after replacing the even more venerable datasette. Even so, the 1541 works quite well in all three modes of the C-128 and I was loath to sell it when I bought my 128 and 1571.

If the 1541 was going to stay, though, something had to be done about the fact that it was slow, slow, slow. I had heard a lot of horror stories about mangled files and garbaged disks, the result of using some of the available fast DOS programs and cartridges, but I was willing to take the chance in exchange for a few precious seconds saved (hardly logical). When I did some comparison shopping, I discovered a better reason to avoid these programs: they're not cheap!

It wasn't until the World of Commodore show that a relatively inexpensive cartridge caught my eye. The **GT4** cartridge, manufactured by Pro-Line and distributed by Norland Agencies, promised me a 500 per cent increase in load *and* save speeds, both for the C-64 and for the C-128 (in 64 mode). Combined with a substantial discount for the show, I just couldn't resist, and have been using it ever since.

The **GT4** has three modes of operation. When the computer is powered up, the fast DOS is automatically enabled, although there is no outward sign that this is so. Loading a program soon convinces you. A 121-block long program that took 81 seconds to load on an unenhanced 1541 loaded in 19 seconds with the **GT4** enabled. These time savings are paralleled for saves: the same program took 91 seconds to save without the fast DOS, and 19 seconds with it. As with most other 1541 enhancers, the **GT4** has no effect on sequential file read and write speeds.

A second mode of operation is enabled if the Commodore key is held down during power up. When this is done the power up message shows that BASIC 4.0 is active. As a bonus, **GT4** supports nearly the full complement of BASIC 4.0 disk commands, the exceptions being **copy** and **concat**. Another small incompatibility is the use of the **dstat** command to read the error channel rather than storing the value in the reserved variable **ds$**. Finally, BASIC 4.0 can be shut off using the **disable** command to leave the fast DOS on, or the **off** command to shut off both. **Reset** will cold start your computer.

My primary reason for buying a fast DOS was to save time when making backups as I program. If you use your computer to run commercial programs, then a fast save is not your first concern. If this is the case then you will be glad to know that the **GT4** has no problems loading and running most programs. BASIC 4.0 mode eats up some RAM and changes memory locations, and so must be disabled, but the fast DOS is not thrown off by many of the protected disks I tried out. Most loaded with appreciable reductions in time.

With both modes shut off the cartridge is apparently invisible to the computer. Although the manual warns that it may be necessary to remove the cartridge to load and use some programs, this has not been the reason that I have had to continually remove it from the expansion port. The **GT4** cartridge is advertised as operating with the C-64/128. As we 128 users are learning, this means that it operates in 64 mode on the 128. Unfortunately, it also means that, as long as the cartridge is in the user port, the computer will always boot up in 64 mode. The only way to access the other two modes is to yank the cartridge out. This is both inconvenient and ultimately damaging to the computer. How hard would it be to include a disable switch?

Other than that I have no complaints. In three months of use I haven't lost any files or disks on either the 1541 or the 1571 in 1541 mode. The 1541 is now so fast I have trouble telling it apart from the 1571. With the bonus of BASIC 4.0 commands, and at a list price of $59.95 Canadian ($49.95 US), the **GT4** cartridge is almost a necessity. At Norland's mail order price of $39.95 Canadian ($29.95 US), it's a bargain that shouldn't be missed.

***GT4 Hi-Productivity Cartridge**, from Pro-Line Software. Distributed by Norland Agencies, 251 Nippissing Road, Unit 3, Milton, Ontario, Canada L9T 4Z5. Telephone (416) 876-4774.* □

Electronic Phone Book

1) Insert your COMAL disk in drive*.
2) Type LOAD "C64 COMAL*",8
3) Type RUN (starts COMAL)
4) Type AUTO (turn on auto line#'s)
5) Enter the program lines shown below (COMAL indents lines for you)
6) Hit RETURN key twice when done
7) Type RUN

```
e=enter  f=find  l=list
f
What name? COMAL
COMAL Users Group     608-222-4432
```

```
0010 dim name$ of 20, phone$ of 12
0020 dim disk$ of 2
0030 black:=0; white:=1; yellow:=7
0040 background black
0050 repeat
0060   pencolor white
0070   print "e=enter  f=find  l=list"
0080   case key$ of
0090   when "e","E"
0100     enter'name
0110   when "f","F"
0120     input "What name?": name$
0130     find'name(name$)
0140   when "l","L"
0150     find'name("")
0160   otherwise
0170     print chr$(147) //clearscreen
0180   endcase
0190 until true=false //forever
0200 //
0210 proc enter'name
0220   input "Enter name : ": name$
0230   input "Enter phone: ": phone$
0240   if name$>"" then add'to'file
0250 endproc enter'name
0260 //
0270 proc add'to'file
0280   open file 2,"phone.dat",append
0290   disk$:=status$
0300   if disk$<>"00" then
0310     close // data file not found
0320     open file 2,"phone.dat",write
0330   endif
0340   write file 2: name$,phone$
0350   close
0360 endproc add'to'file
0370 //
0380 proc find'name(search$)
0390   zone 21 // set auto tab to 21
0400   pencolor yellow
0410   open file 2,"phone.dat",read
0420   while not eof(2) do
0430     read file 2: name$,phone$
0440     if search$ in name$ then
0450       print name$,phone$
0460     endif
0470   endwhile
0480   close
0490   print "Hit <return> when ready"
0500   while key$<>chr$(13) do null
0510 endproc find'name
```

* If you don't have COMAL yet, order a Programmer's Paradise Package-$19.95. It includes the complete COMAL system plus over 400 pages of information. Add $5 more to get our 20 interactive lesson Tutorial Disk. Add $2 shipping. Visa/MC or US funds check accepted. Send to:

COMAL Users Group USA
6041 Monona Drive, Room 109
Madison, WI 53716
phone 608-222-4432

The Commodore Plus/4 Book

by Sarah C. Meyer

Howard W. Sams and Company
$16.95 (US)
295 pages (paperback)

Review by Jerry and Betty Schueler

This book is a very nice, user-oriented manual for the Plus/4 owner. It is not a book for programmers. However, if you look at the Plus/4 as a tool to get a job done, then this book will probably be worthwhile.

It begins with an introduction to the Plus/4 in terms of available hardware and software. One chapter is devoted to how to use the built-in software. Another chapter is devoted to how to choose the software you need. This chapter covers the commercial software available for the Plus/4 — all made by Commodore. The book also contains an excellent introduction to the keyboard.

If you are a non-technical end-user, this book will supplement the manuals that come with the computer. □

Commodore 64 Exposed

by Bruce Bayley

Melbourne House
$14.95 (US)
198 pages (paperback)

Review by Jerry and Betty Schueler

This excellent book covers all aspects of the Commodore 64, but beginners beware: it is not designed for you. It is a very good book for the intermediate or advanced programmer. Just about all aspects are covered, quickly and neatly. Utility routines include, merging, line renumbering and line deleting. Machine language is used throughout, and introduced in superior fashion in Chapter 6. This chapter includes a simple machine code monitor. Although there is little in this book that isn't covered in the *Programmer's Reference Guide*, the useful examples provide help in putting it all together. □

VIC BASIC

by Ramon Zamora, Don Inman, Bob Albrecht and DYMAX

Reston Publishing Company
$17.95 US (hardback)
$12.95 US (paperback)
360 pages (paperback)

Review by Jerry and Betty Schueler

This book is for anyone who wants to learn programming on the VIC 20. It includes attractive and humorous artwork with lots of simple examples. All aspects of programming in BASIC are covered, including graphics and sound. Each chapter ends with a summary and a set of exercises. Don't worry if you have trouble with these — the answers are included as well. The examples and cartoons are geared for teenagers, but most adults will probably enjoy this entertaining way to learn BASIC programming. □

Commodore 16 User's Manual

Edited by C.W. Moody

Howard W. Sams and Company
$12.95 (US)
216 pages (paperback)

Review by Jerry and Betty Schueler

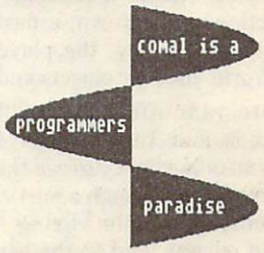
This book has one main thing in its favour: it is the only book on the C-16 that is currently available. There is little that comes with the C-16 itself (*The Commodore 16 Owner's Manual* is as bad as the Atari manual — and that's bad.).

With this in mind, we highly recommend this book for all C-16 owners. It will get you started using your computer and show you how to program it. It explains the **HELP** key, how to make windows, how to use the function keys and many other useful things. Each statement in the built-in BASIC 3.5 is discussed. Additional useful information can be found in the Appendix, including ASCII codes, musical notes, and how to use the built-in **TEDMON** machine language monitor.

Easy Curves

1) Insert your COMAL disk in drive*
2) Type LOAD "C64 COMAL*",8
3) Type RUN (starts COMAL)
4) Type AUTO (turn on auto line#'s)
5) Enter the program lines shown below (COMAL indents lines for you)
6) Hit RETURN key twice when done
7) Type RUN

```
0010 setup
0020 curve
0030 paint'it
0040 add'words
0050 //
0060 proc setup
0070   black:=0; yellow:=7
0080   background black
0090   pencolor yellow
0100   setgraphic 0 //hi res screen
0110   hideturtle
0120 endproc setup
0130 //
0140 proc curve
0150   moveto 110,0
0160   drawto 110,199
0170   for row:=0 to 10 step .03 do
0180     drawto 110+99*sin(row),row*20
0190   endfor row
0200 endproc curve
0210 //
0220 proc paint'it
0230   fill 120,20
0240   fill 100,90
0250   fill 120,180
0260   fill 100,198
0270 endproc paint'it
0280 //
0290 proc add'words
0300   pencolor black
0310   background yellow
0320   plottext 120,155,"comal is a"
0330   plottext 16,90,"programmers"
0340   plottext 120,30,"paradise"
0350 endproc add'words
```



Notice how easy graphics are in COMAL. Lines 70-100 set up the screen colors. Lines 150-190 draw on the screen. Lines 230-260 fill (paint) whole parts. Even putting text on the graphic screen is easy. See lines 320-340. All this is standard and built in as part of COMAL. Plus a full turtle graphics system. Now you know why there are 100,000 users.

* If you don't have COMAL yet, order a Programmer's Paradise Package-$19.95. It includes the complete COMAL system plus over 400 pages of information. Add $5 more to get our 20 interactive lesson Tutorial Disk. Add $2 shipping. Visa/MC or US funds check accepted. Send to:

COMAL Users Group USA
6041 Monona Drive, Room 109
Madison, WI 53716
phone 608-222-4432

Products Received

Presented by Astrid Kumas

The following products have been received by TPUG Magazine *in recent weeks. Please note that these descriptions are based on the manufacturers' own announcements, and are not the result of evaluation by* TPUG Magazine.

Electronic Word Book

Richard Scarry's Best Electronic Word Book Ever from CBS Software, One Fawcett Place, Greenwich, Connecticut 06836. Price: $19.95 (US).

Richard Scarry's books and illustrations have won the hearts of many youngsters. His imaginative characters come now onto a computer screen in CBS Software **Richard Scarry's Best Electronic Word Book Ever** for Commodore 64. It is a reading-readiness adventure program for children aged five and up. Its aim is to provide young computer users with such skills as word identification, vocabulary building, object recognition and word/object association. The product includes two disks and a short instruction booklet.

The principal character of the program is Lowly Wor, who visits six different environments: a farm, a railroad yard, a construction site, a town, a park and a harbour. On the way, the player helps Lowly Worm discover objects and words.

The program offers four skill levels. Stop, Look and Listen (level 1) gives children an opportunity to see the sights. While travelling through a particular environment, they can bring to life animated objects, and at the same time see the name of the object appear on the screen. The exploration is a pleasure: the animated graphics are fun to watch, and the accompanying sound effects and music, featuring familiar childhood tunes, are very enjoyable.

On level 2 — Get the Picture — children are asked to locate and match the pictures, while on Level 3 — Word Patrol — they have to find the object that matches the word shown on the screen.

Skill level 4, Scavenger Hunt, is a very challenging activity. Young readers are shown a list of nine words from several environments, and then must find the corresponding objects scattered throughout the locations.

The program introduces children to over one hundred important words, and makes the learning process really enjoyable. The program is easy enough to use that adult supervision is not required.

Computers For Handicapped

Computer Technology for the Handicapped in Special Education and Rehabilitation: A Resource Guide, Volume I and II from ICCE Publications, 1787 Agate Street, University of Oregon, Eugene, Oregon 97403-1923. Price: Resource Guide II — $10.00 (US); Guides I and II — $15.00 (US). Discount rates are offered for multiple copies.

Those who read Malcolm J. MacArthur's article *Microcomputers and the handicapped* in this issue, and are interested in the subject, will be glad to know that International Council for Computers in Education (ICCE) has published *A Resource Guide*, volumes I and II, on the application of computer technology for the handicapped. These two volumes present an extensive coverage of informational resources up to 1985. *Resource Guide I* describes 191 resources through 1982, and the newly-published *Resource Guide II* describes over 300 more recent resources. Included are books, chapters in books, journal articles, research grants, organizations, newsletters, clearing houses, special issues of journals, and conference proceedings.

All references are thoroughly annotated, and an author and subject index are provided. The computer applications range from computer-assisted instruction to functional aids, computer management in special education and rehabilitation. Physical and developmental disabilities represented in the *Resource Guide* include mentally retardation, learning disability, visual impairment, hearing impairment, quadriplegia, autism, emotional handicaps and cerebral palsy.

The Teacher's Aide

The Teacher's Aide from T'Aide Software Company, P.O. Box 65, El Mirage, Arizona 85335. Price: PET/CBM/8050 (one disk), $100.00 (US); PET/CBM/2040/4040/2031 (two disks), $105.00 (US); C-64/all disk drives (one disk), $100.00 (US).

The Teacher's Aide is designed to help teachers of mathematics and parents in producing standard, ready-to-use exercise sheets.

The C-64 version contains sixteen programs on one disk. The first six programs concentrate on basic mathematics, and feature all operations applicable to integers, decimals, fractions and percent. Programs seven to sixteen are the algebra programs. Signed number operations, linear, fractional and quadratic equations, together with complex arithmetic, are all covered in this section. The manufacturer claims that the number of excercise sheets that may be created by any given program is practically unlimited.

There is also a statistical grading program called **Curve** that will enable the teacher to determine the marks and standard deviation of marks or test scores and student rankings.

The **T'Aide** program is 'dongle'-protected, so backup copies of the disk can be made, but will not run unless the supplied dongle — a small device — is plugged into the computer. □

Calendar of TPUG Events

Meeting Places

Brampton Chapter: Brampton Public Library, Four Corners Branch, 65 Queen St., on the second Thursday of the month, at 7:30 pm.

Business Chapter: TPUG Office, 101 Duncan Mill Rd., Suite G-7, Don Mills, on the second Wednesday of the month, at 7:30 pm.

COMAL Chapter: York Public Library, 1745 Eglinton Ave. W. (just east of Dufferin) on the fourth Thursday of the month, at 7:30 pm in the Story Hour Room (adjacent to the auditorium).

Commodore 128 Chapter: York Public Library, 1745 Eglinton Ave. W. (just east of Dufferin), on the first Wednesday of the month, at 7:30 pm in the storybook room.

Commodore 64 Chapter: York Mills CI, 490 York Mills Rd. (east of Bayview) on the last Monday of the month, at 7:30 pm in the cafetorium.

Communications Chapter: TPUG Office, 101 Duncan Mill Rd., Suite G-7, Don Mills, on the fourth Wednesday of the month, at 7:30 pm.

Eastside Chapter: Dunbarton High School (go north on Whites Rd. from the traffic lights at Highway 2 and Whites Rd. to next traffic lights; turn left to parking lots) on the first Monday of the month, at 7:30 pm.

Hardware Chapter: TPUG Office, 101 Duncan Mill Rd., Suite G-7, Don Mills, on the second Tuesday of the month, at 7 pm.

New Users Chapter: TPUG Office, 101 Duncan Mill Rd., Suite G-7, Don Mills, on the third Monday of the month, at 7 pm.

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 pm.

VIC 20 Chapter: York Public Library, 1745 Eglinton Ave. W. (just east of Dufferin), on the first Tuesday of the month, at 7:30 pm in the auditorium.

Westside Chapter: Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd., on the third Thursday of the month, at 7:30 pm.

TPUG makes every effort to ensure that meetings take place when and where scheduled. However, unforeseen problems may occasionally arise that lead to a particular meeting being changed or cancelled. The TPUG meetings line (445-9040) is the best source of fully up-to-date information on meeting times, and should be consulted.

Are you interested in organizing some other interest group in the Greater Toronto area? Please let the club office know, by mail, phone or TPUG bulletin board. □

APRIL

MON	TUES	WED	THURS
	1 VIC 20	2 C-128	3
7 Eastside	8 Hardware	9 Business	10 Brampton
14	15	16 SuperPET	17 Westside
21 New Users	22	23 Communications	24 COMAL
28 Commodore 64	29	30	

MAY

MON	TUES	WED	THURS
			1
5 Eastside	6 VIC 20	7 C-128	8 Brampton
12	13 Hardware	14 Business	15 Westside
19	20 New Users	21 SuperPET	22 COMAL
26 Commodore 64	27	28 Communications	29

Super-OS/9* Is Here

TPUG has implemented the popular 6809 operating system OS-9* on the SuperPET. Super-OS/9 greatly expands the software availability and the hardware capability of the SuperPET while preserving access to the Waterloo languages and programs.

The cost of Super-OS/9 to club members is $210 (Cdn) (plus $10 shipment/handling Ontario residents add 7% PST), which includes the cost of a hardware modification that will not affect the normal operation of your SuperPET, installation instructions and the operating system disks.

To obtain your copy please send your cheque or money order to:

TPUG
101 Duncan Mill Rd., Suite G-7
Don Mills, Ontario
Canada M3B 1Z3

What does Super-OS/9 offer?

- A true disk operating with features found on UNIX* systems and on the AMIGA.
- Multi-tasking and multi-user capability.
- Hierarchical directory structure with time/date stamps.
- Programmable file access privileges for increased security.

Extensive software is available for OS-9, most of which runs on Super-OS/9.

Super-OS/9 V1.1 includes an assembler, editor, symbolic debugger, communication software and terminal emulation package. Available languages include BASIC09, CIS COBOL, Fortran 77, Pascal, Lisp, C and others. Application software include wordprocessors, spelling checkers, data bases and spread sheet programs.

TPUG has acquired public domain software and will assist users in the conversion of commercial software to Commodore format.

Portability and Expandability

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NOTE: If you own a 3 board SuperPET and wish to acquire Super-OS/9, please call TPUG before, ordering Super-OS/9, for info about a hardware fix to a design error in your SuperPET computer.

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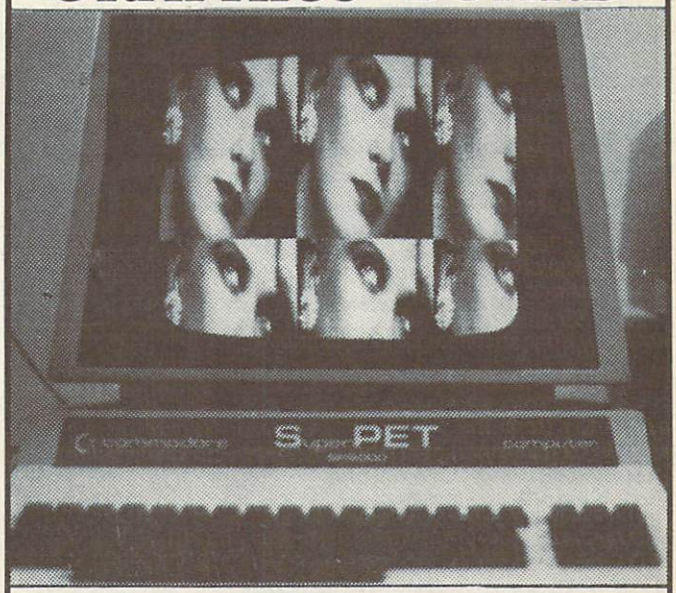

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