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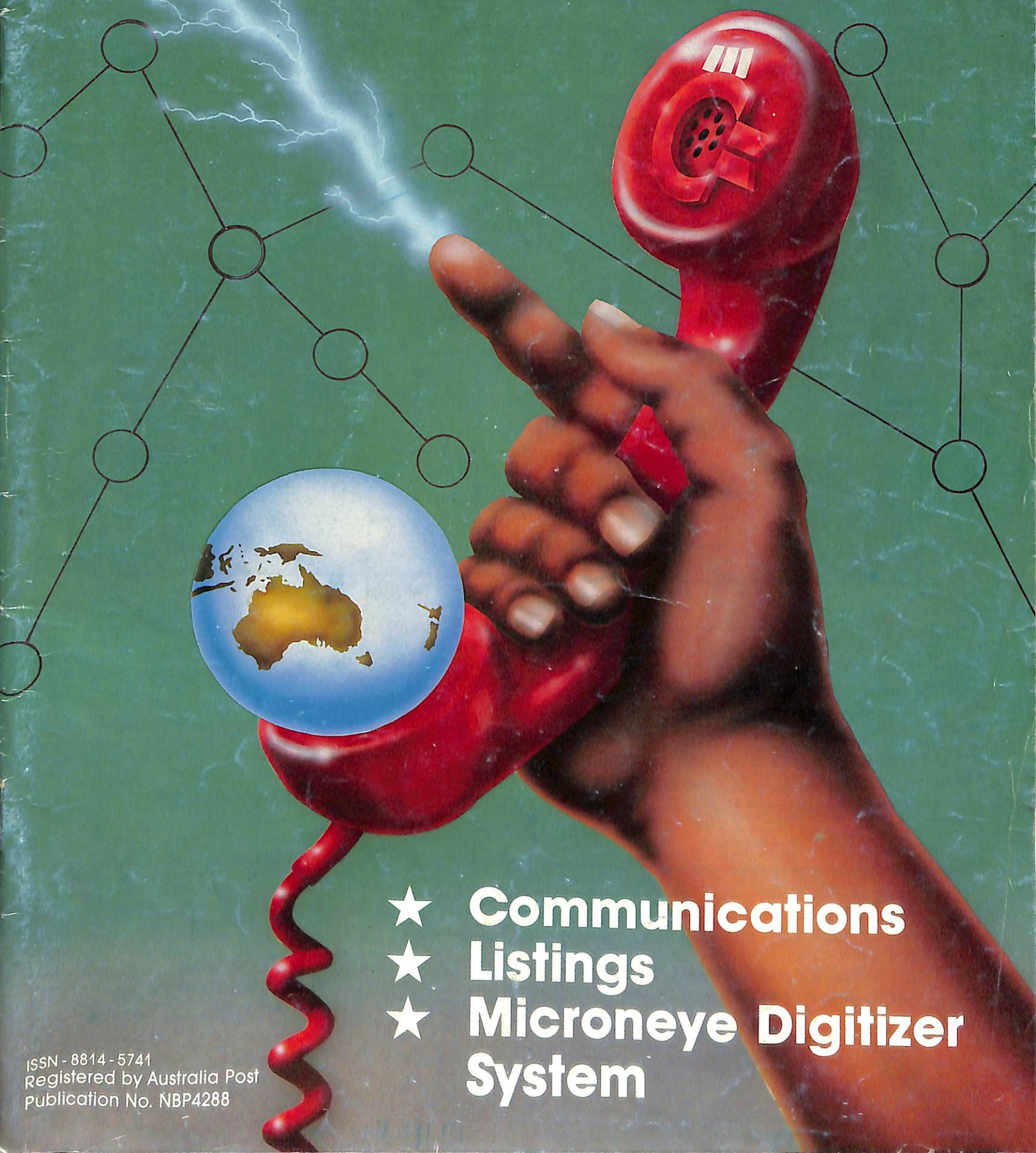

★ Communications
★ Listings
★ Microneye Digitizer System

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COMMODORE MAGAZINE

AUSTRALIAN COMMODORE USERS MAGAZINE

VOLUME 4 NUMBER 6 ISSUE 28

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EDITORIAL

MERVYN BEAMISH

Mervyn Beamish

Just back from New Zealand and arranging a distribution centre so that our KIWI friends can get a better and quicker service. By next issue we hope to have the system up and running. I should thank both 'Computer Input' and 'Bits and Bytes' magazines for their assistance and also Commodore New Zealand.

The Auckland Central Users Group gave me a very enthusiastic reception, even though I did keep referring to them as Queenslanders (foot in mouth disease – should be quarantined). I'd like to thank KIWISOFT (Hal and Rachel Salive and Kevin Slade) who welcomed me into their home and had my eyes boggling at the sophistication of the graphic packages they are working on – and a wonderful new graphics hardware item (all hush hush! didn't say a word, did I!?) My feet did some walking on their hooked rugs. The designs and patterns of these were generated through and printed off a Commodore 64! KIWI Commodore users have been treated poorly by overseas magazines in the past (especially Australian and that includes the Commodore Magazine) with irregular supply, poor coverage of the local situation and high prices.

Well not all that is going to change over night. Our first consideration is getting regular and reliable supply into New Zealand. We hope that by doing this we will be able to review the cover price and make it a more affordable publication.

Coverage of the local scene, however, is to a large part in the hands of the KIWIS. We are looking for both technical and general articles from KIWI contributors and plan to have a regular contribution from a New Zealand technical writer.

Does all this sound like 'hot air'? Well it may be but if we don't give it a go we'll never know.

This issue is running a little later than I predicted. On the basis that we are a bi-monthly publication it has still come out on time (confused!? – June, August, October, December, February, April.) The delay was to give us time to get our house in order before we commenced Volume 5.

A few problems have arisen with a number of communication articles and reviews that were scheduled for this issue. They were being generated from Queensland but intermittent power supply does little to aid productivity. I wonder if Joh, Flo or the power workers have tried working on a candle powered computer. Although in Queensland anything can happen just ask a KIWI.

Next issue we will look at education, bring you more on communication and candle power permitting the continuation of the SID series and other technological delights.

Meryvn Beamish

COVER

'Communications' – Another brilliant cover this issue by our artist Ian Richards.

BACK ISSUES **$5.50 including P & P.**

Vol4 No 1 ..... AVAILABLE
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Vol4 No 4 ..... SOLD OUT
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Vol4 No 5 AVAILABLE

NICE LISTER CONVENTIONS

1. All control, colour, function, and shifted and Commodore key graphics are converted to 'words' (or the abbreviations as represented on the keyboard) enclosed in square brackets [ ].
For example, [DOWN], [CLR] and so on.

2. Multiple cursor controls are represented by one word plus a number.
For example, [DOWN 15].

3. Shifted graphics (right-hand symbol on key) are converted to the corresponding alphabet character enclosed in square brackets. A shifted 'S' heart character becomes [S].

4. Any character accessed by the Commodore (C=) key is indicated by further enclosing the alphabet character inside the symbols <>.
A Commodore 'A' becomes [<A>].

5. With multiple characters, the redundant brackets][are replaced by a comma as:-
[CLR,DOWN5,WHT,<A>]

6. With multiple shifted graphics, the alphabet character is simply repeated, numbers are not used as [AAAAAAAAAA].

7. Multiple Commodore graphics are repeated as [<A>, <A>, <A>, <A>].

8. Spaces and shifted spaces within quotes are represented by the words [SPACE] or [SHSPACE] followed by a number if required.
For example, [SPACE15].

9. Extra words are used for the following control characters.

Keyword	CHR$	
DEL (CRTL-T)	20	
INS	148	
TEXT (CTRL-N)	14	converts character set to upper/lowercase mode.
GRAPH	142	converts character set to uppercase/graphics mode.
LOCK (CTRL-H)	8	disables the C ≐ key and locks the keyboard in the current character mode.
UNLOCK (CTRL-I)	9	enables the C =key sequence.

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News Releases

A selection of releases received since last issue

NEW MODEM FOR VIC & C-64

A new low cost 1200/75 and 300 baud direct connect modem for the Commodore 64 has been unveiled by Melbourne based ACME Software.

The MICROMODEN III (MM3) allows users of Commodore 64 and VIC-20 computers to access telephone computer databases. An RS232 adaptor will also be available to allow use of the MM3 with nearly all computers.

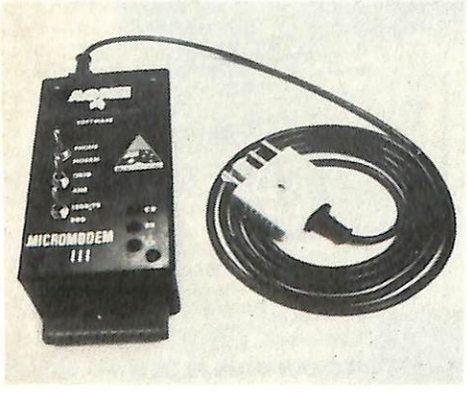
The MM3 has 300 baud mode and the 1200/75 baud mode which is coming into prevalent use. It is the standard adopted by Telecom for their new VIATEL electronic database – which promises to be a true public access system.

The modem is direct connect – all that is required is to plug it into the phone line and into the rear of the computer, load your software, and you are ready.

ACME Software also produce communications software to allow Commodore 64 and VIC-20 users to take full advantage of the features of the MM3 modem.

ACME hasn't forgotten VIC-20 users they will be producing a cartidge version of their communication software for this machine.

For more information ask your local dealer.



ACME's MICROMODEM III for the Commodore 64 and VIC-20

NEW MATHS PROGRAM Equal To The Problem

MATH BLASTER, a mathematics training program just released for the Commodore 64, promises significant increases in exam results for children aged 6 to 11 years.

The program performs the work of a private maths tutor and an arcade game. It's the latest product from Davidson & Associates who also publish the successful WORD ATTACK and SPEED READER educational programs.

It contains 600 exercises in basic maths operations. Children are guided through the learning stages then each "problem" becomes an invitation to have fun.

MATH BLASTER tales a two-pronged approach in teaching maths skills. The first stage is to help children memorize the basic facts and operations. This is done with graphic screen presentations and by requiring the student to fill in answers.

Stage two is to increase speed, accuracy and confidence in handling the basics. This is done with an absorbing arcade-style game.

Questions are presented and the correct answer has to be indicated by making an animated character run along to the correct position. The character is then loaded into a cannon and blasted into the answer box.

Excellent animation, graphics and sound effects make the process lots of fun. Subjects include: subtraction, multiplication, division, fractions, decimals and percentages.

Not only can you choose from four different styles of presentation, you can also choose from five skill levels. The program is operated by using the keyboard or a joystick.

Students are given colourful score reports when they finish using the program.

MATH BLASTER was designed by Dr Janice Davidson and tested on children in the Upward Bound School in California. Tests showed that using the program for 15 to 20 minutes a day brought about impressive gains in mathematical ability.

The program comes with two disks – one a program disk and the other a data disk. The data disk comes with 600 exercises but this can be increased.

Teachers or parents are shown how to use the simple inbuilt editor to change the examples. This means the number of exercises is almost unlimited.

Although MATH BLASTER is menu-driven and simple to use, it comes with a detailed manual containing 26 pages of instructions and explanations and a 40 page listing of the data files.

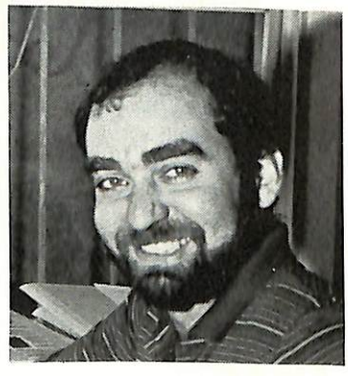
Recommended retail price is $69.

Rogue's Gallery

Meet the production staff of The COMMODORE MAGAZINE.

Denise Elkins – typesetting/assembly

Melissa Williams – despatch/typesetting



Ian Richards – illustrations/assembly

More in this compulsive multi-part series in future issues.

CREATIVE

CREATIVE WRITER, FILER and CALC the Creative Productivity range are distributed in Australia by Sydney based Imagineering and retail under $60 each.

Imagineering claim that a user can get

News Releases

started with CREATIVE WRITER in just fifteen minutes, with the easily understood manuals and help screens.

CREATIVE WRITER lets you concentrate on the words, not the processing and allows you to preview your entire document before printing.

Working with CREATIVE FILER and CALC, CREATIVE WRITER gives you more Word Processing than any program in its class.

CREATIVE FILER is an electronic filing system which simplifies your Data Management tasks and saves time. Data is automatically filed in alphabetical order. Custom report formats are created directly on the screen and can be saved for later use. CREATIVE FILER used with CREATIVE WRITER integrates your data into customised documents.

CREATIVE CALC simplifies any mathematical process. Its spreadsheet lets you relate figures to each other instantly. If you need to change a number on a spreadsheet, CREATIVE CALC will automatically change all other related figures to fit the new format.

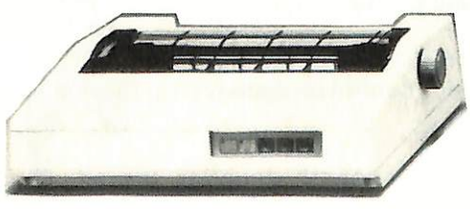
Creative products run on the Commodore 64 Home Computer and retail under $60 each.

C.ITOH RELEASE ECONOMIC PC PRINTER.

C.ITOH have released their economic personal computer printer, the Model 7500. The print speed is rated at 105cps.Industry standard interfaces are available and in the interest of power conservation, the idle power used is 11 watts. Operational features include code compatibility with the M8510/M155+ family, proportional spacing mode, full graphics and Greek character set. In addition the special line monitoring Hexadecimal Dump mode, so useful for solving line and interfacing problems.

Full character attribute versatility is provided, with bold, underline, double width, superscript, subscript, together with the various fonts providing characters/line values from 40 to 136.

Suggested retail price for the Model 7500 with parallel I/F is $659-00.



C.ITOH Model 7500 printer.

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ORGANISE YOURSELF

Commodore's own database for the Commodore 64, The Manager, can help collect and organise information in home or business.

At home, The Manager, helps organise the cheque book, stamp collection, football team, cricket club, community organisation, investments, Christmas card list or recipes.

In business, The Manager, can keep track of inventory, personnel, accounts payable, sales or accounts receivable.

It also provides information previously unavailable because manual methods were too time-consuming.

It organises data in a consistent format and allows applications to be tailored to your needs.

The Manager is an electronic filing cabinet with files able to be sorted, reorganised, manipulated and scanned at any time.

Sorting and re-organising is done with little or no operator intervention.

In fact, this Commodore 64 database takes care of all the records and that includes arithmetic functions. For example, it easily calculates how much a sports club's subscriptions should be next year, if there are 50 new members by Christmas.

If there is a need to work out what sorts of titles to keep in the system and their contents, it's simple with The Manager because of its screen-formatting which displays on the screen the files being designed.

MERLIN HOTEL

The new multi-million dollar Merlin Hotel in Perth, has a 400-room in house video system run by computer.

Heart of the video system is a Commodore 64, which is wired to three VHS video recorders.

The Commodore 64 automatically turns the program video tapes on at the preset time and afterwards rewinds them ready for the next showing.

Between shows, the computer displays a running digital clock showing day, date and time, with a message informing guests about the next movie and the time it will start.

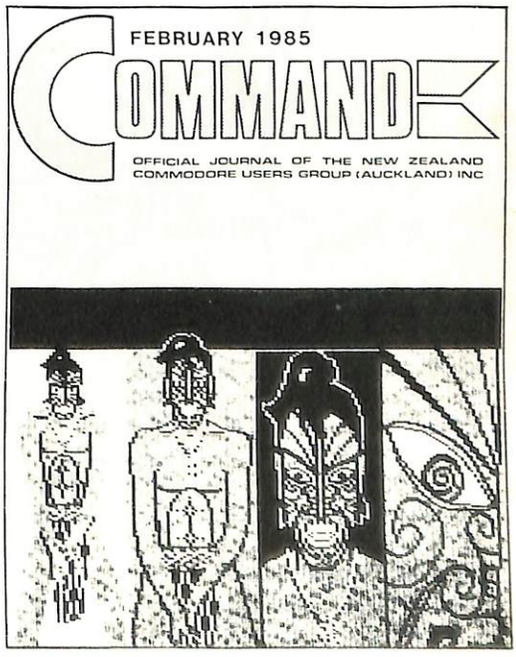
The system is the brainchild of John Gilbert, a technician with Videolink Pty Ltd of West Perth. He conceived the idea and worked out the wiring details while business associates wrote the program code for the computer.

He says the system is easily expandable to handle eight video machines and the number of rooms the service could be distributed to is limited only by the video distribution amplifiers.

Further information is available from Videolink Pty Ltd, P.O. Box 221, West Perth, WA 6005.

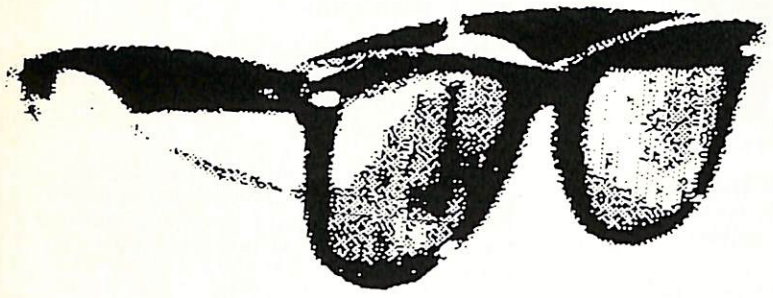
GOODLOOKING NEWSLETTER

Eyecatching newsletters need to be encouraged, so people will want to share in the excitement of using their home computers. The February 1985 edition of COMMAND is worthy of a mention. COMMAND is the official journalis of the NEW Zealand Commodore users Group (Auckland) Inc. The cover illustration (shown here) is an image based on "The Fish of Maui" which is published by Landsdowne Press. It's painted and printed using CADPIC™ from Kiwisoft Programs Ltd.



MICRONEYE SYSTEM

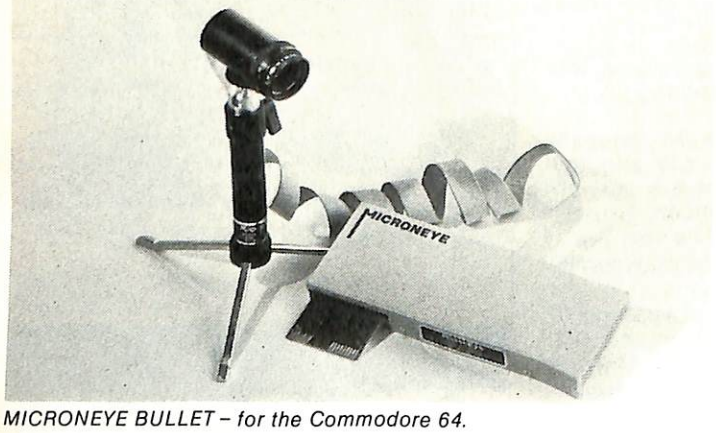
By Paul Blair



If you have a copy of any of the digital picture programs (the ones that provide a computerised slide show) you may have wondered just how the "slides" are produced. They are too good to be hand drawn, or even programmed. The secret is: they are digital images of the real thing, or maybe of a photo of the real thing.

By scanning of an object, it is possible to build up an image of it. Our eyes do this, and present a composite picture to our brain. In the case of computers, which can store images on a pixel (light dot) by pixel basis, an opto/electrical device is required to translate images of light and shade into something that the computer can handle.

The Microneye system does all of this. by combining a lens with an optic RAM chip, pixel arrays can be built for transfer to screen. This sort of technology is not cheap – yet! But, as we have seen with other electronics, that has usually changed with time.



MICRONEYE BULLET – for the Commodore 64.

The typical Microneye installation is a small scanner ("bullet") containing lens and optic array system, plus some conversion hardware that plugs into your computer. Some software rounds out the package.

The information received via the lens is stored on the optic RAM – in this case, 2 arrays of 128 x 256 pixels each. Each array forms one "picture". Both pictures can be shown on the screen simultaneously, but a small but noticeable discontinuity – as if a strip of the photo has been cut out and the two parts rejoined.

The picture scan can be in "black" of "grey" mode – black for high contrast and grey for a softer image. Enhanced mode permits permits enlargement of a zone. To give you an idea of this, we nearly filled a screen with the figure "10" from the top left front corner of a ten dollar note.

There are a number of critical factors in using the camera. We found lighting was tricky, but the handbook that comes with the camera is very comprehensive, and gives a lot of help with all sorts of things – even to a short but comprehensive section on the physics of lenses.

Digital images from the scanner can be stored/retrieved using disk, and a very good hi-res printer program is supplied. Micron create a very good impression with the design and presentation of their product – obviously, a very professional firm.

This is no toy. The system is available in the USA for a little under $300 at last report, roughly the price of two C-64's. The same price relationship applies in Australia, where the cost is around $800 (ED – there has been a price change since Paul wrote this – refer below.) If you have specialist applications (using the C64, Apple or IBM) then try the product and see if it meets your selection criteria. By all accounts, there could be other digitizers available soon (price unknown), so keep your optical scanners open.

MICRONEYE APPLICATIONS SUBROUTINE LIBRARY FOR THE COMMODORE 64

Assembly Language Routines supplied with the system.

INIT – (SYS 18688). Reset ACIA; Set defaults for initial MicronEye setup.

GETPIC – (SYS 18691). Get a picture of the current exposure time and picture type and put it into the bitmap area.

PUTSCREEN – (SYS 18694). Takes the image currently in the bitmap area and maps it onto the graphics screen. The image will not display unless bitmap mode has been invoked.

BITMODE – (SYS 18700). Puts the computer into hires graphics mode without clearing the graphics screen. Use GRESET to clear the graphics screen. In this mode the normal text screen will not be visible.

TEXTMODE – (SYS 18703). Returns the computer to text mode. Text and graphics cannot be displayed at the same time.

RLE – (SYS 18697). Run-length encodes the image currently in the bitmap area and puts the encode into the encode area.

GRESET – (SYS 18706). Clears the graphics screen.

Useful when changing from a large-sized picture to a smaller one.

CHANGEHUE – (SYS 18709). Changes the display colour used for dark and light pixels based on the value of the BWCOL variable.

EXIT – (SYS 18712). Resets MEMTOP to the original value prior to the call to INIT.

USER VARIABLES FOR SUBROUTINE CONTROL

PICTYPE (679) – Current picture type. 0 is a 128 x 64 bit image. 1 is a 512 x 128 bit image. 2 is a 256 x 64 bit image. INIT defaults the exposure time to 256 milliseconds.

EXPTIME (680-681) – Exposure time in milliseconds. INIT defaults the exposure time to 256 milliseconds.

BITMAP (682) – Memory page at which to locate the bitmap image.

RLEMAP (683) – Memory page at which to locate the run-length encode.

TMPMAP (684) – Memory page at which to locate the temporary storage area.

RLESIZE (685) – Number of pages to reserve for the run-length encode.

BWCOL (686) – Display colours to be used for dark and light pixels.

BKCOL (687) – Run-length encode background colour.

Micron Eye printouts supplied by Software Source.

Letter from the Distributor

Dear Merv,

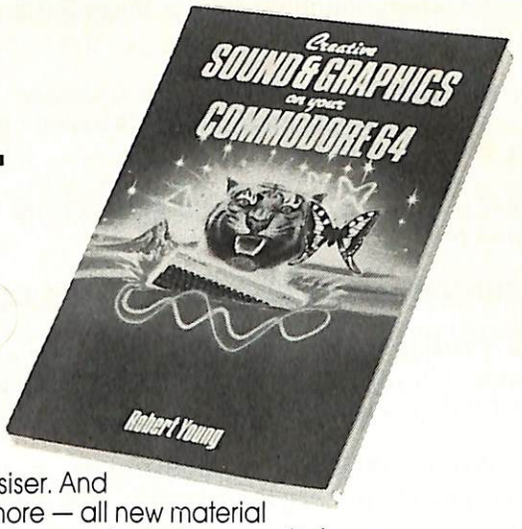
We have been overwhelmed by the response to Micron Eye ever since we introduced it in 1984. We have now been able to increase our purchase quantities and to buy a better deal for the Australian consumer. As of this month, we have been able to reduce the retail price of Micron Eye to $495! Taking into account the current exchange rates and relative price differentials, this makes Micron Eye CHEAPER IN AUSTRALIA THAN IN THE U.S.

The Micron Eye comes complete with a standard C-mount lens. C-mount is the standard lens-mounting on most 16mm movie cameras. Consequently a large range of lenses is available from macro to telephoto.

Micron also provide free the source code to the imaging software. This gives a user the flexability to integrate the Eye into his own software, or to develop many new applications for the unit....

Kindest regards
Greg Lister
Software Source (02) 389 6388
8/3/85

If you're not through playing games on your Commodore 64, here are some more!



Here's the follow-up to our highly acclaimed first Australian Commodore 64 book. Now, "Creative Sound & Graphics on Your Commodore 64" shows you even more ways to explore the full potential of this mighty micro.

You'll see how to use PRINT, PEEK and POKE to create a host of exciting new games like:

Maze Muncher: Eat your way out of danger before the spooks eat you!

Safari: Fight your way back to your jungle camp, through wild beasts and worse!

Robot: Diffuse the bomb while it — and the seconds — tick away!

You'll find new ways to improve animation. How to make the most of your Commodore 64's sophisticated 3-voice-synthesiser. And there's much more — all new material from this brilliant young Australian programmer — all for just $15.95. Available from better booksellers and computer stores.

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THE NEW MACHINES Part 2

Paul Blair

Commodore +4

Before going on with the series, an update on the present sales situation. The +4 was released in Australia (did you catch the saturation advertising campaign? No? Funny, neither did I!!) in late February. The price seems to be $599, which may or may not be official. Meanwhile, the C16 is already being heavily discounted (under $200) in an attempt to sell some. After struggling with the keyboard for an hour or two, who could be surprised.

Rumours of the C128 (which was on show at the Las Vegas Consumer Electronics Show early January) being for early release are doubtless a contributing factor. With a numeric keypad, 40/80 column output, 128K of RAM and a very superior Basic, not to mention the three operating modes. Three? Sure, that's C64 mode, CP/M mode (CP/M 3.0) and C128 mode. Basic 7.0 takes Basic 3.5 (what this series is really all about) from the C16/+4, and adds sound and sprites. But in 80 column mode, forget your TV – you will need a monitor, and Commodore has a new unit, the 1902RGBI monitor.

The C128 may be expanded to 512K, but only 128K will be available to Basic. With three processors (8502, Z80A and 6510A) and the possibility of the high speed disk drive (1571) this should be some computer. About $250 in the USA. Anyone want to buy a cheap C64?

Back to Basic 3.5 (the excitement of it all got me carried away there for a bit). Last issue we looked at the general way the C16/+4 computers are internally ordered, and at the additional commands that have been built in to this greatly expanded Basic. If you glance back at that issue, I tried to set up some sort of command grouping, so that we could discuss the new commands logically. Some of the utility commands were covered (AUTO, DELETE, RENUMBER, TRON, TROFF, KEY, HELP, DEC and HEX). The table of Happy Families shows some other commands that I regard as utilities, but as they go hand in glove with some of the graphics commands, I will leave them to then.

The disk commands form a group that make a very welcome return to the scene. Commodore BASIC 4.0 provided built-in disk handling commands that were easily accessed directly from the keyboard without the tedium of opening and closing the channels needed to communicate with any disk drive. BASIC 2.0 left these out, but BASIC 3.5 reintroduces them, with a couple of sad omissions. The commands in BASIC 3.5 that were not directly available in BASIC 2.0 are:

BACKUP	COLLECT	COPY
DIRECTORY	DLOAD	DSAVE
HEADER	RENAME	SCRATCH
DS$		

Commands from BASIC 4.0 NOT provided directly in BASIC 3.5 are:

APPEND	CONCAT	DCLOSE
DOPEN	RECORD#	

The new commands have direct equivalents in BASIC 2.0 The point of BASIC 3.5 is that the computer now has built-in parsing that takes your disk Basic command and performs all the file opening and closing that you had to provide in BASIC 2.0 The difference is in the computer – the disk drive actually receives the same command string from the computer as before.

I will give a brief explanation of each of the new (??) commands, together with the comparable Basic 2.0 command.

HEADER (BASIC 2.0 command was NEW)
Purpose: prepare an unused disk, or purge a used disk. You will be asked "ARE YOU SURE?", just in case you are thinking of doing the wrong thing.

BACKUP (none)
Purpose: transfer the entire contents of one disk to another within the same disk drive unit, or between two single drive units. The syntax permits you to use, say, units 8 and 9, or a dual drive. Commodore don't seem to have a dual drive on the horizon just yet, so the two drive configuration will have to prevail.

COLLECT (Validate)
Purpose: disk tidier. Checks all legal files on disk, rewrites the Block Allocation Map.

COPY (Copy)
Purpose: to transfer files on the same disk, or to another disk in another drive (duals only) or to another unit.

DIRECTORY
Purpose: to show a disk directory on screen without disturbing any program in memory. No one will miss LOAD"$",8 will they?

Continued from previous page

DLOAD
Purpose: to load a program from disk. It would be nice to use DIRECTORY, then cursor up the screen, type DLOAD in front of the file you want, then press RETURN. Sadly, you still have to nip across the screen and erase the file type (PRG etc) or put in a colon to avoid being reminded of a SYNTAX ERROR. I feel Commodore missed out here.

DSAVE
Purpose: to save a program to disk.

(NOTE: both LOAD and SAVE are still available. These new commands are for users of disk, but the rest of you haven't been forgotten....)

RENAME
Purpose: to rename a file on disk.

SCRATCH
Purpose: to erase a file from disk. Basic 3.5 gives you a safety valve by asking "ARE YOU SURE?" before carrying out the command.

DS$
Purpose: to read the disk error channel.

The nett result of these additions (or re-admissions) will please just about everyone. The bugbear of the VIC and C=64 was the complex syntax needed for even simple jobs.

The omissions, particularly RECORD#, mean that the clumsy BASIC 2.0 syntax for relative file handling will continue for the present – rather a backward step in a range of computers otherwise "designed for productivity". Similarly, data file handling without CONCAT and APPEND (which join together or attach data to sequential files) is difficult to comprehend. These activities can be "made up" using the COPY and "A" (append) file types from Basic 2.0, but these methods are not as convenient as having a direct command. Maybe Commodore just ran out of space.

Some of these commands are presets for the programmable function keys now offered. DIRECTORY, DLOAD, DSAVE are provided for, and as the keys can be altered to suit your needs, other often-used commands could be added if needed.

Before getting on to other commands, there are some features of the screen editor that merit attention.

As you know, facile screen editing has always been a feature of Commodore computers. You have been able to zip around the screen with ease, editing lines by over-typing and so on.

The C16/+4 go far beyond the facilities provided on many much larger units. Without further ado...

The technique of using these additional editor features hinges on the ESCAPE key. The usual key sequence is ESC followed by something or other, usually written ESC-A, if the something or other is the "A" key. I will describe them that way, so here goes.

ESC-A provides automatic insert mode. If you wish to add to the middle of a line of Basic, this key sequence opens up a space for every new keystroke.

ESC-B sets the bottom right-hand corner of a screen window at the current cursor position. See "Windows" below.

ESC-C turns ESC-A off.
ESC-D deletes the current line under the cursor.
ESC-I inserts a blank line on the screen at the current cursor position.
ESC-J moves the cursor back to the start of the present cursor line.
ESC-K moves the cursor to the end of the present cursor line.

ESC-L turns scrolling on, ESC-M turns it off.
ESC-R reduces the current screen size by one character width, to cope with possible out-of-adjustment of the screen. ESC-N returns it to normal.
ESC-O is the universal "off", turning off insert, quote, reverse and flash modes.
ESC-P erases everything from the start of a Basic line up to the current cursor position.
ESC-Q erases everything beyond the current cursor position.
ESC-T sets the top left-hand of a screen window. See "Windows".
ESC-V scrolls the screen up, ESC-W scrolls it down.
ESC-X cancels the escape function.
ESC on its own is the way to avoid those nasty hang-ups caused by quote mode – you know, when the precious line you are working on gets loused up by cursor left and right symbols, or vanishes altogether.

Windows: a feature of many (more costly) computers is window-setting. This is a trick that permits the user to define the active screen area at any time. The technique is to define opposite corners of a screen "box", and the computer then treats that "box" as the screen for things like PRINT. You may define the total left-hand half of the screen, print a checklist for data entry, then define the right-hand half for a data entry "page". The left-hand half will remain undisturbed by activities on the right side.

To set the top corner in program mode, you need to position the cursor, then send the ESC-T sequence. You set the bottom corner the same way.

There are shorthand techniques for all of these- for example, to insert a blank line you could use:

ESC-RVS-M in direct mode, or
PRINT CHR$(25) in program mode.

There are many and varied combinations of all of these features – and there are a few that Commodore don't even seem to know about themselves!! I'll leave you for now with that thought.

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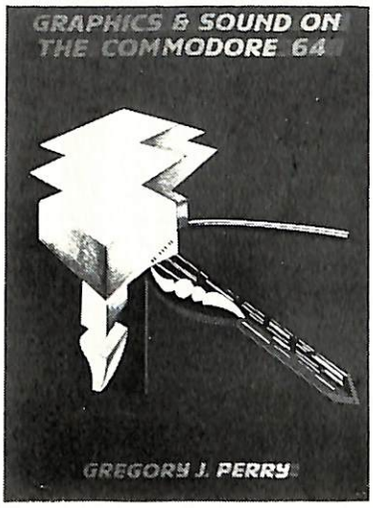

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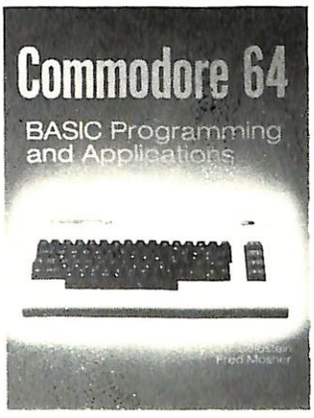

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A comprehensive volume with three self-contained sections. Part I is a step-by-step development of Logo with no user prerequisites except access to a Commodore computer with Commodore Logo. Part II, Quick-Start Logo, is for the person who has some familiarity with Logo. Part III gives a broad overview of Logo that includes its historical development along with useful Logo applications. Together, the three sections form a comprehensive picture and cover all the major Logo topics, including procedures, recursion, co-ordinates, the REPEAT capabilities, screen commands, and the Logo library.

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COMMODORE 64: Basic Programming and Applications

by Larry Joel Goldstein & Fred Mosher

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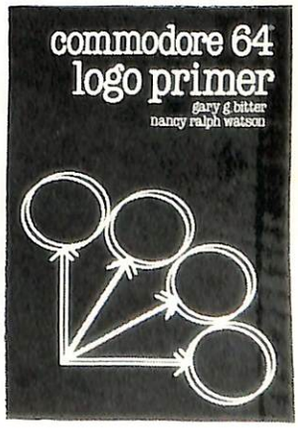

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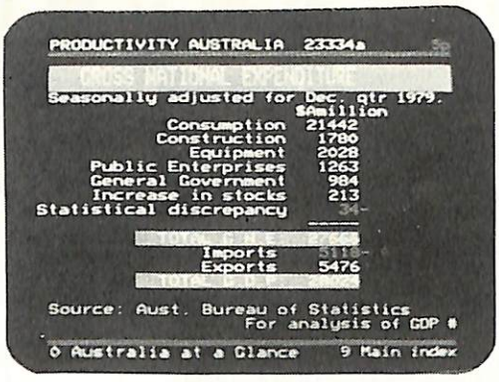
HELLO – Is Anyone There?

Lawrence Hulse



Like a call into the wilderness – there has been little heard about interactive Home Computer communications other than echoes.

But now we are on the brink of a new era which offers low-cost access to large data bases and electronic mail.

There are more than 1000 data bases throughout the world specialising in almost every topic from aviation information to zoological records.

One of the joys about online information services that it takes only a little equipment and a relatively small investment to use them. Your Home Computer (HC) needs to be disk-oriented, because data transmission speed is too fast for saving on cassette tape.

A modem is a must

Modem stands for modulator/demodulator, which translates the digital signals created by the computer into audio signals which the telephone system can recognise (modulation) and converts telephone signals into digital signals usable by the computer (demodulate).

There are two different standards for modems. Australia uses the international telecommunications body's (CCITT) set of standards, while America uses the Bell standard. These two standards are incompatable, because they use different audio tones. (U-S data bases cater for both standards.)

Modems come in basically two forms; the direct-connect type or the acoustic coupler which has two rubber cups which hold the telephone handset.

Most direct-connect modems use a standard RS-232 port and need Telecom approval. Acoustic couplers need not be Telecom approved because they are not plugged into the telephone system.

A major consideration for a modem is its speed capability. At this time, high quality transmission speed is pretty slow at 300 baud per second. That's 30 characters per second. In some instances a 1200 baud rate (120 characters per second) is available. Some overseas countries can cater for up to a 19000 baud rate.

Software

Terminal software (no, it isn't about to die) is needed. That's because your HC becomes a terminal of the data base's main frame machine. Some HCs have telecommunications software built in, while others need disk software.

The best terminal software needs to be versatile and easy to use. They need an upload/download capability (ie send/receive), to save material, and may include options like an auto-dump which automaticcally update the disk when machine memory becomes full.

What's on the other end of the line?

There are well over a dozen data bases available here, and it's quite easy to plug into international data bases, although a bit more expensive.

Telecom's VIATEL

New to the market is Telecom's public access videotex service, VIATEL. Based on the British Prestel service, it will eventually offer a wide range of services including: banking, news, notice boards, business information, travel details andelectronic mail.

Costs are very reasonable as users will pay only $12.50 for the first year of the VIATEL service, then $12.50 a month for business users and only $2.50 a month for domestic users. Then there is a connection time charge of 8¢ per minute between 8am and 6pm, and 5¢ per minute at all other times. These charges are added to your normal telephone bill.

Brian Smith, VIATEL Marketing Manager, says, "We believe that the prices we have set for VIATEL more than meet the view expressed by Australia's videotex industry in Australia."

At press time, Telecom had not responded to our query about press reports that the only modems compatible with VIATEL are expensive 1200 baud rate modems with modified ASCII.

OTC's Minerva

A business oriented service is offered by OTC's Minerva network. In addition to data base access, there is also electronic mail facility which include: word processing, notice boards, conference and personal diary functions.

The Diary is useful to managers where there is a need to schedule meetings between several travelling executives. Noticeboard enables posting of information, bulletins, announcements, schedules or social events.

Conferencing offers the capability of multiple user interchange of information.

There is no registration fee with Minerva and the connect time charge is 25¢ per minute.

Bob McAulay, Data Services Product Manager, says, "The Minerva is intended to be oriented as an international service, to interface with similar dialcom services which are spreading worldwide. An individual may be able to make use of the electronic mail service, which is really the hub of the system, as an international messaging facility. Special interest user groups can have a bulletin board exclusively available to them to disseminate information," he said.

Common traits

Both of these systems, and in fact most data bases, offer privacy via password protection for confidential

Continued on page 14

CICADA
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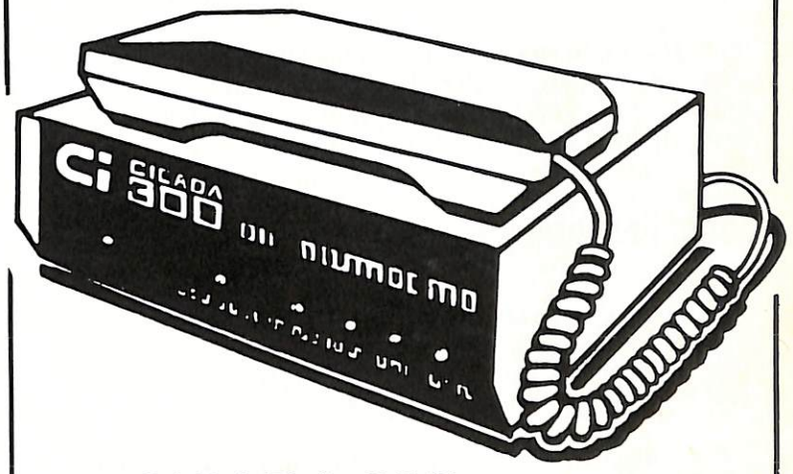
DATA MODEMS



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- CICADA 300T with telephone
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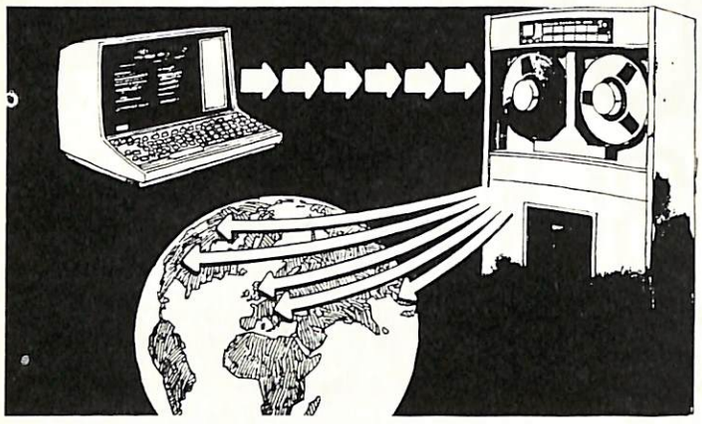


information. In addition they offer "filing" space at an additional charge. This filing capability would be important to user groups who want to use the electronic mail services.

Other data bases

Among easily accessable data bases are The Australian Beginning (due back on line about now), Dialog, IP Sharp, ESA/Quest, Ausinet, The Source, Orbit and World Reporter.

Ausinet is the data base of Australian Consolidated Industries.

Dialog is the oldest service of its type. It was created by Lockheed Corp for NASA researchers who needed fast access to information from a wide variety of fields. It contains over 75 million words on 200 different data bases.

IP Sharp is mainly financial and statistical information. World Reporter offers access to news from 32 countries as it is broadcast and published. Orbit concentrates on patents, chemical and engineering information.

Another way of communicating

Western Australian mining companies are using portable computers to improve two-way radio communications.

Radio communications firm T.R. Barrett of Spearwood, south of Perth, has helped the companies set up communications networks using their commercial two-way radios with Commodore computers.

Transmission can be via HF (3 to 30 MHz) single sideband or VHF and UHF FM radio links. It is also possible to use the computers and their AMTOR units to communicate via regular telephone lines.

The field units are using Commodore SX64 "Executive Portable" machines, while most base stations are connected through Commodore 64 personal computers.

The Radios and computers are wired into an AMTOR unit, a sophisticated electronic black box which sends and receives text and data with full error-correction.

This means that even in poor radio conditions, the messages do not get garbled, as they do on conventional radio teletype systems.

The AMTOR unit (which is normally used for advanced Amateur Radio Communications) continuously checks each character as it is received, and transmits signals back every split second so that the sending station's computer knows the message has been received properly.

Each sequence takes only 450 milliseconds: 250ms is used to transmit, 70 ms for verification, and the rest in sending the signal from one station to the other at the speed of light.

If the text gets garbled, the sending station just keeps repeating it until the two computers agree.

Since this is accomplished in split-seconds, the two-way radio equipment has to be able to switch extremely quickly between transmit and receive

This type of computerised radio communication is fast replacing radio teletype services because of its speed and reliability. It also, offers a high degree of security.

W.A. radio salesman Tom Barrett using a Commodore SX-64 portable computer to send and receive error-free written messages to a mining camp via 2-way radio.

THE JARGON

ASCII – the standard form of information which travels between electronic equipment, and so a computer must be able to "speak" this form. (American Standard for Information Interchange)

Audio coupler – a type of modem which physically, not electronically, connects your PC to the telephone.

Baud rate – the speed at which information travels between the data base or mainframe and your PC. (300 baud = 30 characters per second)

Connect time – the time which your PC is connect to the data base. There is usually a charge for this time which you must pay.

Data base – an organised collection of facts in computer readable form.

Download – take and save information from an online data base.

Modem – the attachment which turns computer digital information into audio tones for telephone transmission.

Networking – the ability to share information and computing power of a data base.

Password – your personal code which identifies you to the data base.

Terminal – any device which can communicate with a computer.

Upload – feeding a file from your system onto the data base.

User – a person, group or organisation which uses a data base.

If you want more information about these data bases, modems, or netrwork facilities – please let us know and if demand is sufficient, we'll run another communication feature soon. Until then keep listening as the wilderness is beginning to answer all of the calls.

COMMODORE CRACKSHOTS

The Commodore Crackshots is a rather unique Commodore Users group. They were formed by Chris Nihill and Peter Harding some eight months ago.

What makes Crackshots so interesting is that they are Australia wide and meet via the telephone using THE AUSTRALIAN BEGINNING (TAB) database.

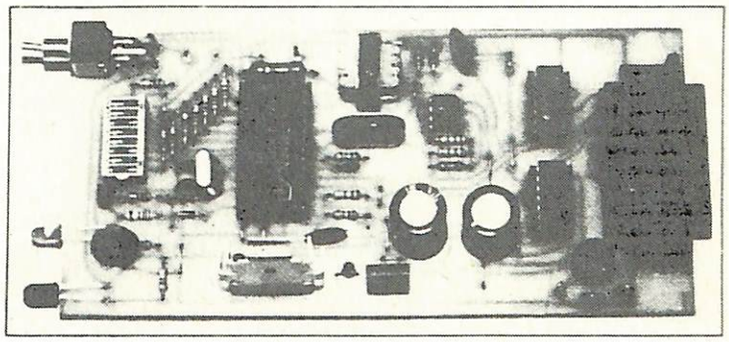
At present they are only twenty in number and have no treasurer because there is no joining fee or subs involved. All the members own modems and all the business is done through the TAB. TAB have encouraged the group with a discount in rates charged to members and have supplied them with their own private bulletin board.

Each member refers to each other by their TAB supplied USENAME and all correspondence, notices and other information collected by the club is available via the database to every member. A list of activities of the group include:
Upload files and/or programs
Download the same for storage or printout
Send Telex anywhere in the world (a standard TAB service)
Purchase goods on the systems shopping box
Chat to each other and exchange news and views.
The last activity is how the group holds its monthly meetings. Users log on and are automatically given a Personal Identification Number (PID). When they enter the chat section a list of all members currently on the system is displayed. Users merely type in the PID nos. they wish to talk to. The group has had up to 13 members on line at once so there is plenty of room for people at the meetings.

The group has been held up in recent times by the fact that TAB has been off the air. However we have been notified by TAB that they have fixed their problem and should be back on air by the time this issue hit the streets. Further information send SAE to Peter Harding, Secretary, Commodore Crackshots (Aust), 1/57 Walker St., Northcote, VIC. 3070

KIWI MODEM

Dick Smith Electronics (New Zealand) have brought out the MEGA MODEM kit. We have not, as yet, built or tested the units but know that it is being evaluated by DSE Australia. Cost NZ$249.



Based around the well known AM7910 Modem "World Chip" this New Zealand designed kitset uses the latest semiconductor technology. Only four integrated circuits have been used. Direct connection to private phone lines gives "error-free" data transmission. An eight-way DIP switch offers 300, 600, and 1200/75 baud rates, answer/originate and full self test in both Bell and CCITT standards.

Features include a phone/modem switch, carrier detect LED, crystal controlled oscillator, and an RS232C interface.

Continued page 38

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INTERFACE DEBUGGING

It is handy to have a 'black box' which performs front panel functions, when debugging interfaces. Here, with a few minor alterations, is a reprint of part of an article from Vol 1 No 4 of the Commodore Magazine. We believe that it may give some experimenters a few ideas.

This box is called Blinkin Lites, and it displays the state of each of the IEEE 488 line and some switches to force the lines low if needed. Figure (1) shows the circuit, and Fig.(2) is a sketch of the box.

Each line is pulled up to «5v with a 10K resistor – the high value was chosen to minimize the load on the 488 bus. The switches can override any line when they are closed to ground.

Each line is pulled up to +5v with a 10K resistor – the high value was chosen to minimize the load on the 488 bus. The switches can override any line when they are closed to ground.

The LEDs draw 170 mA so avoid using the +5v from the tape port.

Supplied with male and female connectors the Blinkin Lites can go between the computer and an instrument.

It easiest to mount a 5 x 7 inch perf-board with 0.10 inch holes into a standard breadboard box and place a label near each switch/LED combination to identify the IEEE lines. The three ICs are the 7404s used to drive the LEDs.

When making the Blinkin Lites is plugged in, the LEDs shows the state of the lines. An LED that is off indicates a low line, which is true, an on-LED indicates high, which is false.

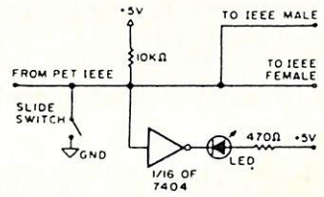

Fig. 1 IEEE "Blinkin Lites" circuit.
Each IEEE line uses one copy of this circuit.

When making the cable, remember that there is a strict length limit of five metres distance between two devices. A maximum of 15 devices, including the computer, can be hooked together and then the longest distance from one end of the set up to the other 20 metres.

It is also wise to avoid electrically noisy areas; so don't drape the IEEE 488 cable over the TV.

Reference:'Get Your PET on the IEEE 488 Bus' by Gregory Yob, The Commodore Magazine, Vol1 No4

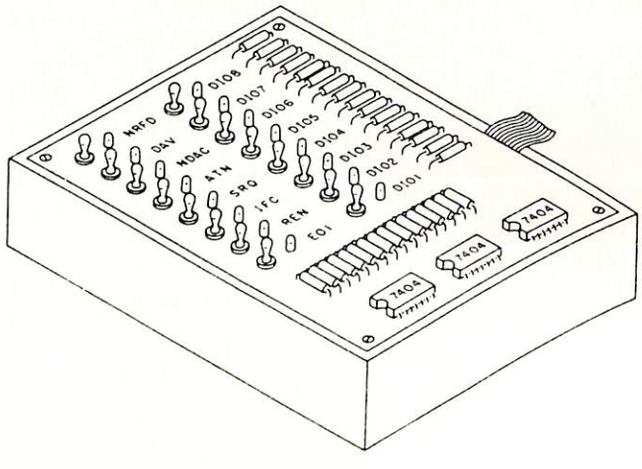

Fig. 2 Sketch of the "Blinkin Lites".

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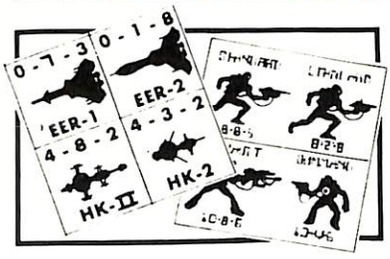
SCRATCH BUILDING

We look at scratch building techniques of Science Fiction models. Spaceships, Diaramas, Models etc. In issue one we demonstrate how to *"scratch build"* our cover ship the SX-35 Inter-System freighter.

MODEL REVIEWS

Pandora will take a critical review of model kits that are on the market and also discuss modelling techniques and adaptations. In issue one we will be reviewing the S.F.-3D Collection of Armour Suit Models.

GAMES CAPSULES



Pandora will feature complete *"Role Play and Board Games"*. We have commissioned Mr. W.G. Armintrout,* well known games author to write three capsule games for us and we will also be featuring items from local authors.

PLAY BY MAIL (PBM)

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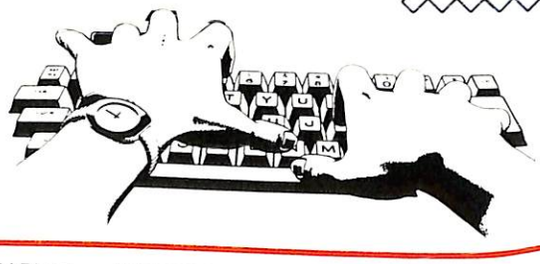

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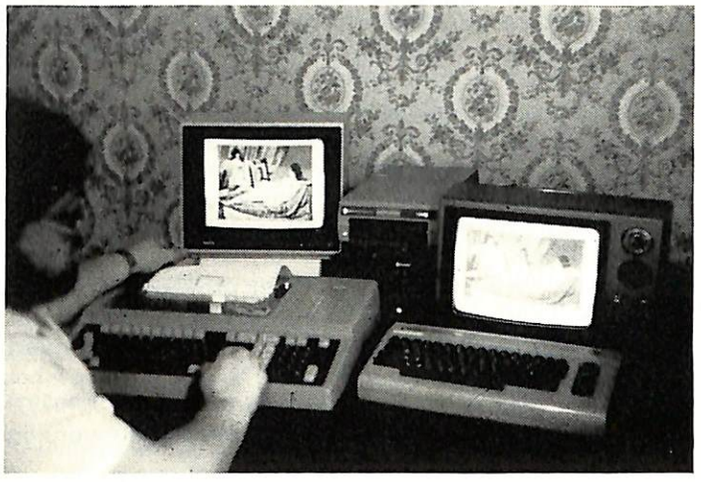
*Mr W.G. Armintrouts' first game may not appear in Issue One, as it is still in the mail to us.

TRANSFERRING PICTURES TO A DIFFERENT BRAND OF COMPUTER

by H T Salive, Kiwisoft



Transferring pictures to another brand of computer is difficult because the computers may use different sets of colours and have different screen sizes. Transferring pictures is worthwhile, however, since it gives other people a chance to enjoy computer pictures in their own homes on their own computers.

Our experience transferring multicolour CADPIC pictures from the C-64 to the Oki-Sigma if800 (BMC if800) should help others hoping to transfer pictures to or from the C-64. We succeeded in transferring 160 x 200 pictures in 16 colours from the C-64 to a 640 x 200 picture having only eight colours. The converted picture on the Oki-Sigma looked pretty good.

Our first step was to convert the C-64 picture to simple form in a file to take over to the Oki-Sigma. The reason we put the picture into a simple form was to make life easy for the Oki-Sigma programmer. This way he would not be required to know anything about colour memory or the organisation of screen memory in the C-64.

The simple form we chose to use for the picture file was 160 x 200 colour numbers with each pair of colour numbers packed into a byte. Since colour numbers on the C-64 range from 0 to 15, they only need half of a byte or character for storage. The first number times 16 plus the second colour number can be stored as a single character:

C64 PROGRAM CONCEPT

```
10  REM PUT CODE TO LOAD PICTURE TO SCREEN
    HERE
50  REM PUT CODE TO OPEN OUTPUT FILE 1 HERE
100 FOR Y=0 TO 199
110 FOR X=0 TO 159 STEP 2
120 XX=X
130 GOSUB 500
140 PX=P1
150 XX=X+1
160 GOSUB 500
170 PRINT#1,CHR$(16*PX+P1); :REM REMEMBER
    SEMICOLON
180 NEXTX
190 NEXTY
200 CLOSE1
210 END
500 REM ROUTINE TO GET COLOUR OF PIXEL AT XX,Y
510 REM P1=GETPIXEL(XX,Y)
520 RETURN
```

The GETPIXEL routine used depends on where your loaded picture is stored. (See page 126 in the Programmers Reference Guide.) We used a multi-colour CADPIC picture with the 8K of pointers at 24576 and the screen memory at 23552. The required formulas to access the pixels are:

```
BYTE= PEEK(24576+320*(INT(Y/8))+8*(INT(X/Y))+(Y AND 7))
POINTER= (BYTE/2↑(6-((X AND 3)*2))) AND 3
OFFSET= 40*INT(Y/8)+INT(X/4) :REM for CM or SM
BG= background colour
```

The POINTER ranges from 0 to 3 allowing selection of BG, top half of SM+offset, bottom half of SM+offset, or bottom half of CM+offset. The selected colour number ranges from 0 to 15 and is returned in P1.

Once we set up the simplified picture file, we then wired up an RS232C cable with DB25 connectors on each end. At the C-64 end we used an RS232C interface board (from JUAL Computing in Auckland) which takes the user port and turns it into a standard RS232C port. The Oki-Sigma end was already RS232C standard so we didn't need to buy any special extra hardware.

We used a CP/M communications package to manage the link at the Oki-Sigma end and wrote our own BASIC program for the C-64 to do the corresponding work for the C-64. A variety of ready made packages could have been used on the C-64 end.

Our next task was to write a BASIC program on the Oki-Sigma which read the picture file in, translated the numbers somehow, stored the translated numbers into the screen memory, and finally at the end saved the screen memory as a standard Oki-Sigma picture file. The hard part was to decide what to do about all the extra C-64 colours and the extra picture space available in the Oki-Sigma.

The eight Oki-Sigma colours are: black, red, blue, cyan,

Continued Overleaf

continued from previous page

yellow, green, purple, and white. We could have built in a rule which arbitrarily converted the eight extra C-64 colours to ones in the Oki-Sigma set. However, a lot of our CADPIC pictures made heavy use of the greys and brown in particular and we would have had a mess.

We chose to use a dithered colour set on the Oki-Sigma so that we could get virtually all of the C-64 colours. Dithering uses groups of colour dots to fool the eye into thinking there are more colours than are actually present. The eye actually blends the colour dots together to produce the additive result.

We used a three horizontal dot dither to produce the extra colours. Our three dot mixtures for the 16 colours were:

C-64 COLOUR	DOT 1	DOT 2	DOT 3
black	black	black	black
white	white	white	white
red	red	red	red
cyan	cyan	cyan	cyan
purple	purple	purple	purple
green	green	green	green
blue	blue	blue	blue
yellow	yellow	yellow	yellow
orange	yellow	red	red
brown	red	black	black
light red	purple	red	red
grey 1	green	red	blue
grey 2	yellow	cyan	purple
light green	cyan	green	green
light blue	cyan	purple	blue
grey 3	white	white	yellow

You can get an idea of how the horizontal dots work by doing three tiny horizontal dots on paper with colour pens or crayons and then standing back from the sheet and merging them with your eyes.

The groups of three solved our problem of matching up the C-64 colours which were missing but still left us with the problem of the different screen sizes. The Oki-Sigma screen is 640 dots wide. Using our triple dot dither we end up with 213 1/3 dithered dots across the Oki screen. Since the C-64 only has 160 multicolour dots across, some adjustment needed to be made. Also the odd dot making up the 1/3 at the end of the Oki line needed to be handled. We chose to take every third C-64 dot on the line and do it twice. This gave us 160 + 53 = 213 dots. The last partial dot we just arbitrarily made black. (Starting with a high resolution C-64 line of 320 dots would require you to throw out one third plus one 107 instead of adding 53.)

Moving down the Oki-Sigma screen proved no problem. Both the C-64 and the Oki-Sigma had 200 lines. Consequently we had a full set of rules to use to convert the picture.

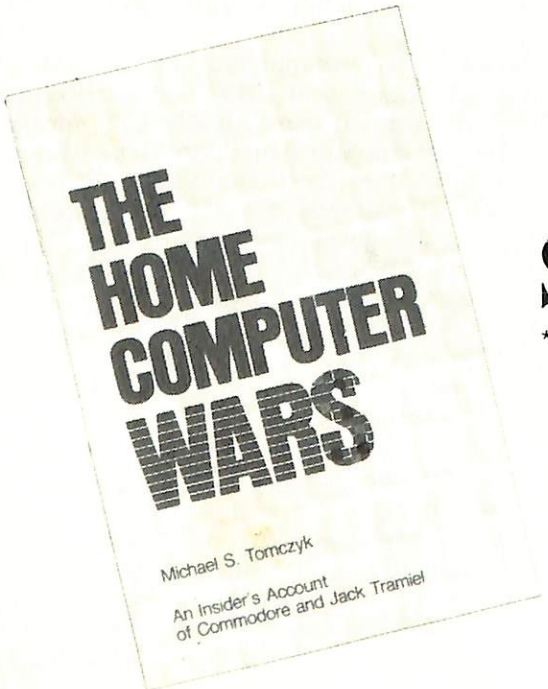
The following description summarizes the conversion process:

TARGET COMPUTER PROGRAM CONCEPT

```
5   REM:PUT DIM PVAL(15,2)
    and then set up CONVERT TABLE PVAL
10  REM: PUT CODE TO OPEN FILE HERE
100 FOR Y=0 TO 199
110 XX=0
115 FOR X=0 TO 159 STEP 2
```

continued on page 50

. . . NOW AVAILABLE . . . NOW AVAILABLE . . . NOW AVAILABLE



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The Home Computer Wars
An Insider's Account of Commodore and Jack Tramiel
by Michael S. Tomczyk

Jack Tramiel built a tiny typewriter parts company into Commodore, the most successful consumer computer manufacturer. After leading Commodore to the forefront of the home computer market, Tramiel, in 1983, left his company and recently bought Atari, one of his victims in the home computer wars.

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Reviews

Software and Publications

'WHO YOU GONNA CALL, GHOSTBUSTERS*'

reviewed by Wayne B. Hodges

"Hey anybody out there seen a ghost?" So begins one of the most exciting games of the year, GHOSTBUSTERS* from ACTIVISION, from the film of the same name (released by COLUMBIA PICTURES)

What is this all about? Are we going to be ripped off?

No you are certainly not!

NOW TO BEGIN

I will describe the game in full so that you will have a good idea what it is all about, and how to play it. Whether you play it successfully – is your business.

Firstly, as with all computer games – read the instructions, this one is no exception. There is a great deal of information about how to play it. Curb the excitement and enthusiasm and start with the rules, FIRST.

After loading the game you are immediately confronted by the 'GHOSTBUSTERS*' logo – and that great music is being played. Also you will soon discover Synthesised music and speech which is a great achievement is this production. After pressing the function key you are formally welcomed and advanced $10,000 for a franchise to trap ghosts. The money is used to purchase equipment. You're choice here is staggering. Four different vehicles and a whole collection of scientific equipment. The choice of gear at this stage is most important.

The next step GHOST-BUSTING, into the streets of New York and trap those ghosts. You must be on the ball otherwise you may be slimed. Technique is important here, you have three men to use in your business, and each time you do trap a ghost you receive payment for the service. You must exceed the $10,000 loaned to you by the time the GATEKEEPER AND THE KEY MASTER come together. (otherwise you are finished).

After a while your ghosthunting technique becomes rather professional, but then you must deal with MARSHMALLOW MAN and the temple of ZUUL.

CONCLUSION

Considering the great success of the movie and the soundtrack it is a great achievement from David Crame and ACTIVISION to create such an exciting game. It is challenging and rewarding to play, and should prove a great success with all the family.

Name: GHOSTBUSTERS
Producer: ACTIVISION
Author:DAVID CRANE
Available: Most Dealers

* "GHOSTBUSTERS" is a trademark of COLOUMBIA PICTURES INDUSTRIES, INC."

GRAPHICS MASTER 64

reviewed by Richard Chalmer

What gets on my gander are companies who produce software utilities that produce programs that (they hope) produce sales of the utility so that other people can run the programs. A bit like the Book of Genesis – A begot B begot C etc....

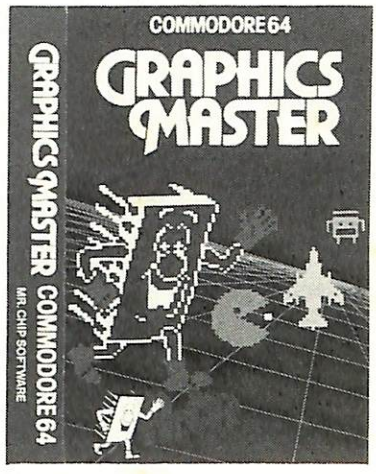
Well Mr. Chip has added salt to the wounds of some of the above unmentionable companies by producing GRAPHICS MASTER (GM) a sprite and character editor that adds to your existing programs and is not needed to rerrun them.

GM allows you to design entirely new character sets or individual characters. For example you could arrange that every time you press '.' a little kiwi or kangaroo would appear instead. GM also allows you to design hi-res and muticolour sprites, save them on disk or tape, and call them up in your programs with a simple four line subroutine :-

```
10 POKE 51,00: POKE 52, 48: POKE 55,00:
POKE 56,48
20 IF L THEN 40
30 L=1: LOAD "(name)", A, 1: REM WERE
A=1 FOR TAPE AND 8 FOR DISK

40 REM YOUR PROGRAM STARTS HERE
```

The GM program comes on cassette with a little manual. I waded in with pure disregard for this item. Loading took 3 minutes and a few seconds. Up comes the opening graphics – 'press F1 to continue'. It



always facinates me why producers do this if you've loaded the program – of course you want to run the —@!dy thing!

Up comes a screen with two windows. Down the right hand side of the screen is a list of user commands and across the bottom is the current character set. All very nicely set out.

There are three modes of operation:-

1. CHARACTER EDITOR for modifying and/or creating new screen characters.
2. CHARACTER DISPLAY to display the character or group of characters as they will be seen on the screen.

Switching between these two modes is as simple as typing 'J'. The modes operate in two separate windows side by side on the same screen.

3. SPRITE EDITOR. This is a totally new screen achieved by 'C=S'. The editing is simply a matter of '*' to fill a pixel or 'space' for a space. In both sprite and character editors you have full cursor control, reverse, mirror and rotating imaging and sprites can be expanded and contracted along the X,Y axis.

I did have to go to the manual to work out how to do multicolour sprites but it was of little use. The trick is to use alternative pixels when in multicolour mode i.e.:-

```
* * * * * *   - character colour
 * * * * * * * - first colour
* * * * * * * * * * * * - second
colour and hi-res.
```

Confused? Get a copy of GM and experiment you will soon see what I mean and how simple it is.

Another beautiful fact that the manual does not mention is the ability to check both sprite and custom character overlay

Reviews

animation routines. These can be reviewed at the design stage just with the use of 'N' next and 'P' previous.

GAMES MASTER is great fun and allows the user to get quickly into custom character and sprite design and use without having to know what goes on under the bonnet. The manual (instruction sheet really) is adequate and the program is relatively inexpensive. I'd recommend it to people who just like mucking around, want to enhance existing programs and educationalists who wish to clarify topics with colour and graphics.

Name: GRAPHICS MASTER
Producer: MR. CHIP SOFTWARE
Price: $15.95(tape) special offer
refer elsewhere this issue.

SOME RECENT BOOKS

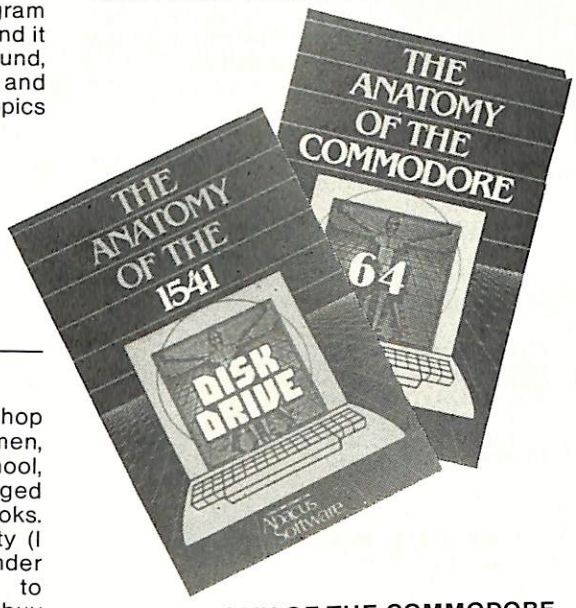
I was browsing through a local bookshop the other day. Three young gentlemen, obviously playing hookey from school, were contemplating the pre-packaged hardware displayed next to the books. After discussing their lack of liquidity (I figured they had about $25 in legal tender between them), they were heard to observe that it was better value to buy books, and learn to write their own material, than to buy programs that they soon tired of. Quite refreshed by their attitude, I moved off to see what else was new.

With more than 100 titles to choose from, the question of which books to buy is quite difficult. From observation, many appear to have been rushed onto the market, with more attention to an eye-catching cover than any depth of content. But there are some very good books as well, and we plan to apply some strong standards in our reviews to help you make the best selection.

The two books we chose for review come from the same source. Arnie Lee and Abacus Software are well known to older Commodore computer fans, through a number of very useful publications for the PET and CBM machines. Arnie has a reputation for being selective about material to which he puts his name, and it was on the strength of it that I got copies of his most recent books.

The books, "THE ANATOMY OF THE COMMODORE 64" and "THE ANATOMY OF THE 1541 DISK DRIVE" are companion volumes originally sponsored by Data Becker Gmbh in West Germany. Dr Achim Becker is a respected figure in European Commodore circles, and with his co-authors has set out to provide help and useful information on the operating systems of both the C64 computer and the 1541 disk drive.

What can you expect for your investments? Are the books worth the money? For each of you, dear readers, the answer will differ. But if you want to know more about both pieces of Commodore computing hardware, you will certainly have your knowledge upgraded with these offerings. Mind you, I wouldn't rate them the best on offer, but more of that anon. Let's get down to the books themselves.



THE ANATOMY OF THE COMMODORE 64

Authors: M. Angerhausen, Dr A. Becker, L. Englisch, K. Gerits
Published by Abacus Software, Michigan, USA
Available in Australia from most bookshops and Commodore dealers. RRP $29.95
Sample from : CW Electronics Pty Ltd.
Paperback, stiff spine, 290 pages
Currency: Covers -02 ROM set, now superseded in most countries.

The Table of Contents lists 8 chapters and 4 appendices. Rather sadly, the Contents page shows up the lack of organisation in the book, as Chapter 1 is about machine language programming, eventually getting to Chapter 6 which covers Basic programming. Most users seems to start out with Basic, and an increasing number try themselves out with machine language after some time at Basic. OK, so start at Chapter 6 – but as there is no index, it may take a little while to pilot your way through the quite useful text section in a logical way.

By page 134, Abacus have blasted their way through machine language, Basic, sprites and the sound synthesizer. For a more experienced hand, the compact handling of programming and useful tidbits is well done. For the novice, it's too much too soon. To be up to setting control registers for RS232 output by page 28 was a bit too rapid, even for my rich tastes.

Appendix A is the main value of the book. When (if?) you read the notes that follow on the 1541 disk drive, you will observe my different attitudes to the two books. It nearly saves the C64 book, but not quite.

The Commodore 64 operating system is a complex maze of interpretive machine code, designed to be very easy to use from Basic, handling the keyboard, screen, and sundry peripheral items such as data cassettes, disk drives and printers (and many other items you may lash up, as well) The routines have been enshrined in a number of Commodore computers, and most work well. To the machine language (and sometimes Basic) programmer, there are literally hundreds of useful blocks of code that can be used as subroutines from other programs.

The trick is knowing where to find the routines needed, so a readable listing of the contents of the operating system, together with understandable commentary, is especially useful. With suitable programs, producing the listing is child's play. Making intelligent commentary is not. Given the size of the Basic interpreter, and the multiple authorship claimed, the commentary was obviously hurried through. Given the skills of Dr Becker, the commentary was skimpy – there are a number of pages devoid of any pointers as to what is taking place. Some sub-routines are unlabelled, which makes interpretation that bit more difficult again.

As noted above, the book covers the -02 ROM set, now superseded by the -03 set. The differences have been noted elsewhere in this magazine (where??????? Edt – page 13 last issue) and represent changes to 58 bytes only. An article on soft-loading the changes is being prepared, and it will run in a future issue.

PLUSES: In the right place at the right time; physically readable (even to my lousy eyesight); provides some interesting insights into aspects of Basic that will be new to many.

MINUSES: Appendix A is not very thorough; annoying number of typographical errors, possibly due to the translation process; no flex-back binding (the spine quickly cracked even with careful handling); poor logical sequence of chapters; no index.

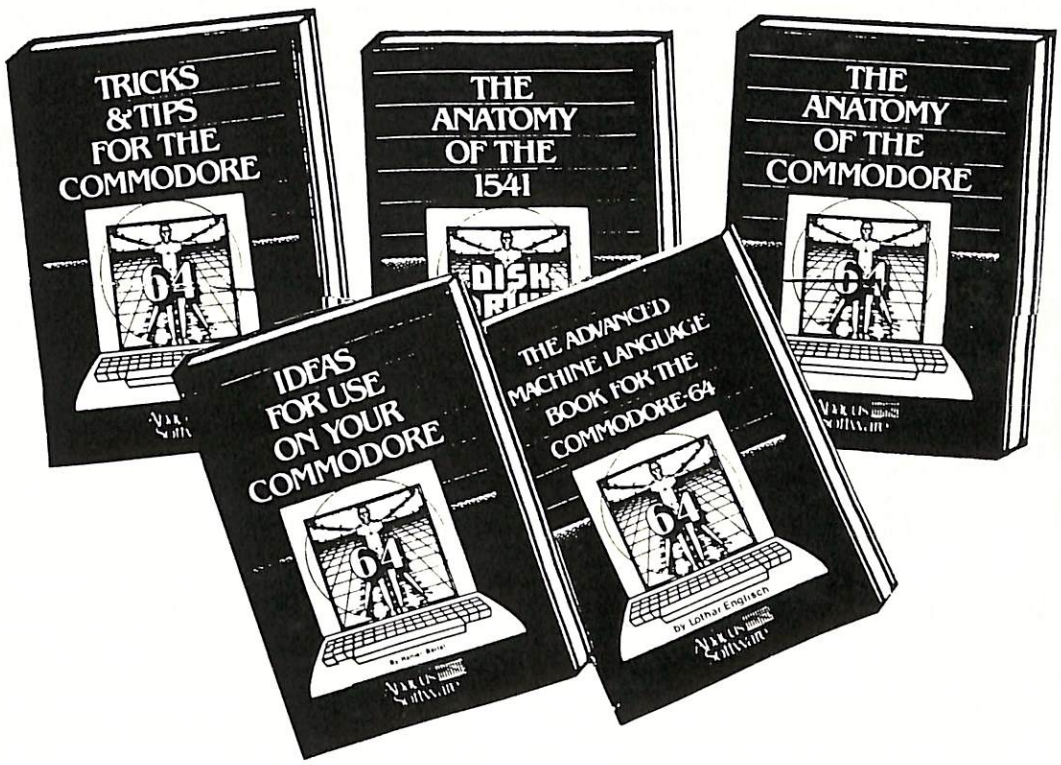
SUMMARY: Number 2 in the C64 interpreter listing market place. Well ahead of about 3 others that claim to 'tell it all' Not as good as one other I have seen, which includes very useful cross-references of locations and system addresses.

THE ANATOMY OF THE 1541 DISK DRIVE

Authors: L. Englisch, N. Szczepanowski.
Published by Abacus Software, Michigan, USA

MORE REVIEWS page 53

Required Reading for your COMMODORE 64



TRICKS & TIPS FOR YOUR C-64 treasure chest of easy-to-use programming techniques. Advanced graphics, easy data input, enhanced BASIC, CP/M, character sets, transferring data between computers, more.

ANATOMY OF 1541 DISK DRIVE - bestselling handbook available on using the floppy disk. Clearly explains disk files with many examples and utilities. Includes complete commented 1541 ROM listings.

ANATOMY OF COMMODORE 64 - insider's guide to the '64 internals. Describes graphics, sound synthesis, I/O, kernal routines, more. Includes complete commented ROM listings. Fourth printing.

IDEAS FOR USE ON YOUR C-64 - Wonder what to do with your '64? Dozens of useful ideas including complete listings for auto expenses, electronic calculator, store window advertising, recipe file, more.

ADVANCED MACHINE LANGUAGE FOR C-64 - covers topics such as video controller, timer and real time clock, serial and parallel I/O, extending BASIC commands, interrupts. Dozens of sample listings.

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WRITING DISK ERRORS

There have been many enquiries from people who have written software, and want to put some form of copy protection on to the diskette. Although disk protection schemes are not foolproof, the idea behind their requests is to stop every Thomas, Richard and Harold making off with their hard work.

The program that follows will permit you to do just that. There are a number of types of disk error that you could use, but Errors 20 to 23 are probably the easiest and most reliable to use.

Disk Error 20 affects the header of a selected sector, the area where some identifiers have been written when the disk was first formatted.

Disk Error 21 destroys the synchronization bytes used by the disk drive to keep time between the rotating disk and the control timer.

Disk Error 22 usually occurs when you ask the disk drive to read a track or sector that doesn't exist, e.g., Track 42 or Sector 99.

Disk Error 23 is a checksum error, and means that data being read doesn't add up to the checksum stored with the data.

The error you choose will depend on your application, and only you can do that. From experience, this will vary from case to case.

A word of warning!! ALWAYS experiment on a scratch disk – one that it doesn't matter if it gets messed up. If things get too messy, simply NEW the disk and all things will be restored to normal.

```
100 REM DISK ERRORS 20 TO 23
110 REM
120 REM FOR COMMODORE 1541 DRIVE
130 REM
140 REM PBE/COMMODORE MAGAZINE (AUST)
150 CLR
160 BY(0)=0 :REM ERR20
170 CA(0)=1
180 CN(0)=1
220 BY(2)=0 :REM ERR22
230 CA(2)=15
240 CN(2)=40
250 BY(3)=0 :REM ERR23
260 CA(3)=128
270 CN(3)=25
280 K$(0)="[RVS]"
290 FORX=0TO88:READD:M1$=M1$+CHR$(D):NEXT
300 FORX=0TO67:READD:M2$=M2$+CHR$(D):NEXT
310 OPEN15,8,15
320 OPEN2,8,2,"#0"
330 OPEN3,8,3,"#1"
340 PRINT"[CLS]"
350 PRINT"[HOME] DISK ERROR"
360 PRINT"[space 4]- - - - - - - - - -"
370 S$=" READ ERROR"
380 PRINT"F1 = SELECT ERROR"
390 PRINT"F3 = SELECT TRACK & SECTOR"
400 PRINT"F5 = END PROGRAM"
410 PRINT"[CRDN]"K$(0)"20"S$
420 PRINT"[CRDN]"K$(1)"21"S$
430 PRINT"[CRDN]"K$(2)"22"S$
440 PRINT"[CRDN]"K$(3)"23"S$
450 GETT$:IFT$=""THEN450
460 IFT$=CHR$(133)THENK$(S)="":
    S=3ANDS+1:K$(S)="[RVS]"
470 IFT$=CHR$(134)THEN500
480 IFT$=CHR$(135)THENCLOSE15:END
490 GOTO350
500 INPUT"[2CRDN]TRACK :";TR
510 IFS=1THENSE=0:PRINT"[CRDN]NO SECTOR REQUIRED":
    GOTO530
520 INPUT"[CRDN]SECTOR:";SE
530 PRINT#15,"U1:"2;0;TR;SE
540 INPUT#15,EN,EM$,ET,ES
550 PRINT"[CRDN]"EN;EM$;ET;ES
560 IFEN<>0THENPRINT"[CRDN]>DISK ERROR<":GOTO700
570 PRINT#15,"B-P:"3;0
580 IFS=1THENPRINT#3,M2$:GOTO600
590 PRINT#3,M1$
600 TX=20
610 IFTR>17THENTX=18
620 IFTR>24THENTX=17
630 IFTR>30THENTX=16
640 SX=SE-1:IFSX<0THENSX=TX
650 MC$="M-E"+CHR$(3)+CHR$(4)+CHR$(TR)+CHR$(SX)+
    CHR$(CA(S))+CHR$(CN(S))+CHR$(BY(0))
660 PRINT#15,MC$
670 PRINT#15,"U1:"2;0;TR;SE
680 INPUT#15,EN,EM$,ET,ES
690 PRINT"[CRDN]"EN;EM$;ET;ES
700 GETT$:IFT$=""THEN700
710 GOTO340
720 DATA76,22,4,173,5,2,174,6,2,133,8,134,9,169,224,133,1,165,1,
    48,252,96
730 DATA32,10,245,44,0,28,16,251,32,86,245,174,8,2,172,7,2,184,
    80,254,136
740 DATA208,250,169,255,141,3,28,173,12,28,41,31,9,192,141,12,
    28,173,9,2,141,1
750 DATA28,184,80,254,202,208,250,173,12,28,9,224,141,12,28,
    169,0,141,3,28,76,105,249,0
760 DATA76,22,4,173,5,2,174,6,2,133,8,134,9,169,224,133,1,165,1,
    48,252
770 DATA96,169,255,141,3,28,173,12,28,41,31,9,192,141,12,28,169,
    0,141,1,28,168,170,80
780 DATA254,232,208,251,200,208,247,173,12,28,9,224,141,12,28,
    169,0,141,3,28,76,105,249
```

DISK NAME CHANGE

Paul Blair

Familiarity breeds attempt, as the blonde said to her girlfriend. Over the years that I have used this program, I had long ceased to note its real worth, until someone asked me the other day if it is possible to change the name of a diskette without having to go through the hassle of formatting a new disk, and endlessly copying files. . . . . .

It is only a short program, so type it in for future use. Line 320 simply reads in Track 18 Sector 0, and line 330 points to the locations where the disk name is stored. You will then be asked to nominate a new name, which will then be written back to the disk (line 560) and you may then elect to finish, or go on and do another diskette. No prizes for originality, but full marks for usefulness.

The items in square brackets ([RVS] and so on) are simple representations of Commodore control characters:

[CLS] is clear screen
[CRRT] is cursor right
[CRDN] is cursor down
[CRUP] is cursor up
[RVS] is reverse on
[16SP] means 16 spaces

```
100 REM DISK NAME CHANGER
110 REM COMMODORE 64/1541 DRIVE
120 :
130 OPEN9,0,0:OPEN15,8,15:PK=PEEK(53272):POKE53272,23
```

continued next page

```
140 XF$="[HOME]":FORI=1TO20:XF$=XF$+"[CRDN]":NEXT
150 FORI=1TO39:BL$=BL$+" ":NEXT
160 P0$="[CLS 2CRDN] DISK NAME CHANGER
170 CN$="PRESS RVS]RETURN[RVS OFF] TO CONTINUE
180 DATA2,OUT OF RANGE,TOO LONG
190 READA:DIMEM$(A):FORI=1TOA:READEM$(I):NEXT:
    GOTO280
200 INPUT#9,IN$:PRINT:Q1$=LEFT$(IN$,1):RETURN
210 CLOSE2:CLOSE15:POKE53272,PK:PRINT"[CLS]":END
220 PRINTLEFT$(XF$,XF)BL$:PRINTBL$
230 PRINTLEFT$(XF$,XF);:RETURN
240 XF=21:GOSUB220
250 PRINT"[RVS]UNACCEPTABLE ENTRY —"EM$(EM)
260 PRINT" "CN$:GOSUB200:GOSUB220
270 RETURN
280 F=0:PRINTP0$:DV=0
290 PRINTP0$:PRINT"[CRDN] PLACE DISKETTE IN DRIVE"
    DV"[CRDN]"
300 PRINT"[6SP]"CN$:GOSUB200
310 PRINT#15,"I0":GOSUB660
320 OPEN2,8,2,"#":PRINT#15,"U1:"2;0;18;0:GOSUB660
330 PRINT#15,"B-P";2;144:GOSUB660:DN$=""
340 FORI=1TO16:GET#2,A$:DN$=DN$+A$:NEXT
350 XF=10:GOSUB220:IF F THEN RETURN
360 PRINT"PRESENT DISK NAME: ";
370 PRINTCHR$(34)DN$CHR$(34)
380 XF=13:GOSUB230
390 PRINT"DO YOU WISH TO CHANGE IT? (Y/N) RVS]"::
    GOSUB200
400 IFQ1$="N"THEN610
410 IFQ1$<>"Y"THEN380
420 XF=16:GOSUB230
430 PRINT"ENTER NEW DISK NAME <16 CHARACTERS MAX>
    [RVS]"
440 PRINT"[RVS][16SP][CRUP]"
450 GOSUB200:IFLEN(IN$)>16THENEM=2:GOSUB240:XF=18:
    GOSUB220:GOTO450
460 NN$=LEFT$(IN$+BL$,16)
470 XF=21:GOSUB220
480 PRINT"SEND NEW NAME RVS]"NN$
490 PRINT"[RVS OFF]TO THE DISKETTE (Y/N) RVS]"::
    GOSUB200
500 IFQ1$="Y"THEN530
510 IFQ1$<>"N"THENGOSUB220:XF=18:GOSUB220:GOTO420
520 GOTO470
530 XF=21:GOSUB220:PRINT"BE PATIENT...
540 PRINT#15,"B-P";2;144:GOSUB660
550 PRINT#2,NN$;:GOSUB660
560 PRINT#15,"U2:";2;0;18;0:GOSUB660
570 PRINT#15,"I0":GOSUB660:CLOSE2
580 F=1:PRINTP0$:GOSUB310:F=0
590 PRINT"THE NEW DISK NAME IS: ";
600 PRINTCHR$(34)DN$CHR$(34)
610 CLOSE2:XF=21:GOSUB220:PRINT"DO YOU WISH TO DO
620 PRINT"ANOTHER DISKETTE? (Y/N) [RVS]"::GOSUB200
630 IFQ1$="Y"THEN290
640 IFQ1$="N"THEN210
650 GOTO610
660 INPUT#15,ER,EM$,ET$,ES$:IFER=0THENRETURN
670 PRINTXF$"[RVS]>DISK ERROR<[RVS OFF] "ER" "EM$"
    "ET$", "ES$:CLOSE15:END
```

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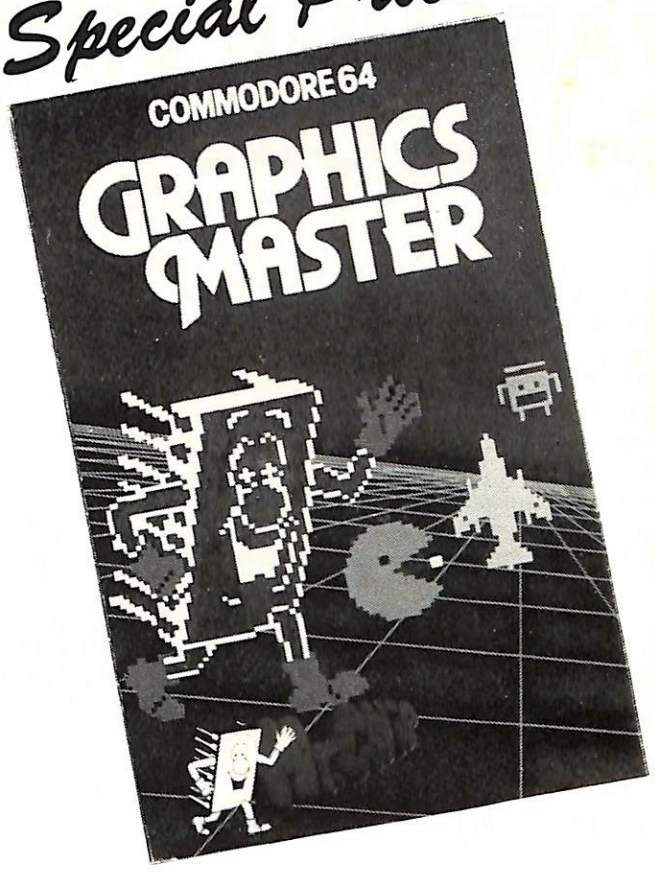

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VARIABLE FILE NAMES IN G-PASCAL

by David Roth

During file operations in G-PASCAL an obvious drawback when handling multiple files is the fixed file name required by the G-PASCAL inbuilt file functions, e.g. LOAD(8,start_address,0,"file name") or OPEN(1,8,1,"file name"). This compares badly with BASIC where variable strings may be used, e.g. OPEN 1,8,1,FI$. I have worked out a means to overcome this limitation by patching the PCODE parameters. This requires some care and a bit of trial and error, but the results are well worth the trouble. The following 'recipe' sets out the requirements:-

(i) Define the function required within the first PROCEDURE in your program (it should be the only function within the PROCEDURE). The file name 'template' should be in the function, viz:-

```
PROCEDURE SAVEIT;
BEGIN
SAVE(8,start_address,end_address,"@8:disk.id.vn")
END
```

The underlined characters are the characters we are going to patch, so that we can vary disk id ('id') and version number ('n') within our program.

(ii) In your MAIN PROCEDURE determine the start of the PCODES (call this 'start_ptr').

```
start_ptr := MEMC[$28] + (MEMC[$28 + 1] SHL 8);
(* $28/$29 points to the start of your PCODES *)
```

(iii) We now look for our function (in this case 'SAVE', PCODE $5C) within our main saving PROCEDURE, viz:-

```
PROCEDURE SAVE_PROC;
const save_code = $5c; (20* SAVE PCODE *)
var ss : integer;
BEGIN
ss := start_ptr - 1; (* point to start of PCODES less 1 *)
repeat
ss := ss + 1;
until memc[ss] = save_code; (* ss now points to the
SAVE PCODE *)
```

(iv) In the same PROCEDURE, we can now patch our characters, knowing how the PCODE parameters are set up. For SAVE, we know the syntax is SAVE(device_no, start_address,end_address,"file name"). 'device_no' is 1 character, 'start_address' and 'end_address' are 2 characters each so the file name starts at ss + 6 (commas and apostrophes are not counted). Therefore 'id' is at MEMC[ss + 14] and MEMC[ss + 15] and 'n' is at MEMC[18]. Thus continuing our procedure :-

```
(* patch the file name *)
memc[ss + 14] := id_character_1; (* e.g. '0' *)
memc[ss + 15] := id_character_2; (* e.g. '1' *)
memc[ss + 18] := version_number; (* e.g. '0' *)
(* our patched 'saveit' should now be :-
SAVE(8,start_address,end_address,"@8:disk.01.v01") *)

start_address := $mmmm;
end_address := $nnnn;

saveit; (* call the patched save procedure *)

(* check if SAVE was successful *)
if invalid then (* error procedure *)
else (* notify files saved ok *)
end;
```

Note that we are in no danger of accidentally patching other 'SAVES' in our program since we have deliberately made 'SAVEIT' the first SAVE in the program. Also note that the patched 'SAVE' remains patched until you patch it again.

(v) It is suggested that you save your source code and try your program out on a disk with nothing important on it when using this method for the time. Without due care, it is quite possible to miscount your patch address and cause the program to go haywire by patching the wrong places (with unpredictable results).

(vi) For other functions, such as LOAD or OPEN, note that addresses are 2 characters and device numbers, etc. 1 character. For example, in LOAD(8,start_address,0, "file name"), "file name" would start at 'ss + 5'.

The above method could be applied (with care) to other G-PASCAL functions where the syntax doesn't give enough flexibility. Special care needs to be taken if patching functions such as OPEN(15,8,15,"S8:file name") where putting an asterisk in the wrong place can cause a disk disaster.

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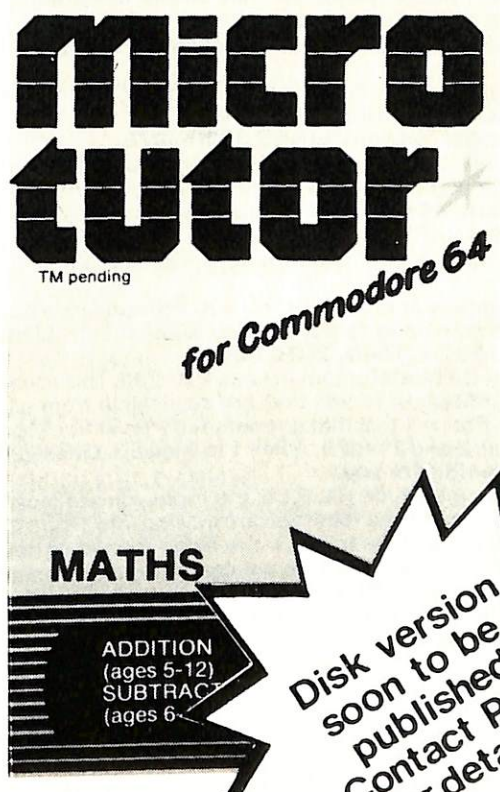

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MAPS AND MAPPING PT.2

by Mervyn Beamish

Did you get lost in the description of how the computer listing worked in PT.1? Well here it is again with line numbers.

NOW TO THE KEYBOARD

Right-ho! Now how do we do all that on the computer? To demonstrate we will set up a test program.

First let us locate ourselves (DIM statement is for use later). **LINES 90-100**

To move to another room we must be able to instruct the computer to "GO 06": **LINES 1000-1040.**

That lot is straight fortward. **LINES 3020-3070.**

This routine will take the string A$ (your instructions) and separate the first two characters of the first and last words and make them equal to A$ and B$ respectively. If you had said "GET THE BROWN BLANKET" then A$ would be "GE" and B$ "BL". Our instruction was "GO 06" therfore A$ = "GO" and B$ = "06". **LINE 1100**

If you put a tempory line 1200 GOTO 100 you can move room to room. But we may need to put a bar on some rooms. **LINES 200-230, 1200-1220, 1540, 2070-3000**

Ignore the last DATA statement in lines 210-230. This routine enters a listing RM$(I) of rooms that are accessible from each individual room. For I = 1 to 9 that is rooms 1 to 9 level 1., 11 to 19 rooms 1 to 9 level 2 and 21 to29 rooms 1 to 9 level 3. Lines 1200 to 1220 decipher this for you.

In line 2070 we introduce R1. R1 is the room you are moving out of where R becomes the room you are moving into. Hope that makes sense. 2070 checks to see if the move is valid or not.

Now we are in a situation where we can move from room to room in a section only. **LINES 1050-1060.**

These lines allow you to move up or down a level in room 06 only with the command "GO UP" or "GO DOWN".

Now we can travel between rooms and levels.

LINES 1070, 3100-3200. The command "GO SECTOR" will now permit you to travel from one room to the room adjacent to it in the next sector. Lines 3101 to 3150 is a computerised version of TABLE 1. 3200 reads three figures from the relevant RM$ statement based on the sector you are currently in, e.g. if you are in sector 5 room 3 the RM$ statement would be that on line 3130 and the relevant three figures would be 507 that is the fifth group of three figures in the RM$ statement. Line 3200 would then change to ROOM 5 and SECTOR 7.

Now you should be able to move anywhere within your newly created space station or what-ever. What about descriptions of rooms.

LINE 1005. Will give every room 06 the same description. You may decide that "GO TO THE WINDOW". **LINE 1030**

Chequerboard Base

Chequerboard or square grid mapping seems to be the most popular method of Adventure mapping and as such there are many and varied ways of doing it. Basically, however, it boils down to the same mathematics. The mathematics that I will demonstrate here.

Let's say our Adventure has a grid of 300 rooms.

LINE 10

We'll say three levels of 10 x 10 grid (100 rooms each) and each room has a number of 1 to 300.

From each room we have ten possible exits North, North East, North West, South, South East, South West, West, East, Up, Down.

LINE 100

Place yourself in room 155. That is approximately in the centre of the middle level.

LINES 120-170

LINE 170 makes sure that your reply is at least two characters long. Now we have to give your instruction a numerical value. Your instruction is compared against X$ which will give it a number from 1 to 10 or, if it is invalid print out a "DON'T UNDERSTAND" message.

LINES 190-200

To change our grid position it is just a matter of R+10 or R−10 for North or South; R+1 or R−1 for East of West; R+9 or R−9 for North West or South West; R+11 or R−11 for North East or South East and R+100 or R−100 for up or down.

LINES 210-230

If you look carefully the mathematics in these lines will make sense.

Now we can move anywhere within our 300 grid. There is no edge to our levels and no closed rooms.

There are ten ways out of each room. We create a template for each room. This template has a '1' for a permissible exit and 'O' for non-permissible. The template is based on the order of exits listed in X$ so if we only wanted to be able to exit a room North and South the template would be:

"1001000000"

Many of the rooms will have the same template so you can create a bank of standard templates.

LINE 40

Other rooms will have special templates.

LINES 50-70

Now it is just a matter of comparing the numeric value of your movement command against the relevent template.

LINES 240-260

You can store room descriptions and templates in the same variable;

RM$(155) = "1111111111STAIR WELL. STAIRS VERY SHAKY"

And read the description like this

RM$ (155) = RIGHT$ (RM$, LEN (RM$-10))

Good Hunting

```
1 GOTO 5
2 SAVE "@0:M 1.2",8: VERIFY "M 1.2",8: STOP
5 REM
10 DIM RM$(300)
40 A$(1)="0001000000":A$(2)="1000000000"
50 RM$(155)="1111111111":RM$(255)="0000000001":
   RM$(55)="0000000010"
60 RM$(154)="1000000100":RM$(144)=A$(1):RM$(145)=A$(1)
70 RM$(165)=A$(2):RM$(156)="0001011000":RM$(166)=A$(2)
100 X$="N NENWS SESWW E U D "
120 R=155
130 PRINT "YOU ARE IN ROOM "R
160 PRINT "WHERE SHALL WE GO": INPUT "N,S,E,W,NE,NW,
    SE,SW,U,D";D$
170 IF LEN (D$)<2 THEN D$=D$+" "
190 R1=R: PRINT : FOR X=1 TO LEN (X$) STEP 2:
    IF MID$(X$,X,2)=D$ THEN I=(X+1)/2:GOTO 210
200 NEXT : PRINT "DON'T UNDERSTAND ?": GOTO 130
210 IF I>0 THEN R=R-10: IF I>1 THEN R=R+1:
    IF I>2 THEN R=R-2: IF I>3 THEN R=R+21
220 IF I>4 THEN R=R+1: IF I>5 THEN R=R-2:
    IF I>6 THEN R=R-10: IF I>7 THEN R=R+2
230 IF I>8 THEN R=R+99: IF I>9 THEN R=R-200
240 IF MID$(RM$(R1),I,1)="1" THEN 130
250 PRINT "NO ENTRY PERMITTED - SORRY":R=R1
260 GOTO 130
```

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programs

MULTICOLUMN RECORDS

By James Cottrill

This database program was originally written by A.P. Stephenson. I have modified his original so that it will run on the Commodore 64 as well as the Commodore PET/CBM 2000, 3000 and 4000 computers with the version 2.0 or 4.0 ROM. I have also added a few additional routines and have made some changes to the program. When typing the program into a PET/CBM computer ignore line 530 and disregard any of the colour controls codes.

This program will require at least 16K of memory and has been initially set up to have a maximum of 80 records with up to 6 columns. The record length has been restricted to 70 characters so that it will fit nicely on a printer with 80 column output with appropriate spacing between each field. All of these parameters can easily be changed by altering the relevant dimension statements, field lengths and field types. The program contains many REM statements so it shouldn't be too difficult to spot the required lines to change.

Multicolumn records has a number of options all of which are fairly self-explanatory. I will give a brief description of these options below.

Primary Options include:

1. Create New File – set up a new file with appropriate headings
2. Search For Record – search by field or record number
3. File Manipulation – see description later on
4. Column Search – search through record which have parameters equal to or within a given range of search parameters
5. Save File – save to tape or disk
6. Load File – load from tape or disk
7. Print File – print out entire file
8. Exit Program – note after exiting from this program on a Commodore 64 it may be necessary to hit the RUN/STOP and RESTORE keys to turn off the cassette motor(if used) which may have been activated by the code in this routine.

In examining the File Manipulation options there are twelve available including:

View Columns
- allows the various columns to be revolved into the display window

Next Record
- proceeds to the next record in the file

Last Record
- proceeds to the last record in the file

Modify Data
- allows data which is currently displayed in the window to be modified

Modify Key Field
- allows key field data to be altered

Modify Columns Headings
- allows column heading in display window to be changed

Change File Name
- allows file name to be changed, a useful option for disk users

Add Record
- allows a record to be added

View Record
- displays complete record on the screen

View File
- displays whole file by scrolling down the screen

Totalise Column
- totals column in window and also shows the average. Only valid for numeric data

Return to Primary Options
- returns to primary option menu

Hopefully this program will be of use to users who wish to set up their own personal databases. Don't be daunted by the size of the program listing. Key it in a bit by bit and save off what you have keyed periodically.

(This program will be on Disk#3 due for release soon).

```
100 REM ********************************
110 REM * MULTICOLUMN RECORDS
120 REM * ====================
130 REM *
140 REM * CONVERTED TO RUN ON THE
150 REM *COMMODORE 64 AND PET/CBM 2000,
160 REM *3000 AND 4000 COMPUTERS
170 REM *BY J Y COTTRILL
180 REM *1 JANUARY 1985
190 REM *
200 REM *FROM A PROGRAM
210 REM *BY A P STEPHENSON
220 REM *WITH ADDITIONAL ROUTINES AND
230 REM *MODIFICATIONS
240 REM *BY J Y COTTRILL
250 REM ********************************
260 REM ** MINIMUM CONFIGURATION:
270 REM ** COMMODORE COMPUTER
280 REM ** MONITOR AND TAPE DRIVE
290 REM ** OPTIONAL:
300 REM ** COMMODORE DISK DRIVE
310 REM ** AND PRINTER
320 REM ** COLOUR AND CONTROL CODES:
330 REM * "[RED]" = RED "[BLU]" = BLUE
340 REM ** "[RVS]" = REVERSE ON "[OFF]" = REVERSE OFF
    "[UP]" = CURSOR UP
350 REM ** COMPUTER SYSTEM INITIALIZATION
360 MTL=50003: REM * MACHINE TYPE LOCATION
370 XX=PEEK (MTL): POKE MTL,0:YY=PEEK (MTL)
380 IF YY=160 THEN TX=59468:UC=12:LC=14:HI=144:EN=85:
    DE=88
390 IF YY=1 THEN TX=59468:UC=12:LC=14:HI=144:EN=46:
    DE=49
400 IF YY=0 THEN POKE MTL,XX:TX=53272:UC=21:LC=23:
    HI=788:EN=49:DE=52
410 POKE TX,UC: REM * SET TEXT TO UPPER CASE MODE
420 X=0: REM * NUMBER OF COLUMNS
430 Y=0: REM * NUMBER OF RECORDS
440 R=0: REM * ROW
450 C=0: REM * COLUMN
460 I8$="": REM * KEYBOARD INPUT
470 K$="": REM * GET INPUT
480 F8$="": REM * MESSAGE FLASH
490 N$="": REM * FILE NAME
500 DIM A$(80,6):A$(R,C)="": REM * SET FILE TO 80 RECORDS
    AND MAX OF 6 COLUMNS
510 POKE HI,DE: REM * INHIBIT STOP KEY
520 A$(R,C)="":F=0:S=0
530 POKE 53280,15: POKE 53281,15: PRINT CHR$(31):
    REM * SET COLOURS COMMODORE 64 ONLY
```

MULTICOLUMN – CONTINUED

```
540 REM * OPTIONS
550 PRINT CHR$(147): REM * CLEAR SCREEN
560 PRINT TAB(12)"[RVS]PRIMARY OPTIONS[OFF]"
570 PRINT : PRINT : PRINT : GOSUB 3370
580 PRINT TAB(3)"CREATE NEW FILE" TAB(35)"1":
    GOSUB 3370
590 PRINT TAB(3)"SEARCH FOR RECORD" TAB(35)"2":
    GOSUB 3370
600 PRINT TAB(3)"FILE MANIPULATION" TAB(35)"3":
    GOSUB 3370
610 PRINT TAB(3)"COLUMN SEARCH" TAB(35)"4":
    GOSUB 3370
620 PRINT TAB(3)"SAVE FILE" TAB(35)"5": GOSUB 3370
630 PRINT TAB(3)"LOAD FILE" TAB(35)"6": GOSUB 3370
640 PRINT TAB(3)"PRINT FILE" TAB(35)"7": GOSUB 3370
650 PRINT TAB(3)"EXIT PROGRAM" TAB(35)"8": GOSUB 3370
660 PRINT "KEY DESIRED[SPACE,RVS]OPTION NUMBER
    [OFF]"
670 GET K$
680 IF K$="" THEN 670
690 IF VAL (K$)<1 OR VAL (K$)>8 THEN 670
700 ON VAL (K$) GOTO 1920,720,1010,2530,3400,3810,4800,5180
710 REM * SEARCH FOR RECORD
720 PRINT CHR$(147): GOSUB 3370
730 IF Y=0 THEN F8$="[RVS,RED]FILE NOT RESIDENT ![OFF,
    BLU]": GOSUB 3280: GOTO 550
740 PRINT TAB(11)"[RVS]SEARCH PROCEDURES[OFF]"
750 PRINT : PRINT : PRINT : GOSUB 3370
760 PRINT : PRINT : PRINT "KEY 'K' TO SEARCH BY
    [SPACE,RVS]KEY FIELD[OFF]"
770 PRINT : PRINT "KEY 'N' TO SEARCH BY[SPACE,RVS]
    RECORD NUMBER[OFF]": PRINT : PRINT
780 GOSUB 3370
790 GET K$
800 IF K$="" THEN 790
810 IF K$="K" THEN 840
820 IF K$="N" THEN 870
830 GOTO 790
840 PRINT TAB(3)"ENTER KEY FIELD": PRINT : PRINT TAB(3);
850 GOSUB 3220
860 GOTO 930
870 PRINT "[SPACE2]THERE ARE "Y" RECORDS IN THIS FILE"
880 PRINT : PRINT TAB(3)"ENTER RECORD NUMBER": PRINT :
    PRINT TAB(3);
890 GOSUB 3220
900 R=VAL (I8$)
910 IF R=0 OR R>Y THEN PRINT "[UP]": GOTO 880
920 GOTO 1010
930 FOR R=1 TO Y
940 IF I8$=A$(R,1) THEN 1010
950 NEXT R
960 PRINT CHR$(147): PRINT TAB(240): GOSUB 3370
970 PRINT TAB(10);"[RVS,RED]NO SUCH RECORD EXISTS !
    [OFF,BLU]": GOSUB 3370
980 FOR Z=1 TO 1000: NEXT Z
990 GOTO 720
1000 REM * MANIPULATE FILE
1010 PRINT CHR$(147):C=2
1020 IFY=0 THEN F8$="[RVS,RED]NO FILE EXISTS[OFF,BLU]":
    GOSUB 3280: GOTO 550
1030 PRINT "[RVS]";N$ TAB(24)"[RVS]RECORD NO";R
1040 GOSUB 3370
1050 PRINT A$(0,1) TAB(20)A$(0,C+CN)
1060 GOSUB 3370
1070 PRINT "[RVS]"A$(R,1); TAB(20)A$(R,C+CN)
1080 GOSUB 3370
1090 PRINT "USE '<' AND '>' TO[SPACE3]VIEW COLUMNS"
1100 PRINT "KEY 'R' TO[SPACE11]VIEW RECORDS"
1110 PRINT "KEY 'F' TO[SPACE11]VIEW FILE"
1120 PRINT : PRINT "KEY 'T' TO[SPACE11]TOTALISE COLUMN"
1130 PRINT "KEY 'N' FOR[SPACE10]NEXT RECORD"
1140 PRINT "KEY 'L' FOR[SPACE10]LAST RECORD"
1150 PRINT : PRINT "KEY 'M' TO[SPACE11]MODIFY DATA"
1160 PRINT "KEY 'K' TO[SPACE11]MODIFY KEY FIELD"
1170 PRINT "KEY 'H' TO[SPACE11]MODIFY COL.HEADING"
1180 PRINT "KEY 'A' TO[SPACE11]ADD RECORD"
1190 PRINT "KEY 'C' TO[SPACE11]CHANGE FILE NAME"
1200 PRINT : PRINT "KEY 'P' FOR[SPACE10,RVS]PRIMARY
    OPTIONS[OFF]"
1210 GET K$
```

Continued Overleaf

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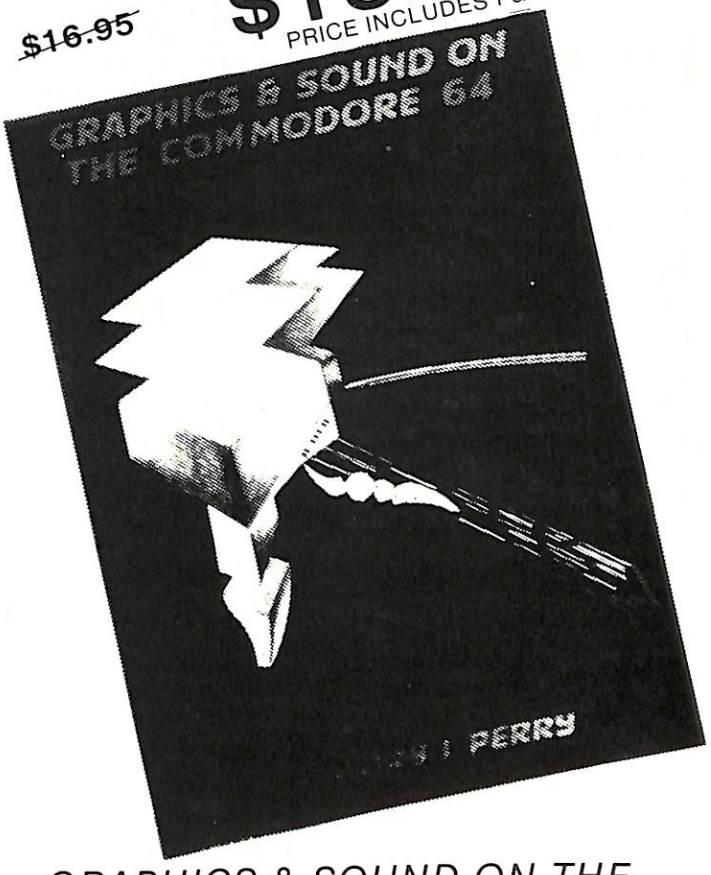

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MULTICOLUMN – CONTINUED

```
1220 IF K$="" THEN 1210
1230 IF K$=">" THEN CN=CN+1
1240 IF K$="<" THEN CN=CN-1
1250 IF K$="N" THEN R=R+1: IF R>Y THEN R=Y: GOTO 1010
1260 IF K$="L" THEN R=R-1: IF R<1 THEN R=1: GOTO 1010
1270 IF K$="M" THEN 1390
1280 IF K$="P" THEN 550
1290 IF K$="F" THEN 1520
1300 IF K$="R" THEN 1720
1310 IF K$="T" THEN 1820
1320 IF K$="C" THEN 1480
1330 IF K$="H" THEN 1440
1340 IF K$="K" THEN CN=0:C=1: GOTO 1390
1350 IF K$="A" THEN F=1: GOTO 2280
1360 IF C+CN<2 OR C+CN>X THEN C=2:CN=0
1370 GOTO 1010
1380 REM * MODIFY RECORD
1390 GOSUB 3370
1400 PRINT "ENTER CORRECT DATA FOR[SPACE,RVS]"A$(0,
     C+CN)
1410 GOSUB 3220
1420 A$(R,C+CN)=I8$
1430 C=2: GOTO 1010
1440 GOSUB 3370
1450 PRINT "ENTER CORRECT COLUMN HEADING ":
     GOSUB 3220
1460 A$(0,C+CN)=I8$
1470 GOTO 1010
1480 GOSUB 3370
1490 PRINT "ENTER NEW FILE NAME ": GOSUB 3220
1500 N$=I8$: GOTO 1010
1510 REM * VIEW FILE
1520 PRINT CHR$(147): GOSUB 3370
1530 PRINT TAB(9)"FILE WILL SCROLL DOWN"
1540 PRINT : PRINT : PRINT TAB(4)"TO STOP SCROLLING,
   PRESS[SPACE,RVS]SPACE BAR[OFF]"
1550 GOSUB 3370
1560 FOR Z=1 TO 2000: NEXT Z
1570 PRINT CHR$(147): PRINT TAB(12)"[RVS]";N$"[OFF]"
1580 PRINT : GOSUB 3370
1590 FOR R=1 TO Y
1600 FOR C=1 TO X
1610 PRINT A$(0,C) TAB(20)A$(R,C)
1620 IF C=1 THEN PRINT "[DDDDDDDDDDDDDDDDDDDDDD
     DDDDDDDDDDDDDDDDDD]": REM * 39 CHARS
1630 FOR Z=1 TO 400: NEXT Z
1640 NEXT C
1650 GOSUB 3370
1660 GET K$
1670 IF K$=" " THEN 1010
1680 NEXT R
1690 FOR Z=1 TO 600: NEXT Z
1700 R=Y: GOTO 1010
1710 REM * VIEW RECORD
1720 PRINT CHR$(147): PRINT "[RVS]";N$ TAB(19)"RECORD
   NO ";R: GOSUB 3370
1730 PRINT TAB(15)A$(R,1): GOSUB 3370
1740 FOR C=2 TO X
1750 PRINT A$(0,C) TAB(19)A$(R,C): GOSUB 3370
1760 NEXT C
1770 0PRINT TAB(5)"[RVS]PRESS SPACE BAR TO RETURN[OFF]"
1780 GET K$
1790 IF K$<>" " THEN 1780
1800 GOTO 1010
1810 REM * TOTALS
1820 PRINT CHR$(147): GOSUB 3370
1830 T=0: PRINT
1840 FOR R=1 TO Y
1850 T=T+ VAL (A$(R,C+CN))
1860 NEXT R
1870 PRINT "[RVS]"A$(0,C+CN)"[OFF,SPACE]
   COLUMN TOTAL IS" TAB(30);T
1880 PRINT : PRINT "AND THE AVERAGE IS" TAB(30)T/Y
1890 GOSUB 3370: PRINT : PRINT
1900 GOTO 1770
1910 REM * CREATE NEW FILE
1920 PRINT CHR$(147)
1930 F8$="[RED]WARNING.[BLU]ARE YOU SURE ?":
     GOSUB 3280
1940 PRINT TAB(129)"ANSWER Y(YES) OR N(NO)"
1950 GET K$
1960 IF K$="" THEN 1950
1970 IF K$="N" THEN 550
1980 IF K$="Y" THEN 2000
1990 GOTO 1950
2000 PRINT CHR$(147)
2010 F8$="[RED]NOTE:[BLU]MAX REC LENGTH 70 CHARS":
     GOSUB 3280
2020 PRINT CHR$(147): CLR
2030 DIM A$(80,6)
2040 PRINT TAB(12)"[RVS]CREATE RECORD[OFF]"
2050 PRINT : GOSUB 3370
2060 PRINT "WHAT IS FILE NAME >> ";
2070 GOSUB 3220
2080 N$=I8$
2090 PRINT : GOSUB 3370
2100 PRINT "HOW MANY COLUMNS IN EACH RECORD >> ";
2110 GOSUB 3220
2120 X=VAL (I8$): PRINT
2130 IF X<1 OR X>6 THEN PRINT "[RVS]1 TO 6 COLUMNS
   ONLY[OFF]": GOTO 2100
2140 PRINT CHR$(147):C=1
2150 PRINT "[RVS]THIS FILE IS NAMED ";N$
2160 GOSUB 3370
2170 PRINT "REMEMBER THAT COLUMN 1 IS THE
     [SPACE,RVS]KEY FIELD[OFF]"
2180 PRINT : PRINT "WHICH WILL BE USED TO[SPACE,RVS]
     IDENTIFY[OFF,SPACE]RECORDS": GOSUB 3370
2190 PRINT "STATE[SPACE,RVS]TITLE[OFF,SPACE]OF COL
     "C" >>";
2200 GOSUB 3220: PRINT
2210 IF LEN (I8$)>10 THEN PRINT "[RVS]MAX OF 10
     CHARACTERS![OFF]": GOTO 2190
2220 A$(0,C)=I8$
2230 PRINT : GOSUB 3370
2240 IF C=X THEN 2280
2250 C=C+1
2260 GOTO 2190
2270 REM * ENTER FILE DATA
2280 IF F=1 THEN R=Y+1:Y=Y+1: GOTO 2300
2290 R=1:Y=1
2300 PRINT CHR$(147): PRINT TAB(12)"[RVS]RECORD
     NUMBER";R"[OFF]"
2310 GOSUB 3370
2320 PRINT : PRINT "YOU HAVE " FRE (0)" BYTES LEFT IN
     MEMORY": GOSUB 3370
2330 PRINT : PRINT TAB(3)"ENTER 'END' IN EACH
     COLUMN TO"
2340 PRINT : PRINT TAB(9)"TERMINATE FILE": GOSUB 3370
2350 FOR C=1 TO X
2360 PRINT "ENTER "A$(0,C) TAB(18);
2370 GOSUB 3220
2380 A$(R,C)=I8$
2390 REM * SET MAXIMUM FIELD LENGTHS
2400 IF LEN (A$(R,1))>10 THEN PRINT : PRINT "[RVS]FIELD
     TOO LONG![OFF]": GOTO 2360
2410 IF LEN (A$(R,2))>20 THEN PRINT : PRINT "[RVS]FIELD
     TOO LONG![OFF]": GOTO 2360
2420 IF LEN (A$(R,3))>10 THEN PRINT : PRINT "[RVS]FIELD
     TOO LONG![OFF]": GOTO 2360
2430 IF LEN (A$(R,4))>10 THEN PRINT : PRINT "[RVS]FIELD
     TOO LONG![OFF]": GOTO 2360
2440 IF LEN (A$(R,5))>10 THEN PRINT : PRINT "[RVS]FIELD
     TOO LONG![OFF]": GOTO 2360
2450 IF LEN (A$(R,6))>10 THEN PRINT : PRINT "[RVS]FIELD
     TOO LONG![OFF]": GOTO 2360
2460 PRINT : GOSUB 3370
2470 NEXT C
2480 IF F=1 THEN F=0: GOTO 1010
2490 IF I8$="END" THEN R=1:Y=Y-1: GOTO 550
2500 R=R+1:Y=Y+1
2510 GOTO 2300
2520 REM * COLUMN SEARCH
2530 PRINT CHR$(147): PRINT TAB(240): GOSUB 3370
2540 E=0
2550 FOR R=1 TO Y
2560 PRINT "NAME[SPACE,RVS]COLUMN[OFF,SPACE]OF
     INTEREST ";
```

```
2570 GOSUB 3220
2580 CI$=I8$
2590 PRINT : GOSUB 3370
2600 C=1
2610 IF A$(0,C)=CI$ THEN 2670
2620 C=C+1: IF C<X+1 THEN 2610
2630 IF C<X+1 THEN 2610
2640 PRINT CHR$(147)
2650 F8$="[RED]NO SUCH COLUMN[BLU]": GOSUB 3280
2660 GOTO 550
2670 PRINT "ENTER ";CI$;" OF INTEREST": GOSUB 3220
2680 DI$=I8$
2690 PRINT : GOSUB 3370
2700 PRINT : PRINT : GOSUB 3370
2710 IF VAL ( LEFT$(DI$,1))=0 THEN 3040
2720 PRINT "DO YOU WANT ALL ";CI$;" :-"
2730 PRINT : PRINT TAB(2)"EQUAL TO" TAB(20)DI$ TAB(28)
     "KEY 'E'"
2740 PRINT : PRINT TAB(2)"LESS THAN" TAB(20)DI$ TAB(28)
     "KEY 'L'"
2750 PRINT : PRINT TAB(2)"GREATER THAN" TAB(20)DI$
     TAB(28) "KEY 'G'"
2760 GET K$
2770 IF K$="" THEN 2760
2780 IF K$="E" THEN 3040
2790 IF K$="L" THEN 2820
2800 IF K$="G" THEN 2930
2810 GOTO 2760
2820 PRINT CHR$(147): GOSUB 3370
2830 S=0
2840 PRINT TAB(6)"FOLLOWING "N$" HAVE "
2850 PRINT : PRINT TAB(8)CI$" LESS THAN "DI$
2860 GOSUB 3370: PRINT
2870 FOR R=1 TO Y
2880 IF VAL (A$(R,C))< VAL (DI$) THEN PRINT TAB(10)A$(R,1)
     TAB(22)"RECORD NO ";R
2890 S=1
2900 NEXT R
2910 IF S=0 THEN PRINT CHR$(147): GOTO 3140
2920 GOTO 3160
2930 PRINT CHR$(147): GOSUB 3370
2940 S=0
2950 PRINT TAB(6)"FOLLOWING "N$" HAVE "
2960 PRINT : PRINT TAB(8)CI$" GREATER THAN "DI$
2970 GOSUB 3370: PRINT
2980 FOR R=1 TO Y
2990 IF VAL (A$(R,C))> VAL (DI$) THEN PRINT TAB(10)A$(R,1)
     TAB(22)"RECORD NO ";R
3000 S=1
3010 NEXT R
3020 IF S=0 THEN PRINT CHR$(147): GOTO 3140
3030 GOTO 3160
3040 PRINT CHR$(147): GOSUB 3370
3050 S=0
3060 PRINT TAB(6)"FOLLOWING "N$" HAVE "
3070 PRINT : PRINT TAB(8)CI$" = "DI$
3080 GOSUB 3370: PRINT
3090 FOR R=1 TO Y
3100 IF A$(R,C)=DI$ THEN PRINT TAB(10)A$(R,1) TAB(22)
     "RECORD NO ";R
3110 S=1
3120 NEXT R
3130 IF S=1 THEN 3160
3140 F8$="[RVS,RED]NO DATA EXISTING[OFF,BLU]":
     GOSUB 3280
3150 GOTO 550
3160 PRINT : PRINT TAB(10)"[RVS]PRESS SPACE BAR[OFF]"
3170 GET K$
3180 IF K$="" THEN 3170
3190 IF K$=" " THEN R=R-1: GOTO 550
3200 GOTO 3170
3210 REM * CRASH-PROOF INPUT TO I8$
3220 OPEN 1,0
3230 INPUT#1,I8$
3240 IF I8$="" THEN 3230
3250 CLOSE 1
3260 RETURN
3270 REM * FLASH F8$
3280 SP=INT ((40- LEN (F8$))/2)
3290 FOR Z=1 TO 6
```

continued on page 51

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programs

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Good luck!

Converting to the CBM-64:

Creepy Caves should easily convert to the CBM64. The sound POKES are on line 30(volume) and the last four lines for sound effects. These can be replaced with REM statements or C64 sound POKES. The screen colour pokes are on lines 90 and 900, and these can be replaced with the 53281 command. Lines 50 to 80 select the screen colours, and these can also be replaced. The only other POKE is on line 110, and this on the 64 can be found in the user manual, as it pokes a character onto the screen. You shouldn't have too much trouble with screen display, although some lines need to be adjusted. I suggest 64 owners add SPRITES to the program!

```
10 REM #CREEPY CAVES##
20 REM #(C)MICHAEL SPITERI 1984##
30 S=50: POKE 36878,15
40 A=INT ( RND (1)*20)+0
50 IF A<5 THEN Z=8
60 IF A>4 AND A<11 THEN Z=42
70 IF A>10 AND A<16 THEN Z=76
80 IF A>15 THEN Z=110
90 POKE 36879,Z: PRINT "[CLR,WHT]";
100 GOTO 670
110 POKE 8023,191
120 PRINT "COMMAND[SPACE,RVS]G[OFF]ET OR[SPACE,
    RVS]L[OFF]EAVE?"
130 GET A$: IF A$<>"G" AND A$<>"L" THEN 130
140 IF A$="L" THEN ZZ=1: GOTO 670
150 IF X=1 OR X=2 THEN 600
160 IF X=3 OR X=4 THEN 540
170 PRINT "[HOME,DOWN13,RIGHT6,RVS]..[OFF,DOWN,
    LEFT2,RVS,<A>,<S>,OFF,DOWN,LEFT2,@,L,DOWN,
    LEFT2,N,M,DOWN2]"
180 PRINT "[DOWN2,RVS]A[OFF]TTACK OR[SPACE,RVS]R
    [OFF]ETREAT"
190 TT=RND (1)
200 GET A$: IF A$<>"R" AND A$<>"A" THEN 200
210 IF A$="R" AND TT>.5 THEN 480
220 IF A$="R" AND TT<.5 THEN PRINT "I TRIPPED!!":
    FOR I=1 TO 2000: NEXT :AM=1
230 PRINT "[DOWN4]SMASH!!!!!": FOR I=1 TO 1000: NEXT :
    GOSUB 990
240 PRINT "[DOWN4,RIGHT7]BANG!!!!": FOR I=1 TO 1000:
    NEXT : GOSUB 990
250 PRINT "[DOWN4,RIGHT10]WALLOP!!!!": FOR I=1 TO 1000:
    NEXT : GOSUB 990
260 T=RND (1)
270 IF AM=1 OR T>.5 THEN PRINT "[DOWN]HE BATTERED
    ME AND HE LEFT, 5 STRENGTH LOST!":S=S-5
280 IF AM=1 OR T>.5 THEN GOSUB 980: GOTO 300
290 IF T<.5 THEN PRINT "[DOWN]YOU BASHED HIM OUT OF
    THE CAVE, 5 STRENGTH[SPACE2]GAINED":S=S+5:
    GOSUB 970
300 FOR I=1 TO 3000: NEXT : GOTO 40
310 END
320 PRINT "[HOME,DOWN7,RIGHT6,<Q>,<W>,DOWN,LEFT2,
    <Q>,<W>,DOWN,LEFT2,<Q>,<W>,DOWN,LEFT2,<Q>,
    <W>,DOWN,LEFT2,<Q>,<W>,DOWN,LEFT2,<Q>,<W>,
    DOWN,LEFT2,<Q>,<W>,DOWN7]"
330 PRINT "CLIMB IT?[SPACE,RVS]Y[OFF]ES[SPACE,RVS]N
    [OFF]O"
340 GET A$: IF A$<>"Y" AND A$<>"N" THEN 340
350 IF A$="N" THEN 480
360 L=INT ( RND (1)*10)
370 FOR I=1 TO 70: PRINT TAB(7)"[<Q>,******,<W>]
380 PRINT TAB(7)"[-,SPACE6,-]"
390 IF L>6 AND I=35 THEN PRINT "[YEL,RVS]*GOLD*[OFF,
    SPACE,<Q>,******,<W>]": GOSUB 1000
400 IF L<5 AND I=35 THEN PRINT "[WHT,RVS]*[N]BP[M]
    *[OFF,SPACE,<Q>,******,<W>]": GOSUB 990
410 FOR SS=1 TO 50: NEXT SS
420 NEXT
430 IF L>6 THEN PRINT "YOU PICKED UP GOLD ON THE WAY
    - GAIN 10!!!!":SC=SC+10: GOSUB 970
440 IF L<5 THEN PRINT "YOU PICKED UP A BOOBY PRIZE -
    LOSE 10!!!!":SC=SC-10: GOSUB 980
450 FOR I=1 TO 3000: NEXT
460 GOTO 40
470 END
480 PRINT "[HOME,DOWN18]";
490 PRINT "ENTER DIRECTION"
500 PRINT "[RVS]N[OFF]ORTH[SPACE,RVS]S[OFF]OUTH
    [SPACE,RVS]E[OFF]AST[SPACE,RVS]W[OFF]EST
    [SPACE44]"
510 GET A$: IF A$<>"N" AND A$<>"S" AND A$<>"E" AND
    A$<>"W" THEN 510
520 GOTO 40
530 END
540 FOR I=1 TO 50: PRINT TAB(6)"[RVS,YEL]BOOBY TRAP"
550 PRINT TAB(6)"[RVS,WHT]BOOBY TRAP"
560 PRINT TAB(6)"[RVS,CYN]BOOBY TRAP"
570 NEXT : PRINT "[WHT,DOWN2,SPACE2]YOU LOSE 10
    POINTS": GOSUB 990
580 SC=SC-10
590 FOR I=1 TO 2000: NEXT :ZZ=1: GOTO 670
600 FOR I=1 TO 50: PRINT TAB(9)"[RVS,YEL]GOLD"
610 PRINT TAB(9)"[RVS,WHT]GOLD"
620 PRINT TAB(9)"[RVS,CYN]GOLD"
630 NEXT : PRINT "[WHT,DOWN2,SPACE2]YOU GAIN 10
    POINTS": GOSUB 1000
640 SC=SC+10
650 FOR I=1 TO 2000: NEXT :ZZ=1: GOTO 670
660 END
670 PRINT "[CLR]SCORE:";SC;"STRENGTH:";S
680 S=S-1
690 IF S<1 THEN 900
700 FOR A=0 TO 4:B=2*A
710 PRINT SPC(A)"[M]" SPC(19-B)"[N]"
720 NEXT A
730 PRINT SPC(5)"[O,<T><T><T><T><T><T><T><T><T><T
    >,P]"
740 FOR I=0 TO 4: PRINT TAB(5)"[<G>,SPACE9,<M>]": NEXT I
750 PRINT TAB(5)"[L,<@><@><@>,RVS,SPACE2,OFF,<@><
    @><@><@>,@]"
760 PRINT "[UP3]";: PRINT TAB(9);"[RVS,SPACE2,OFF]";
    TAB(31)"[RVS,SPACE2,OFF]"
770 PRINT : FOR A=4 TO 0 STEP -1:B=2*A
780 PRINT SPC(A)"[N]" SPC(19-B)"[M]": NEXT
790 PRINT "[UP5]";
800 PRINT "[SPACE,RVS,.OFF]"; TAB(19)"[RVS,<*>,OFF]"
810 PRINT "[SPACE,RVS,SPACE,OFF]";
    TAB(19)"[RVS,SPACE,OFF]"
820 PRINT "[SPACE,RVS,SPACE,OFF]";
    TAB(19)"[RVS,SPACE,OFF]"
830 PRINT "[SPACE,]"; TAB(19)"[<*>]"
840 IF ZZ=1 THEN ZZ=0: GOTO 480
```

Continued on page 52

WHERE DOES IT ALL END?

Paul Blair

It happens to all of us at some stage or another, I suppose. Even if it doesn't, this little routine could be useful/ interesting/ helpful/ fun.

I messed up a disk. Badly. My own silly fault, I suppose. No problem, get the backup out and recover the situation. Ah! The backup went to Zanzibar the other day with something else on it, because I was short of disks. So I decided to rebuild the wreckage (I really didn't have the option. . . .)

What I needed was a routine to provide me with an audit trail of the sectors of each program in order of appearance. If I had that, I could reconstruct the chains and recover as much as possible.

Informed readers will know that each disk sector contains 256 bytes of storage. The first two bytes hold the so-called "chain bytes", the track and sector number of the block following the present block. Using these two bytes, Commodore computers can string storage together in any quantity required.

So this routine was born. With it, you enter the track and sector where you want the audit trail to begin, and it beavers away, reading until it finds the end of the chain. Let's annotate the program to show how:-

```
100 REM: TRACK/SECTOR AUDIT TRAIL
110 REM: ANY COMMODORE DOS2 DISK DRIVE
120 REM: PAUL BLAIR
130 REM: LINE 210 FOR C64 ONLY
140 REM:
150 GOTO200
160 :
```

Put the error routine here. . . .

```
170 INPUT#15,EN,EM$,ET,ES:IFEN=0THENRETURN
180 CLOSE4:CLOSE15:PRINT"[2CDN][RED]DISK ERROR
    [RVSOFF]";EN;EM$;ET;ES:END
190 :
```

Now the program proper. . . .

```
200 PRINT"[CLS][SPACE 9][BLU]PROGRAM TRACE"
210 M=53280:POKEM,1:POKEM+1,1:U=8
```

Get the starting track/sector, even if it's a guess. . . .

```
220 PRINT"[CDN][BLK][SPACE 4]WHERE SHOULD TRACE
BEGIN":INPUT"[CDN]TRACK";TK
230 INPUT"[CDN]SECTOR";SC:PRINT:GOTO300
```

Open the error channel, plus a direct access channel. . . .

```
240 OPEN15,U,15,"I0":OPEN5,U,5,"#":GOSUB170
```

Read in the chosen block with a direct access command, U1

```
250 PRINT#15,"U1";5;0;TK;SC:GOSUB170
```

Scan the first two bytes from the buffer where the U1 command stored them. If the first byte is zero, or greater than the maximum number of tracks, 35, on a normal disk, you have found the last sector (line 270). . . .

```
260 GET#5,IN$:IFIN$=""THENIN$=CHR$(0)
270 TK=ASC(IN$):IFTK=0ORTK>35THEN340
280 GET#5,IN$:IFIN$=""THENIN$=CHR$(0)
290 SC=ASC(IN$):CLOSE5:CLOSE15
```

Format the values to 2 characters each for tidy output. . . .

```
300 TK$="T"+RIGHT$(STR$(100+TK),2)
310 SC$="S"+RIGHT$(STR$(100+SC),2)
320 PRINTTK$":"SC$"[5SP];
330 XX=XX+1:GOTO240:REM KEEP COUNT
340 CLOSE5:CLOSE15:PRINT
350 PRINT"[CDN][BLU]"XX"BLOCKS COUNTED[CDN]"
360 :
```

And see if there is more work to be done. . . .

```
370 PRINT"[BLK]PRESS F1 FOR MORE"CHR$(13)"PRESS F3 TO
END"
380 GETY$:IFY$=""THEN380
390 IFY$=CHR$(133)THENRUN
400 IFY$=CHR$(134)THENEND
410 GOTO380
```

Printer output could be included quite easily if required. A favourite trick goes like this:-

Chop "GOTO300" from the end of line 230. Add lines-

```
231 DV=3:INPUT"[CDN]HARD COPY (Y/N)";AN$
232 IF ASC(AN$)=89THENDV=4:REM YES
233 OPEN 4,DV:GOTO300
```

Then, change PRINT to PRINT#4 in lines 320 and 350, and add CLOSE 4 to line 340.

Yes, I recovered the disk. It took a while, but was worth it. With better management, you should only ever have to use this for fun or sleuthing.

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DATAWRITER 64

Paul Blair

Due to reasons beyond my control, the DATAWRITER program got rather mangled somewhere between the disk and the printed page. Throsselwhite, the illiterate who forges the Editors editorials, has been sent off to work on something less demanding, and his replacement, the fair Desmondea, is keen to make amends. Never one to miss a chance (you should see Desmondea, dear readers!), here is the TRUE program that I intended for you.

Now that we have HELPOUT (well, I do) [DUE NEXT ISSUE – ED] the checksums have been added. If that doesn't choke off the angry letters, abusive phone calls and threats to my cat, I give up. What.. HELPOUT doesn't work?

Desmondea and I are going out for a drink. Type this lot in (you will have to "shorthand" some of the lines, and the funny symbol in the middle of Line 2 is an up-arrow), and I will see you when we get back. Maybe we won't come back....

```
0 PRINT"[CLR]TYPE START/END ADDRESSES":PRINT"IN
  DEC. OR $0000 FORM[DOWN]":W=631'DGVN
1 INPUTA$(1),A$(2):FORI=1TO2:IFLEFT$(A$(I),1)<>"$"THEN
  A(I)= VAL(A$(I)):GOTO3'MNMO
2 FORJ=1TO4:K=ASC(RIGHT$(A$(I),J)):A(I)=A(I)+16↑(J-1)*
  (K-48+7 *(K>60)):NEXT'QSYT
3 NEXT:S=A(1):F=A(2):FORI=0TO9:POKE W+I,13:NEXT:
  PRINT"[CLR DOWN2]"0:PRINT1:PRINT2:PRINT4'NGIQ
4 PRINT"3S="S":F="F:PRINT"10S="S":F="F:
  PRINT"RUN[HOME]";:POKE 198,7:END'FOEM
5 PRINT"[CLR DOWN2]4X="X+1:PRINT1000+X;"DATA ";:
  FORY=0TO15: Z=S+16*X+Y:IFZ>=FTHEN7'PBNV
6 PRINTRIGHT$(" "+STR$(PEEK(Z)),3);",";:NEXT:
  PRINT"[LEFT] ": PRINT"RUN[HOME]S";:POKE198,3:END'JYGR
7 PRINTRIGHT$(" "+STR$(PEEK(Z)),3):Y=15:NEXT:
  PRINT"RUN8 HOME]";:POKE198,3:END'KXMR
8 PRINT"[CLR DOWN]":FORI=3TO9:PRINTI:NEXT:PRINT"?";
  CHR$(34): POKE198,8'JTCQ
9 PRINT"[UP]SAVE"CHR$(34)"0:DATAFILE"CHR$(34)",
  8[HOME]";: END'EKTQ
20 FORI=STOF:READA:POKEI,A:NEXT'GKDD
30 PRINT"[DOWN2]SYS"S"TO RUN PROGRAM[DOWN]"'BBDF
40 NEW'BALA
```

Phew!

QUICKIES

A few small but useful routines, gathered together for your edification. Let's start in with a screen plot routine for the C=64.

The idea of this is to permit rapid location of the cursor around the screen. You are probably tired of printing strings made up of "cursor down" and "cursor across" characters, the tried and true but very intelegant way used in many programs.

This routine sits at $C000 (#49152) but can go anywhere out of the way – the cassette buffer for example. Simply change the load address, LX.

```
100 REM: PRINT@
110 LX = 49152
120 FOR A= LX TO LX+25
130 READ B: POKE A,B: NEXT
200 DATA 32,253,174, 32,158,183
210 DATA 138, 72, 32,253,174, 32
220 DATA 158,183,104,168, 24, 32
230 DATA 240,255, 32,253,174, 76
240 DATA 164,170
```

Check your typing, then RUN the program. To try it out, use this example.

```
500 PA = 49152
510 SYS PA,10,10,"HOW THIS"
520 SYS PA,10,20,"PROGRAM WORKS"
530 SYS PA,10,0,"TO SHOW YOU"
540 SYS PA,15,10,"— PRESS A KEY"
550 GET A$:IF A$ = "" THEN 550
560 IF A$ = "Q" THEN END
570 PRINT CHR$(147):RUN
```

Answer "Q" to quit at any time it gets too boring for you.

Next we present more ways of saving a block of memory, such as a machine code routine, onto disk or to tape.

BASIC uses two sets of pointers to keep track of the amount of memory it has to save. In simple language, these are the start address and end address, which are where the block starts and ends (of course!!), usually abbreviated to SA and EA.

Both routines require information about SA and EA, and it has to be in a form that the computer understands. You will need to do a little bit of arithmetic first.

The task is to work out the values for any given number. This is necessary because Commodore computers take two bytes to store any number greater than 255. The convention goes like this.

Say the SA is 4276 (that's in decimal). To calculate the bytes, divide 4276 by 256, which gives 18.461. Ignore the fraction, and write down 18. Now, multiply 256 by 18, which gives 4608. So, the remainder was 118. Write that down, too. Check your work by doing 18*256+118, and you should get 4276.

Those two values represent the HIGH BYTE and LOW BYTE of the value 4276. Commodore computers store these in LOW BYTE/HIGH BYTE order, so the number 4276 would be stored as 118 18 in successive locations.

If EA is 14529, what are the low and high bytes? Make sure by doing the reverse calculation.

Back to the slow "quicky". Having calculated the SA and EA in low/high byte order, call the low bytes SAL and EAL, and the high bytes SAL and EAH.

Trick 1:

```
SYS57812"xxxxxxx",8:POKE193,SAL:POKE194,SAH:POKE174,
EAL:POKE175,EAH:SYS62954
```

Trick 2 is more simple. By changing the pointers to BASIC so that they point to your block of memory, we can use a less complex routine:

```
POKE43,SAL:POKE44,SAH:POKE45,EAL+1:POKE46,EAH:
SAVE"xxxxxxx",8
```

This leaves some pointers in a mess. You may either try to restore the old pointers (POKE44,1:POKE45,8 would be a start), but I usually just reset the computer. Change the device number as required for cassette.

The C16/+4 has a monitor, so you can type M shifted-O and press RETURN to get into monitor mode, then use the "S" command without the need to carry out the arithmetic shown above. Much more civilized.Next comes a keyboard item. We have all Fallen Foul of the Accidental Key. In other words, we have managed to press two keys at once when asked to "PRESS ANY KEY", and the second key pressed takes our fancy program off in some direction never intended. The danger of simply accepting any key-push from the keyboard can be solved. Not only that, but there is a key that can be used that wont interfere with things like GET and INPUT. That key is, of course, the SHIFT key.

Try this:

```
100 PRINT "PRESS SHIFT KEY WHEN READY"
110 GOSUB 900
120 PRINT "THANK YOU"
130 END
900 IF PEEK(653) THEN 900
910 RETURN
```

For PET, PEEK(152) is the location to check. Use PEEK(1347) for the C16/+4. In each case, the location contains zero until the SHIFT key is pressed.

Now a bit of screen work. The next little routine could be named "Placeholder", because the idea is to be able to remember where you are on the screen at the moment, then go off to print something somewhere else, then return to where you were.

The power of Commodore screen editing comes in useful here. Every Commodore computer has four locations where it stores information for cursor position. These are:

PNT 2 memory locations that remember the address of the screen line

PNTR 1 byte to keep track of the cursor position on that line

TBLX 1 byte for the line number

These differ in different models:

LABEL	PET/CBM	VIC/C64	C16/+4
PNT	196/197	209/210	200/201
PNTR	198	211	202
TBLX	216	214	205

If we store the values from these locations, then restore them after doing whatever we want to do, we will be able to move around the screen with ease. Now, a short routine for the C64 to show this off.

Continued Overleaf

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QUICKIES - CONTINUED

```
100 S0=209:S1=210:S2=211:S3=214
110 PRINTCHR$(147):PRINT
120 FORJ=100TO999STEP2
130 M0=PEEK(S0)
140 M1=PEEK(S1)
150 M2=PEEK(S2)
160 M3=PEEK(S3)
170 PRINTCHR$(19)STR$(J)" ";
180 POKES0,M0
190 POKES1,M1
200 POKES2,M2
210 POKES3,M3
220 FORK=3TOSQR(J)+.5STEP2
230 Q=J/K
240 IFQ=INT(Q)GOTO300
250 NEXTK
260 PRINTJ;
300 NEXTJ
```

Change the values in Line 100 from the table if you are using a different computer. In case you're wondering, Lines 220-250 are a very simple prime number generator.

Lastly, the shortest word-processor (and the cheapest) in the world. Try this:

```
OPEN4,4:CMD4:POKE22,35:LIST (VIC/C64)
OPEN4,4:CMD4:POKE19,32:LIST (PET/CBM)
```

All you do to use this is enter text in direct mode as if it were BASIC.

```
10 Dear Mother
20 How are you?
```

To see it on the screen, just do the POKE. Use the whole line to send your notes to the printer.

To turn it off, create a SYNTAX ERROR or add another line. Easy, and most undemanding of memory. If you have a programmers aid of some kind, you will greatly expand the flexibility of this giant program.

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KIWI MODEM - Continued from page 15

The 1200/75 baud rate is the same used by both Australian VIATEL and New Zealand VIDEOTEXT.

The modem does not have New Zealand Post or TELCOM approval.

COMMODORE OWNERS BEWARE

The RS232 I/O on the Commodore is not designed to handle dual baud rates i.e. 1200/75. Information comes into the computer at 1200 baud and leaves at 75 baud. You will need a special software communication package to handle the situation. A this stage I don't know where you'll get one. The assembly instructions refer to a Telenet cartridge - you could also try High Technology in Melbourne they may be able to help you (refer ACME in press releases.)

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PANDORA MAGAZINE

Mervyn Beamish
Editor -
PANDORA MAGAZINE

PANDORA is KIM BOOKS' newest magazine. It is a Science Fiction and Fantasy (SF & F) magazine catering for model makers, artists and gamers.

It is easy to say what will appear in PANDORA but, as any politician will agree, keeping the promises is not always as easy. I have built up an editorial group who are well versed in the topics that PANDORA will cover. Daily, contributors are making contact and we have arranged for editorial from well known, internationally recognised experts in the SF & F area.

The production team at KIM BOOKS has proven abilities to produce interesting and readable publications which are well known by our readers throughout Australia, New Zealand and beyond.

PANDORA will contain a selection of 'how to' articles on model building plus associated photography and film making techniques. A series on SF art techniques, with and without airbrush, is planned along with reviews, news and other items on models, art, artists, films and photography.

Play By Mail (PBM) is a growth area in the SF & F market. PBMers have quickly come out of the woodwork and shown themselves. Scenarios ranges include medieval fantasy, war and SF strategy. A growing number of PBM games are created and run in Australia are already on the international market. It is my hope that PANDORA will become the mouth piece of local PBMers as well as an industry focal point.

Throughout Australia and New Zealand, there are enthusiast groups, clubs and individuals meeting weekly to play TRAVELLER, RUNEQUEST, SPACE OPERA, STARTREK, DUNGEONS & DRAGONS (all trademarked names) and other well known games. Reviews of the latest in games and support materials will be reviewed along with revisits to some of the grand oldies.

Conventions occur in most capital cities and universities throughout the country – The Canberra War Games Convention (January), Phantastacon (Melbourne, Easter) and many more. This year Melbourne will be hosting AUSSIECON II the 43rd world science fiction convention, in August. SF enthusiasts from all over the world will converge on Victoria. PANDORA will keep its readers informed of happenings on the SF & F front.

Complete capsuled games in both board and role play categories will be published. Some games have been imported from the U.S.A and I'd like to thank the SPACE GAMER magazine for their assistance in arranging this for us. However I see these games as a starting point and will be encouraging local authors to publish their own games capsules.

The micro computer has revolutionised the way we wash our clothes, drive our car, cook our meals and even write our letters. It has also set up its own brand of gamers in the adventure and strategic areas. Programming techniques and designer notes along with a close look at the micro computer and its role in the gaming market will be a feature of the magizine.

The editorial areas open to PANDORA are vast and it would be easy to become so rambling and generalised that it starts to resemble a "Great wall of boiled cabbage". I intend to keep a close reign on the publication through regular contact with both the readers and advertisers, letters to the editor and other forms of feedback. PANDORA will offer what is current and futuristic in the world of SF & F.

This is one of the most exciting projects I've worked on and I believe that the enthusiasm expressed by the production and editorial team will be reflected in the publication as a whole. PANDORA will initially be bi-monthly and available through newsagents, games and modelling outlets and by subscription.

This magazine will give Australian and New Zealand talent – which is as good, if not better, than any in the world – a publication of its own. I believe that our isolation will work for us. PANDORA's uniqueness will attract international interest.

Mervyn Beamish
Editor

THE SPR C64 / 1541 TURBO SYSTEM

Review by Dr Arnold Wall M.B., B.S.

For the past couple of months my poor old 64 and 1541 drive have resembled transplant patients on life support, with wires dangling from every available orifice.

The reason for this sacrilege? I've been one of the "guinea pigs" used to test South Pacific Radio's "Turbo System", from the first rough prototype (a Frankenstein's nightmare creation of wires, diodes, chips, switches, plugs, sockets and bits of veroboard) through various developmental stages to the final version which is now on sale.

Apart from the fact that it looked like an electronic magpie's nest, a few hours with the very first prototype had me convinced that the SPR Turbo System was an absolute "must" on my computer shopping list. Looking back, it was almost Neanderthal compared to the current version. I now have one of the first production models to come off the line neatly and permanently installed.

The system consists of two printed circuit boards (one for the computer and one for the drive) fitted with the Turbo System chip and sockets for the original chips, a neat user port extension board fitted with a switch and a button (more about this later) and a connecting cable with microclip terminations which links the computer and the drive.

Sounds complicated? Wrong!! Installation is a breeze. It took me less than ten minutes, although I must that I've had quite a few practice runs with experimental versions over the past few weeks.

A first timer, even someone with no electronic experience, should be able to have the system up-and-running in twenty minutes or so, thanks to the easy-to-follow installation instructions supplied. No soldering or drilling is required, and everything fits neatly into place. The removal of the drive and computer covers will void the warranty, of course. Strict observers of warranty conditions will wait ninety days before installing the SPR Turbo System....sneakies will no doubt have already gathered that the modification can be installed and removed without leaving a trace. (ED – not recommended and I wouldn't be too sure of that fact.)

During development SPR experimented with various colour combinations, and finally settled for light blue on a full-screen black background. An excellent choice in my opinion. (Even looks good in a black-and-white screen.) Until I installed the turbo my first task from cold start was invariably to poke out the wishy-washy and eye-straining Commodore colours. For those who would like something different SPR will program any border/screen/cursor colour combination to order. Anyone for cyan border, purple screen and green characters?

The cold start screen displays the turbo system heading, 38911 bytes free (note that no RAM is missing), and the command to access the inbuilt DOS wedge. The wedge is not quite as complete as some of the disk-based wedge utilities, but only infrequently-used (by me, anyway) commands are missing. It would be nit-picking to find fault in this direction. Some of the single-keystroke commands are LOAD, FORMAT, VALIDATE, RENAME, SCRATCH, COPY and READ DIRECTORY without corrupting memory.

The entire SPR Turbo System is dedicated to speeding up and improving C64/1541 operations, and naturally all commands default to the drive. <SHIFT><RUN/STOP> loads the first program in the directory. The utilities disk included with the modification package enabled me to rearrange the directories on my old disks so that <SHIFT><RUN/STOP> boots up an autoloader (excellent for the kids' games disks) and a directory reading menu which is ideal for those metre-long public domain directories.

Unlike some of the other C64/1541 hot-up systems I've tried, the SPR Turbo System actually SAVES at higher speed.... not as far as it loads, but certainly a lot faster than standard. A 142-block basic program used for comparison loaded in 93 seconds/saved in 102 seconds in standard trim and loaded in 27 seconds/saved in 48 seconds in turbo mode. Programs of only a few blocks load up to 500% faster than standard. Programs seem to load proportionately slower as they get larger, to a low of around 300% over standard speed. Most heavily-protected commercial software seems to favour the 300% mark. Commercial file copiers such as the one on the Di-Sector disk read like lightning but will only write at the speed predetermined by the program.

Hotted-up-format disks like Speedball and Turbo-64 load only fractionally faster than they would on a standard 1541. Easy Script loads in about ten seconds, Superbase 64 in about forty-five seconds and Microsoft Multiplan in about thity-five seconds. Files accessed from within these programs also load at turbo speed. (Try matching that with your Speedballed Easy Script!!)

An onboard "UNNEW" routine can be SYS'd in to recover programs "lost" to keyboard lockup, a condition which can strike even the most experienced programmers at the most inopportune moments.

Which brings us back to the user port extension button and switch. The button is the hacker's best friend, the "RESET". When you fall foul of the lockup gremlin you simply hit the button, SYS in the "UNNEW" routine, and you're back where you left off. The switch combined with a short typed command to the drive, throws the Turbo System out and returns the 64 to standard trim, a feature sadly lacking in some hot-up systems as occasionally one encounters a program which refuses to load at anything other than standard speed. There aren't many of these, but I'd hate to have to swap chips in my computer drive or remove a cartridge and rip out the assorted wiring every time I wanted to use "Flight Simulator II", which won't load in turbo with the SPR system or any other speedloader that I know of.

The system supports all peripherals. It's transparent to cartridges and will simultaneously support two 1541 drives and a printer (1541 Express users....eat your hearts out!!) and all original ports and sockets remain free for us to use. So how did SPR manage to cram all these extra goodies in without robbing RAM? Simple... they pinched the space normally occupied by the datasette functions. In turbo mode the datasette ceases to exist as far as the 64 is concerned, but switching back to standard mode brings it back to life. (No, it doesn't turbo tapes.)

The manual is well laid-out and comprehensive....nothing fancy but very useable....with a quick-reference page, a section covering the DOS wedge commands and advanced commands for experienced 65XX programmers. The system carries a 90-day warranty. Packaging isn't very spectacular, but it's what's inside that counts. (Ever noticed how some of the grottiest games imaginable are the ones in the most lavishly expensive packaging?)

To sum up....the SPR Turbo System is simple to install, speeds up 1541 operations by 300% to 500%, handles almost all currently available software, simplifies and speeds up keyboard operation, provides quick and easy recovery of "lost" memory, and best of all....there are no cartridges to plug in or special disks to format. It's there all the time as an integral part of your system.

Continued on page 52

SWEET SIXTEEN

Michael Spiteri

For the Commodore 16 (C16)

Welcome to our new section for users of the CBM-16.

Under the heading of SWEET SIXTEEN will be short program listings, long programs listings, hints and tips for the C16 user (and +4). Exploiting the unique C16 Commodore BASIC.

If you have any programs, any hints and tips for the C16 or +4 and would like to contribute them to this section, please contact me:

SWEET SIXTEEN
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Please send listings in hardcopy as well as on disk or tape.

Three short simple programs demonstrating the colour, sound and graphics commands of the C16.

PROGRAM 1: EXPLOSION

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PROGRAM 2: BURST OF COLOUR

The C16 is capable of producing 121 different colours very quickly and simply. This program scrolls all the colours up the screen, ranging from the darkest colour to the brightest.

PROGRAM 3: SOUND AND VISION

This simple program asks the user to enter a tone (0 – 1015).

The computer then plays a note in this tone using voice 2 and displays a graphic representation of the note on the screen. If the tone is high then the note will be displayed at the top of the screen. If the tone is low then the note will be displayed on the bottom of the screen etc.

PROG 1: Explosion

```
 10 REM #EXPLOSION#
20 VOL 8
30 GRAPHIC 3,1
40 C=INT ( RND (1)*3)
50 A=INT ( RND (1)*200)
60 B=INT ( RND (1)*160)
70 DRAW C+1,80,200 TO B,A
80 SOUND 3,700,0
90 GOTO 40
```

PROG 2: Colour Burst

```
5 REM #BURST OF COLOUR#
10 COLOR 0,1,0: COLOR 4,1,0
20 FOR A=0 TO 7
30 FOR B=1 TO 2
40 FOR C=3 TO 16
50 PRINT "[RVS]";: READ D
60 COLOR 1,D,A
70 FOR I=1 TO 40
80 PRINT "[SPACE]";: NEXT I
100 NEXT C: PRINT : RESTORE
120 NEXT B,A
130 LIST 1,2,4
140 DATA 7,14,4,13,6,16,11,8,10,9,3,12,5,15
```

PROG 3: Sound and Vision

```
10 REM #SOUND & VISION#
15 VOL 8
20 GRAPHIC 2,1
30 INPUT "ENTER TONE (0 – 1015)";T
35 IF T<0 OR T>1015 THEN 30
40 IF T<300 THEN 100
50 IF T>299 AND T<600 THEN 200
60 IF T>599 THEN 300
100 CIRCLE 1,160,120,10
110 DRAW 1,170,120 TO 170,70
120 PAINT 1,160,120
130 SOUND 2,T,100
135 FOR I=1 TO 1000: NEXT
140 RUN
200 CIRCLE 1,160,90,10
205 DRAW 1,170,90 TO 170,40
210 PAINT 1,160,90
220 SOUND 2,T,100
230 FOR I=1 TO 1000: NEXT
240 RUN
300 CIRCLE 1,160,60,10
310 DRAW 1,170,60 TO 170,10
320 PAINT 1,160,60
330 SOUND 2,T,100
340 FOR I=1 TO 1000: NEXT
350 RUN
```

ADVENTURE HELP

Michael Spiteri

Welcome to ADVENTURE HELP!

How many times have you played your favourite adventure game, only to spend hours trying to work out certain problems?

At last, help is at hand. If you are stuck in an adventure game, send us the name of the adventure and machine, and your problem. (Address letters to ADVENTURE HELP c/- Publisher.)

We will print your problem on this page, then hopefully, someone else will write in giving a solution. If you have ANY tips for ANY adventure, send them in and we will print them, so maybe the tips will help other adventurers.

We also want to know what your favourite and worst adventure games are.

Here are some clues and tips for some popular games:

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DALLAS QUEST – C64

Getting past the rat – an owl and sunglasses make a great team.

HULK – C64

Not all domes are the same!

WAR GAMES – C64

Two pipes make a perfect pole-vault.

WAR GAMES – VIC-20

Look near a fence for a useful knife.

DEADLINE – C64

Curious about two holes? Trying putting the wooden ladder there.

TAREK – C64

Shuttle code is a lighting problem in the previous room.

Next issue – The secret to proving the death was a murder! That's it for now. – *Michael*

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LETTERS

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Piracy

Dear Sir,
There is a rumour circulating among Commodore users to the effect that the SPR TURBO SYSTEM is a renamed pirate copy of an American-made turbo modification.

This is like suggesting that "Zaxxon" is a renamed pirate copy of "Space Invaders".

A couple of years ago I bought a utilities disk in Hong Kong containing among other things the Ralph Down/Stu Burrows original "Cockroach" copier, appropriately renamed "Golden Dragon" copier but otherwise untouched. They hadn't even bothered to change the screen headings. Ralph and Stu didn't make a cent out of the deal.

THAT'S piracy!!

There's a guy in Brisbane who'll sell you a professionally-made universal cartridge board complete with ZIF sockets and DIP switches for forty dollars, and chips programmed with carbon copies of Hesmon, VicTree, Blitz, Simon's Basic, or whatever else you want, for twenty bucks apiece. Royalties? Zero .. equally shared among the rightful owners of the original programs.

THAT'S piracy!!

The programmer who designed the SPR system examined a number of turbo disks, cartridges, and ROM replacement systems, selected the best features from each, modified and combined these with his own ideas to create a unique package which we feel is the best C64/1541 turbo system on the market.

Is this piracy? No way!!

There isn't a programmer alive who hasn't utilized someone else's code and ideas while writing his "own" programs and learned about programming by doing so.

This is "progress" .. not "piracy".

And without it this magazine would have been printed on Gutenberg's first patent and we'd be reading reviews of the latest Commodore abacus!!

Rod Fewster
South Pacific Radio

ED – Any other reader wish to comment on Mr. Fewster's views. The views expressed by Mr. Fewster are not necessarily those of the publisher.

Enough to make an Editor smile!

Dear Sir,
Thank you very much for your very prompt sorting out of my problem with MONAD A & BASAD A. It really is a pleasure to find people who are interested enough in their patrons to answer their problems so speedily. Perhaps it is the quality and excellence of the original product that there aren't many problems to deal with anyway. I look forward to a long and happy association with Commodore Magazine and Kim Books.

Yours Faithfully
Derek J. Donohue
Brisbane

ED – We just had to print this one. Thanks Derek.

DISK ALIGNMENT

Dear Mervyn

I greatly enjoy your magazine as I have been computing for many years and use mine mainly as a business venture.

I use two computer systems with disk drives and have suffered the dread head alignment problem associated with 1541 etc. As I am a keen electronics worker I have solved the problem and the cost of fixing the drives.

If you would like this sort of info for a column let me know.

Reader
W.A.

ED – Yes! Yes! Yes!.
I can see our readers getting excited about your article already.

P.S. my photocopy of your letter has dropped your name off but Paul has it.

NEW GROUP

Dear Sir.

On Monday, February 25th, our own Commodore User Group was formed. We named it C-BUG, for Commodore-Barcaldine User Group. Unlike most computer bugs we are a friendly one, with aims such as: exchanging ideas and information amongst our members; assisting new computer owners in getting started and promoting the use of personal computers at home, for educational and recreational purposes.

We meet monthly, on the last monday of every month, at 8.30 pm. (ED – where?)

We used your article on User Groups published in your magazine (Vol.4 num.4) as a guideline throughout our first meeting and congratulate you for the quality and information there displayed.

Cristina Frioni (Mrs)
Secretary
C-BUG PO Box 145, QLD 4725

ED – Thankyou for keeping us informed 'I love it when a plan comes together!'. Mr. Rod Timmins is the President and a contact number is (074) 511527.

SUPERBASE V2

There is a strong (and growing) interest in Superbase, the database utility from Precision Software. But did you know about the revised version, and the wider range of support programs now available?

Superbase V2 has been released. The program has been enhanced to reduce user errors, and now incorporates reduced loading time and some new copy features. We don't know the cost, but upgrades from genuine copies are being offered in the U.K.

In addition to the main program disk, a Stepping Stones series has been developed to provide application templates for specific uses. Templates include Time Recording, Club Membership, Sales Daybook, Stock Records, Job Costing/Estimation and Cash Book, Then there is the Homebase series, which includes templates for Birthdays, Book Collections, Freezer Contents, Record Collections and a Names/Addresses file. Check your local dealer.

They're the commercial items. But what about the users out there in the suburbs? Some User Groups have been putting together the collective wisdom of their members, to share useful ideas and workable routines around. Maybe there is a wider interest than we know about. Would it be worthwile to start up a Superbase Column? Readers could communicate news and views through our columns. What do you think? Write and let us know.

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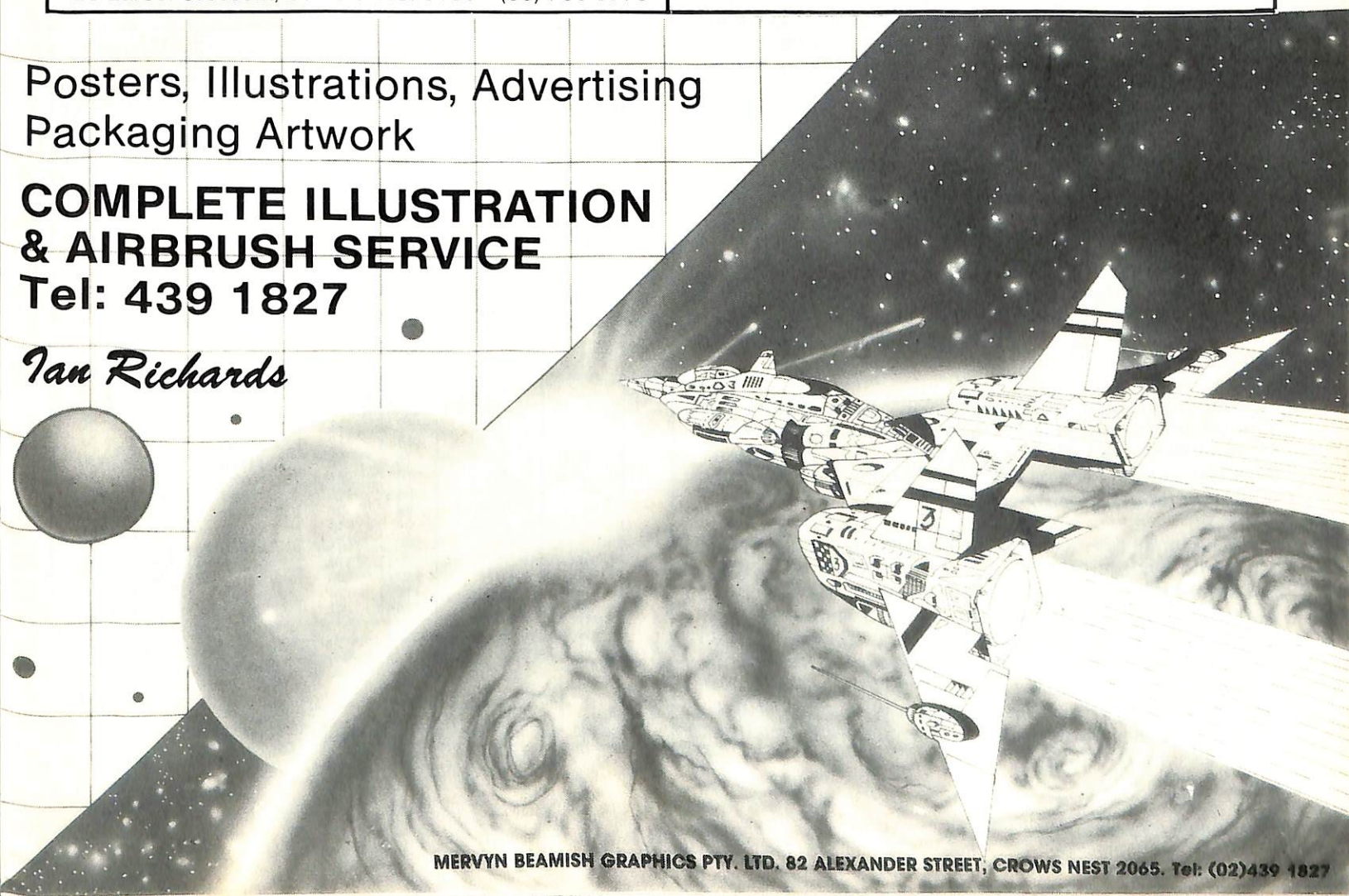

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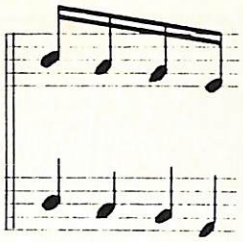
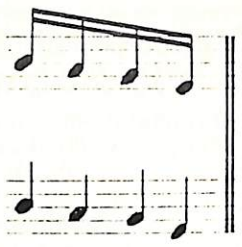


HOW TO WRITE MUSIC VIC/C64



by David Bergmeier

Computer music is one good way of showing off your computer, and improving the quality of games. Until now, only experts of both computers and music were able to do it well. The aim of this article is to change all that so anyone will be able to do it, and achieve a good result.

The first thing to do is to obtain a base program that sets up the three voices, reads the DATA and plays the music. Program (1) is the BASIC program for C64 users and Program (3) is the BASIC program for VIC-20 users. The VIC-20 program is shorter, even though it does the same thing as the C64 program, as there are no ADSR settings. C64 users may want to change the ADSR settings as those in the program are only a guide to the example given in program (2).

Once the base program has been entered you only have the DATA left to type in. You will need to refer to figure (1) – C64 or figure (2) – Vic-20 to find the decimal numbers for each note. See also page 384 of the C64 Reference Guide or either pages 135, 73 of the VIC-20 Users Guide. (Refer also Commodore Magazine Vol4 No4 *REFERENCE*.) The C64 Users Guide is unsuitable as the table gives high and low bytes, not the decimal numbers as used by Program (1). It is okay to use high and low byte numbers, but the base program would have to be altered. It is actually much easier to use decimal numbers, and it saves memory, especially in longer tunes as six (6) DATA numbers (high and low bytes) are reduced to three (3) decimal numbers.

The first DATA number to enter, is the length of the note or chord. The base program has a provision for three alternatives. You may want to add other things like changing a voice (C64 users only). The first option is to change the volume during the piece of music, so the volume (between zero and fifteen) should be entered, preceded by a minus sign. It is also possible to change the way the music is being played. It can be very smooth like an organ or violin, or short and detached like a harpsichord.

To make the music smooth an S in quotes should be entered or a D in quotes, to make it detached. If either of these options are included (you can include more than one), the program keeps going on reading DATA until a valid note length is reached.

The timing of the music can be made extremely easy by using one system for all the pieces of music you write. One method is to define an arbitrary length for a crotchet, the notes and rests that you are likely to encounter are shown in figure (3). Rests are periods of silence so the note's decimal number is zero. Note well the variations that may occur between notes. Usually the sum of the notes is the length to use, except in two cases. If two notes joined by a curved line are the same note, the first

Commodore 64 SID Note Values

Note	Octave 0			Octave 1		
	Oscillator Frequency			Oscillator Frequency		
	Decimal =	Hi (x256) + Lo		Decimal =	Hi (x256) + Lo	
C	268	1	12	536	2	24
C#	284	1	28	568	2	56
D	301	1	45	602	2	90
D#	318	1	62	637	2	125
E	337	1	81	675	2	163
F	358	1	102	716	2	204
F#	379	1	123	758	2	246
G	401	1	145	803	3	35
G#	425	1	169	851	3	83
A	451	1	195	902	3	134
A#	477	1	221	955	3	187
B	506	1	250	1012	3	244

Note	Octave 2			Octave 3		
	Oscillator Frequency			Oscillator Frequency		
	Decimal =	Hi (x256) + Lo		Decimal =	Hi (x256) + Lo	
C	1072	4	48	2145	8	97
C#	1136	4	112	2273	8	225
D	1204	4	180	2408	9	104
D#	1275	4	251	2551	9	247
E	1351	5	71	2703	10	143
F	1432	5	152	2864	11	43
F#	1517	5	237	3034	11	218
G	1607	6	71	3215	12	143
G#	1703	6	167	3406	13	78
A	1804	7	12	3608	14	24
A#	1911	7	119	3823	14	239
B	2025	7	233	4050	15	210

Note	Octave 4			Octave 5		
	Oscillator Frequency			Oscillator Frequency		
	Decimal =	Hi (x256) + Lo		Decimal =	Hi (x256) + Lo	
C	4291	16	195	8583	33	135
C#	4547	17	195	9094	35	134
D	4817	18	209	9634	37	162
D#	5103	19	239	10207	39	223
E	5407	21	31	10814	42	62
F	5728	22	96	11457	44	193
F#	6069	23	181	12139	47	107
G	6430	25	30	12860	50	60
G#	6812	26	156	13625	53	57
A	7217	28	49	14435	56	99
A#	7647	29	223	15294	59	190
B	8101	31	165	16203	63	75

Note	Octave 6			Octave 7		
	Oscillator Frequency			Oscillator Frequency		
	Decimal =	Hi (x256) + Lo		Decimal =	Hi (x256) + Lo	
C	17167	67	15	34334	134	30
C#	18188	71	12	36376	142	24
D	19269	75	69	38539	150	139
D#	20415	79	191	40830	159	126
E	21629	84	125	43258	168	250
F	22915	89	131	45830	179	6
F#	24278	94	214	48556	189	172
G	25721	100	121	51443	200	243
G#	27251	106	115	54502	212	230
A	28871	112	199	57743	225	143
A#	30588	119	124	61176	238	248
B	32407	126	151	64814	253	46

The value under Hi is POKEd into the Hi byte of the frequency registers (54273, 54280, 54287). Likewise with Lo (54272, 54279, 54286)

Figure 1

OCTAVE	36876	36875	36874	OCTAVE	36876	36875	36874
Note	Decimal	Decimal	Decimal	Note	Decimal	Decimal	Decimal
C-0			135	G#-3	179	217	236
C#-0			143	A-3	183	219	237
D-0			147	A#-3	187	221	238
D#-0			151	B-3	191	223	239
E-0			159	C-4	195	225	240
F-0			163	C#-4	199	227	241
F#-0			169	D-4	201	228	
G-0			175	D#-4	203	229	
G#-0			179	E-4	207	231	
A-0			183	F-4	209	232	
B-0			187	F#-4	212	233	
C-1		135	195	G-4	215	235	
C#-1		143	199	G#-4	217	236	
D-1		147	201	A-4	219	237	
D#-1		151	203	A#-4	221	238	
E-1		159	207	B-4	223	239	
F-1		163	209	C-5	225	240	
F#-2		169	212	C#-5	227	241	
G-2		175	215	D-5	228		
G#-2		179	217	D#-5	229		
A-2		183	219	E-5	231		
A#-2		187	221	F-5	232		
B-2		191	223	F#-5	233		
C-3	135	195	225	G-5	235		
C#-3	143	199	227	G#-5	236		
D-3	147	201	228	A-5	237		
D#-3	151	203	229	A#-5	238		
E-3	159	207	231	B-5	239		
F-3	163	209	232	C-6	240		
F#-3	169	212	233	C#-6	241		
G-3	175	215	235				

Figure 2

note is to be played and held for the length of the sum of the lengths of each note. If two notes joined by a curved line are not the same note, each note is to be played separately, but smoothly. The grouping of the last two notes varies, but if grouped in three with a curved like and a number three above, or below them, they are three notes to be played in the same time as two of the same kind. It is advisable to be able to distinguish between a dot above to below a note as a dot beside a note. If a dot is used after a note, the length of the note is made half as long again, that is, the length of the note without the dot is multipied by 1.5. If the dot is above or below the note it is to be played short and detached.

Music is often filled with signs about the volume of notes. A double *ff* means very loud. A single *f* means loud. A *mf* is moderately loud. A *mp* is moderately soft. A *p* is soft and a double *pp* is very soft. Words like *Rit.* and *Ritard.* means the piece of music is slowing down. *Accel.* means it is getting faster. A greater than sign (>) or the word *Dim.* means the piece is getting softer. A less than sign (<) or the word *Cresc.* indicates the volume is increasing.

Now comes the reading of the note. You should be familiar with sharps, flats and naturals. A sharp indicates an increase of half a note, a flat indicates a decrease of half a note. A natural cancels any previous sharp or flat. Often they are written at the beginning of a tune and on each following line. The sharps or flats written there are enforced for the entire piece of music, unless otherwise changed by a sharp, flat or natural, usually naturals. If one of these signs is written in a bar, it is enforced for the entire bar unless otherwise altered.

Figure (5) shows all the notes in order in both the treble and the bass. Notice the curly signs written on each line inducating if the notes are in the treble or bass. Take care when reading music as the notes in the treble are different to the notes in the bass, even when written in the same line. It is also important to realise that notes with different names, can have the same decimal number.

It is obviously not possible to include all the theory so you can write any piece of music for your computer. It is best to start with simple one line melodies and progress to a full three voice symphony. If you encounter an unusual sign and, or get stuck, try asking a music teacher to help you, or ignore it and alter it to what sounds best.

Once you have written the music you may wish to alter the speed at which it plays. For the C64 listing change line 330 to:

```
330 T = T (S * X)
```

and line 200 in the VIC-20 listing to:

```
200 T = T + (S * X).
```

Where in both cases X is a number if X is less than one (1) and greated than zero (0). the speed will increase. To decrease the speed, let X be more than one (1).

When you have finished the tune, you will get an OUT OF DATA error so let the last DATA number be a zero (0). This will indicate the end of the tune and the computer will automatically end without an error. To illustrate this technique of writing music, there is a small test with answers, see figure (6). If you can correctly complete it, identifying both the notes and their lengths, you should be ready to write many tunes for your computer. Good luck and beware Beethoven.

(C) David Bergmeier 1984

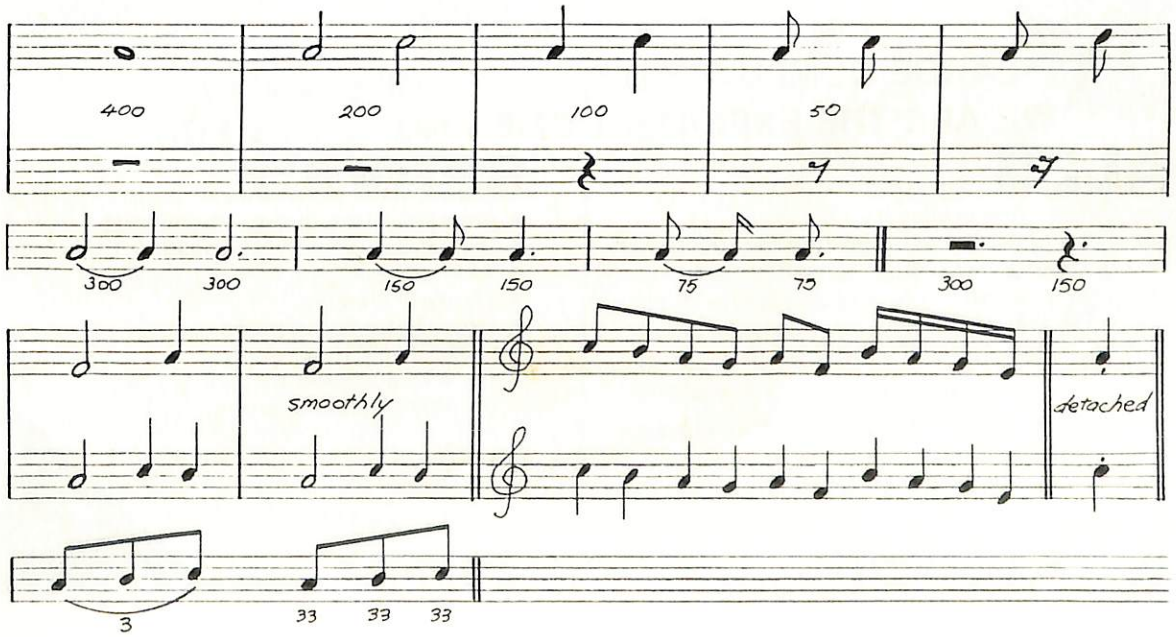


Figure 3

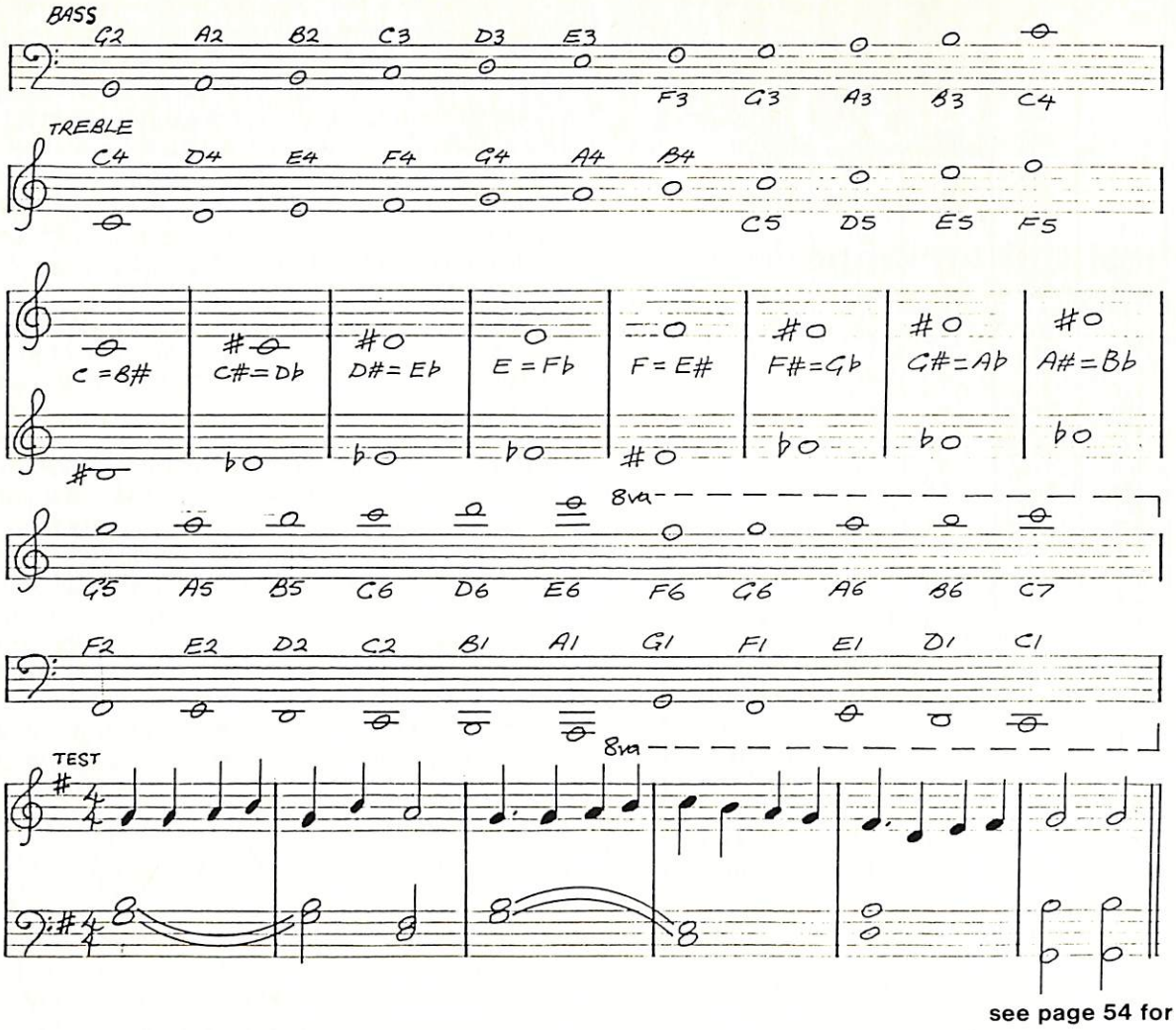


Figure 5

see page 54 for Figures 4 & 6

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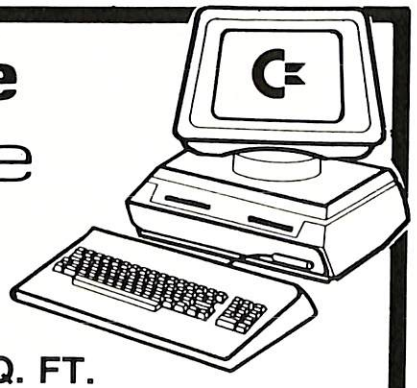

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Michael Spiteri

POKE HERE! POKE THERE! POKE EVERYWHERE!
Producing on-screen graphics.

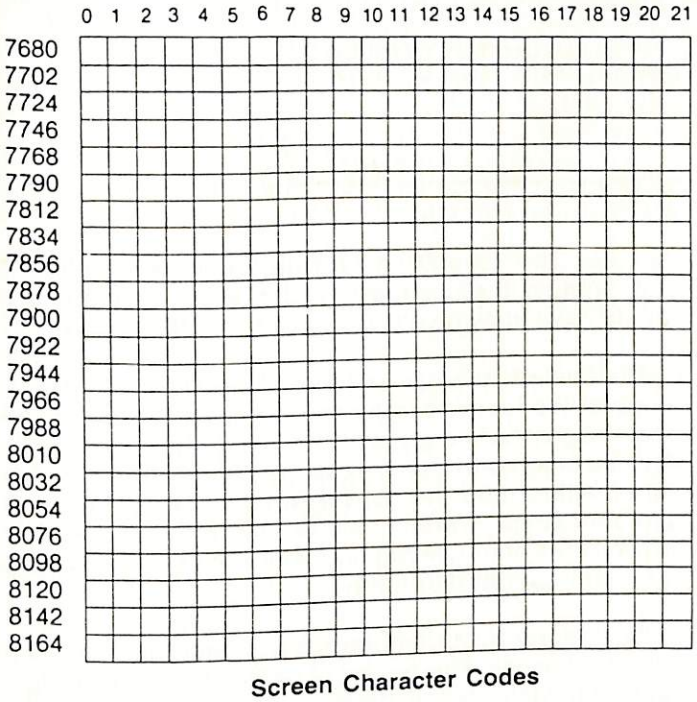
After reading this edition's article you should be able to poke graphic characters on the screen and paint them with ease!

Any of the graphic characters, letters and numbers can be printed on any position on the screen. Imagine each location on the screen as a 'pigeon hole'.

In each hole you can put just one thing, and paint it one colour.

The Vic screen comprises of 506 'pigeon holes' (23 rows times 22 columns).

Here is a plan of the screen's "pigeon holes"



Screen Character Codes

Each pigeon hole is given a number between 7680 and 8185. The pigeon hole in the top-left-hand-corner is location 7680, and counting along each pigeon hole on the screen, you should get up to 8185, which is the pigeon hole in the bottom-right-hand-corner.

To put a character into a pigeon hole, you do the following things:

1) Look up the screen code of the character (charts are printed on page 141 of the Vic user manual, and also in the Reference Book in Commodore Magazine Vol 4 No 4)

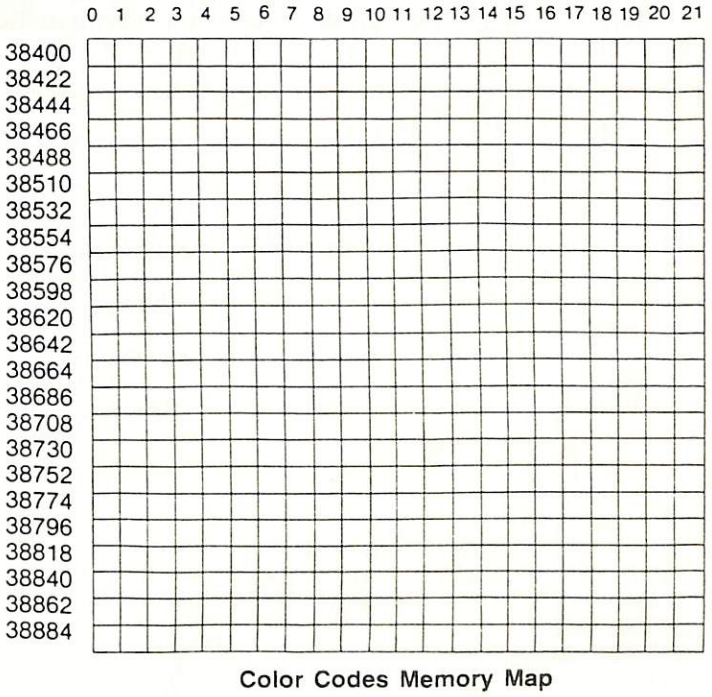
2) Find the screen location number on the chart above.

3) Poke the screen location with the screen code, or in other words: POKE screen location, screen code.

If you try it now, nothing will be shown on the screen, because the colour is automatically set to 1, which is white. Changing the screen colour will reveal your character in it's chosen pigeon hole.CHANGING THE COLOUR OF THE PIGEON!

Now you know how to poke a pigeon into a pigeon hole, you would probably want to know how to change the colour of the pigeon.

Another POKE is required to do this, as each pigeon hole has a number for changing colours. Not to leave you astray, printed below is the screen memory map (or pigeon hole map) for changing colours:



Color Codes Memory Map

Each pigeon hole is given a colour code number between 38400 (top-left-hand-corner) and 38905 (bottom-right-hand-corner). POKEing any of these pigeon-holes with 0 will change the character in that pigeon-hole to BLACK. POKEing any of these locations with 1 will change the character in that pigeon-hole to WHITE etc.

Continued Overleaf

Here is a list of colours available and the code number:

CODE	COLOUR
0	Black
1	White
2	Red
3	Cyan
4	Purple
5	Green
6	Blue
7	Yellow

Confused? Maybe the following examples will help:

Example 1

Suppose we want to place a green heart in the top-left-corner-pigeon hole.

The screen location is 7680. The screen code for a heart is 115, so we poke:

```
POKE 7680, 115 (press return)
```

The screen colour location for that pigeon hole is 38400, and the code for GREEN is 5, so we poke:

```
POKE 38400, 5 (press return)
```

There should now be a green heart on the corner of the screen!

Example 2

This program will print a ball in the middle of the screen and make it change colours.

```
10 POKE 7911, 113: REM pokes the ball to the middle of the screen#
20 FOR I = 0 TO 7: REM start of a loop that changes the colour of the ball#
30 POKE 38631, I: REM pokes the colour to the middle of the screen#
40 NEXT : REM finishes the loop#
50 GOTO 20 : REM restarts the program#
```

Filling pigeon holes is easy when you get the hang of it! Remember, any characters you redesign (see this article in Commodore Magazine Vol 4 No 2) can easily be poked using the same method.

For more information try:
VIC-20 Programmers Reference Guide.
VIC-20 User manual
Back issues of the Commodore Magazine.

Continued from page 20

```
120 GET#1, A$
125 P2=ASC(A$+CHR$(0))
130 PX=P2/16 :REM FIRST PIXEL VALUE
135 GOSUB 500 :REM CONVERT AND PUT INTO SCREEN
140 PX=P2 AND 15 :REM SECOND PIXEL VALUE
145 GOSUB 500 :REM CONVERT AND PUT INTO SCREEN
150 NEXTX
155 PUTPIXEL(639,Y,0) :REM BLACK FOR LAST IN LINE
160 NEXTY
165 REM PUT CODE TO SAVE SCREEN PICTURE HERE
170 END
500 IF((XX/3)*3)=XX THEN GOSUB 600 :REM 53 extra
510 GOSUB 600
520 RETURN
600 PUTPIXEL (XX,Y,PVAL(PX,0))
610 PUTPIXEL (XX+1,Y,PVAL(PX,1))
620 PUTPIXEL (XX+2,Y,PVAL(PX,2))
630 XX=XX+3
640 RETURN
```

In the above description PUTPIXEL refers to a sub-routine which uses as arguments the screen location and value. For example, PUTPIXEL would in line 600 poke PVAL(PX,0) into screen location XX,Y. Necessarily the way this happens is different for various systems.

Our final result was a pretty reasonable picture. But we still did one more thing to improve the converted picture. We used different conversion tables for odd and even lines to help avoid stripes showing up in the dithered colours.

The second table was the same as the first except for the order. For example, orange in one table was yellow, red, red. The second conversion table was red, yellow, red. Without the change in order, a large orange area would have shown yellow and red vertical stripes.

The final picture can still look quite different from the original. We found that the shades of green differed and that the greens and greys did not work very well together. A white cloud with a bit of light grey ended up with a faint bit of yellow after the conversion. Mistakes in the C-64 picture which weren't visible there, were glaringly obvious in the Oki-Sigma where colour boundaries worked together differently.

Nevertheless, our judgement was that the conversion was worthwhile. The resultant picture on the Oki-Sigma was enjoyable. Since then, we have used a graphics program to clean up mistakes and change colours to more pleasing combinations for the Oki-Sigma.

In retrospect we were very lucky with the conversion. We managed to hang on to all 16 C-64 colours thanks to dithering. We also were fortunate to have 640 dots across the Oki-Sigma screen so that when we finished dithering, we still had more than enough room for the whole C-64 picture line. Converting an Oki-Sigma picture to the C-64 would have been more painful since we would have had to compress the picture and, if dithered, throw out colours.

KIWISOFT, 5 Elwood Place, Auckland, New Zealand.

Continued from page 33

```
3300 PRINT TAB(SP)F8$
3310 FOR T8=1 TO 250: NEXT T8
3320 PRINT CHR$(147)
3330 FOR T8=1 TO 250: NEXT T8
3340 NEXT Z
3350 RETURN
3360 REM * PRINT LINE
3370 PRINT "[<T><T><T><T><T><T><T><T><T><T><
     T><T><T><T><T><T><T><T><T><T><T><T><T
     ><T><T><T><T><T><T><T><T><T><T><T><T
     ><T><T><T><T>]": REM * 39 CHARS
3380 RETURN
3390 REM * SAVE FILE
3400 PRINT CHR$(147)
3410 IF Y=0 THEN F8$="[RVS,RED]NO FILE EXISTS[OFF,BLU]":
     GOSUB 3280: GOTO 550
3420 PRINT TAB(240): GOSUB 3370
3430 PRINT : PRINT TAB(3)"ARE YOU SAVING ON[SPACE,RVS]
     DISK[OFF,SPACE]OR[SPACE,RVS]TAPE[OFF]?"
3440 PRINT : GOSUB 3370
3450 PRINT : PRINT : PRINT : PRINT TAB(11)"KEY 'D' OR 'T'"
3460 GET K$
3470 IF K$="" THEN 3460
3480 IF K$="T" THEN 3520
3490 IF K$="D" THEN 4220
3500 GOTO 3460
3510 REM * SAVE FILE ON TAPE
3520 PRINT CHR$(147): PRINT TAB(240): PRINT TAB(120)
3530 PRINT "HAVE YOU INSERTED A CASSETTE?"
3540 PRINT : PRINT "HAVE YOU REWOUND IT TO DESIRED
     POSITION"
3550 PRINT : PRINT "HAVE YOU SWITCHED MOTOR OFF?"
3560 PRINT : PRINT : PRINT "[RVS]YOU MUST NOW ANSWER
     Y(YES)[OFF]"
3570 GET K$
3580 IF K$<>"Y" THEN 3570
3590 PRINT CHR$(147): PRINT TAB(240): GOSUB 3370
3600 PRINT TAB(12)"[RVS]BE PATIENT ![OFF]": GOSUB 3370
3610 PRINT : PRINT : PRINT TAB(5)"YOUR FILE[SPACE,RVS]";
     N$;"[OFF]"
3620 PRINT : PRINT TAB(5)"WILL TAKE TIME TO
     SAVE ON TAPE"
3630 PRINT : PRINT
3640 OPEN 1,1,1,N$
3650 PRINT#1,Y
3660 PRINT#1,X
3670 FOR R=1 TO Y
3680 FOR C=1 TO X
3690 PRINT#1,A$(R,C)
3700 NEXT C
3710 NEXT R
3720 FOR C=1 TO X
3730 PRINT#1,A$(0,C)
3740 NEXT C
3750 CLOSE 1
3760 GOSUB 3370
3770 PRINT "FILE NAMED[SPACE,RVS]";N$;"[OFF]NOW ON
     TAPE": GOSUB3370
3780 FOR Z=1 TO 1000: NEXT Z
3790 GOTO 550
3800 REM * LOAD FILE
3810 PRINT CHR$(147): PRINT TAB(240): GOSUB 3370
3820 PRINT TAB(2)"ARE YOU LOADING FROM[SPACE,RVS]
     TAPE[OFF,SPACE]OR[SPACE,RVS]DISK[OFF,SPACE]?"
3830 GOSUB 3370
3840 PRINT : PRINT : PRINT TAB(5)"KEY 'T' OR 'D'"
3850 GET K$
3860 IF K$="" THEN 3850
3870 IF K$="T" THEN 3910
3880 IF K$="D" THEN 4480
3890 GOTO 3850
3900 REM * LOAD FROM TAPE
3910 PRINT CHR$(147): PRINT TAB(240)
3920 CLR
3930 DIM A$(80,6)
3940 PRINT "ENTER FILE NAME"; TAB(20);
3950 GOSUB 3220
3960 N$=I8$
3970 PRINT : PRINT TAB(240)
3980 PRINT "IS THE CASSETTE IN TAPE DRIVE?"
3990 PRINT : PRINT "IS IT REWOUND?"
4000 PRINT : PRINT "IS THE MOTOR SWITCHED OFF?"
4010 PRINT : PRINT : PRINT : PRINT "IF SO, ANSWER Y(YES)"
4020 GET K$
4030 IF K$="" THEN 4020
4040 IF K$<>"Y" THEN 4020
4050 PRINT CHR$(147): PRINT TAB(240): GOSUB 3370
4060 PRINT "HAVE PATIENCE ! THIS TAKES TIME":
     GOSUB3370
4070 PRINT
4080 OPEN 1,1,0,N$
4090 INPUT#1,Y
4100 INPUT#1,X
4110 FOR R=1 TO Y
4120 FOR C=1 TO X
4130 INPUT#1,A$(R,C)
4140 NEXT C
4150 NEXT R
4160 FOR C=1 TO X
4170 INPUT#1,A$(0,C)
4180 NEXT C
4190 CLOSE 1
4200 GOTO 550
4210 REM * SAVE FILE ON DISKETTE
4220 PRINT CHR$(147): PRINT TAB(240): GOSUB 3370
4230 PRINT TAB(2)"DO YOU WANT TO SAVE ON[SPACE,RVS]
     DRIVE'0'[OFF]"
4240 PRINT : PRINT TAB(2)"OR ON[SPACE,RVS]DRIVE '1'
     [OFF]?": GOSUB 3370
4250 PRINT : PRINT : PRINT
4260 GET K$
4270 IF K$="" THEN 4260
4280 IF K$="0" THEN N1$="0:": GOTO 4310
4290 IF K$="1" THEN N1$="1:": GOTO 4310
4300 GOTO 4260
4310 N2$=",SEQ,WRITE"
4320 NN$=N1$+N$+N2$
4330 OPEN 1,8,4,NN$
4340 GOSUB 4700
4350 PRINT#1,Y; CHR$(13);
4360 PRINT#1,X; CHR$(13);
4370 FOR R=1 TO Y
4380 FOR C=1 TO X
4390 PRINT#1,A$(R,C); CHR$(13);
4400 NEXT C
4410 NEXT R
4420 FOR C=1 TO X
4430 PRINT#1,A$(0,C); CHR$(13);
4440 NEXT C
4450 CLOSE 1
4460 GOTO 550
4470 REM * LOAD FILE FROM DISKETTE
4480 PRINT CHR$(147): PRINT TAB(240)
4490 CLR
4500 DIM A$(80,6)
4510 PRINT "ENTER[SPACE,RVS]NAME[OFF,SPACE]OF FILE"
4520 PRINT : PRINT : PRINT : PRINT TAB(7): GOSUB 3220
4530 N$=I8$:NN$=N$
4540 N1$="0:":N2$=",SEQ,READ"
4550 NN$=N1$+NN$+N2$
4560 OPEN 1,8,4,NN$
4570 GOSUB 4700
4580 INPUT#1,Y
4590 INPUT#1,X
4600 FOR R=1 TO Y
4610 FOR C=1 TO X
4620 INPUT#1,A$(R,C)
4630 NEXT C
4640 NEXT R
4650 FOR C=1 TO X
4660 INPUT#1,A$(0,C)
4670 NEXT C
4680 CLOSE 1
4690 GOTO 550
4700 REM * DISK DRIVE ERROR ROUTINE
4710 CLOSE 15
4720 OPEN 15,8,15
4730 INPUT#15,EN,EM$,ET,ES
4740 IF EN<20 THEN RETURN
4750 PRINT CHR$(147)
```

Continued Overleaf

```
4760 PRINT "[RVS,RED]DISK ERROR:[OFF,BLU,SPACE]";EN;
     " ";EM$;" ";ET;" ";ES
4770 FOR Z=1 TO 2000: NEXT Z
4780 CLOSE 15: CLOSE 1
4790 GOTO 550
4800 REM * PRINT FILE
4810 PRINT CHR$(147)
4820 IF Y=0 THEN F8$="[RVS,RED]NO FILE EXISTS
     [OFF,BLU]": GOSUB 3280: GOTO 550
4830 REM * DETERMINE FIELD TYPES: CHANGE TO SUIT
     INDIVIDUAL APPLICATION
4840 F1$="999999999-[SPACE2]AAAAAAAAAAAAAAAAAAA
A[SPACE2]999999999-": REM * RECORDS
4850 F2$="[SPACE2]999999999-[SPACE2]999999999-[SPACE2]9
     99999999-"
4860 F3$="AAAAAAAAAA[SPACE7]AAAAAAAAAA[SPACE7
     ]AAAAAAAAAA": REM  * COLUMN HEADINGS
4870 F4$="[SPACE2]AAAAAAAAAA[SPACE2]AAAAAAAAAA
     [SPACE2]AAAAAAAAAA"
4880 PRINT CHR$(147): PRINT TAB(240): PRINT TAB(120)
4890 PRINT "HAVE YOU INSERTED PAPER?"
4900 PRINT : PRINT "IS THE PRINTER ON?"
4910 PRINT : PRINT : PRINT "[RVS]YOU MUST NOW ANSWER
     Y(YES)[OFF]"
4920 GET K$
4930 IF K$="" THEN 4920
4940 IF K$<>"Y" THEN 4920
4950 OPEN 4,4,1
4960 OPEN 1,4,1
4970 OPEN 5,4
4980 PRINT#5, CHR$(147): REM * PAGING ON
4990 OPEN 2,4,2
5000 OPEN 3,4,2
5010 PN=1:LN=0:CE$=CHR$(29)
5020 GOSUB 5110
5030 FOR R=1 TO Y
5040 PRINT#2,F1$+F2$
5050 PRINT#1,A$(R,1),A$(R,2),CE$,A$(R,3),A$(R,4),A$(R,5),
     A$(R,6)
5060 LN=LN+1
5070 IF LN=50 THEN PN=PN+1:LN=0:PRINT#5,CHR$(19):
     GOSUB 5110
5080 NEXT R
5090 CLOSE 1: CLOSE 2: CLOSE 3: CLOSE 4: CLOSE 5
5100 GOTO 550
5110 PRINT#5,SPC(65)"PAGE NO. ";PN
5120 PRINT#4:PRINT#4
5130PRINT#3,F3$+F4$
5140 PRINT#4,A$(0,1),CE$,A$(0,2),CE$,A$(0,3),CE$,A$(0,4),
     CE$,A$(0,5),CE$,A$(0,6)
5150 PRINT#4:PRINT#4:PRINT#4
5160 RETURN
5170 REM * EXIT
5180 PRINT CHR$(147)
5190 F8$= "[RVS]P R O G R A M  E X I T[OFFRVS]"
5200 GOSUB 3280
5210 POKE HI,EN
5220 END
```

This program proved too long to print in the magazine. Any reader who cannot wait for DISK#3 can obtain a hardcopy by forwarding $2.00 (no credit cards thankyou) and a Self Addressed Envelope (SAE) for a hardcopy. No SAE – no reply.

CREEPY CAVES – Continued from page 34

```
850 PRINT "[DOWN]IN HERE THERE IS:"
860 X=INT ( RND (1)*12)+1
870 IF X<5 THEN PRINT "[RVS]MYSTERY OBJECT": GOTO 110
880 IF X=5 OR X=6 OR X=7 THEN PRINT "[RVS]LADDER":
    GOTO 320
890 IF X>7 THEN PRINT "[RVS]MONSTER!!!!!": GOTO 170
900 POKE 36879,8: PRINT "[CLR]"
910 PRINT "[DOWN4]THOU ART SLAIN!!!!!!!!"
920 PRINT "[DOWN2]YOU SCORED:";S
930 PRINT "ANOTHER GO? (Y/N)"
940 GET A$: IF A$<>"Y" AND A$<>"N" THEN 940
950 IF A$="N" THEN END
960 IF A$="Y" THEN RUN
970 FOR I=128 TO 255: POKE 36875,I: NEXT I: POKE 36875,0:
    RETURN
980 FOR I=255 TO 128 STEP -1: POKE 36875,I: NEXT :
    POKE 36875,0: RETURN
990 FOR I=1 TO 50: POKE 36877,255: NEXT : POKE 36877,0:
    RETURN
1000 FOR I=1 TO 50: POKE 36876,200: NEXT : POKE 36876,0:
    RETURN
```

Continued from page 41

Criticism? I find having to type in the commands to shift the drive into "fast" or "slow" mode after switching the computer between standard and turbo a bit annoying, but I only do this occasionally to load "Flight Simulator II". The commands are very short, but if you don't type them in, the computer will ignore the drive until you do.

MANUFACTURER'S NOTE

We thought we'd made the original SPR Turbo System as user-oriented as possible, but we were wrong.

After reading Dr Wall's review we added additional switching to the user port extension board, entirely eliminating the need to type in FAST/SLOW commands to the drive. Now a simple flick of the switch is all it takes to switch between SPR Turbo mode and standard Commodore mode.

The problem Dr Wall found in loading "Flight Simulator II" seems to be peculiar to his disk, as three other copies of the same program load perfectly in SPR Turbo mode on Dr Wall's own system.

Readers who pruchased the original SPR Turbo System ..... return the extension board to us and we will replace it with the upgraded version at no charge.

HIGH SCORE

HIGH SCORE is for serious games players who thrive on competition. We are publishing the highest known scores of readers for any game on disk, cassette or cartridge on any Commodore machine.

If you have a score that beats the existing record photograph your screen or get a second person to initial your highscore and send it in. If a game is not listed send in your highest score – you might be the champion.

GALACTIC CROSSFIRE
27,010 Michael Bakes, Tas

MENAGERIE
6,100 J.H. Fry ACT

MONEY WARS
104,240 D.G. Fry ACT

RADAR RAT RACE
137,540 Tom Spencer, Qld

RAID ON FORT KNOX
13,783 D.G. Fry ACT

SPRITEMAN 64
92,290 Brendon Madden VIC

TRASHMAN
265,765 Maxine Brown, ?AUST.

VIC FROGGER
225,000 J.H. Fry A.C.T.

ATTACK OF THE MUTANT CAMELS
52,280 Brendan Madden Vic.

LOCO
100,400 Brendan Madden Vic.

Reviews

Continued from page 22

Available in Australia from most bookshops and Commodore dealers.
RRP $29.95
Sample from: C W Electronics Pty Ltd.
Paperback, stiff spine, 322 pages.
Currency: Covers -05 DOS ROM set.

Like its brother (or is it sister?) above, this book is divided into 2 sections – text and a listing of the contents of the disk drive operating system. That's where the similarity stops, because this volume is valuable.

The editions of the 1541 instruction manual produced by Commodore's Misinformation Division were not only useless, but erroneous as well. This new book provides the help and user information that should have been provided by Commodore. Starting from the start (LOAD and SAVE) the text section takes the reader on a well-paced tour through disk commands, data storage (sequential and relative), then tackles the mysteries of advanced disk handling. Next, the TEST/DEMO disk is explained. Lastly, there are some nicely prepared and documented utility program to use with your 1541. All top stuff. Whether you should have to pay $30 for it, or should expect to get it as documentation with your disk drive is debatable. But here it is, go for it.

The Disk Operating System (DOS) listing was a bit disappointing, having spent countless hours myself preparing such a document. It's presented to you without much explanation, but if you are at the stage of wanting to actually try your hand at programming the drive, then that won't matter much. The routines are clearly (if sparsely) annotated, but some major routines are not discussed at all. By and large, error (but not typo) free.

PLUSES: The text section is clear and concise, and will make disk use more understandable – buy it if you want to extract the most from your disk drive investment.

MINUSES: There are an irritating number of typos; the commentary in the DOS listing is only reasonable, and not enlightening on some subjects (e.g. Group Code Recording); no index.

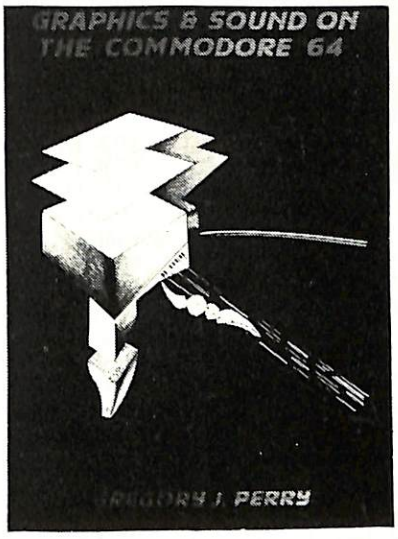
Rated Number 1 in its field at present, but watch out for a newly-released book from Datamost by Dr Dick Immers and Gerald Neufeldt. The DOS disassembly is a wow. No news of Australian release yet, but mail order from overseas is no more expensive, anyway.

Reviewed by Paul Blair, (C) 1984

GRAPHICS & SOUND ON THE COMMODORE 64

comments by – Mervyn Beamish

To the reader of the Commodore Magazine Gregory Perry is a familiar name. Readers, as well as most people involved in the User Group Network, will be familiar Greg's quality of work and enthusiasm for Commodore computers.



Prentice-Hall are also well known and respected as publishers both in Australia and overseas. The combination of Greg and Prentice-Hall has given us a very comprehensive book. A book that I feel will soon be in many serious C64 user's libraries through out the world.

Any lesser publisher would have split this book into three volumes in search of the extra dollars. The content is there. Just take a look at the directory of the accompanying disk (optional – but your masochist if you don't get it):-

3-D HISTOGRAM 3-D SCALED HISTO ANIMATION
ARROW ASCII/SCREEN B/S COLORS
BATTLE CALC FREQ 64 CHAR BOOT
CHARACTER EDITOR COLOR HISTOGRAM COLOR MESSAGE
COLOR TEST COMPUTER.SET 5 COSINE BANKED
COSINE CURVE DATA MAKER DOWN SCROLL
EAT TEXT ECM DEMO ERROR BORDER
FILTER 2 FILTER SONG FILTER
FIRST SONG FLASHING BORDER GRAPHICS DATA
GRAPHICS.BIN HORIZONTAL HISTO HOUSE
HRG TEST 1.2 HRG TEST 1.3 HRG TEST 1.4
HRG TEST 1.5 HRG TEST 1 HRG TEST 2
HYDEN SONG JOYSTICK 1 KEYBOARD
MAN DATA MAZE JOY ADDS MAZE
MOVE CHARACTERS MOVING HEART MULTIVOICE 1
MUSIC SUITE 1 MUSIC SUITE 2 NEW CHARACTERS
NICE LISTER OCTAVE PING
PRINT TEXT PROG CHARACTERS RND COLOR RAM
ROTATE.DATA S+27 EFFECT 1 S+27 VIBRATO
S-B COLLISION S-S COLLISION SAVE MC GRAPHICS
SCREEN POSITION 1 SCROLL.DATA SIMPLE BORDER
SINGLE NOTE SLIDE 1 SLIDE 2
SM.SCROLL DATA SM.SCROLL PROG
SM.SCROLL.BIN
SPACE SHIP DATA SPRITE BOOT SPRITE DEMO
SPRITE EDITOR SPRITE GEN FULL SPRITE GENERATOR
SPRITE MOVEMENT STANDARD.SET SURF
TIMER HISTO TOREODOR'S SONG TRAIN
VERTICAL HISTO WEDGE BOOT WEDGE-64-$8000.C
WEDGE-64-$C000.C..PRG

Greg has written this most comprehensive study of the C64 sound, colour and graphics mode in the form of a self study guide. A guide complete with interesting (not trivial) exercises and examples.

If you follow and enjoyed Gregory Perry's series on SID in this magazine (power strike stopped its appearance this issue) then you cannot afford not to obtain a copy of this book – save your fingers a lot of work by getting the accompanying disk at the same time.

Good work Dr. Greg.

Name: GRAPHICS & SOUND ON THE COMMODORE 64
Author: GREGORY J. PERRY
Publisher: PRENTICE-HALL, Australia
Price: Book $15.95
Book + Disk $25.95
(Refer special reader's price this issue)
Sample: from the Publisher

MASTERING THE COMMODORE 64

comments by – Mervyn Beamish

Australian writer Peter Vernon has written an authoritive overview of the Commodore 64.

The book joins the many other titles that aim at 'showing' you how to make the most of your C64 with the least wastage of time. In this book we get, yet again, an introduction to the "exciting world of Commodore 64 computing."

However where as Mr. Vernon's book is not all that different it is range of content it is very well illustrated with understandable diagrams and listings. Glory be! – it has a good index as well!

The book is well laid out and Mr. Vernon's writing style is clean, precise and very readable.

If you are in need of a book to take you deep into the forest of the C64 then this is about as good a traveller's companion as any available anywhere. Better than most. We will attempt to do Mr. Vernon justice by doing a proper review in a later issue.

Name: MASTERING THE COMMODORE 64
Author: PETER VERNON
Publisher: PRENTICE-HALL, Australia
Price: $16.95 (refer special reader's this issue)
Sample: from the Publisher

Continued from page 48

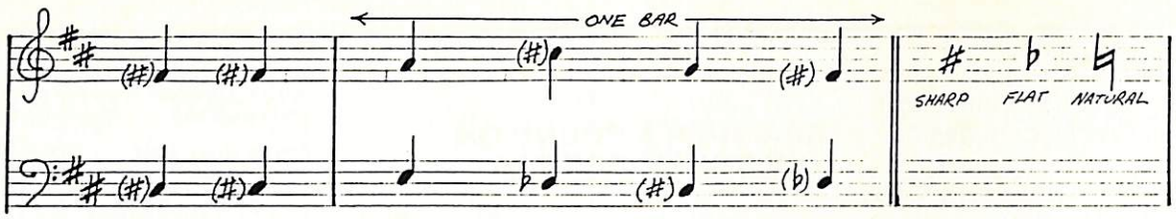


Figure 4

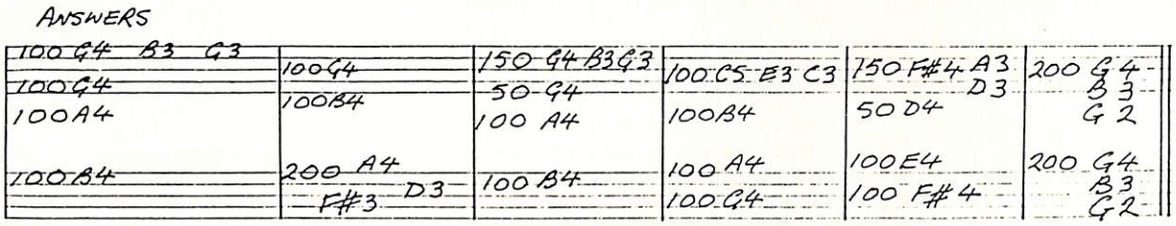


Figure 6

Program (1) – Commodore 64 routine.

```
100 PRINT "[CLR]"
110 POKE 54296,15
120 REM VOICE ONE
130 POKE 54277,10: POKE 54278,1
140 POKE 54275,0: POKE 54274,200
150 POKE 54276,65
160 REM VOICE TWO
170 POKE 54284,10: POKE 54285,1
180 POKE 54282,0: POKE 54281,200
190 POKE 54283,65
200 REM VOICE THREE
210 POKE 54291,11: POKE 54292,1
220 POKE 54289,0: POKE 54288,200
230 POKE 54290,65
240 T=T1
250 IF Q THEN POKE 54276,64: POKE 54283,64: POKE 54290,64
260 READ S$:S=VAL(S$)
270 IF S<0 THEN POKE 54296,ABS(S): GOTO 260
280 IF S$="D" THEN Q=1: GOTO 260
290 IF $="S" THEN Q=0: GOTO 260
300 REM PUT EXTRA ROUTINES HERE
310 IF S=0 THEN 450
320 READ ,X,Y,Z
330 A=INT (X/256):B=X-256*A
340 C=INT (Y/256):D=Y-256*C
350 E=INT (Z/256):F=Z-256*E
360 IF A THEN POKE 54276,64: POKE 54273,A
370 IF A THEN POKE 54272,B: POKE 54276,65
380 IF C THEN POKE 54283,64: POKE 54280,C
390 IF C THEN POKE 54279,D: POKE 54283,65
400 IF E THEN POKE 54290,64: POKE 54287,E
410 IF E THEN POKE 54286,F: POKE 54290,65
420 T=T+(S*33)
430 IF T>T1 THEN 430
440 GOTO 260
450 FOR I=54272 TO 54296: POKE I,0: NEXT
460 PRINT "[CLR,<BLU>]";: END
```

Program (2) – MINUET IN G, BY J.S.Bach, Arranged by David Bergmeier

```
6800 DATA 100,9634,4050,3215,50,6430,4817,0
6810 DATA 50,7217,0,0,50,8101,4050,3608
6820 DATA 50,8583,0,0,100,9634,3215,4050
6830 DATA 100,6430,0,0,100,6430,0,0
6840 DATA 100,10814,0,4291,50,8583,5407,0
6850 DATA 50,9634,0,0,50,10814,0,0
6860 DATA 50,12139,0,0,100,12860,0,4050
6870 DATA 100,6430,0,0,100,6430,0,0
6880 DATA 100,8583,0,3608,50,9634,2408,0
6890 DATA 50,8583,0,0,50,8101,4817,0
6900 DATA 50,7217,0,0,100,8101,0,3215
6910 DATA 50,8583,2408,0,50,8101,0,0
6920 DATA 50,7217,4817,0,50,6430,0,0
6930 DATA 100,6069,4291,4817,50,6430,4050,4050
6940 DATA 50,7217,3608,0,50,8101,3215,3215
6950 DATA 50,6430,4050,0,100,8101,2408,4817
6960 DATA 50,7210,4817,2408,50,0,0,4291
6970 DATA 50,0,0,4050,50,0,0,3608
6980 DATA 100,9634,3215,4050,50,6430,4817,0
6990 DATA 50,7217,0,0,50,8101,4050,3608
7000 DATA 50,8583,0,0,100,9634,0,3215
7010 DATA 100,6430,4050,0,100,6430,3215,0
7020 DATA 100,10814,0,4291,50,8583,5407,0
7030 DATA 50,9634,0,0,50,10814,4291,0
7040 DATA 50,12139,0,0,100,12860,0,4050
7050 DATA 50,6430,4291,0,50,0,4050,0
7060 DATA 50,6430,3608,0,50,0,3215,0
7070 DATA 100,8583,0,3608,50,9634,2408,0
7080 DATA 50,8583,0,0,50,8101,4817,3034
7090 DATA 50,7217,0,0,100,8101,3215,3215
7100 DATA 50,8583,2408,0,50,8101,0,0
7110 DATA 50,7217,4817,4050,50,6430,0,0
7120 DATA 100,7217,0,4291,50,8101,0,4817
7130 DATA 50,7217,0,0,50,6430,2408,0
7140 DATA 50,6069,0,0,100,6430,0,3215
7150 DATA 100,0,0,0,100,0,1607,0
7160 DATA 100,9634,4050,3215,50,6430,4817,0
7170 DATA 50,7217,0,0,50,8101,4050,3608
7180 DATA 50,8583,0,0,100,9634,3215,4050
7190 DATA 100,6430,0,0,100,6430,0,0
7200 DATA 100,10814,0,4291,50,8583,5407,0
7210 DATA 50,9634,0,0,50,10814,0,0
7220 DATA 50,12139,0,0,100,12860,0,4050
7230 DATA 100,6430,0,0,100,6430,0,0
7240 DATA 100,8583,0,3608,50,9634,2408,0
7250 DATA 50,8583,0,0,50,8101,4817,0
7260 DATA 50,7217,0,0,100,8101,0,3215
7270 DATA 50,8583,2408,0,50,8101,0,0
7280 DATA 50,7217,4817,0,50,6430,0,0
7290 DATA 100,6069,4291,4817,50,6430,4050,4050
7300 DATA 50,7217,3608,0,50,8101,3215,3215
7310 DATA 50,6430,4050,0,100,8101,2408,4817
9320 DATA 50,7210,4817,2408,50,0,0,4291
9330 DATA 50,0,0,4050,50,0,0,3608
9340 DATA 100,9634,3215,4050,50,6430,4817,0
9350 DATA 50,7217,0,0,50,8101,4050,3608
9360 DATA 50,8583,0,0,100,9634,0,3215
9370 DATA 100,6430,4050,0,100,6430,3215,0
9380 DATA 100,10814,0,4291,50,8583,5407,0
9390 DATA 50,9634,0,0,50,10814,4291,0
9400 DATA 50,12139,0,0,100,12860,0,4050
9410 DATA 50,6430,4291,0,50,0,4050,0
9420 DATA 50,6430,3608,0,50,0,3215,0
9430 DATA 100,8583,0,3608,50,9634,2408,0
9440 DATA 50,8583,0,0,50,8101,4817,3034
9450 DATA 50,7217,0,0,100,8101,3215,3215
9460 DATA 50,8583,2408,0,50,8101,0,0
9470 DATA 50,7217,4817,4050,50,6430,0,0
9480 DATA 100,7217,0,4291,50,8101,0,4817
```

```
9490 DATA 50,7217,0,0,50,6430,2408,0
9500 DATA 50,6069,0,0,100,6430,0,3215
9510 DATA 100,0,0,0,100,0,1607,0
9520 DATA 100,16203,4050,3215,50,12860,3215,0
9530 DATA 50,14435,3608,0,50,16203,4050,0
9540 DATA 50,12860,3215,0,100,14435,4817,3034
9550 DATA 50,9634,0,0,50,10814,0,0
9560 DATA 50,12139,0,0,50,9634,0,0
9570 DATA 100,12860,2703,2703,50,10814,2273,3215
9580 DATA 50,12139,2408,0,50,12860,2703,2703
9590 DATA 50,9634,2273,0,100,9094,1804,3608
9600 DATA 50,8108,0,0,50,9094,0,1804
9610 DATA 100,7217,0,0,50,7217,2273,3608
9620 DATA 50,8101,2408,0,50,9094,2703,0
9630 DATA 50,9634,3034,0,50,10814,3215,0
9640 DATA 50,12139,3608,0,100,12860,4050,4050
9650 DATA 100,12139,3608,4817,100,10814,3215,4547
9660 DATA 100,12139,3608,4817,100,7217,3034,3034
9670 DATA 100,9094,3215,3608,50,9634,3034,4817
9680 DATA 50,0,3215,0,100,0,3608,2408,100,0,3823,4291
9690 DATA 100,9634,4050,4050,50,6430,0,4817
9700 DATA 50,6069,0,0,100,6430,4817,4050
9710 DATA 100,10814,4291,4291,50,6430,0,5407
9720 DATA 50,6069,0,0,100,6430,5407,4291
9730 DATA 100,9634,0,4050,100,8583,0,3608
9740 DATA 100,8101,0,3215,50,7217,3034,4817
9750 DATA 50,6430,2703,0,50,6069,2408,0
9760 DATA 50,6430,2703,0,100,7217,3034,0
9770 DATA 50,4817,4817,2408,50,5407,4547,0
9780 DATA 50,6069,4291,0,50,6430,4050,0
9790 DATA 50,7214,3608,3034,50,8101,3215,0
9800 DATA 100,8583,3034,2703,100,8101,4817,3215
9810 DATA 100,7217,4291,3034,50,8101,4050,3215
9820 DATA 50,9634,0,0,100,6430,2408,2025
9830 DATA 100,6069,4291,2408,100,6430,4050,3215
9840 DATA 100,0,0,2408,100,0,0,1607
9850 DATA 100,16203,4050,3215,50,12860,3215,0
9860 DATA 50,14435,3608,0,50,16203,4050,0
9870 DATA 50,12860,3215,0,100,14435,4817,3034
9890 DATA 50,9634,0,0,50,10814,0,0
9900 DATA 50,12139,0,0,50,9634,0,0
9910 DATA 100,12860,2703,2703,50,10814,2273,3215
9920 DATA 50,12139,2408,0,50,12860,2703,2703
9930 DATA 50,9634,2273,0,100,9094,1804,3608
9940 DATA 50,8108,0,0,50,9094,0,1804
9950 DATA 100,7217,0,0,50,7217,2273,3608
9960 DATA 50,8101,2408,0,50,9094,2703,0
9970 DATA 50,9634,3034,0,50,10814,3215,0
9980 DATA 50,12139,3608,0,100,12860,4050,4050
9990 DATA 100,12139,3608,4817,100,10814,3215,4547
10000 DATA 100,12139,3608,4817,100,7217,3034,3034
10010 DATA 100,9094,3215,3608,50,9634,3034,4817
10020 DATA 50,0,3215,0,100,0,3608,2408,100,0,3823,4291
10030 DATA 100,9634,4050,4050,50,6430,0,4817
10040 DATA 50,6069,0,0,100,6430,4817,4050
10050 DATA 100,10814,4291,4291,50,6430,0,5407
10060 DATA 50,6069,0,0,100,6430,5407,4291
10070 DATA 100,9634,0,4050,100,8583,0,3608
10080 DATA 100,8101,0,3215,50,7217,3034,4817
10090 DATA 50,6430,2703,0,50,6069,2408,0
10100 DATA 50,6430,2703,0,100,7217,3034,0
10110 DATA 50,4817,4817,2408,50,5407,4547,0
10120 DATA 50,6069,4291,0,50,6430,4050,0
10130 DATA 50,7214,3608,3034,50,8101,3215,0
10140 DATA 100,8583,3034,2703,100,8101,4817,3215
10150 DATA 100,7217,4291,3034,50,8101,4050,3215
10160 DATA 50,9634,0,0,100,6430,2408,2025
10170 DATA 100,6069,4291,2408,100,6430,4050,3215
10180 DATA 100,0,0,2408,100,0,0,1607
10190 DATA 500,0,0,0,0
```

Program (3) – VIC-20 routine

```
100 POKE 36879,15:T=TI
110 READ $:S=VAL (S$)
120 IF S<0 THEN POKE 36879, ABS (S): GOTO 110
130 IF S$="D" THEN Q=1: GOTO 120
140 IF S$="S" THEN Q=0: GOTO 120
150 IF S=0 THEN 260
160 READ A,B,C
170 POKE 36876,A
180 POKE 36875,B
190 POKE 36874,C
200 T=T+(S*1)
210 IF T<TI THEN 210
220 IF Q THEN POKE 36876,0
230 IF Q THEN POKE 36875,0
240 IF Q THEN POKE 36874,0
250 GOTO 110
260 FOR I=36874 TO 36879: POKEI,0: NEXT
270 PRINT "[CLR,BLU]";: END
```

SHORT WAVES CAN ACTIVATE YOUR RAMs

Bringing together short-wave radio and PCs is the goal of Radio Netherlands's broadcasts "Hobbyscoop" and "Radio-Activity".

Through these radio shows, computer programs are shared throughout the world. The origin is the weekly short-wave radio show "Hobbyscoop" (pronounced Hobbyscope), which looks at developments in electronic, communications and computers.

Hobbyscoop transmitted its first computer program in 1978, but a problem developed due to individual machine languages. The BASICODE was specifically designed to overcome these problems. The Hobbyscoop BASICODE handbook and accompanying cassette contain details of NOS-BASICODE which has been designed as a standard for software exchange between 20 different brands of computers.

BASICODE is an established standard audiocode which can be used to store and retrieve computer programs from cassette. In order to enable a computer to read and write in BASICODE, special translation programs have been developed for each specific brand of PC.

It is important to stress that the protocol has been put together on an entirely NON-PROFIT MAKING basis. The show "Radio-Activity" now broadcasts BASICODE programs. To buy a handbook and cassette, complete an international money order for 41 Dutch Guilders (check with local bank about A$ exchange rate) payable to "NOS ALGEMEEN SECRETARIAAT". Send that and an order specifying the type of PC you have, to:

BASICODE
Administratie Algemeen Secretariaat,
NOS
P.O. Box 10
1200 JB Hilversum
The Netherlands

USER GROUPS

The Who, where and what of user groups.

User Groups who have made contact

NSW ACT

Name: 486 SQN Commodore User Group
Secretary: R.J. Nichols
Address: 486 SQN Elec Sect, RAAF Base, Richmond, NSW, 2755
Meetings: Whenever Possible, 486 SQN
Description: To assist each other with operation of computers.

Name: The ACT VIC-20 Users Association
President: Chris Groenhout
Address: 25 Kerferd St, Watson, ACT, 2602
Meetings: First Monday of the Month, 7.30pm-10pm, Boy's Grammar Scout Hall
Description: We do not have members as such but run a magazine to which people subscribe and are thought of as members. The association also runs a software library of over 530 programmes.

Name: Commodore User Group (A.C.T.)
Secretary: Peter Thompson
Address: P.O. Box 599, Belconnen, ACT, 2616
Meetings: Fortnightly
Description: Very active group that produces an informative newsletter and a comprehensive software library. This group has actively assisted several groups in their formative stages.

Name: Southern Districts Commodore Users Group
Secretary: Lex Toms
Address: 3 Lucille Cr., Casula, NSW, 2170
Meetings: Not Advised
Description: Very active and growing group. It encourages country members and produces an informative newsletter (50c). Has a software library.

Name: Wollongong C64 Users Group
Secretary: Peter Stanhope
Address: 155 Jacaranda Ave, Figtree, NSW, 2525
Meetings: Monthly
Descriptions: Two groups (beginners and advanced), each of which meets once a month. Magazine, disk and tape libraries. Members have access to over 100 different tape programmes. Classes for beginners, and for the more experienced.

Comp-Tel
Secretary: Karen Jacks
Address: 138 Barcom Ave., Rushcutters Bay, NSW, 2011
Meetings: When discussions - must take place at Tudor Inn, Castlereagh St.
Description: Not Advised

Figtree High School User Group
Secretary: Ashley Paske
Address: C/- Figtree High School, Gibsons Rd., Figtree, NSW, 2525
Meetings: At school at lunchtime - once a week.
Description: Share ideas and programs.

Penrith Commodore Users Club 16/20/64
Secretary:. Fitzgerald
Address: 48 Oag Crescent, Kingswood, NSW, 2750
Meetings: Monthly.
Description: To assist each other with operation of computers.

Commodore Computer Users Association
Secretary: Ralph Walsh
Address: G.P.O. Box 4721, Sydney, NSW, 2001
Meetings: 729 Club, Lithgow St., St. Leonards, NSW, 2065. 7pm last Wednesday each month.
Description: Not Advised

Albury Wodonga Commodore Users Group
Secretary: Beth McIntyre
Address: Drumwood Rd., Jindera, NSW, 2642
Meetings: Albury Police Citizens Boys Club. 1st Wednesday each month.
Description: Not Advised.

QLD

Rockhampton Commodore Users Group
Secretary: Jim Bishop
Address: Box 5733, Rockhampton Mail Centre, QLD, 4702
Meetings: 1st Monday each maonth. C.I.A.E.

Name: Saint La Salle PC Users Group
Secretary: M. Tyler
Address: De La Salle Library, Scarborough Rd, Scarborough, QLD, 4020
Meetings: After School in Library, Mon & Fri
Description: Not Advised

Name: Commodore Computer User Group (Townsville)
Secretary: Tony Moore
Address: 1 Paxton St, Townsville, QLD, 4810
Meetings: Computer Room, St Ignatius Park College, 7.30pm, 1st wednesday of the Month
Description: Very active group with software library and newsletter. Strong contacts with other groups.

Name: Cairns Commodore Users Group
Secretary: Walter Kindt
Address: 42 Langan St, Cairns, QLD, 4870
Meetings: Tuesday each fortnight. Cairns Education Centre
Description: Programming and Games. Has newsletter.

Commodore Computer Users Group (QLD)
Secretary: Norm Chambers
Address: P.O. Box 274, Springwood, QLD, 4127
Meetings: Milton State School. 1st Tuesday each month.
Description: Not Advised.

Mt Isa C.C.U.G.
Secretary: John Melvin
Address: P.O. Box 844, Mt Isa, QLD, 4825
Meetings: Flying Doctor Visitors Centre. 7.30pm. 3rd Wednesday each month.
Description: Not Advised.

Name: Southport Commodore Computer User Group
Treasurer: J. Smith
Address: P.O. Box 790, Southport, QLD, 4215
Meetings: Labrador State School, Mondays 7pm-10pm
Description: Further knowledge of computing. Software library and computer newsletter.

C-BUG (Commodore-Barcaldine User Group)
Secretary: Cristina Frioni
Address: P.O. Box 145, QLD, 4725. (074) 51 1527
Meetings: Last Monday each month at 8.30pm.
Description: Exchanging ideas and information, assisting new computer owners, promoting the use of personal computers at home, for educational and recreational purposes.

64 Users Club
Secretary: Liam Orford
Address: 13 Lister St., Toowoomba, QLD, 4350
Meetings: At above, Mondays 4pm.
Description: To exchange programs.

Mermaid (Business) Users Group
Secretary: Ron Perry
Address: P.O. Box 76, Mermaid Beach, QLD, 4218
Meetings: Fortnightly at Mermaid Computers, 'Home Inn', Gold Coast Highway, Mermaid Beach, QLD, 4218
Description: To offer mutual assistance in solving problems encountered in its application to his business.

S.A.

Commodore Users Group
Secretary: Ric Kube
Address: McCutcheon St., Waikerie, SA, 5330
Meetings: Last Friday each month.
Description: Not Advised.

VIC

Name: Geelong Commodore Computer Club
Secretary: D. Gerrard
Address: c/- 15 Jacaranda Place, Belmont, VIC, 3216
Meetings: Not Advised
Description: New Group

Name: Commodore 64 User Group
Editor: F.A. Martin
Address: 46 Studley St, Abbotsford, VIC, 3067
Meetings: Not Advised
Description: A very professionally produced newsletter. Software library. It seems to be a combination of a number of groups ie. PRAHAN GROUP, DONCASTER CENTRAL GROUP etc.

Latrobe Valley Commodore Users
Secretary: Ross Beamsley
Address: C/- P.O. Box 322, Moe, VIC, 3825
Meetings: Every 2nd Wednesday night. Regional Education Office, Moe VIC. (051) 27 2927.
Description: Not Advised.

Northern Suburbs Computer Users
Secretary: George Stamatopoulos
Address: 21 Noone St., Clifton Hill, VIC, 3068
Meetings: Northcote Library, 8pm, alternating Wednesdays.
Description: Not Advised.

Vic Computer Club
Secretary: Michael Spiteri
Address: 20 Larool Cres., Seaford, VIC, 3198
Meetings: Not Advised.
Description: Not Advised.

Shepparton Commodore Computer Club
Secretary: Val Hutchinson
Address: 11 Dunrobin St., Shepparton, VIC, 3630
Meetings: Scout Hall, Welsford St., Shepparton, VIC. Sunday fortnightly - 7.30pm.
Description: Not Advised.

Commodore Crackshots (Aust)
Secretary: Peter Harding
Address: 1/57 Walker St., Northcote, VIC, 3070
Meetings: Not Advised
Description: Refer item in magazine.

NEW ZEALAND

Name: Christchurch Commodore Users Group
Secretary: John Kramer
Address: P.O. Box 15-024, Christchurch, 8000, New Zealand
Meetings: 4th Monday 7.30pm Chefs Hall, Bedford Row
Description: We are one of the largest groups in NZ with members spread right throughout the country and a few overseas At present we are in the process of getting enough members with modems to warrant the setting up of a bulletin board.

Name: Nelson Commodore Users Group
Secretary: Steph Cocker
Address: P.O. Box 860, Nelson, New Zealand
Meetings: Stoke School, 7.30pm, third Thursday
Description: Group lists its interest as education and general computing

WA

Name: VICHIPS Computer User Group
Secretary: Ron Teague
Address: 48 Hercules St, Rockingham Park, WA, 6168
Meetings: Rockingham High School, Mon – 7.30pm
Description: We differ from most user groups as we have taken as part of our charter to establish a wide and active community base and have worked to ensure that Commodore Computers are introduced into the schools in our area, with the commitment to those schools that we would support them in every way, I am happy to say that we have had a great deal of success.

Vic-Ups (Inc) C.U.G.
Secretary: G. Frichot
Address: P.O. Box 268, Claremont, WA, 6010
Meetings: Hollywood S.H.S. 2nd Saturday - 1pm and 4th Tuesday - 7.30pm each month.
Description: Not Advised.

Vic-Up's (Kalgoorlie)
Secretary: Tony Casbolt
Address: D. Lambert. 36 Charles St., Kalgoorlie, WA, 6430
Meetings: C.Y.S.S. Building. 3rd Monday each month.
Description: Knowledge.

Definition Competition

You can knock who or what you like the magazine, Commodore or even the Editor

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C+4 – 7 if C=3

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DISCLAIMER –
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