

The Australian COMMODORE REVIEW

September/October 1984

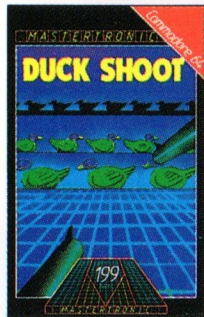
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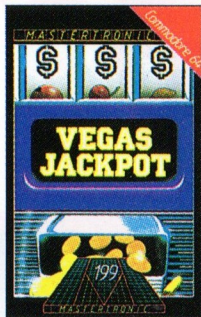
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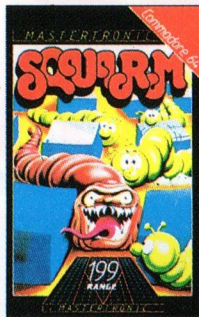
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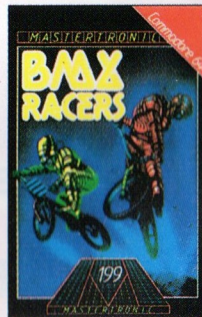
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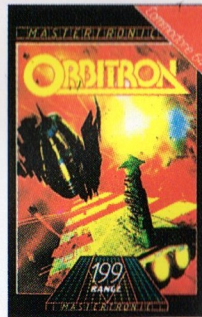
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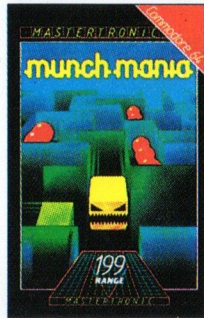
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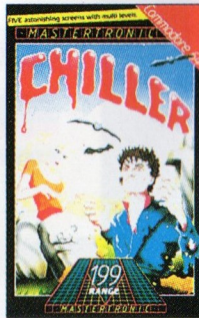
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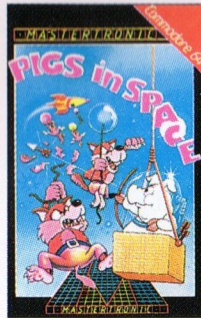
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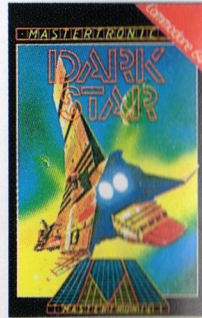
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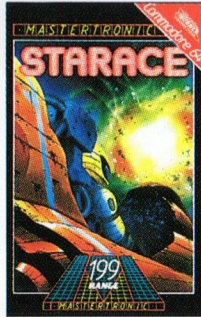
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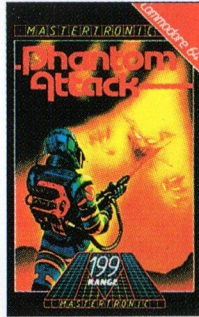
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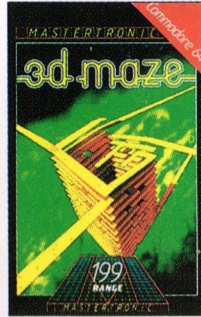
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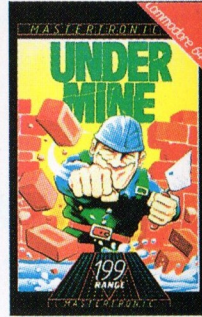
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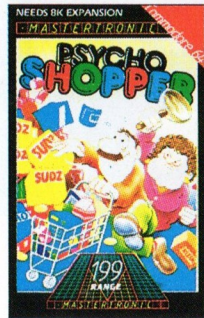
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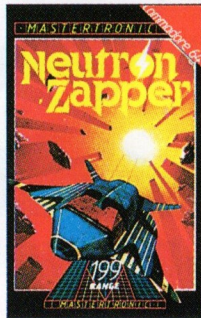
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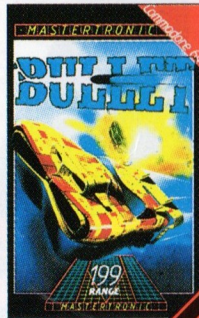
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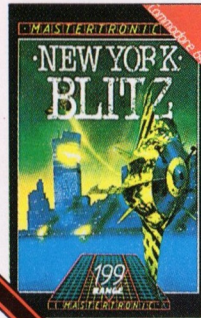
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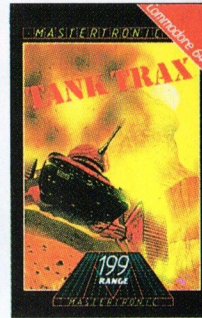
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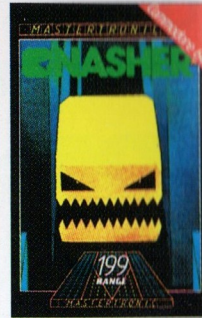
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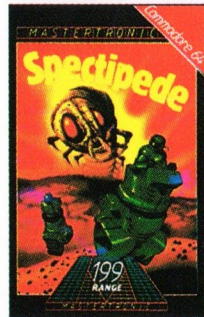
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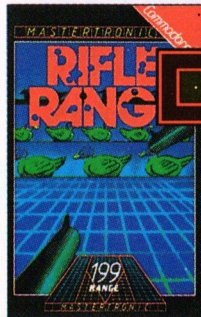
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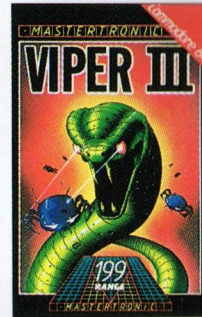
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COMMODORE 64 15 0045



COMMODORE 64 15 0045



COMMODORE 64 15 0045

THE
MASTERTRONIC
RANGE OF
COMPUTER
GAMES

Some titles
displayed not yet
available in Australia.

**FUTURETRONICS AUSTRALIA
PTY. LTD.**

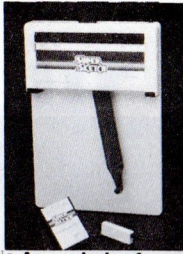
Sole authorised distributor of Mastertronics games.

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*Recommended retail price

Contents

2

EDITORIAL

3

BE YOUR OWN VAN GOGH

5

RAM RUMBLINGS

7

VIC 20 VIDEO TITLE GENERATOR

8

COMMODORE 64 THE HOLLYWOOD STAR

10

OLYMPICS REVISITED

12

IT SAYS "READY" BUT WHAT DO I DO NOW?

14

HOW TO DO NOTHING WITH NOBODY
ALL BY YOURSELF

16

LETTERS

17

HACKER'S HOLLOW

20

THE "IT" SYNDROME

22

SPECIALLY FOR ANKLE BITERS

24

BUSINESS APPLICATIONS

26

SORE THUMB DEPT.

31

ADVENTURER'S CORNER

33

READER SURVEY

34

A HANDLE FOR YOUR GAME

35

MACHINE LANGUAGE TUTORIAL REVIEW

36

ALL ABOUT GETTING INPUT

37

PROGRAMMING

40

VIEW FROM THE HOLD

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The game Pingo, and the graphics tablet Super Sketch, both from OziSoft.

Another Commodore Review and another step towards discovering the meaning of life. Is it really true Gareth Powell has an Apple in his living room? I hear cries of traitor from the office rat, who continues to elude us all. Enough! You must be wondering what's inside.

This month there are a few new columns, all of which, the authors promised me, will continue for a good while yet. For adventure lovers, Adam Rigby will be providing tips on the more popular games as well as reviewing promising new releases. For the true programmer we welcome Hacker's Hollow, dedicated to providing useful machine code programs in an understandable format. On other pages, Colin Beecroft will be exploring the possible uses of a computer as well as enlightening us as to the difference between some

of the top selling business programs.

Now for something extra interesting. A chance to obtain, pilfer, steal or otherwise receive no less than \$200 worth of software. What must you do? It's very simple. Write a good game for us to publish on either the Commodore 64 or Vic 20 computer. Don't send in a long listing, or it will never be typed in. Do send a working backup copy on a spare disk or cassette. Every program published will provide the author with a free game program in return, with the best entry receiving \$200 worth of software. Be sure to include a phone number so we can get in contact with you.

Before you place this magazine on the mantelpiece next to your grandmother's picture, do please fill in the reader survey found elsewhere in this issue. Through this simple method of obtaining



information about our readers we hope to able to provide you with a better, bigger, brighter magazine.

Andrew Farrell

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The Australian Commodore Review

Top Rear, 4 Carrington Rd,

Randwick, NSW 2031



Be your own Van Gogh

Super Sketch

from OziSoft at \$99.95

Overview

Super Sketch is a graphics tablet for the Commodore 64. It is made of high impact plastic of a cream colour. It comes complete with a detailed owner's manual and a ROM cartridge that contains the software necessary to allow you to draw detailed pictures in Multicolour Mode graphics. The pointer is attached to a control arm that allows free movement all around the pad. To select various draw modes there are five buttons.

Super Sketch has been designed to allow tracing of drawings, rather than just free hand sketching, and has two clamps at the top of the sketch pad to hold drawings in place. Included are several simple line drawings that may be traced as exercises to help non-artists such as myself wit their first computer drawing.

Starting Super Sketch

To begin drawing all you have to do is plug Super Sketch into joystick port 1, insert the "Super Sketch Graphics Master" ROM cartridge and turn the power on. The title screen immediately appears on the screen. Press the MENU key on the Super Sketch and you are ready to draw your first picture.

Using the Sketch Pad

All drawings are done by moving the Control arm. The control arm is attached to the sketch pad, but allows free movement all around the pad. There is a pointer at the end of the control arm that is represented by the cursor on the screen. Basically there are two modes of operation. Picture mode, where you draw a picture and menu mode, where you select various options such as brush type, paint colour etc. From picture mode, you simply press the MENU button to enter the Menu. To return to the picture mode



you simply press the LIFT button. If you are already in picture mode and you press LIFT, your imaginary brush is lifted off the picture so you may move the control arm without drawing on the screen. Below is a list of the functions each of the buttons perform.

Menu. When the menu key is pressed, any current activity will stop and the main menu will appear on the left of the screen. The menu is a list of commands and colours that may be used while you draw.

Lift. There are two lift keys, one on the left and one on the right for convenience. This button, when pressed allows you to move the control arm without drawing on the screen. It is also used to leave the menu and return to your drawing.

Select. The button marked select is used to select options in the menu. After pressing the menu button, you move the control arm to the option you want, then simply press the select button.

Release. One of the nice features of Super Sketch are the clamps to hold work in place that you wish to trace. The release button simply lifts these clamps.

Drawing pictures

Imagine the pointer on the end of the control arm is your paintbrush, and the graphics screen on the Commodore 64 is your canvas. By moving the pointer you paint your picture. From the menu you can change the colour of the paint brush from a choice of 16 colours. You may also change the type of brush you use.

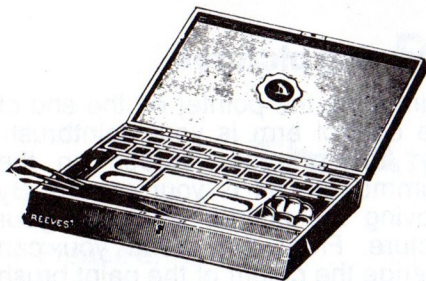
You have eight different brushes to choose from. For simple outlines you would use the single dot brush, which, not surprisingly, draws a line one pixel wide by one pixel high. For heavy outlines you would select a thicker brush. There are also brushes that draw diagonal lines, which can be used to provide very nice grading effects.

If you want to use a brush that is not provided you may edit the current brush. This ability to edit brush patterns is a very powerful feature and one I did not expect to find in this product. The brush is made of a grid four pixels wide by eight pixels high. You may turn any pixel on or off. I made a fairly random looking brush that I found

very useful for shading. This is one of Super Sketches most useful features, when drawing landscapes and the like.

But it doesn't stop there. Apart from flexible use of the paintbrush, you can also select the pattern you wish to paint in. When the paintbrush paints, it fills in a preselected pattern, which means if you are using just a single pixel brush, as you move the pointer back and forth over a small area, you gradually fill in this area with this preselected pattern.

Usually this pattern is just a plain colour, resulting in a single colour appearing on the screen, but like the brush itself, you can choose from eight different patterns. For example, there is a checker board



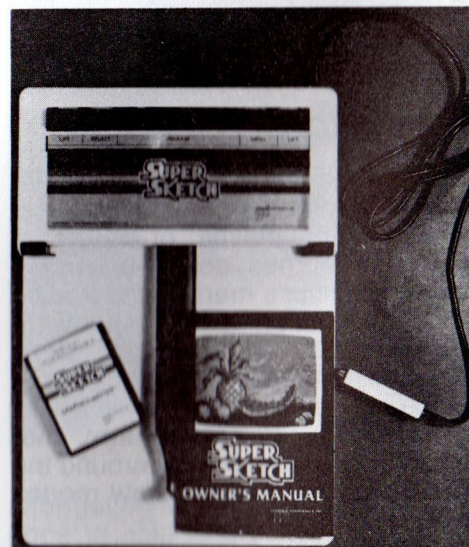
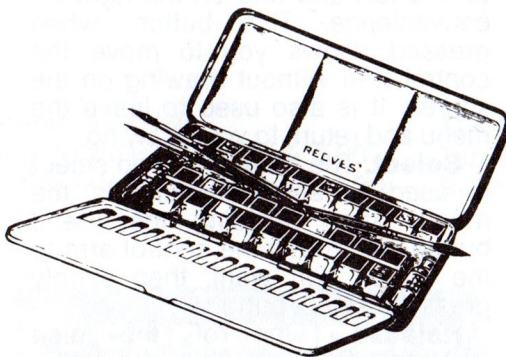
pattern, where every alternate pixel is on or off. By choosing this pattern as you paint, you are in fact painting not in a single colour, but in this board pattern. If you scribble in one area you will see the pattern emerge. Again, like the paintbrush, you can edit the pattern to your own design. What's more, your pattern can be multicoloured. This is probably the single most impressive feature of the Super Sketch.

Apart from the paintbrush, other options you can select from the menu are lines and rays for drawing straight lines from one point to another, or a series of straight lines. Horizontal or vertical lines are also supported. Circles, ellipses and

boxes are all well supported and very useful. Mirror and flip cause everything you draw to be reflected horizontally and vertically respectively. Quad divides the screen in four, anything you draw in one quadrant of the screen is reflected in the other three. This gives a very nice kaleidoscope effect.

There is also a very powerful fill command. It fills in outlines in the currently selected pattern, including custom made patterns. This gives you absolute control on shading effects of your pictures. Almost all other artist programs I have studied only offer a colour fill command, whereas this command gives you not only control over the colour, but over the texture as well. I found that by quickly drawing a few outlines, and selecting detailed multicoloured patterns to fill the outlines, I managed to draw a nice farm setting very easily.

Another powerful feature is the ability to copy one section of the screen to another. This is useful for repetitive shapes, such as birds or trees. You only need draw one shape, and you can copy it as often as you like. Super Sketch actually supports two pictures in memory at once, and it is possible to copy from one picture to another, so you could have a library of shapes you often use on one picture, and copy them to your new picture as you wish.



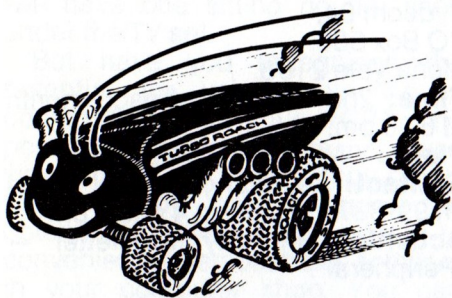
Changes made since you last used the menu are remembered. If you make a mistake, selecting Undo will restore the picture to how it was when you last visited the menu. I found that each time I was satisfied with my picture I would go to the menu, just so I could always return my picture to that condition if I made a mess of it.

As the Super Sketch software is on Rom cartridge, it allows both cassette or disk storage for your pictures, so cassette users can enter the world of computer graphics just as simply as disk users.

All in all, I found Super Sketch a remarkably powerful package. At first, I found the pointer a little inaccurate, but after I gained experience in using it, I realised I was inaccurate, not the pointer. My only real criticism is that when drawing with a fat brush and a complex pattern it becomes very slow. This is a small problem though, when you realise the full potential of this facility. When I began this review I was unaware of the price of Super Sketch, and I assumed it must be around the \$150 mark. It is in fact \$100, which must be considered excellent value for money as it is such a well designed product.

Turbo-Roach

Commodore 64



Turbo-Roach

How would you like to back up a disk on your 1541 in less than three minutes? Thanks to Turbo-Roach that is now a reality. An all Australian program that could be the start of a new wave of turbo disk operating systems, Turbo-Roach formats a disk in just under ten seconds and then in three further passes will back up any unprotected disks. This is not a copy program for pirates.

The program actually speeds up the mechanical activity within your disk drive, so it is important you have a well aligned, clean unit. We tried out several of the office drives and found, would you believe, that using Turbo-Roach backing up a disk was not only faster but more reliable.

Operating instructions are provided on screen and a pleasant jingle signals that a pass is completed. Very user friendly — a must for any 1541 owner. Special thanks is due to Stu Burrows, Ralph Down and Cliff Cundy for making Turbo-Roach available. For further information contact Scarborough Fair Computer Centre, Shop 5 Scarborough Fair, Southport 4215.

Ultima at last

If you haven't played Ultima, you haven't really played an adventure game. Rumour has it that Imagineering have released Ultima II for the Commodore 64 and that Ultima III is on the way. If you can get your hands on a copy it is well worth the money. Watch this space for more information.

New joysticks

Ozisoft have on the market two new joysticks. The SUPER STICK and the PRO 5000. Both are very well made and, at \$20 and \$35 a piece, represent good value for money. Both come with long warranties.

Go west young man

Computer Spot have opened up a new branch in the Greenway Arcade in Parramatta and are rumoured to be going even further west by Christmas.

Vic successor

I went to a propaganda evening at Commodore the other night and saw the successor to the Vic. It has 16k (max) memory with 128 colours, 320 by 200 max resolution. Its BASIC has been extended to give full control over graphics (at last), but is not software compatible with the Vic or C64, nor will it use the same tape player or joysticks. But, it is software compatible with the new "Commodore Plus Four". No, the Plus Four is not the replacement of the C64. Neither of the new machines have sound facilities or sprites equal to the C64 or Vic.

Mastertronic Games

Commodore 64 owners will soon have access to a new brand of inexpensive computer games, thanks to Futuretronics.

The company has obtained the exclusive Australian distribution rights to the UK-based Mastertronic

range of cassette computer games, which retail for around \$12.95.

In the UK, Mastertronic sold a quarter of a million units in their first five weeks.

Mr Noel Thurlow, Futuretronics General Manager, said the Mastertronic range offered games of a high standard, at a price all Commodore 64 owners could afford.

He said his company would release 11 titles with further titles becoming available on an on-going basis.

The range will be available through computer, department and chain stores from early September. Full reviews of their initial releases next month.



Activision launch tape and disk games for home computers

Leading American software house Activision has introduced a range of their popular ROM based games — on tape and disk — for home computers.

The first of the titles, "Pitfall", "Decathlon" and "Hero", are now available for the Commodore 64.

Mr Mulligan, Activision's Director of International Marketing, complimented the Australian retailers and distributors. "It is a

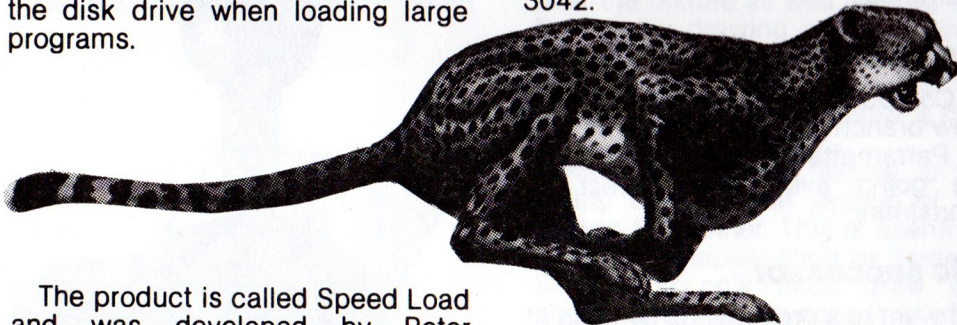
good and tough competitive scene, and there are some really good operators here," he said.

Following his review of the Australian scene, Mr Mulligan said Futuretronics offered the best distribution and marketing expertise in Australia. Mr Mulligan has announced the continuation of his company's agreement with Futuretronics to be the sole Activision distributor in Australia.

Futuretronics' General Manager Noel Thurlow said his company had every confidence in the Activision range and its appeal to game players.

Speed Load

A new Australian product is now available which triples the speed of the disk drive when loading large programs.



The product is called Speed Load and was developed by Peter Norman and Bill Dimech. It will be marketed under the name of Eureka Software.

It consists of a cartridge which plugs into the expansion port on the Commodore 64. No wiring or special requirements are necessary. On power up the cartridge does what it has to do and then switches itself off. It is then required only when a load is taking place. This leaves full BASIC RAM (\$0801-\$9FFF) and (C000-\$CFFF) free to the programmer. The cassette buffer is also free.

The cartridge is designed to accommodate BASIC programs. It also handles machine code which uses the standard "LOAD" syntax and does not manipulate low memory too heavily as certain vectors are altered to accommodate the Speed Load process.

With normal programming the

cartridge is transparent. It will also load and run some commercially produced software.

Other high speed routines such as "Disector" gain extra speed by rewriting the disk drive DOS eliminating error checking etc. (You know that if an error occurs the normal operating system will have several tries to read the disk before aborting. Disector tries only once and reports an error but continues on.)

Speed Load uses the same system of reading the disk that the normal DOS uses, thereby giving the user the same reliability as the standard system. Getting the data down the serial line at triple speed is where the difference lies. Speed Load will sell for \$59.95 retail. For further information contact: Eureka Software, PO Box 310, Niddrie, Vic 3042.

New from Software Product Support

New programs available on disk for the Commodore 64 are a word processing program, Word Commander, \$59.95; and two games, Phoenix Lair, \$39.95, and Trivia Trek, \$39.95.

In Trivia Trek (similar to the board game Trivial Pursuit) can be played by one or two people. You answer general knowledge questions from a category selected from those available on the disk, or you can make your own categories.

In Phoenix Lair you destroy enemy eggs, fight spiders and joust against the Pharis Hailex — 10 increasingly difficult boards.

These are produced by MMG micro software, available from Software Products Support, (02) 419 5879. Look out for reviews of these programs in our next issue.

User Group Grapevine

Join your local User Group — where they meet and who to contact will now appear regularly in the following column. If you run a User Group please don't hesitate to let us know the above details along with any special up and coming events.

Sydney

Sydcorn 64,
PO Box 586,
Mona Vale 2103.

Time: 2nd Tuesday of each month at 6.30 pm.

Place: YWCA (4th Floor).

Contact: Secretary, Michael Stead on 99-3370 (between 4 and 6 pm).

Activities: Monthly newsletter — "Peripheral".

NSW

Southern Districts C.U.G.
3 Lucille Crescent,
Casula, NSW 2170.

Time: 1st and 3rd Wednesday of each month at 6.30 pm.

Place: API Hall, Kurrajong Rd, Prestons. (Next to 2FC Tower.)

Contact: Lex Toms (02) 6028691

Queensland

CCUG (Q), PO Box 274,
Springwood 4127.

Time: 1st Tuesday of each month at 7.30 pm.

Place: Milton State School.

Activities: Monthly workshop and newsletter.

Upshot Electronics
135 Abbott St
Cairns

Contact: P. McCartney (070) 519455

ACT

Commodore User Group (ACT),
PO Box 599,
Belconnen 2616.

Time: 1st Monday of each month at 7.30 pm.

Place: Melba High School.

Time: 3rd Monday of each month at 7.30 pm.

Place: Woden Town Centre Library. (Note: these are the correct times and places for the ACT CUG, not those shown in issue number 6.)

Vic 20 Video Title Generator

by Phil Campbell

There are probably as many video cassette recorders in the world as there are computers. Most technological types like yourselves will have one sitting on the shelf under the TV set.

But have you recognised the potential for using your Vic in conjunction with your VCR? The possibilities are endless . . . use video tapes to send "copy-proof" examples of your programs to potential distributors or to conveniently demonstrate software in your computer shop. You can even tape your performance at Jelly Monsters and analyse your mistakes in slow motion replay. Golfers have been doing it for years!

Alternatively, use your computer to insert professional looking titles on your home movies or even to insert useful information at the beginning of broadcast programs which you record for later use.

All these tricks can be accomplished simply by feeding the output from your video modulator straight into the aerial socket of your video recorder. In many cases it will not even be necessary to retune your VCR . . . simply tune to the normal Channel 0 or 1 position as you do with your TV set. Press the record button and you are in business.

The Vic 20 is especially well suited to video titling due to the nice clear large characters. It is possible to simply type the messages you want on the screen before you start recording. The results can be quite satisfactory, but if you want to get a bit more sophisticated, the Video Title Generator program is just what you need.

The program produces messages in double height with alternate rows of pixels reversed by lines 60 and 70. This may sound a little weird but the visual effect is quite impressive, especially on a colour monitor. The letters appear to be carved out of the background (or to be raised

above it, depending on the type of eyeballs you have). Line 80 moves the character set pointer and switches on double height mode by turning on Bit 1 of memory location 36867. As only 512 bytes were reserved for the new character set, with 16 bytes required for each character, line 110 replaces the fairly useless "back arrow" character with a set of parallel lines (representing a blank space). Hence it is necessary to use the arrow character instead of the space bar when you are creating your own messages in line 200 and 240.

The message is scrolled smoothly down the entire TV screen in lines 210 and 230 by incrementing register 36865, the Vic chip location which controls vertical centring of the screen.

Enter this program carefully as

editing becomes difficult once the program has run — due to the scrambling of the character set. Error messages will be legible in double height mode but line numbers will not. Simply type POKE 36869, 240 (RETURN) followed by POKE 36867, PEEK(36867)AND254 (RETURN) to decode the garbage on the screen.

Try modifying the program for other uses . . . double sized characters could be useful for shop window displays or as titles for your programming masterpieces. Substituting 'PEEK(PA)' for '255-PEEK(PA)' in line 60 will produce double sized versions of the normal character set. Equally simple changes will produce reversed characters and other interesting variations which nobody else would ever think of. Type it in, turn on your video and make sure you put my name in the credits!

VIDEO TITLE GENERATOR

```

10 REM*****VIC 20 VIDEO TITLE GENERATOR*****
20 REM*****USING DOUBLE SIZE CHARACTERS*****
30 REM*****BY PHIL CAMPBELL,1984*****
40 CLR:OPEN2,2,2:PRINT"□":POKE36879,25
50 PA=32768:CO=7168
60 FORPA=32768TO33032:POKECO,255-PEEK(PA)
70 POKECO+1,PEEK(PA):CO=CO+2:NEXTPA
80 POKE36869,255:POKE36867,PEEK(36867)OR1
110 FORI=7664TO7679:POKEI,255:POKEI+1,0:I=I+1:NEXT
115 PRINT"READY PRESS SPACE":WAIT197,32
135 PRINT"□++++++++++++++++++++";
200 PRINT"←CAMPBELL←PRODUCTIONS←";
201 PRINT"++++++++++++++++++++PROUDLY←←PRESENT←←";
205 PRINT"++++++++++++++++++++";
210 FORG=0TO187:POKE36865,G
230 FORDELAY=1TO30:NEXTDELAY:NEXTG
239 POKE36865,38:PRINT"□++++++++++++++++++++";
240 PRINT"←←GONE←WITH←THE←WIND←";
242 PRINT"++++++++++++++++++++";
243 FORI=1TO12000:NEXT:POKE36869,240
244 PRINT"□":POKE36867,174:POKE36879,76:GOTO244
245 FORH=1TO8
250 POKE36874,PEEK(36876)-H:POKE36875,PEEK(36876)-H
255 FORI=1TO50:NEXT:FORV=15TO0STEP-.5
260 POKE36876,PEEK(36875):POKE36878,V:NEXTV,H
270 GOTO270

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Commodore 64

The Hollywood Star

by Scott Wilcox

Your Commodore 64, or any Commodore computer, has the chance to hit the big time. Yes, it's time all those people who ask the question "What can I use a computer for anyway?" get an answer that is not just another sales pitch.

This article is strictly limited to people owning a Commodore computer and a home video cassette recorder. For those unfortunate readers without this equipment, there is no need to read any further. Unless you crave the knowledge of what the plastic wonder keyboard, the one you call a dust collector, can actually do.

Set up

What we are actually aiming for is to be able to link a home video recorder to a Commodore computer without any expensive attachments or add-ons. I used a Commodore 64, but from this point onwards, remember that any Commodore computer can be used, not just a 64. In fact, there is an article in this issue concerning the Vic and video recorders.

Step 1: Set up your video recorder in the usual manner, just as though you are going to watch a movie. Take a look at the back of your video recorder and remove the cable going to the "Video In" socket. You will not receive TV signals while this cable is removed. Hopefully you will receive computer signals later on.

Step 2: Take the video cable supplied with the 64 and plug the 64 into the "Video In" socket. Now turn on your 64, the TV and the video recorder. For the paranoid, this is quite safe if the steps are correctly followed.

Step 3: This is the tricky part. Just as you fine tuned the TV channels into the channels of your recorder, you must now tune the 64's frequency into an unused channel on your recorder. All you have to do is set one of the video recorder's channels to UHF 36. When this is all correct you should see the normal power on message on your TV screen (see page 5 of the user manual and remember, fine tune on your VCR, not on the TV).

Note: When I got the idea for this link up, I had no knowledge of how to actually hook it up. The small operation only took about ten minutes the first time, and I am no electronic genius. So if you still have difficulties after about fifteen minutes, read through the set up steps again, and remember, don't get frustrated, because something might get broken, and you are using quite expensive equipment. If you cannot get the whole thing working after the second attempt, I suggest you ask your friends if they have a shotgun you can borrow.

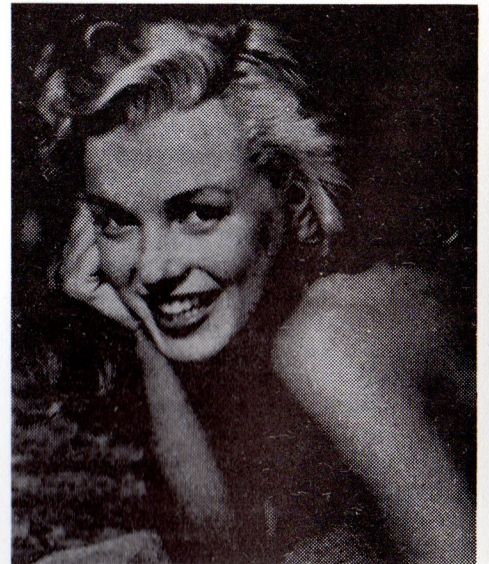
What for?

Yes, you may ask why we are going to all this trouble, so I will explain some of the many uses this link up has for the average user. The hook up will be of greater benefit to your video recording than to your use of a computer.

Blank tapes

Remember when you first bought that blank tape and now it's covered with recordings that you don't even want over recordings that have the same useless existence? I bet you wish you could get that tape to play back a black black screen as it did in its early days.

Here is the simple answer. Simply use the short program below (program 1) to blank the computer's



screen and make it black. Now simply rewind your blank tape to the beginning and record the computer's signals. Let the tape record right through, then rewind the tape and it's as good as new, or at least it looks that way.

Professionals

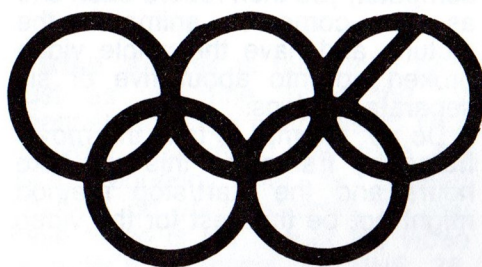
When you rent a home video, you see a title displayed at the beginning of the tape, so you know exactly what you are watching.

The same can be done to movies you record from the TV (be careful not to infringe copyright laws). When you have selected the movie you wish to record, simply run the program listed on the following pages and input the necessary information. This will place a title on the screen of the computer.

Now, just like blanking a tape you rewind the blank tape and record the picture for as long as you wish to view it when played back. The tape is now ready to be recorded on. If you set the timer to record at a later date, be sure the tape has been stopped at a point just after the end of the title recording.

This method can also be used for home movies on your video. If you own a video camera you can put the place, date and things such as directors' names etc. This will give your movie the professional look.

Olympics Revisited



by Tom Quealy

By now I'm sure you're all bored romless with the Olympic Games. You've had it with them interfering with your TVs, newspapers, radios and McDonalds thickshakes. Well, hard luck because here they are on your Commodore 64.

Two of the big boys from the States have produced some of the best graphic software since the SubLogic Flight Simulator. Hes software have produced "Hes Games" and Epyx "Summer Games". Both require a disk drive, at least one joystick and about fifty dollars.

"Hes Games" allow the user to select from six events, hurdles, diving, weightlifting, 100 metre dash, long jump and archery. Of these, weightlifting, archery and diving are the most amusing.

The music which bellowed from my monitor signaled my first battle, the title page menu! Only slightly wounded, I made it to the 100 metre sprint. OK, it has cute graphics, but it's pretty boring, as are the hurdles and the long jump.

The weightlifting chap then arrived on my screen, complete with knee guards and moustache (a real meathead). By clever manipulation of the joystick, I managed to get Meaty to pick up the dumb bell. The

silly thing then dropped it and gave me a nasty look.

The simulation of archery is excellent. You must aim for two different targets at four distances (no, not all at once!). The gravitational and wind effects are very realistic.

As for diving, the user must jerk the joystick in all eight directions at once, and then press the fire button, to see this most amazing little sprite do its thing. Very funny.

"Summer Games" by Epyx allows the user to pick from eight events (Hes give six). The first thing to arrive on my screen this time — the opening ceremony. The animation is almost cartoon quality. Good stuff! Next a minor struggle with menus, flags and national anthems (Waltz Sing Matilda?)

Just like "Hes Games" the running events are quite boring, brilliant graphics, but quite boring. As is the swimming. So I tried the pole vault. The user must push the button at just the right time, in just the right place. Once again, excellent graphics, but pretty boring.

The diving event is great fun. The poor little sprite is at your mercy thirty feet above the pool. With a twist of the wrist you can make this lassy bend and twist and land flat on her face. Great fun!

Skeet shooting is just another set-em-up, shoot-em-down, again nice graphics.

So that leaves me with the gymnastics. Now, here's a sprite that enjoys punishment. The event is set on the horse, with the aid of a springboard. What you can make this sucker do is truly nasty. A short run, one bounce, one twist and BANG right on her head! Most entertaining.

The graphics of both programs are fantastic, but the "Summer Games" graphics are just that little bit better. The same can be said for the soundtracks (and I mean soundtracks). "Summer Games" has eighteen national anthems plus two or three boppy tunes. "Hes Games" has a replay mode and a classic event mode, very cute, as is the very rusty starter's voice.

I found that both programs tended to get a little boring after a while. Then again, all you have to do is change the event. A word of warning, little birdies have told me there are bugs in each of the programs, although I failed to come across any. Have fun!

Hes Games is produced by Hes Ware, distributed by Futuretronics and retails for \$59.95 disk.

Summer Games is produced by Epyx, distributed by Imaginering and sells for \$49.95.

The Commodore 64 has some of the most powerful graphics facilities available on a personal computer.

Using them is another story – unless you own

The Graphics Workshop

A development system that teaches you
A teaching system that lets you design
Designs you can use in your own programs
Programs you can use in your own software

A fully integrated menu driven package complete with tutorials and High resolution graphics routines

Sprite editor with multicolour rotate shift, trace and much more

Character editor with reflect, copy, rotate and reverse

Split screen generator

Sprite animator and sprite animation editor

Printer option

Compatible with existing graphics packages

Available soon from your local dealer

Distributed through OziSoft for



It says "Ready" but what do I do now?

by Colin Beecroft

So you have just received, purchased, obtained (strike out that which does not apply) a Commodore 64 home computer. Terrific! Now, just exactly what are you going to do with it? Well, there's . . . or . . . um. See what I mean, everybody agrees that computers are the greatest and home computers are just deliriously fabulous stuff.

I hear the cries all around. Philistine! Luddite! Not so, let me say that computers are great things, I enjoy playing with them and they help me with practical applications. For example, this article was written using Easy Script. However, at the moment many home computers are not realising a fraction of their true potential. That in a nutshell is the thrust of my plea.

There are a myriad practical applications for small computers and nearly as many less than ideal uses, so why don't we use this magazine as a bulletin board for interesting, practical and inventive micro applications. The Commodore has plenty of facilities for expansion and enough computing power to do heaps.

If you have a Commodore doing something along these lines then drop me one and you could be famous! Write even if you have a good idea but not the technical wizardry to carry it out; who knows, you might be the catalyst that sparks a new development. Just to get the imagination rolling I will detail some of the areas where a poor orphan micro can find a comfortable home.

Business

This field ushers in some of the better known applications, eg word processing (I don't know how I survived before), spreadsheet financial analysis, databases, stock

control, ledgers and invoicing. Next time you receive a bill in the mail I bet it will be computer printed. Perhaps not an entirely fair entry in this article as we are talking about micro applications; however the penetration of small machines into small business is increasing,



The new family pack from Commodore includes a Commodore 64 datasette joystick and four software packages. Recommended retail price \$499.

particularly as the current generation of "microkids" enters the work force.

Another major factor is the development of user friendly software, which is easing the brain strain on business people who are not yet familiar with microcomputers.

Education

You were waiting for this one. Now I am going to light a fire amongst educationists. I believe that computers are best used in education to teach people about computers. I'm not certain that they can facilitate the learning process any better than conventional teaching methods in subjects other than computer science. Please address all correspondence to the contrary to me care of this magazine. If anybody can provide a convincing argument I will admit the error of my ways like a man, but I have yet to be convinced.

Maths and science

It may seem a little harsh lumping these two areas together but they are so inextricably linked that simultaneous treatment seems not unfair. How many applications can you think of in maths and science? The list is enormous. The needs of

these disciplines were the mother of invention to the computer. Many proofs of mathematical theorems have only been obtainable with the enormous number crunching power and data handling abilities of high speed numerical processors. One of the first high level language compilers was FORTRAN (formula translator), produced specifically for the calculation needs of the sciences.

Data acquisition and control

For years now industry has soldiered on with electromechanical control systems. It's surprising the complexity of some tasks taken on by designers using only analogue measurements and semi-mechanical control systems. Very clever. Enter the micro and a whole world of reliable high precision control was opened. The unique abilities of microprocessors have made large volume data acquisition a possibility, and together with precision control, eg the ability to introduce a mathematical function into a process loop, have created quite a change in the efficiency of manufacturing industry. One application I have seen in the petrochemical industry recouped the computer control system cost in

less than six months, simply by improving the efficiency of conversion of raw materials to finished product.

Space exploration

This is a subject very close to my heart. If mankind (meaning both genders) is to continue growing then there is only one place left to go: the universe. It's about time we stopped squabbling amongst ourselves on this little blue-green globe and did something about visiting our neighbours. We've made a start so let's keep at it! Now I've got that off my chest, I can say that computers are the key tool of space exploration. Without them a course change on a moon flight would involve an impossible amount of calculation, remote probes would be too dumb to send back any worthwhile data and the enormous power of a modern liquid fuelled rocket motor would be uncontrollable.

Recreation

After all the heavy applications above, you thought maybe I would forget? Not a chance! Microcomputers can be frustrating but they are the greatest mental recreation there is. Apart from developing your logic and exercising the mind (I'm not into exercising much else) they can be so much fun. In terms of hours of entertainment for your dollar, computers cost very little. Your friends and loved ones are probably only too aware of how much time you spend staring blankly at a monitor, muttering to yourself and generally having a great time. It has been said that computer enthusiasts are a little antisocial. My reply is just attend a user group meeting, you will see a collection of people in a cooperative group pursuing one of the most exciting and interesting hobbies available today.

In conclusion, if you don't have a Commodore computer you are missing out on something and if you do have one then see that it gets the sort of varied exercise and use it needs, feed it good software, write it interesting programs and above all . . . enjoy the fun, pleasure and challenge of microcomputers.

Have you seen the other Gareth Powell Computer Magazines?

The Australian Apple Review and The Australian Business PC Report

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Top Rear, 4 Carrington Rd, Randwick, NSW 2031

How to do nothing with nobody all by yourself

by Phil Campbell

Guitar Tutor

**Format: Cassette for Vic 20,
disk for Commodore 64
Publisher: Southpac Software**

How often do you wish there was a really easy way to learn to play a musical instrument? Unfortunately, there isn't. There is no substitute for plain old hard work, with practice, practice and more practice being the order of the day. The only good news is that some teaching methods are more helpful — and more fun — than others.

Guitar Tutor is one of the first examples of the "new breed" of music education methods, for now it is possible not only to see how things should be played, but to hear how they should sound at the same time. Bouncing dots jump around diagrams of the guitar fretboard (at a user selectable rate), showing clearly where the fingers are meant to be put, while the computer plays the melody. There is a certain amount of frustration involved, as these things are never quite as easy as they appear! However, with a bit of perseverance, it is quite possible to get the hang of "Lightly Row" . . . not exactly Top Forty material, but progress is progress.

The course introduces the concepts of musical notation, rhythm and chord structures, and culminates in a two-part harmony version of Greensleeves. Even if it's still too hard to play, it's not bad fun watching the computer performing.

The Vic 20 version of the Guitar Tutor has been available for quite some time as a two part course. Each cassette has around seven programs chained together, providing a reasonably detailed

introduction to music theory in general, and the guitar in particular. The Commodore 64 disk version of Guitar Tutor, which has just been released, covers virtually identical material, although both the introductory and advanced courses are included on the same disk. Both versions contain instructional manuals, which provide additional information for each section of the course, as well as hints on correct technique.

All in all, the course provides a novel approach to the challenge of learning a musical instrument. If nothing else, the computer is a patient teacher, happy to repeat the same old thing over and over again . . . and it doesn't charge by the hour! As always, the problem lies with the student (like me) who expects instant results. Further information can be obtained by phoning Southpac Software on (02) 290 3299 or by talking to your local dealer.

Guitar Tutor is produced by Southpac and retails for \$18.00 on cassette for both the C64 and Vic 20.

Pingo

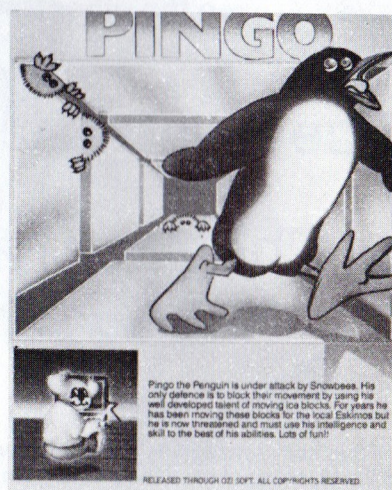
**Distributor: OziSoft
Format: Cassette or disk
Computer: Commodore 64**

Pingo is one of the most enjoyable games I have played for quite a long time. This is fortunate, because it helped me to calm down about the fact that the loading instructions on the package were totally wrong. Well, not totally . . . the bit about inserting the disk was pretty right. Then I was told to type LOAD "START",8 (RETURN). This did not work, and a quick look at the

directory indicated there was no program called START on the disk. I took a guess that "PINGO" might be what I wanted, but there was one trick left. LOAD "PINGO",8 does not work . . . which only leaves LOAD "PINGO",8,1.

How many kids will work this out for themselves when they are given Pingo for Christmas? How many copies will be returned to the frustrated software salesman? What will this do for OziSoft's reputation? How sympathetic will simple minded reviewers be, if they can't even load the program? I'm glad you asked. Very few kids will work it out. Hundreds of copies will be returned. OziSoft's reputation will only be regained when people realise Pingo is a great game after all. Reviewers will be angry and critical until OziSoft start taking more care with simple little things like loading instructions.

As I intimated earlier, the game is great. A Pingo is not a variety of dingo with a pointy head, but a



Pingo comes from Ozisoft, and sells for \$19.95 cassette and \$24.95 disk.

penguin who pushes around big blocks of ice and tries to squash nasty looking Snoobies. You may have met a similar game called Pengo on your last visit to a video game arcade. The aim of the game is to do away with the Snoobies as quickly as possible, while trying to line up three diamond blocks for bonus points. Everything happens at a frenetic pace, although a slow speed option can be selected by pressing F1 at the start of the game. Funnily enough, this does not make things all that much easier, as poor old Pingo is slowed down just as much as the Snoobies.

Sound and graphics are excellent, although the continuous background music can get tedious. Fortunately, a quick push of F7 kills the orchestra and leaves just the "slide and splat" sounds. Everything moves smoothly round the screen, response to the joystick is fast and positive, and it is obvious from the beginning that this is a high quality product.

It's hard to say what makes a game successful, but I suspect simplicity and elegance have quite a large part to play. Throughout history, the games that have survived are the ones that are simple to learn, yet frustratingly difficult to master. Truly good games like Space Invaders and Pacman share this characteristic. Pingo also succeeds in capturing some of this excitement... the aim is simple, but the tactics involved are complex.

On a dangerously sexist note, I can also say that Pingo is a game that appeals to ladies. Although it's very unfashionable to say things like this, it seems that women have entirely different tastes from blokes when it comes to video games. In fact, in the days before Pacman, it was rare to find a female anywhere near a game arcade. But Pacman was cute, relatively non-destructive, and friendly: he immediately became a big hit with both sexes. If your girlfriend keeps telling you that you waste too much time playing stupid video games, buy Pingo. My research reveals that almost 100% of women will respond favourably.

In summary, Pingo is a very appealing game. Try not to get too angry about the loading instructions... OziSoft will have them corrected

very soon (I hope). So far, I have reached level six, where things really start to get difficult. My top score is around 28,000. Not bad for a beginner, but I need to keep practising. If only my wife would let me have a turn!



Aztec Challenge

by Andrew Farrell

Some people count sheep at night, but after playing Aztec Challenge you'll be counting spears, pits and pyramids. It's the sort of game that has you chained to the chair and glued to your joystick in a fruitless attempt to reach the next level. Onlookers will not be just passive observers either. The music builds up an atmosphere as thin as ice. Every move has the potential of breaking it — sending hysterical cries of pain through the crowd.

In fact, the effect of the music would rate equally to that of any decent action movie such as Raiders of the Lost Ark or Star Wars. Let us backtrack a little to give you a bit more background about things.

The year is 1500 AD and you are a citizen of Tenochtitlan, capital of a large Aztec empire. Marauding renegade tribes constantly harass the population. As a result Aztec warriors have developed amazing skills in jumping, dodging and

leaping to avoid traps set by their enemies. However the Aztecs also have a strange religion which demands that a sacrifice be made to one of their numerous gods each year. As the chosen victim, your only escape is to survive a long endurance course pitted with traps and full of vermin, in order to prove your worth.

Sound good? There are seven levels in all, each of which requires different types of dodging skills, not to mention a fair degree of concentration. First encounter is the gauntlet, a straight run towards the temple hampered by spears thrown at your head and legs. This is one of the hardest frames and can be very frustrating when after a long dash a spear catches your leg, sending you back to the start.

The graphics here are very good. With three dimensional scrolling and that captivating music playing, you can't help but wonder what awaits beyond. Well, don't get your hopes up too high because the rest is only average compared to the first frame. Perhaps I should explain that a little better. All the bells and whistles (except the music) are over, the rest is a fairly run of the mill program. Nonetheless, the game as a whole does not deteriorate.

In a way this is most annoying. Such a simple concept, such simple programming and yet it still has all the qualities of a number one seller. Am I confusing you? On to level two and falling stone blocks are making my climb up the stairs very difficult. Next up, a side-on view of the inner temple appears. Guarded by spikes, falling blocks, spears and trapdoors, the going is pretty rough. Every level is quite different from the last. I will not spoil it by describing any more but take a tip and be sure you start with a good joystick. It may be a long night.

Game:	Aztec Challenge
Graphics:	****
Sound:	*****
Addictiveness:	*****
Originality:	****
Overall:	****

Aztec Challenge is produced by Computamart in WA, and retails for \$24.95 cassette, and \$34.95 disk.

Dear Ed,

I own a 64 and so far I'm trying to make do with a datasette. I'm considering getting a disk drive, but I'm a bit hesitant with the reports of slowness and unreliability. Is there any news of an improved drive for the 64 or any modifications that can be effected on the 1541? Also is there an alternative to the 1541? Surely someone could design an interface to adapt other drives. Will you be reviewing Commodore's SFD 1001 disk drive? What traps should one be aware of when buying secondhand drives, printers and software?

Will there be a review of "Rabbit" and "Arrow" cartridges that supposedly make the datasette as fast as a disk drive? Have you plans for a regular section explaining some of the trickier parts of programming, eg AND and OR? These two logical operators appear in some poke statements, their purpose escapes me.

Recently a neighbour purchased an Apple IIe and a mouse. A very impressive little device it was too.

Is there a mouse for the 64 or will Micro-Illustrator and a light pen do the same thing? Speaking of such, are there any differences between light pens or are they all the same?

W.S. Laidlaw
Elmhurst, Vic

I love letters with thousands of questions. Now for some answers. Firstly, yes the 1541 is not the most reliable of disk drives. There are various modifications available which improve its reliability; however, these are a little costly. Several alternatives to the 1541 are available, the most notable of which is the MSD drive from Interfaceware. We have made several tests on this unit and found it to be very reliable, without the 1541's tendency to overheat.

Personally, I use a 1541 to run Easy Script in conjunction with the 1541 Express from Cybex Computing. It all works nicely now after we glued the drive motor mechanism to stop those nasty bumps knocking it out of alignment. The Express speeds up operation by a factor of three and

is compatible with most commercial software. If you do decide a second hand disk drive may be a cheap alternative, be sure to see it up and running using disks you know work on another unit. Try formatting a disk a few times or running some of the test programs included on the demonstration disk that comes with the disk drive. If all goes well, you should pay between \$200 and \$300 for the unit.

The 1001 disk drive was designed as a backup for Commodore's hard disk system. It may be used in conjunction with a suitable IEEE interface, as a second drive for a Commodore 64. I have used one for some time and find it very useful and most reliable. However, it is of no use as a stand alone drive since the format is different from the 1541. The 1001 does after all have a disk capacity of one megabyte and uses double density double sided disks. For further information see the article in issue 5, page 8.

A review of the **Arrow cartridge** also appeared in issue five. It is useful for some applications. Increasing use of turbo load cassettes has made it redundant for owners only concerned with loading commercial software. A turbo load cassette is one which has a special program which LOADS first and then speeds up the rest of the program LOAD. This first program is known as a Turbo Loader.

AND and OR: When used in a POKE or PEEK statement, the AND and OR functions are used to test or modify specific bits of the value stored in memory. A knowledge of binary is essential to understand exactly what is involved, so here goes. As you probably know, the largest number that can be stored in any single location is 255. There is a simple reason for this, to do with the actual design of an eight bit computer. An eight bit computer being one that moves information around internally in groups of eight bits. A bit may be either zero or one. With eight of these strung together the value of each bit is relative to its position. Binary is base two, unlike our

decimal system which is base ten. So instead of each column having a power of ten, it has a power of two.

The first column would be two to the power of zero, the second, two to the power of one, the third two to the power of three and so on. A bit of a rough explanation, perhaps you should try reading Tech Tips in issue number five. Now back to our look at AND and OR. By ANDing a value with another number we are doing a comparison between the two bit patterns of each number. The result will be a number whose bit pattern is equal to only those bits which are on in both numbers ANDed. Perhaps an example will help.

ANDing the value three with two will produce the result of two. Bit two in both these numbers are on and therefore that is the only bit set in the result. Bit two being set gives the value of two since column two is two to the power of one. OR is similar except that instead of the result being equal to bits which are on in both numbers, it is equal to the bits which are on in either number. For example eight ORed with 64 gives the value of 92. For further information I suggest you invest in the Commodore Reference manual which is a very useful book.

Micro-Illustrator? If your friend was only using his mouse to doodle pretty pictures then the Micro-Illustrator will do the job nicely. It is best purchased with the Koala Pad touch tablet as this is a little more accurate than a light pen. Light pens are not all the same either. Some are just cheap jobs consisting of no more than a photo-sensitive transistor and a few wires. Several are more elaborate with an amplification circuit employed to add to their accuracy. Computer Technics do manufacture such a light pen; however even it is not a fair alternative to a good touch tablet. Light pens only work well under perfect conditions, unlike those found using the average home television set or fluorescent lighting.

Editor

continued on page 34

Hacker's Hollow

by Ian Lucas

Welcome to our first journey into "Hacker's Hollow". Over the next few issues we will go beyond BASIC and explore some of the more hidden aspects of the Commodore 64. As we all know, the C64 has about the best graphics and sound capabilities in the business, but unfortunately many of these features remain hidden from view. I hope that through these pages we can share a few of the tricks that can make programming easier on the Commodore 64.

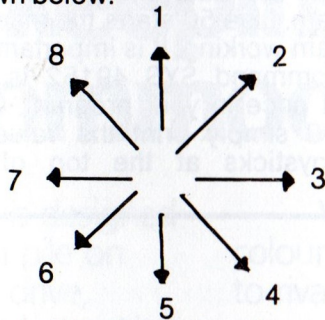
This issue I have a joystick read routine that makes it very easy from Basic to find out in what direction either joystick is being moved, and if the fire buttons are being pressed. The routine is in machine code, but is designed to be accessed from Basic.

The Joystick Read Routine is run under interrupts, and automatically scans the joystick port about 60 times a second. Interrupts are one of the invisible features of the 64 that are very useful. Sixty times every second the main processor in the 64, the 6510 (that's its name) stops whatever it's doing and executes the interrupt handling routine. This routine reads the keyboard and updates the 64's real

time clock. What we are going to do is make it go one step further and also read the joysticks and fire buttons for us. Don't worry if you have never used interrupts before, as you will be able to use the routine anyway.

How the joystick works

The joystick has four switches inside it, one for each direction, Up, Down, Left and Right. To get diagonal movement we actually press two switches together. Thus we have eight different directions as shown below.



Each joystick also has a fire button, which is just another switch.

How the joystick is connected to the Commodore 64

The joystick is controlled by a versatile chip known as the MOS

6526 CIA (that's Complex Interface Adapter) By reading that chip we can find out in what direction the joystick is being moved and that is exactly what the program does. Because of the way the joystick is wired to the 64, we must decode the value we get from the MOS 6526 before it is a number that is easy to use in a BASIC program. (For more detailed information on how the joystick is actually interfaced to the 64 see page 344-345 of the Commodore 64 Programmers' Reference Guide.)

There are two memory locations that our program must access to read the joysticks, location 56321 for joystick 1 and 56320 for joystick 2. The joysticks are both read in the same way. Each joystick requires 4 bits from each byte for the 4 switches and 1 bit for the fire button. If a switch is pressed the appropriate bit is set to 0. Otherwise the bit is set to 1. Thus bit 4 will be set to 0 if the fire button is pressed and set to 1 if the button is not being pressed. Likewise if the joystick direction is up then bit 0 will be 0. Otherwise bit 0 will be set to 1. Table 1 shows which direction each bit represents.

Table 1

BIT	DIRECTION
0	UP
1	DOWN
2	LEFT
3	RIGHT
4	FIRE BUTTON

How the program works

The machine code routine has two parts. The first part, called SETUP, changes the interrupt vector of the C64 so that whenever an interrupt occurs the second part of the program, the actual joystick read routine, is executed. The second part called READ reads both joysticks in turn and saves the results. Listing 1 is the assembly language source code and may be entered using the Commodore



assembler. Listing 2 is the same program though stored as data statements in a BASIC program. You can incorporate the program in listing 2 in your own BASIC program.

The program reads the joystick ports. It tests Bit 4 (firebutton). If the bit equals 0 then the fire button is being pressed and the program stores a value of 1 in the firebutton location. If the button is not being pressed the program returns a value of 0. Testing the joystick itself is a bit more complex. The 4 bits of the joystick form a 4 digit binary number. A 4 digit binary number can have 16 different values from 0 to 15. The program has 16 bytes of data at the location named DATA. Using the 4 bit joystick number as an offset, the program selects the appropriate number from DATA onwards. This value is the direction of the joystick.

After the program has finished it jumps to the standard interrupt routine, so that the C64 can read the keyboard and update the clock etc.

Using the routine

Once the program is poked into memory the setup routine must be called once. IMPORTANT!! ONLY CALL THE SETUP ROUTINE ONCE. The setup routine is called from BASIC by SYS 49152, from machine code by JSR \$C000. After SETUP has been called the joystick is automatically scanned 60 times every second. To find out the value of the joysticks your program must PEEK the following locations:

JOYSTICK 1	251
FIREBUTTON 1	252
JOYSTICK 2	253
FIREBUTTON 2	254

In the BASIC program lines 10 to 40 read the data and pokes in the program. Line 50 starts the machine program working. It is important that the command SYS 49152 is only called once in your program. Lines 90-110 simply print the values of the joysticks at the top of the

screen. You can change these lines to whatever you want. Good luck.

Moving sprites

If you have ever used sprites from BASIC you will know how slow they become when you try to move several at once. This month's routine forms an introduction to what can be done with interrupts. Next month I will discuss another interrupt routine, this time a SPRITE move routine. Once you have designed your sprites you can set them in motion. You tell the routine how fast you want your sprites to move and what direction to travel in and how long to travel for. Once started the sprites will automatically move anywhere you like. You can be very precise in the direction you give your sprites, as you actually give them an independent speed for the X and Y axis. Sprites will also wrap around if you like.

More on this routine next issue. Keep hacking!

LISTING 1. ASSEMBLY LANGUAGE VERSION FOR USE WITH COMMODORE ASSEMBLER. REMEMBER TO ADD LINE NUMBERS.

```

* = 49152 ; PROGRAM STARTS AT 49152 ( $C000)

IRQVEC = 788 ; INTERRUPT VECTOR
PORT1 = 56321 ; ADDRESS OF JOYSTICK PORT 1
PORT2 = 56320
JOY1 = 251 ; ADDRESS TO PEEK FOR JOYSTICK 1 VALUE
FIRE1 = 252 ; ADDRESS TO PEEK FOR FIREBUTTON 1
JOY2 = 253
FIRE2 = 254

SETUP
SEI ; TURN OFF INTERRUPTS
LDA IRQVEC ; SAVE LOW ORDER BYTE OF INTERRUPT VECTOR
STA VECTOR
LDA IRQVEC+1 ; SAVE HIGH ORDER BYTE OF INTERRUPT VECTOR
STA VECTOR+1
LDA #<READ ; GET LOW ORDER BYTE OF ADDRESS OF ROUTINE
STA IRQVEC ; STORE BYTE IN INTERRUPT VECTOR
LDA #>READ ; ALSO SET HIGH BYTE
STA IRQVEC+1
CLI ; ALLOW INTERRUPTS
RTS ; EXIT ROUTINE

READ
LDA PORT1 ; GET VALUE FROM PORT1
JSR CALC ; GOSUB JOY CALCULATE ROUTINE
STA JOY1 ; SAVE JOYSTICK 1 VALUE
STX FIRE1 ; SAVE FIREBUTTON 1 VALUE
LDA PORT2 ; NOW DO PORT2
JSR CALC
STA JOY2
STX FIRE2
JMP (VECTOR) ; NOW JUMP TO STANDARD INTERRUPT ROUTINE

CALC
TAX ; TEMPORARY STORAGE FOR A
AND #15 ; LOGICAL AND WITH 15, MASK LOWER 4 BITS
TAY ; PUT VALUE IN Y REGISTER
TXA ; RESTORE A
EOR #16 ; INVERT BIT 4
AND #16 ; MASK BIT 4
BEQ CALC1 ; IF RESULT = 0, BRANCH BELOW
LDA #1 ; MAKE VALUE 1 FOR FIRE BUTTON PRESSED
CALC1 TAX ; SAVE FIRE STATUS IN X REGISTER
    
```

```

LDA DATA,Y ; USING VALUE ALREADY IN Y, GET DATA
RTS ; EXIT ROUTINE

VECTOR *#+2 ; VECTOR FOR INTERRUPT

DATA .BYTE 0,0,0,0,0,4,2,3,0,6,8,7,0,5,1,0 ; JOYSTICK DATA
.END ; END OF PROGRAM
    
```

LISTING 2. BASIC LANGUAGE VERSION.

```

10 FOR I = 49152 TO 49235 : REM THE MACHINE CODE IS AT 49152
20 READ V : REM READ THE BYTES
30 POKE I,V : REM POKE IN THE PROGRAM
40 NEXT I
50 SYS 49152 : REM TURN ON THE READ ROUTINE
60 REM
70 REM NOW READ THE JOYSTICKS AND PRINT THE VALUES
80 REM
90 PRINT CHR$(147);"JOY1","FIRE1","JOY2","FIRE2"
100 PRINT PEEK(251),PEEK(252),PEEK(253),PEEK(254)
110 GOTO 90
120 REM
130 REM
1000 DATA 120 , 173 , 20 , 3 , 141 , 66 , 192 , 173 , 21
1010 DATA 3 , 141 , 67 , 192 , 169 , 25 , 141 , 20 , 3
1020 DATA 169 , 192 , 141 , 21 , 3 , 88 , 96 , 173 , 1
1030 DATA 220 , 32 , 48 , 192 , 133 , 251 , 134 , 252 , 173
1040 DATA 0 , 220 , 32 , 48 , 192 , 133 , 253 , 134 , 254
1050 DATA 108 , 66 , 192 , 170 , 41 , 15 , 168 , 138 , 73
1060 DATA 16 , 41 , 16 , 240 , 2 , 169 , 1 , 170 , 185
1070 DATA 68 , 192 , 96 , 49 , 234 , 0 , 0 , 0 , 0
1080 DATA 0 , 4 , 2 , 3 , 0 , 6 , 8 , 7 , 0
1090 DATA 5 , 1 , 0
    
```



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The "It" Syndrome

by Andrew Farrell

Friday afternoon on a bleak winter day in our office. The air-conditioning refused to melt the icicles which now hang from the air ducts not far above. My 1541 was still refusing to LOAD Easy Script, so I decided to type it in byte by byte from the listing we made some time ago. An Indian programmer worked solemnly in a dark corner at the end of the room. Occasionally a cry of joy was emitted from a face which looked ready to slide off her head a few hours back.

A brief power surge had rearranged her disk directory and destroyed the week's work. A backup was not in sight. After belting her to a chair and removing any sharp objects from the room I managed to shove some Bex in a glass. It was not until she had drunk the white mixture that I realised the glass had contained cleaning fluid. We called an ambulance and within a few hours all was well.

Back to my story. In another room several faces were crowded around the glowing screen of a new slab of Commodore technology. A strange error number appeared on the display. One of the figures stepped back in horror. "It isn't removing the third bit from the left side of the hex conversion routine after the logic shift." After some minutes of thought I decided he must be the programmer. But what was this thing that he was talking about? "It" was not doing something. "It" needs attention, run a diagnostics on "it".

My worst fears were reinforced. (How soppy.) The dreaded IT syndrome was here. My attention was momentarily diverted by a strange ringing noise in my left ear. I had to stop falling asleep on the phone.

I answered the intrusion with my normal opening retort. How can you have an opening retort? Do not ask questions. Just read.

A man from Yeppoon was wanting to know how he could

connect a Kenwood to his 64 without using any expensive interfaces or complicated wiring. I gave him my psychiatrist's phone number and said to ask him.

By now I had typed in the first 3000 bytes of Easy Script. Only 13,000 to go! It helps to have a positive outlook. With that in mind I decided to try building my own custom disk drive from a few scrap pieces of metal in my junk box. An old record player served as the drive mechanism, with varying access speeds and disk sizes. Hey, maybe I'm really on to something?

Now for the electronics. My greatgrandfather's radio was looking dejected so with a few modifications I put it to use as the drive controller. All I needed was a Disk Operating System. But where would I be able to find one with enough bugs to simulate the Commodore system?

Ahah! The old Rank Xerox had a fairly good DOS. Within minutes I

copied the ROMs, removed any useful commands and then corrupted things a little to make sure the whole caboodle had a few bugs. Perfect. Now for a power pack. One I could cook eggs on for those early morning shifts and also use to heat the room on cold late nights. I used to own a Microbee. Now where did that Taiwanese power pack get to? A few adjustments to the voltage, a bit of soldering and that too was ready to go.

Now for the moment of glory. I reached for the power switch, my brain sent a pulse to my left hand's index finger, but before I could even hear that familiar click a brief jolt sent me flying into the next room.

I woke up in hospital next to this Indian programmer who had taken an overdose of Bex and cleaning fluid. Just across the hall a familiar voice was crying out "Why didn't it work? ..."

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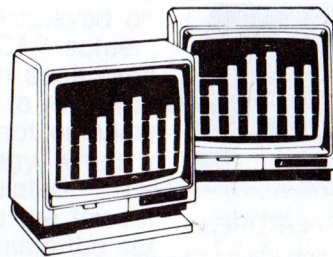
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Specially for ankle biters

Computers in Schools

by Jenny Binstead

A number of schools have purchased computers, and some make a lot of use of the equipment available to them. Others, however, have not even unwrapped their goodies.

It is a waste of equipment if a school has a computer but does not use it to the fullest extent. But it may merely be a problem of adjustment. Perhaps the answer is for parents with computer knowhow to offer their services. Just helping the staff become familiar with equipment in a field quite foreign to them would be a step in the right direction.

I have heard complaints about teachers not wanting to use the equipment because they are lazy,

thoughtless, and selfish. But the main reason teachers steer clear of computers is fear of the unknown and of not being able to be "good" teachers using them. Both students and parents are ready to blame the teacher who does not know all the answers — it does not matter in the slightest whether that teacher has been trained in the area concerned or not.

Schools where students are allowed access to a computer before school, at recess, lunchtime and after school find there are very few girls using the computers at these times. This is particularly noticeable at high school level — especially if the students have not been exposed to the computer in primary school. Therefore, primary schools who encourage the use of computers by both boys and girls

and perhaps give extra encouragement to the more timid girls should be congratulated.

By the time girls have reached year 11 they already feel they do not know anything about the electronic gadget and could not possibly learn to use it effectively. Many parents tend to push their sons into the field of computing because it may be useful for their careers. The same doesn't apply for their daughters — not because they want to be mean but because they don't stop to think a girl's career is just as important as a boy's.

There are already a number of primary and infants' schools which are effectively remedying the situation. Such affirmative action as teaching two girls at a time about the computer and making them monitors in charge of setting up the

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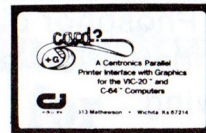


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equipment. As well as giving confidence to the pupils concerned, it also shows the more timid girls that computing is not entirely a boy's domain.

Some schools do not allow the students access to computers after hours, mainly because of supervision problems — there is no-one available to spend all this extra time in the computer room. Without supervision, equipment does get broken, causing inconvenience to the rest of the school as well as being costly.

As with any new subject there are many teething problems to be overcome. After a few years though, both teachers and students gain confidence with this new technology. It is then the most effective and rewarding use can be made of the equipment available. For all students, not just the more outgoing, or those who might be lucky enough to have a computer at home. At the beginning though, it all seems to be trial and error. But still interesting and fun to students and teachers as they go through the various stages of learning.

As with most other things in life, it is very unlikely that any person will be able to say "I know everything about computing". The older you get, the more you can learn from the young. So, students, you can probably teach your teacher a few things but do it nicely. Please.

Math Mileage

by Chris and Jenny Binstead

Math Mileage ("Maths" in Australian) is an educational game from CBS Software. It is very attractively packaged in a video style plastic case. It is disk based, and requires the use of a joystick. All the instructions necessary are included in a seven page booklet and are summarised on a hardwearing plastic card. The only annoying thing is that the instructions for loading are only

written on the disk. You have to type in the usual:—

```
LOAD"MATH",8,1
```

then remove the disk when you find you have forgotten the SYS command necessary to start the action. There is no hassle though, just do as we did. Carefully remove the small red label from the disk and stick it on the bottom of the plastic card. It's bad when that's all you can find wrong.

The program starts with the burst of music we have come to expect from most new programs written for the Commodore 64. The general idea is to drive a racing car along a track and to accumulate a set total in the shortest possible time. The track weaves left and right and every now and then forks — this is where you have to make a decision designed to make you practise your skills in addition, multiplication and estimation.

It's a game for up to four players, each taking turns to race along the track. The computer keeps a record of the time taken to get the set total, the number of forks taken and the driver's score. This is displayed on what is called the RECAP screen. Every player should run each race twice. This is designed to reinforce positively a good attempt or allow for a change in strategy when a player has miscalculated. The RECAP screen displays the fewest forks needed to accumulate the set total so the players have some number to work towards.

No matter how you play or how bad your arithmetic may be at the beginning, you must finally reach the set total, even if it takes time. This is a big plus for using it with slower children — they will complete the race and they will learn to become a little faster each time. It would be a good idea for the slower child to play against himself until he gets confident.

Both boys and girls should find this program equally stimulating as there is no great skill needed to stay on the track. In fact you cannot go off the track. You are just slowed down if your steering is not up to scratch at the beginning.

Driving the car makes a game of learning, but it is still very easy for the player to concentrate on the arithmetic skills the program is trying to teach and reinforce. As one plays the game more often one begins to think out the fastest combination of numbers to reach the set total. This game is a good "thinking" learning game — one which teaches the manipulation of numbers.

There are three levels to choose from — 1 being the easiest and 3 the hardest. Each level has two options — daytime driving or night driving for the more adventurous. For the daytime driver a running tally of the total is displayed. Not so for the night driver — you must keep your own tally. But if you forget or lose count you may stop before one of the billboards on the track and shine your headlights (by pressing the firing button on the joystick) at it to get your total at that point. Of course this slows you down, and remember the object of the game is to drive the course in the shortest possible time.

During the race you can only go forward. You cannot go back or turn around. If you have chosen the wrong direction and you go over your set total, all is not lost — the computer sends you along a route which does the opposite to your last operation and takes your answer back to what it was before you made the wrong decision. The only thing you lose is time.

The player who manages to drive along the shortest route possible, that is with the fewest number of forks, arrives at the destination to find the sign sparkling in honour of a perfect run. This is something all players can try to achieve as many times as possible.

Both kids and parents will get a lot of mileage out of this package. The kids will enjoy the manipulative challenge, they will practise their arithmetic skills and their parents will be pleased to have them entertained for a few hours. Math Mileage costs \$39.95, and a cassette version should be out around Christmas.

Business applications

Business Software for the Commodore 64 It's getting better all the time

by Gareth Powell

The amount of business software that becomes available for the Commodore 64 never ceases to amaze us.

The wide range and the versatility of programs available means that the Commodore 64 is slowly but surely repositioning itself as the ideal machine for the small business — and for the medium sized business — as well as for the happy home hobbyist. Because programmers writing for the Commodore 64 have to work within restrictions of space, memory and a 40 column format, their ingenuity is taxed to the utmost.

The result is a series of elegantly written user friendly programs which, dollar for dollar, leave the programs for larger, pure business machines for dead.

Let us look, for example, at the business programs which have been produced in New Zealand by Meridian Systems. Business programs that we get from New Zealand tend, on average, to be superior to those we receive from other sources. This may be because, in New Zealand, the Commodore 64 leads the market as a business machine.

There are five sections to the group of programs (Meridian call them modules which sounds much more expert). They cover the big five of accountancy — General Ledger, Creditors, Debtors, Invoicing and Sales Analysis, Stock Control.

It may be of passing interest for readers to know that the writer was involved with a similar program that was run on an Elliot 803 in the early sixties. That program had about the same capacity but was somewhat slower.

However, the machine it ran on cost just over \$300,000 and the

programs cost over \$25,000. And they were full of bugs. Times have, indeed, changed.

Let us look at the components of the total system one by one and see the scope and the attention to detail which characterises this series.

General Ledger

This works under standard accountancy principles and maintains the accounts by allowing the operator to add, change, delete, query and print accounts.

Note that I say operator, for in truth neither a bookkeeper nor an accountant is needed to run these systems. Any reasonably intelligent person could have the system sorted out and up and running in a day.

It might require an accountant's advice as to which expense should go in which category, but after that it is all plain sailing, and this General Ledger will bring you to trial balance stage with ease. And with some slight adjustment will go even further.

Not only will it run the standard segments of the General Ledger but it will also maintain budgets — add, change, query and print budget figures.

And at the same time it will also maintain financial reports — add, change, delete, query and print report definitions and reports.

Transactions — that is when an order is accepted and the promise of money changes hands — can be entered in batches.

The program allows you to print batch lists showing every transaction in a batch or in a whole range of batches.

At the end of the month, or at a date that you nominate, you can get a print-out of the trial balance complete with subtotals.

You can also at any time get a printout of the General Ledger showing all transactions for all, or a range of accounts.

Having done that you can print financial statements including Trading Accounts, Profit and Loss Statements and Balance Sheets.

At the end of your standard accounting period you can set balances to zero and clear transactions prior to the next accounting period.

The program allows budgets to be carried forward for up to 12 months per account code.

To get all that on a general ledger system on a big machine would be considered a major feat. How Meridian have managed to cram it all so that it fits neatly into the Commodore 64 leaves me speechless with amazement.

The other modules also manage to achieve their results with elegance and, as far as I could ascertain, without any corners being cuts or any bugs left unsquashed.

Creditors System

With this section of the program the operator can maintain accounts — add, change, delete, query and print creditors, together with a list of available account numbers for allocation to new accounts.

When you load transactions you can log and approve creditor invoices for payment. You can also load journals and, a sad but necessary happening, stop payments.

You can print payments lists, printing transactions by payment criteria.

You can print remittance advice forms for all of your creditors, for some of your creditors or for single creditors — as the mood takes you.

At the end of period you can age creditor transactions and remove or amend appropriate invoices and journals.

This module will handle 200 creditors' accounts and provides analysis of payments into over 50 categories. As it happens I would like rather fewer accounts and rather more categories — but this is quibbling.

Debtors System

In this module you can maintain a complete accounting of your company's situation with its

debtors. Again you can with ease and facility add, change, delete, query and print debtors. You have to hand a list of available account numbers.

You also have full control of all transactions and can input invoices, credit notes, journal entries or receipts.

An useful feature is that you can print a current aged trial balance report at any time during the month.

And you can, of course, print statements for all, a range of, or individual debtors.

A ledger enquiry facility may be used at any time during the month to query the current state of the ledger.

At the end of period you can print the aged debtors' balances prior to loading transactions for the new month.

This balance-forward system handles up to 490 debtors.

Sales Analysis

This program is designed to help you to analyse what your customers are doing, which is absolutely essential for a healthy company. The purpose of accounting is not, primarily, to keep the tax man happy but to give management a working tool so that they can see which way the company is going. Sales analysis is one way to keep a close eye on what the company is doing.

With this module you can adjust and print customer type analysis codes.

You can then add, change, delete, query and print sales analysis codes.

And then you can do the same for your invoice line analysis codes and your sales tax codes. This module also allows you to print and update monthly customer and sales analysis totals.

With the end of period you can reset month-to-date analysis figures and year-to-date analysis totals.

Stock Control

This program accommodates 1000 stock items, 99 suppliers and 200 stock movements per batch.

It features maintenance of the stock master file. You can add, change, delete, query and print the current status of stock items. Same for your record of suppliers. You can update your records to keep track of stock orders, receipts, sales and transfers. You can print wholesale and retail price lists, which give you instant stock-take check lists. In exactly the same way you can print reports of stock on hand and stock on order.

By setting a minimum level for various items of stock you can allow your computer to generate a report of which items are below recommended levels — instantly.

A sales analysis is ever at hand.

A zero sales and purchase analysis can be generated at, say, the end of the month or the year.

Note that this is fully integrated with the debtors system and as a result will print out invoices and credit notes.

I have, it is true, seen bigger, better and more comprehensive accountancy systems. But they were all for much, much larger machines and cost up to ten times as much.

Until someone shows me otherwise, the Meridian accounting package is the best value software currently available in accounting packages for any computer. That is a large claim and a tall statement. I can be proved wrong. But somehow I doubt it. The Kiwis who are responsible for this suite of programs can now move centre stage and take a bow.

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All of the above programs are supplied free with each purchase of G-Pascal on disk. G-Pascal is available from your local Commodore dealer, Commodore Information Centre Pty. Ltd., or Gambit Games. Recommended retail: \$79.50

* excludes existing older dealer stocks.

If you have already purchased G-Pascal these extra programs may be ordered by sending \$20 direct to Gambit Games.

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The Sore Thumb Dept

The Boss

Commodore 64 game review by Gary Williams

Are you sick of saving the world from the hordes of nasty space aliens? Tried adventure gaming and can't find your way out of the first room? Well, have I got a game for you!

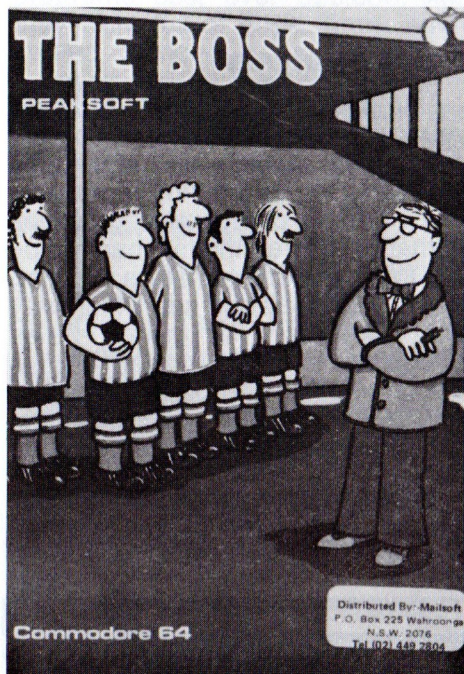
What do you imagine a game to be about that is called "The Boss"? No, it's not everyman's fantasy of telling the boss where to go after winning the Lotto. It's about the game of soccer, or football to those uneducated in the ways of rugby league and union.

The Boss is unique in that it cannot be categorised into either arcade or adventure game. So I guess it has the distinction of making its own little niche. But what to call it? I suppose it is closer to the adventure game category since there is no manual dexterity involved.

It doesn't matter anyway because The Boss is the best fun for one or more people to play for hours on end without getting bored.

The basic idea of the game is to run a soccer team and not go bust, while trying to win as many games as possible in the meantime. It's just like the real thing in that you can start in any of the three divisions (excluding first division) and try to work your way up the table and get promoted into the next highest division. In the meantime you have the opportunity of playing in the FA Cup.

You start by giving your team a name and purchasing some players. For this you can either go to the transfer screen (which has the names of players from other divisions) or check the other teams in your particular division. Each player has a level of skill next to his name from 0-9. The price you pay for his transfer is reflected by his level of skill. Unfortunately you may lash out and purchase some big name players (with high skill levels)



and be disappointed by their performance (or lack thereof). On the other hand the low skill players you purchased as fillers could be consistently scoring goals every few games.

That's one of the fascinating features of this game, expect the unexpected.

You have thirteen screens to check out before each game is played. Not that you have to, but what's the point of playing if you don't get all the vital statistics?

The first four screens show the opposing teams, and include the names of the players and their skill ratings. Also included is the formation of the team, which means the position of the players in defence, midfield and attack. You are also told the rating of their formation. All this is of critical importance if you are serious about being promoted to the next division.

The next screen is the transfer market and, as mentioned before, shows you who is up for transfer from the other divisions.

Screens 7 and 8 are the table and fixtures. The table tells you where the team stands in the competition and includes the obligatory goals

for and against. The fixtures screen tells you all the teams you are to play, in order, and whether the games are at home or away.

Screen 9 shows you your opponents, when you play in the FA Cup. After 10 games you have the opportunity of playing in it. The trouble with playing in the FA Cup is your players may incur numerous injuries or suspensions which will make it much harder if you bomb out of the Cup and are left short in the competition proper. But on the bright side, a win in the FA Cup final pays handsomely and enables you to afford more highly skilled players.

Screen 0 shows you how to save your game to tape so you can resume playing at a later stage. The makers have thoughtfully supplied a blank tape to allow for this.

Finally, the last screen gives you an interview with your friendly bank manager. This becomes all the more important when you work your way up to the first division and have to pay a small fortune to purchase players, not to mention their weekly salaries. When you borrow from the bank it will cost you 1% interest. Not much, ah, but that's per week. For you have to pay back 5% of the total of your loan after each game.

After you have finalised your team and made sure you have the best chance of defeating your opponent (according to their ratings, etc.) you simply press (P)lay and let your team go to work. This part only takes a minute or two and is like listening to the game on the radio. All you are given is the progressing time of the game and when a goal is scored the screen flashes and you are told which team has scored, by whom and in what minute of play. Doesn't sound all that exciting but believe you me, it is. Especially after you have spent the last ten minutes arguing with all the co-managers who should go where and which player should be bought.

If, after many sleepless nights, you manage to get into first division and per chance win, you are allowed to play in the European Cup. This is similar to the FA Cup

only you don't have to play as many games. You start off in the semi-finals and consequently the amount of money at stake is much higher.

So the object of the game is to start in lowly fourth division, have a stab at the FA Cup on the way. Then graft your way into the next division, still with a chance at the FA Cup and win that division. Until finally you are in the big time (first division). Then win first division and play in the European Cup and win that and become the greatest coach/manager/trainer of all time. I have a way with understatement, for to get to that stage you will have had to play at least 120 games, undefeated.

A friend of mine has been playing The Boss religiously for an hour every night for over three weeks and has almost succeeded in all the points above, but he's in the red with the bank and still hoping to get to the European final for the really big money.

Oh, by the way, it costs \$26.00, is produced by the English (where else) company Peaksoft and is available from Mailsoft in Turramurra (on cassette only I'm afraid).

Bizy Beezzz

reviewed by A. Rigby

Bizy Beezzz is a reasonable game by most standards. It has its good and bad qualities. But the thing that struck me was that the theme is for a younger audience, whilst the skills needed to play successfully are those of a space-invader veteran.

The cassette comes in a scaled-down version of a video cassette case, which is much better than the usual cassette cases. The cover illustrations look like the test card for Romper Room. Good selling point?!

On the inside back cover, instructions state that loading time



is ten minutes, but I found that with Turbo Load, it was greatly reduced.

The player must move Humphrey B. Bear through a maze of platforms (moving and stationary) to collect "honey pots" to quench this bear's never-ending appetite. However, Humphrey is harassed by bees patrolling their hive. When a bee triumphantly stings him, a bear is lost (sad but true).

The music is played in interrupt, which seems to be the latest trend. Humphrey rages along to the tunes of The Teddy Bears' Picnic and various other children's "fairy-tale songs". My three year old sister played it just to hear the music. To my ears, the music is impressive, to say the least.

Humphrey is barely recognisable as he leaps from platform to platform; he is a bit too block-like for my liking. The bees, however, are animated sprites, and superbly done. Jumpman fanatics will find the moving platforms in the upper levels of Bizy Beezzz irregular — moving six or seven pixels at a time.

The only complaints in playing the game are that the jumping ability of the bear is extremely hard to get used to, as his jump is limited.

Also, it is difficult to distinguish where the platforms end, which added to the difficulty I had in jumping the bear. The bees follow a set pattern when guarding the honey pots, so a set pattern of play is needed to complete each of the sixteen frames.

A nice touch to the normal high score facility is that the pre-set names before others are entered belong to famous bears such as Yogi, Boo-boo, Grizzly, Paddington and Rupert.

Another feature of this game is the network of honeycombs present in the background of the screen. This adds to the total confusion of the games. The game is played with the joystick or the keyboard, but the joystick seemed easier.

The game provides hours of entertainment for ages from Humphrey watchers to senile old ducks. Available from OziSoft, cassette \$19.95, disk \$24.95.

Graphics	***+
Sound	****
Lasting appeal	***+
Value for money	***+
Difficulty	***+
Originality	***

Hungry Horace

reviewed by Jhary-a-Conel

Visual and audio appeal	**
Ease of use	*
Game interest	**
Sustained interest	***

Hungry Horace from Melbourne House is a Pacman style game for the Commodore 64.

The player controls the movements of Horace through a park, which he is determined to destroy. This park is divided into four sections. In each section there is an exit leading to the next section. As Horace progresses through the various sections of the park it becomes more difficult to avoid the guards. Horace does not have to

totally destroy the section of the park he is in before he advances to the next section.

To keep Horace on his toes there are guards patrolling the park he is attempting to desecrate. These guards are naturally very concerned about the park's wellbeing and constantly try to throw Horace out of the park. This effectively kills Horace, because to him it seems life is not worth living unless he can create havoc in the park.

Horace starts with four passes allowing him to enter the various sections of the park. Even after being thrown out by the guards for destroying great portions of the park, he is let back in if he has a pass allowing entry. (This leads one to wonder about the mental state of the intrepid guards.)

Horace can move along paths, bridges and tunnels. As he does so he devours flowers and any lunches he happens to come across. Lunches are occasionally dropped by the guards who are patrolling the park. These are either made of cherries or strawberries.

Horace scores points for eating guards' lunches and for eating flowers. (Why he eats flowers is not clear except for the fact points are scored this way.)

In the park that Horace roams are several alarm bells. If Horace can steal (run into) one of these the guards will panic. If Horace can catch them while they are in a panic they will promptly disappear. Supposedly they have fled the park in sheer terror. If a guard does flee he is quickly replaced by another. Guards also enter the section of park Horace is in if he wanders about in a dither and does not leave the section as quickly as possible.

Hungry Horace has a feature that lets the player design his or her own mazes (sections of park). While in this mode you can load and save any mazes you have stored on tape (not disk) or create a maze of your own design. Unfortunately this mode is slow to respond to cursor commands. This section of the game has been designed in such a way as to make it difficult and rather frustrating to actually place things in the section of park you are designing.

When designing a maze there are

various modes you can utilise such as flower, wall and tunnel modes. While in these modes you can place a flower or wall depending on the mode. This was rather annoying. For



example, if I had a moment of inspiration and wanted to put a tunnel in a tricky spot and I was in flower mode I would have to forward through various other modes to get to tunnel mode. This took time and the idea had invariably gone. What's more if I then forwarded the mode, assuming that I would return to flowers, the program thought I was finished (when I was not) because I had passed through every mode. One could have pulled one's hair out quite easily.

I think this section of the game could have been greatly improved by having a maze designing system something like Lode Runner. That is, to have all variables that can possibly be put on a frame easily accessible. A bit of cursor speed would also have been greatly appreciated.

Other ways that Hungry Horace could have been improved are graphics, sound and responsiveness: the graphics are reasonably simple and give the game a rather unprofessional look. The sound is a bit harsh and unappealing. After a while it becomes annoying, in my opinion.

By responsiveness I mean the controlling of Horace's movements. I found it was sometimes hard to move Horace where I wanted to; he tended to go off with a mind of his own. By comparison the guards moved extremely well, especially when turning corners, and because of this they were hard to avoid once they latched onto my trail.

Although this game is not one of my favourites it has some interesting features, which could be improved with revised programming.

Hungry Horace comes from Melbourne House, and sells for \$20.00, cassette only.

Space Pilot

reviewed by Gary Williams

Space Pilot is an arcade style game, produced by ANIROG for use on the Commodore 64.

There are five frames to get through, each representing a different era in aircraft development.

The first is back in the days of the Red Baron, bi-planes and Zeppelins and the like, and fortunately for the good guys we are supplied with far superior aircraft. There are 56 enemy fighters per frame, and some attack in squadrons of six. If you are skilled enough to destroy a squadron you get quite a hefty bonus. As well, you can gain bonus points for saving the parachutists which occasionally waft down. This is done by simply flying into them; the bonus increases with each one you save.

After you have shot down 56 of the enemy aircraft, a Zeppelin nonchalantly cruises by, and upon destroying it you are transported in time to the next stage. Mind you, it takes more than one slug to down the Zeppelin.

The next stage is a la Battle of Britain (1940's) where the enemy fighters are that little bit faster and more agile. No worries, with practice they can be defeated. Again the same holds true with the saving of parachutists and the destruction of squadrons boosting your score. In this stage or era you have to shoot down a Heinkel bomber before doing your time

GAMES REVIEWS

tunnel bit and going onto the next stage.

Aha, now we get closer to home and the Vietnam war where the helicopter gun-ships commanded the sky. Things get a little tricky here as the choppers are quite fast and almost as agile as your (1980's) jet fighter.

Unfortunately or fortunately, this is as far as I have managed to get without being blown out of the sky. But don't let this discourage you as I haven't quite got my eye in yet, and when I do they won't stand a chance.

After (according to the documentation) you finish off the choppers you are again dematerialized into the present (1980's, silly) and do battle with jet aircraft as quick and manoeuvrable as your own.

Then onto the year 2000 or so where you pit your wits against an enemy in a machine technologically far superior to your own — sounds frightening.

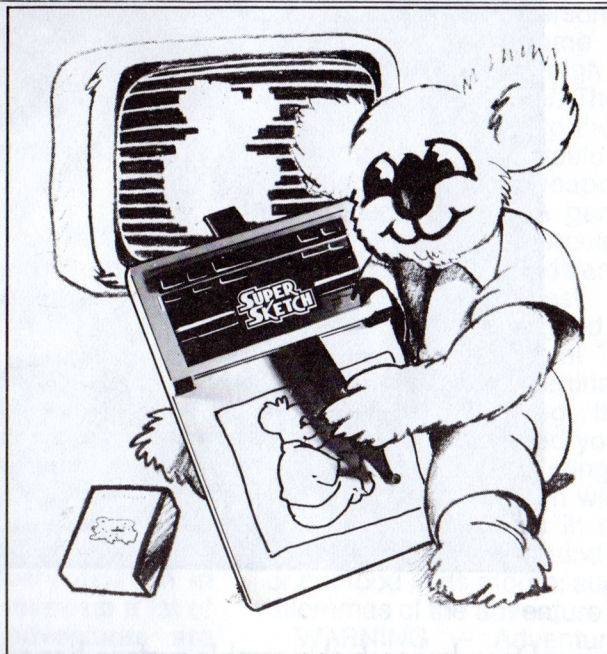
Normally I don't go for these blast'em'up, kill, crush, destroy type "educational" games, but this one had me from the start. I don't think I'll be able to rest until I've managed to get through all the levels and won, by which time they'll have dreamed up even more amazing aircraft from the year 3000 or so.

Be warned, this is not a game for the faint at heart, especially if your joystick has seen better days, as you will inevitably be seen jerking and pulling it in every direction trying to evade a dreaded heat seeking missile, or the like. And for those poor unfortunate souls who feel their datasette should be seen and not heard (let alone used) there is still hope. This game comes with a loading system called "Turbo Load", which increases the speed of loading to (almost) that expected of the 1541 disk drive. Price — \$20 cassette, \$32.95 disk, distributed by Melbourne House.

Theme	***
Entertainment	****
Ease of use	***
Graphics	****
Value for money	****
Audio	***
Originality	***
Addictiveness	****
(Scores out of a possible five)	

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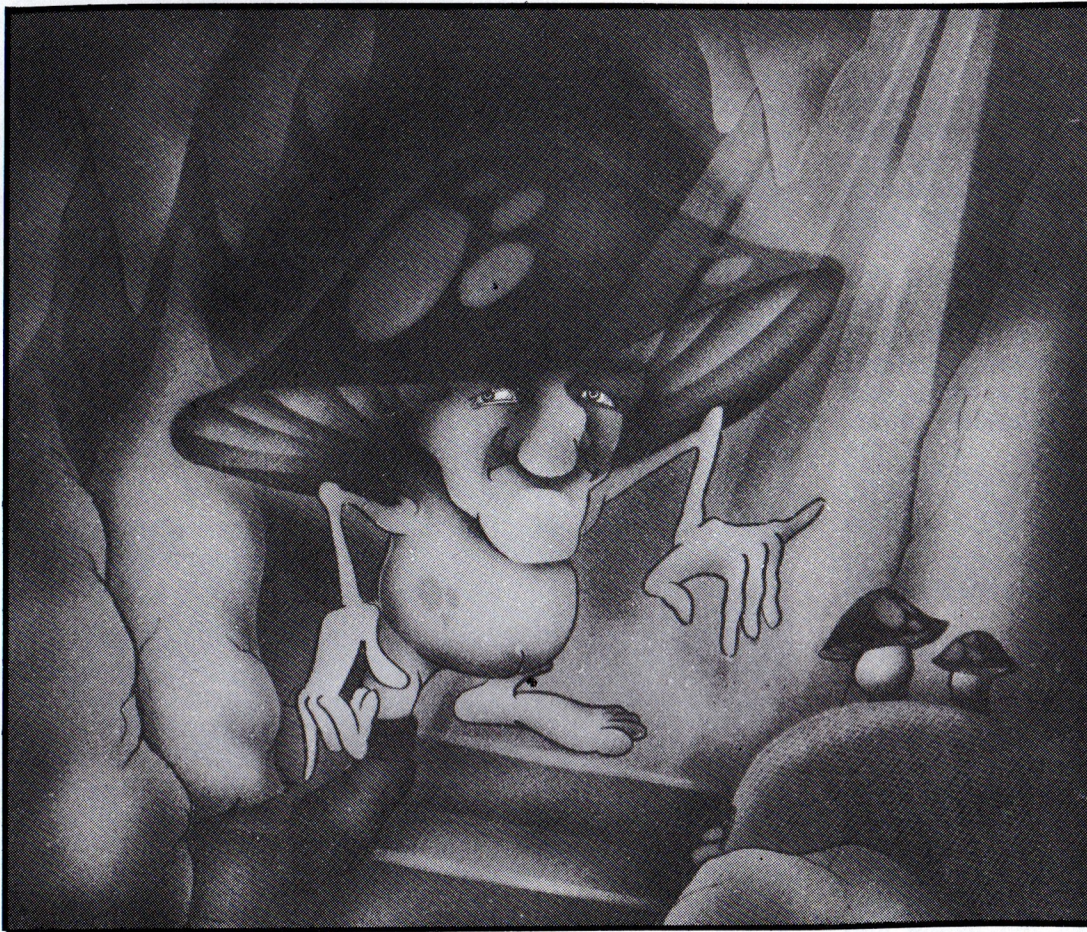
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Written and designed by Andrew Farrell

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Adventurer's Corner

by Adam Rigby

For all those with a sore thumb, a bored brain and a will to explore the terrain of an unfamiliar world, or solve cryptic clues etched in a wall — adventure games are probably the missing link in your computer entertainment.

People already addicted, such as myself, will find the included reviews, hints and various other information about adventure games worth reading. First, though, I will try to convince non-adventure players why they should start the habit.

What is an adventure game? Good question, I'm glad you asked. An adventure game is a computer simulation of the human senses, that is, what you could feel, see, hear or smell in another world or place. This place has some type of problem, puzzle or objective which you must fulfill. The computer tells you what you see, etc; in response you enter a command and the computer will try to carry it out.

The following is a quick example of an adventure game.

Computer writes: You see — a fireplace, armchair, shelf.

You input: Inventory (this lists items carried).

Computer writes: You are carrying: matches, an axe, bottle of gin.

You input: Light fire with matches.

Computer writes: The fire bursts into flames, smoke fills the room for a moment and then clears. A strange man is sitting in the chair, he starts telling you a tale.

"When I was a young . . ."

This is a simple example of a possible adventure game; remember, a VERY simple version. In an adventure game called Snowball, you have to master the controls of a spaceship — not at all easy. In fact, that adventure boasts an amazing 7,000 locations aboard a realistic, planned background of a starship that could actually work (NASA will want to hear about this one).

I am an avid "shoot 'em down" video game player myself, but just think, when you would like to play a game for a few hours how many "shoot 'em down" games have the lasting appeal to stop you from chewing your fingernails? Of course, there may be times when you only want to play a game for a few minutes (although I find when I sit in front of my 64, I'm usually there for quite a while).

There are a few different kinds of adventure games, and I shall explain each one in turn.

Pure text — These adventures usually take a great deal of concentration and have a huge amount of puzzles, problems and strange situations. Of course, they are just text — no pictures. A good example is the amazing Zork series.

Text and graphic — As the name implies, these are text with major scene pictorials (such as The Hobbit, which is just as hard as pure text adventure) or a graphical representation of every location in the adventure (this takes up a lot of memory, so the adventures are usually simpler). The beauty of this type of adventure is that a number of people can input ideas as a group effort (a great family game), because it is simpler and easier to follow. An example of this type of adventure that I enjoy playing is Mystery Island.

Graphic adventure — There are few good graphic adventures around. The most impressive example is Ultima III, which has just come on to the market for the 64 and is a must. This type of adventure is most likely to please the eager "shoot 'em down" player, for it usually incorporates the hand-eye coordination needs of the classic arcade games. You still need to solve problems but they are usually fewer and far less difficult.

Fantasy role playing — This is a feature of an adventure game rather than a type. In theory it can be incorporated in every type of adventure, but it is most often found in the graphic adventures — Dungeons and Dragons players will

know what I am talking about. The idea behind fantasy role playing games is that you create a person with certain primary abilities, such as strength, intelligence, dexterity (agility) and wisdom. These various abilities allow the person to excel in a chosen field — a person with high strength would become a warrior and a person with high dexterity would become a thief. These fields would be in relation to the game. A game in the future would probably consist of psychics, weapon experts and space pirates. A game in the era of King Arthur would include knights, thieves, wizards and clerics.

There is no best type of adventure, all have good and bad qualities. A good hint for most adventurers is to imagine you are actually there facing the exact problem — what would you do? If a face of stone is protruding from the wall with a mouth open wide, would you put twenty cents in its mouth, follow a cryptic clue found on a rock or put food in its mouth; such are the dilemmas of the adventure game.

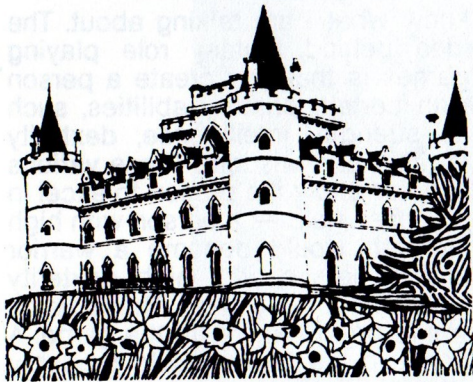
WARNING — Adventure games are mentally stimulating.

Dunzhin

In this adventure you play a pre-created character. You must provide your warrior with weapons, food, water and armour. Battles increase your warrior's abilities, thus making him more capable of finding his objective, a randomly selected item of value.

Loading took only two minutes with Turbo Load, a godsend for datasette owners. I found, however, that with this loading system, side B loaded without difficulties, unlike side A. Next, the formalities of saved games and characters are presented. Your objective is then made clear to you and an option either to enter the dungeon or quit the game is put forward.

Upon entering the dungeon, you must ready your weapon and armour or die when you first go into battle. When the command FACTS is entered, a list of the abilities of



your character will be presented. This includes your character's level of skill, his rate of movement and various other ratings to help you play the game. FACTS also gives you a rating of protection (armour) and how much damage your character can take in certain areas, should the attack exceed the armour rating.

I found that the directions given by the game were presented too slowly. So I entered a SPEED command. However, this made important instructions unreadable, as they flashed on and off too quickly.

The documentation was essential to playing the game successfully, and was set out as a story of a previous adventurer. The story was quite amusing and referred to writing on the screen as "fiery letters in a crystal ball". Overall, a good idea and the documentation was well presented.

Combat is a complicated exercise and the booklet is a great help. Random encounters are stumbled upon, and a fight is usually required. There are three categories, low rank, middle rank and high rank. All counted, there were seventeen different types of foe blocking the path to success and fulfilment of your goal. In battle, you must specify target areas at which you are aiming, be it leg, neck or torso. To get a list of all target areas, the key F3 must be hit. After the target is specified, the "crystal ball" tells you to press any key when

you feel lucky. I found that when I pressed the space bar, my character hit every time. The command FORCE may be entered, which makes extra damage, but the chance of hitting is lessened. It is worth typing this, however, because with the invincible space bar and the combination of force, you should kill your opponent in the first attack.

Every so often, a question will appear on the screen. If this question is answered correctly then your "pseudo-luck" will continue. However, if the question is answered incorrectly, then dreadful things start to happen. An example is "Do you think that is wise?" I answered "Yes", which was incorrect, and in the next battle my sword broke, and thus I was helpless to stop my foe from attacking me. I did, however, escape that foe and eventually made my way to the surface, only to find that my sword was unfixable.

The game involves a re-designed character set which is impossible to read on a colour TV. This is because the characters are only one pixel wide, which creates CHROMA noise (colour distortion). Dunzhin is available from OziSoft, cassette \$34.95, disk \$39.95.

Graphics	**
Sound	*
Lasting appeal	**
Difficulty	*
Originality	***

Castle of Mydor

The Castle of Mydor is a combination text and graphic adventure, available on both tape and disk. The objective of the game is to find the wizard's cave deep beneath the dungeons, defeat the wizard and return the crown to the throne room. However, many obstacles hinder your progress throughout the game.

There is a graphical representation of each location in the adventure. These pictures consist of keyboard graphics, and even though they are simple, they

are quite effective. The shapes created by the keyboard graphics are in most cases easily recognisable, and add to the total atmosphere of the game. One omission is that of sound, which is not surprising in this type of adventure as it is not really needed.

Entering commands is a two word process, although the usual abbreviations may be used. An annoying feature of the game is that to check if two words have been entered the computer looks at how many spaces are in the command issued. If more than one space is found then an error message is issued. Most words can be abbreviated to the first three letters.

The documentation looks like something the cat dragged in. One piece of paper with loading instructions and a few commands that the average adventure player should know. The tape comes in a re-sealable plastic bag, with a barely recognisable picture showing the wizard and the castle on it.

The Castle of Mydor is, however, an excellent game for the whole family to play as it is easy to follow. A bit of group spirit actually adds to the game. Imagine a loud cheer released from the group as the solving command is inputted into the computer. Heart-warming stuff.

I thoroughly enjoyed this game and recommend it to anyone, especially beginners, but don't let that put off experienced adventurers.

Always try to think logically as if you were standing there at the scene. And remember, programmers have a sense of humour too (well, only just).

Graphics	***
Lasting appeal	****
Difficulty	**
Originality	****
Value for money	****

Castle of Mydor is a Mountain Valley Software product, and retails for \$26.95 tape, and \$28.95 disk.

What do you think of the magazine?

To improve our magazine, we want feedback from you, the silent majority. Tell us what you want, what you appreciate and what you positively hate, and we'll do our best to cater for you. If you want a better Australian Commodore Review, this is a constructive way to help us progress. Thank you very much. By the way, this information will be regarded as confidential; you won't suddenly find your mail box full of junk mail, or strange people ringing you up.

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● What would you like changed, added, deleted, altered from the Commodore Review? In other words, what improvements would you make?

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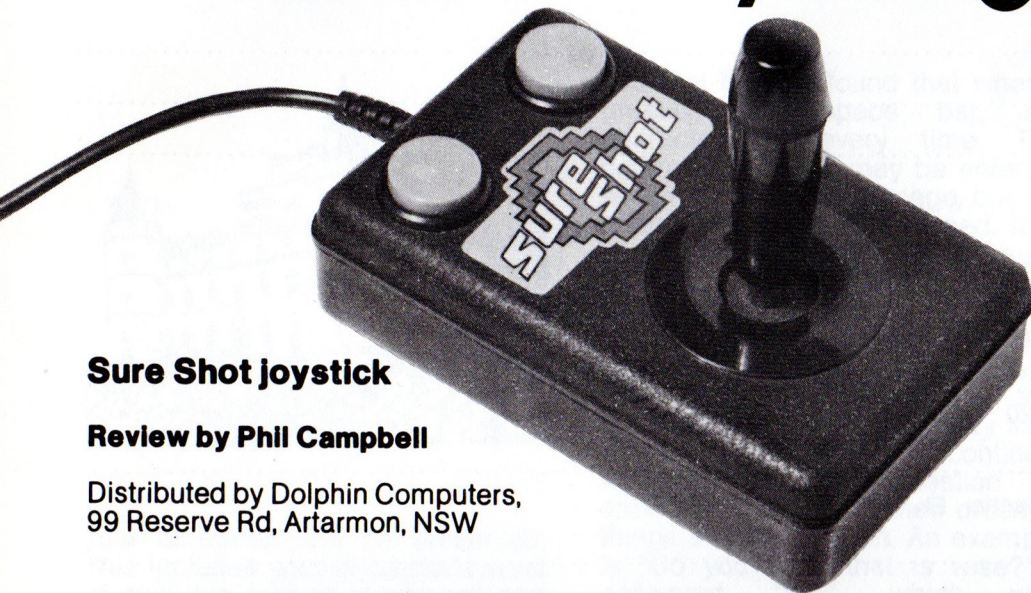
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Again, thank you very much for all the time you've taken. Just stick this in an envelope and post it to "The Australian Commodore Review", Top Rear, 4 Carrington Rd, Randwick NSW 2031.

A handle for your game



Sure Shot joystick

Review by Phil Campbell

Distributed by Dolphin Computers,
99 Reserve Rd, Artarmon, NSW

The stars twinkle forlornly in the evening sky, unaware that the evil Cylons are gathering for their final merciless attack on the planet Earth. Fear not! Space Cadet Arthur Grimwiffle is on his regular night patrol. His sensors register the impending attack, and he warps to sector nine just in time to engage the deadly fleet in a grim battle to the death.

Arthur is a well trained cadet, and fights bravely until his Commodore joystick falls to pieces in his hands. Quickly, he grabs another more expensive model. In the heat of the battle, it too expires. What will Arthur do? Will the world survive?

Undoubtedly, many of us have suffered a similar fate. In fact, it sometimes seems joysticks are designed to self destruct just as you are about to beat your best ever space invaders score.

Good news, Space Cadets. The Sure Shot joystick is an "arcade quality" controller, built to withstand the traumas of space battles, ghost chases and anything else you can dish up. In fact, it can probably even withstand your over-enthusiastic friends.

Exploratory surgery

In the pursuit of knowledge, I took the liberty of opening up a sample Sure Shot joystick on your behalf. Being an inquisitive soul, I have taken apart every joystick I have

ever owned. Seldom do they ever go back together as easily as they fall to pieces. Seldom do they ever work as well as they did before. However, I have learned quite a lot about joysticks. Nothing quite prepared me for the sight that met my eyes when I prised open the Sure Shot... the manufacturers had used that rarest of materials — good old fashioned steel — in the construction of the switching mechanism. Sure, there were bits of plastic and nylon here and there, but the real guts of the joystick were mounted on a sturdy piece of steel. Not only that, but the shaft itself is a steel bar! Real micro switches have been used instead of the ubiquitous cheap and fragile "bubble switches" used in the standard Commodore and Atari joysticks. A positive "click" can be felt and heard as each switch is activated, assuring the Space Cadet that a positive electrical connection has been made. Two fire buttons have been provided, on the assumption that some people are left-handed: both are connected to the same micro switch.

In play

The Sure Shot is pleasant and reliable to use. The casing is compact and easy to hold, the fire buttons are well located and the spring loaded shaft allows positive

control. At \$29.95, it is certainly not the cheapest games controller on the market, but the Sure Shot should outlive three or four cheaper joysticks. It's a bargain.

continued from page 16

Dear Sir(s),

I was very interested in your articles on the Vic 20. I have personally owned one of these fantastic bits of plastic for about four months now and I can't believe the value for money that it offers.

One option I have indulged in is a Super Expander cartridge. Why Commodore never built this in I don't know. It really adds another dimension to the Vic 20.

Those of you out there who have a Super Expander and use it regularly will probably find it a pain to 'crunch' BASIC programs that have Super Expander commands as there is no abbreviated form, right? **WRONG!**

While playing around the other day I came across the following shortened versions of the Super Extender Commands. These are not mentioned in the book and they may be useful to anybody else who has a Super Expander.

Commands	Abbreviation
KEY	K shift E
GRAPHIC	G shift R
COLOR	CO shift L
POINT	PO shift I
REGION	RE shift G
DRAW	D shift R
CIRCLE	C shift I
PAINT	P shift A
CHAR	CH shift A
SCNCLR	S shift C
SOUND	S shift O
RGR	R shift G
RCOLOR	R shift C
RDOT	R shift D
RSND	R shift S
RPOT	R shift P
RPEN	RP shift E
RJOY	R shift J

Thanks for a great magazine and more power to Sean McSullea!!

D J Shrapel

Machine Language Tutorial Review

by Jhary-a-Conel

BASIC has become the universal computer language for home and personal computers. To the programmer it soon becomes apparent that BASIC has a very large drawback, speed. This is where machine language can help. By removing the immediate interpretation of step BASIC, the computer can run hundreds and in some cases thousands of times faster. "How is this possible?" one may ask.

Machine language (code) is the language that the central microprocessors of all computers run on. All its instructions are in machine code. Thus machine code is the native and in fact, the only language that the CPU understands. In that case why is it possible to run BASIC programs on the computer? It is because the Operating System actually interprets any BASIC program it is running and performs sections of a large machine code program accordingly. This program is permanently built into the computer's memory and is called the BASIC interpreter. So, because machine code is already in the computer's native form and does not have to be interpreted like BASIC, or any other high level language, it is performed much faster than BASIC.

When I first started using computers I received a great deal of advice suggesting that the first language I should learn is BASIC. So I did, to a certain extent. Once I knew all the BASIC commands and how to use them, (by thoroughly reading the relevant section in the Programmers' Reference Guide) it became apparent that BASIC was not a language that suited me.

BASIC is a relatively easy language to program in. Many BASIC commands do a great deal inside the computer, an example of this is the random (RND) command. If the programmer makes a mistake in BASIC the computer will stop the program and inform the

programmer what type of error has been made and where it is. A BASIC program is also assembled in memory by the computer and the Screen Editor keeps the program nice and tidy at the users' end.

Some readers may be wondering what the point is of learning machine language at all, if BASIC is so good. Well, it is not all good. As already said, BASIC is very slow and also has some limitations in accessing memory. Some people will no doubt hotly deny this statement.

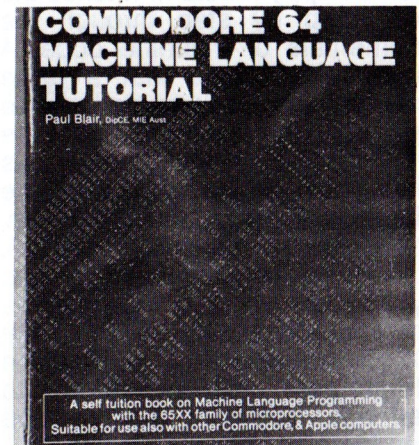
Just about the only BASIC commands to directly access memory are PEEK and POKE. Machine code directly revolves around the use of memory, so just about every machine code command directly affects memory in some way.

BASIC also affects memory but in a roundabout way. The user does not have a great deal of control over the actual values in the bytes of the computer's memory.

While programming in machine language the program is written directly into memory in the computer's own language. You become the definer of program logic and if that logic is not correct then you may confuse the computer so much that you lose control of it. You have greater control over the program and therefore the computer. Logic skills become strengthened because machine code is not very tolerant of mistakes. Judicious use of machine language permits larger and more complex programs to reside in the limited memory space of a microcomputer.

Finally, I think machine language is just about the only satisfactory language for generally repetitive tasks such as sorting, searching and some graphics. These are the reasons why I learned machine language and use it before BASIC. Learning machine code can be very rewarding and I recommend it.

Now on with the review. For all those newly converted machine code programmers, a number of books and tutorials are available.



Many of these assume the reader already knows the fundamentals of machine code. This will just not do. What about true beginners? Do not worry. A new book designed specifically for true beginners has hit the market. Published by KIM books it is called "Commodore 64 Machine Language Tutorial" and is written by an Australian, Paul Blair. The book describes itself as "A self tuition book on machine language programming with the 65xx family of microprocessors."

The book is actually a ring binder folder with loose leaf paper and comes with a cassette. As said, the book is intended for use as a general tutor for all of the 65xx.

This includes the Commodore 64 which uses the 6510 microprocessor. In the tutorial are several sample program listings. These are written for the 64. So the book was written with the 64 in mind. These sample programs are various utilities and a graphics program. To save you typing them in they are supplied on the accompanying cassette.

Some tutorials try to pack all sorts of information into a relatively small space, so defeating their purpose by confusing the reader with new information that has not been explained. On the other hand, some tutorials give the reader only the very basics of a subject at great length. This leaves the reader wanting more.

For the novice machine code programmer, I think this book has

struck a happy medium. It takes the reader step by step through the fundamentals of machine code. A feature I liked was that a large section of the book is devoted to preparing the reader for the environment of machine code. This includes reasons for using machine code, memory organisation, hexadecimal notation, flags and why they are used, a bit about the 65xx microprocessor, a list of the 6502 instructions, what a machine code program looks like and how to enter one. Monitors, editors and assemblers are also mentioned.

Short informative chapters are used throughout the book to gradually introduce all the machine code commands and their uses. Each facet of machine code is dealt with separately and where possible the commands are related to their BASIC equivalent. This helps beginners structure a program in machine code because they can relate it to the structure of BASIC programs.

The book gradually introduces many sections of machine code. An example of this is the introduction of addressing modes. To the uninitiated these can sometimes be overwhelming. Paul Blair has gradually introduced these as he introduces the various LOAD and STORE commands. Then a summary and a table are given for easy reference.

This tutorial was designed for first time machine code users so it does not give any information on the more complex uses of machine code. It does however, mention them to inform the reader that more complex tasks can be performed. For this reason it needs a follow up, which I am told is already being written. In my opinion this is an excellent tutorial and I thoroughly recommend it for first time machine code users.

The Machine Language Tutorial Review is published by KIM books, distributed by Holt Saunders, and sells for \$34.95 book and disk, and \$32.50 book and cassette.

All about getting input

by Ian Lucas

One of the most common problems beginner programmers encounter is how to get input from the user. In most instances the INPUT statement alone will not suffice, as it is clumsy and prone to produce errors. So we must collect characters one at a time using the GET statement.

```
10 GET A$: IF A$="" THEN 10
```

Simple, but still a little crude. The input must have a line number of its own, which seems a shameful waste of space. Here is an example:

```
10 IF F=1 THEN GET A$: IF A$="" THEN 10
```

The problem is fairly obvious. Conditional input is no longer possible. In fact, the above example would not even work. One solution would be to have an input routine as a separate routine.

```
10 IF I=10 GOSUB 1000: PRINT "Rest of line.."
```

Still messy. There is another way using location 198. This location tells us the number of characters in the keyboard buffer. We can set it to zero, wait for it to equal one and

then get a character.

```
10 POKE 198,0: WAIT 198,1: GET R$
```

That will work well if we wish to wait for a keypress and then place it in a variable. But what if we don't want to wait? In a game the program should not come to a grinding halt every time it needs a keypress. For this we will need to use location 197. Peeking this location returns a value of 0 to 64 depending on the key pressed. For example the space bar produces the value 60.

```
10 IF PEEK (197)=60 THEN ...
```

Using the table on this page it is possible to test for almost any key press except for the Commodore, shift and control keys. For these we must look at location 653. Use:

```
10 IF PEEK (653) AND n = n THEN...
```

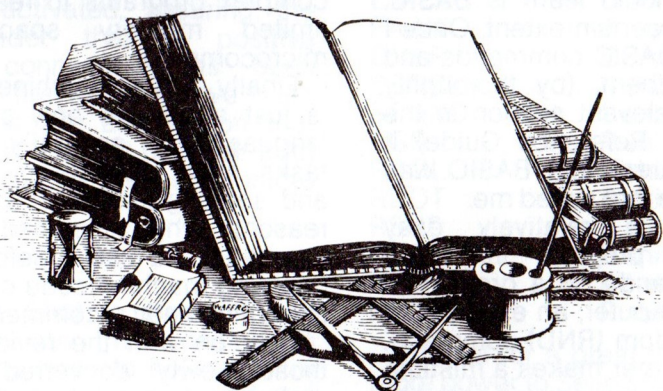
Where:

Shift — n=1

Commodore — n=2

Control — n=4

There is one more. Restore. I am afraid you cannot really test for it being pressed from Basic because it is connected to an interrupt line. Next month a look at writing your own custom input routine.



Progmerge

by R.K. Sparks

Here is a very useful program for the serious Commodore 64 programmer. Have you ever wanted to write a new program which incorporates that "beaut" routine from "such and such" program, but don't want to type it all in again? PROGMERGE will surely be to your liking and will prove a welcome addition to your Toolkit.

The program is written entirely in BASIC so while not fast, it is easy to follow and could form the basis of many other utility programs of your own design. The program reads two BASIC source programs from disk and merges them to produce a new composite source program on disk. Where duplicate sequence numbers occur, the source line from the merge file (B) replaces the corresponding main file line (A).

All file names are input from the screen and the output file may be optionally scratched if it already exists. During merge process, the output sequence numbers (and the file from which they come) are displayed on the screen.

Program structure

SEQ 1-95 General housekeeping, opening files etc.

SEQ 100-900 Mainline logic processing (comparing sequence numbers etc).

SEQ 1500-1560 Scratch output file (if required).

SEQ 2000-2400 Read next program source line from main input file.

SEQ 3000-3400 Read next program source line from merge file.

SEQ 4000-4100 Write output source line from main input file (A).

SEQ 5000-5100 Write output source line from merge file (B).

SEQ 9000-9010 Standard SAVE and VERIFY coding used during development and modification.

```

1 REM ..... R.K.SPARKS
2 REM ..... PERTH W.A.
3 REM
4 OPEN 15,8,15,"I"
5 POKE 53280,6: POKE 53281,6
10 PRINT "-----"
11 PRINT "                PROGMERGE"
12 PRINT "                BASIC PROGRAM MERGE UTILITY"
15 PRINT "-----"
17 REM
18 REM ***** GET MAIN PROGRAM *****
19 REM
20 INPUT "MAIN PROGRAM NAME(A) ";IP$
25 OPEN 2,8,2,"0:" +IP$+",P,R": INPUT#15,ER,EM$,T,S
30 IF ER=62 THEN PRINT "    NOT FOUND":PRINT#15,"I": CLOSE2: GOTO 20
31 PRINT "
34 REM
35 REM ***** GET MERGE PROGRAM *****
36 REM
40 INPUT "MERGE PROGRAM NAME(B) ";MP$
45 OPEN 3,8,3,"0:" +MP$+",P,R": INPUT#15,ER,EM$,T,S
50 IF ER=62 THEN PRINT "    NOT FOUND":PRINT#15,"I":CLOSE3: GOTO 40
51 PRINT "
54 REM
55 REM ***** GET OUTPUT PROGRAM *****
60 INPUT "OUTPUT PROGRAM NAME ";OP$
65 OPEN 4,8,4,"0:" +OP$+",P,W": INPUT#15,ER,EM$,T,S:IF ER=63 THEN GOTO 80
75 GOTO 90
80 INPUT "PROGRAM EXISTS - SCRATCH(Y/N)";YN$:IF YN$="Y" THEN GOSUB 1500: GOTO 65
85 CLOSE 4: PRINT#15,"I": PRINT "III": GOTO 60
90 PRINT "                ": LCT=0
95 S1=1: S2=8
100 REM *****
105 GET#2,N1$,N2$: REM REMOVE 2 BYTES(START OF MAIN FILE - BLOCK 1)
110 GET#3,N1$,N2$: REM REMOVE 2 BYTES(START OF MERGE FILE - BLOCK 1)
120 PRINT#4,CHR$(S1);CHR$(S2): REM WRITE 2 BYTES(START OF OUTPUT FILE)
129 REM
130 REM **** READ MAIN RECORD ****
131 REM
140 GOSUB 2000
149 REM
150 REM **** READ MERGE RECORD ****
151 REM
160 GOSUB 3000
170 IF SA<SB THEN GOSUB 4000: GOSUB 2000: GOTO 170
180 IF SA>SB THEN GOSUB 5000: GOSUB 3000: GOTO 170
190 IF SA=99999 THEN PRINT "***** MERGE FINISHED *****": GOTO 300
200 GOSUB 5000
210 GOTO 140
800 PRINT#4,CHR$(1);CHR$(0);CHR$(1);CHR$(1);CHR$(1)
900 CLOSE 2: CLOSE 3: CLOSE 4: CLOSE 15: END
997 REM *****
998 REM      SUB-ROUTINES
999 REM *****
1500 REM
1501 REM      SCRATCH OUTPUT FILE
1502 REM
1510 CLOSE4: PRINT#15,"I": PRINT#15,"S0:" +OP$
1520 CLOSE2: OPEN 2,8,2,"0:" +IP$+",P,R"
1530 CLOSE3: OPEN 3,8,3,"0:" +MP$+",P,R"
1540 PRINT "I"
1560 RETURN
2000 REM
2001 REM **** READ NEW MAIN RECORD ****
2002 REM
2160 GET#2,N1$,N2$: REM GET 2 BYTES EACH RECORD & CHECK FOR END OF INPUT
2170 IF N1$="" AND N2$="" THEN SA=99999: GOTO 2400
2200 GET#2,C1$,C2$: IF C1$="" AND C2$="" THEN SA = ASC(C1$)+ASC(C2$)*256
2204 IF C1$="" THEN C1#=CHR$(0): SA = ASC(C2$)*256: GOTO 2206
2205 IF C2$="" THEN C2#=CHR$(0): SA = ASC(C1$)
2206 A#=C1#+C2$
2210 FOR I=0 TO 256
2220 GET#2,CH$: IF CH$="" THEN CH#=CHR$(0)
2225 IF ST < 0 THEN PRINT "MAIN FILE STATUS=";ST: GOTO 2400
2300 A#=A#+CH$
2310 IF CH#=CHR$(0) AND A#="" THEN GOTO 2400
2350 NEXT I
2400 RETURN
3000 REM
3001 REM **** READ NEW MERGE RECORD ****
3002 REM
3160 GET#3,N1$,N2$: REM GET 2 BYTES EACH RECORD & CHECK FOR END OF INPUT
3170 IF N1$="" AND N2$="" THEN SB=99999: GOTO 3400
3200 GET#3,C1$,C2$: IF C1$="" AND C2$="" THEN SB = ASC(C1$)+ASC(C2$)*256
3204 IF C1$="" THEN C1#=CHR$(0): SB = ASC(C2$)*256: GOTO 3206
3205 IF C2$="" THEN C2#=CHR$(0): SB = ASC(C1$)
3206 B#=C1#+C2$
3210 FOR I=0 TO 256
3220 GET#3,CH$: IF CH$="" THEN CH#=CHR$(0)
3225 IF ST < 0 THEN PRINT "MERGE FILE STATUS=";ST: GOTO 3400
3300 B#=B#+CH$
3310 IF CH#=CHR$(0) AND B#="" THEN GOTO 3400
3350 NEXT I
3400 RETURN
4000 REM
4001 REM **** WRITE MAIN RECORD ****
4002 REM
4010 S1=S1+LEN(A#)
4020 IF S1>255 THEN S2=S2+1: S1=S1-256
4030 PRINT#4,CHR$(S1);CHR$(S2);A#
4040 PRINT "A";SA
4100 RETURN
5000 REM
5001 REM **** WRITE MERGE RECORD ****
5002 REM
5010 S1=S1+LEN(B#)
5020 IF S1>255 THEN S2=S2+1: S1=S1-256
5030 PRINT#4,CHR$(S1);CHR$(S2);B#
5040 IF SA<SB THEN PRINT "B";SB: RETURN
5050 PRINT "B";SB;TAB(14):"FILE(A) RECORD DROPPED"
5100 RETURN
9000 OPEN 15,8,15,"S0:PROGMERGE": CLOSE 15
9010 SAVE"0:PROGMERGE";8:VERIFY"PROGMERGE";8:END

```

Renumber Program

by Geoff Rayner

This is a very simple utility to renumber a program. As space is the main necessity for us Vic owners it does not include changing any GOSUB, GOTO or THEN statements, but after reading this article you will no doubt be capable of writing that yourself. To overcome this problem we will have to put remark statements at every GOSUB, GOTO or THEN statement.

This is shown here:

```
10 GOSUB 500: REM GOSUB 1
20 GOTO 600: REM GOTO 2
500 X=0 :REM 1 :RETURN
600 PRINT " VIC ": REM 2
```

Some points about the program. If you have an unexpanded Vic SB (Start Byte) = 4096 and if expanded with superexpander SB = 1024. LN is the line number we wish to start at. Now a bit about how the Vic accepts a line of Basic. When you type a line of Basic the Vic converts all commands and key words into tokens, ie Print is 153.

Also the first two bytes tell the computer what the next line will be. The next two bytes are the line numbers, in binary so that the line

```
10 Print A : GOTO 10
```

will be stored as

1	10	0	153	65	58	137	49	48	0
---	----	---	-----	----	----	-----	----	----	---

The 0 at the end denotes the end of Basic line. Two 0s together indicate the end of a program. Now about renumbering the GOTO, GOSUB, THEN. The tokens from these are 137, 141, 167 respectively. So to check for these we must search the program for these tokens and then the line number referred to would need to be stored along with the byte that it starts at.

We can check through the program again, checking for these line numbers and changing both line numbers as we renumber the program. The difficulty of this is that

the line numbers are in binary, but when addressed after a GOSUB, GOTO or THEN the line number is in ASCII.

Now the program.

```
10000 END
10010 SB=4096 :LN=10
10020 IF PEEK (SB + 3)= 10 AND
PEEK( SB + 4)= 39 THEN END
10030 HI= INT( LN / 256) : LO= LN
- 256 * HI
10040 POKE SB+3,LO : POKE
SB+4, HI : SB = SB + 5
10050 IF PEEK( SB) <> 0 THEN SB=
SB+ 1 : GOTO 10050
10060 LN = LN + 10 : SB = SB + 5:
GOTO 10020
```

VARIABLES:

SB = Start byte

LN = Line number start

LO = Low byte for line number

HI = High byte for line number

To obtain full use of this program and other sub-routines we can save them on a tape and reload them when writing a large program. This can be done before we write the new program so we do not have to

retype the renumber program every time we need it. There is another method we can use so we can merge programs in the computer. More about this method in another article.

Progrenumber

by R.K. Sparks

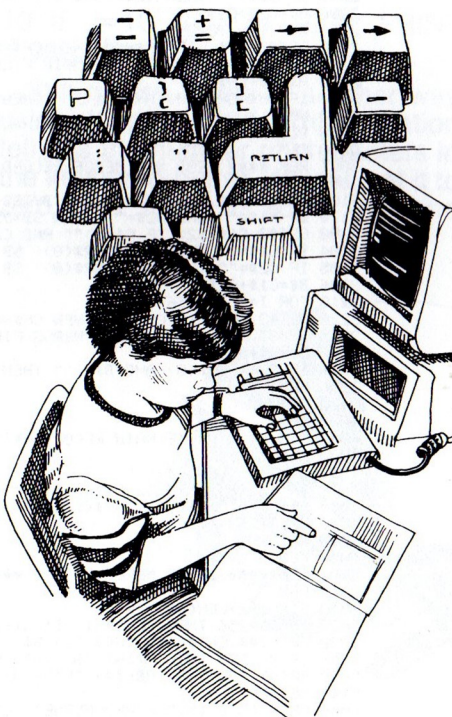
This is the second utility program for the Commodore 64 Toolkit. The program reads a Basic source file and resequences it with corresponding conversion of all "GOTO", "GOSUB", & "THEN" sequence numbers. The program is written entirely in Basic and hence is not particularly fast, but is easy to follow and amend.

The program requests the file names of the input and output source files from the screen and optionally scratches the output file if it already exists. The program operates in two passes of the input source file:

PASS 1: Reads the source program file and builds up a table of up to 1000 source numbers (OLD, NEW). The old sequence numbers are displayed on the screen so that the user does not fall asleep during large programs.

PASS 2: The source program file is read and scanned for imbedded "GOTO", "GOSUB" & "THEN" verbs. Resequencing is applied where required and the output source program written. Again the output sequence numbers are displayed (even more slowly than on Pass 1).

The user specifies the range of old sequence numbers to be renumbered, the new starting sequence number and the increment to be used. The user may also retain sequence breaks for sequence numbers ending in "000". In this way, sections of the code may be resequenced in isolation and logical breaks maintained.



PROGRAMMING

PROGRAM STRUCTURE

SEQ 1-95 General housekeeping, opening files etc.
SEQ 100-900 Mainline logic Processing (Pass 1 & Pass 2).
SEQ 1500-1560 Scratch output file (if required).
SEQ 2000-2400 PASS 1: Read and Process input Program file and store sequence numbers in table (T). The table currently allows for 1000 sequence numbers. If this is insufficient, line 95 should have the "DIM" statement changed accordingly.
SEQ 3000-3600 PASS 2: Reads next Program source line and checks for "GOTO", "GOSUB" & "THEN".
SEQ 4000-4100 Writes output source line.
SEQ 8000-8400 Performs sequence number replacement.
SEQ 9000-9010 Standard SAVE and VERIFY coding used during development and modification.

READY.

```
1 REM ..... R.K.SPARKS
2 REM ..... PERTH W.A.
3 REM
4 OPEN 15,8,15,"I"
5 POKE 53280,6: POKE 53281,6
10 PRINT "-----"
11 PRINT "          PROGRAMNUMBER"
12 PRINT "          BASIC PROGRAM RENUMBER UTILITY"
13 PRINT "-----"
14 REM
15 REM
16 REM ***** GET INPUT PROGRAM *****
17 REM
18 REM ***** INPUT PROGRAM NAME "IP$
19 REM
20 INPUT "*****INPUT PROGRAM NAME "IP$
21 OPEN 2,8,2,"0":"+IP$+",P,R": INPUT#15,ER,EM$,T,S
22 IF ER=62 THEN PRINT "          NOT FOUND": PRINT#15,"I": CLOSE2: GOTO 20
23 PRINT
24 REM
25 REM ***** GET OUTPUT PROGRAM *****
26 INPUT "OUTPUT PROGRAM NAME": OP$
27 OPEN 4,8,4,"0":"+OP$+",P,W": INPUT#15,ER,EM$,T,S: IF ER=0 THEN GOTO 70
28 INPUT "PROGRAM EXISTS - SCRATCH(V/N)": VNS: IF VNS="Y" THEN GOSUB 1500: GOTO 45
29 CLOSE 4: PRINT#15,"I": PRINT "IT": GOTO 40
30 INPUT "RETAIN '000' SEQ NUMBERS(V/N)": S$
31 IF S=C"Y" AND S=C"N" THEN 70
32 INPUT "RESEQUENCE FROM:": SL
33 INPUT "          TO:": SH
34 INPUT "OUTPUT SEQUENCE:": SN
35 INPUT "          INCREMENT:": IN
36 PRINT
37 SI=1: S2=8: DIM T(1000,1): SO=0: S=0
38 REM *****
39 GET#2,NS,N$: REM REMOVE 2 BYTES(START OF INPUT FILE - BLOCK 1)
40 PRINT#4,CHR$(S1);CHR$(S2): REM WRITE 2 BYTES(START OF OUTPUT FILE)
41 REM
42 REM *** READ INPUT FILE - PASS 1 ***
43 REM
44 GOSUB 2000: MX=SO: SO=0: PRINT " "
45 REM
46 REM *** READ INPUT FILE - PASS 2 ***
47 REM
48 CLOSE 2: OPEN 2,8,2,"0":"+IP$+",P,R"
49 GET#2,N$,N$: REM REMOVE 2 BYTES(START OF INPUT FILE - BLOCK 1)
50 REM
51 T(MX,0)=99999: T(MX,1)=99999: S=0
52 GOSUB 3000
53 IF SA=99999 THEN GOTO 800
54 GOSUB 4000
55 GOTO 180
56 PRINT#4,CHR$(0);CHR$(0);CHR$(1);CHR$(1);CHR$(1);CHR$(1)
57 CLOSE 2: CLOSE 4: CLOSE 15: END
58 REM *****
59 REM          SUB-ROUTINES
60 REM *****
```

```
1500 REM          SCRATCH OUTPUT FILE
1501 REM
1502 REM
1503 CLOSE 4: PRINT#15,"I": PRINT#15,"S0:"+OP$
1504 CLOSE 2: OPEN 2,8,2,"0":"+IP$+",P,R"
1505 PRINT "I"
1506 RETURN
2000 REM
2001 REM *** READ INPUT RECORD - PASS 1
2002 REM
2003 GET#2,N1$,N2$: REM GET 2 BYTES EACH RECORD & CHECK FOR END OF INPUT
2004 IF N1$="" AND N2$="" THEN GOTO 2400
2005 GET#2,C1$,C2$: IF C1$="" AND C2$="" THEN SA = ASC(C1$)+ASC(C2$)*256
2006 IF C1$="" THEN SA = ASC(C2$)*256: GOTO 2210
2007 IF C2$="" THEN SA = ASC(C1$)
2008 FOR I=0 TO 256
2009 GET#2,CH$: IF ST=64 THEN 2400
2010 IF ST=19 THEN PRINT "INPUT FILE STATUS=":ST: GOTO 2400
2011 IF CH$="" THEN GOTO 2220
2012 T(SO,0)=SA
2013 IF S="Y" AND RIGHT$(STR$(SA),3)="000" THEN T(SO,1)=SA: SN=SA+IN: GOTO 2340
2014 IF SA<L OR SA>H THEN T(SO,1)=SA: GOTO 2340
2015 T(SO,1)=SN: SN=SN+IN
2016 S=S+1: PRINT "PASS 1":SA: TAB(15):S: SO=SO+1: GOTO 2000
2017 NEXT I
2018 PRINT: RETURN
3000 REM
3001 REM *** READ INPUT RECORD - PASS 2
3002 REM
3003 GET#2,N1$,N2$: REM GET 2 BYTES EACH RECORD & CHECK FOR END OF INPUT
3004 IF N1$="" AND N2$="" THEN SA=99999: GOTO 3600
3005 GET#2,C1$,C2$: IF C1$="" AND C2$="" THEN SA = ASC(C1$)+ASC(C2$)*256
3006 IF C1$="" THEN C1$=CHR$(0): SA = ASC(C2$)*256: GOTO 3206
3007 IF C2$="" THEN C2$=CHR$(0): SA = ASC(C1$)
3008 SB=T(SO,1): IF SB = 99999 THEN SA=SB: RETURN
3009 C2=INT(SB/256): C2$=CHR$(C2): C1=SB-INT(C2*256): C1$=CHR$(C1)
3010 A$=C1+C2$
3011 FOR I=0 TO 256
3012 GET#2,CH$: IF CH$="" THEN CH$=CHR$(0)
3013 IF ST > 19 THEN PRINT "INPUT FILE STATUS=":ST: GOTO 3600
3014 IF CH$=CHR$(137) OR CH$=CHR$(141) OR CH$=CHR$(167) THEN GOSUB 8000
3015 A$=A$+CH$
3016 NEXT I
3017 SO=SO+1: IF SA<99999 THEN SA=SB
3018 RETURN
4000 REM
4001 REM ***** WRITE MAIN RECORD *****
4002 REM
4003 S1=S1+2+LEN(A$)
4004 IF S1>255 THEN S2=S2+1: S1=S1-256
4005 PRINT#4,CHR$(S1);CHR$(S2);A$
4006 S=S+1: PRINT "PASS 2":SA: TAB(15):S
4007 RETURN
8000 REM
8001 REM REPLACE GOTO, GOSUB & THEN SEQ NUMBERS
8002 REM
8003 TF$="": IF CH$=CHR$(167) THEN TF$="Y"
8004 NS=0
8005 A$=A$+CH$
8006 GET#2,CH$: IF CH$="" THEN CH$=CHR$(0)
8007 IF NS<0 THEN GOTO 8100
8008 IF CH$="" THEN GOTO 8040
8009 IF CH$="" THEN RETURN
8010 IF CH$=CHR$(0) THEN RETURN
8011 IF CH$=CHR$(48) OR CH$=CHR$(57) THEN GOTO 8120
8012 NS=(NS*10)+ASC(CH$)-48: GOTO 8050
8013 IF NS<0 THEN 8130
8014 IF CH$=CHR$(137) OR CH$=CHR$(141) THEN GOTO 8000
8015 RETURN
8130 FOR L=0 TO MX
8140 IF NS>T(L,0) THEN NEXT L
8150 IF NS=T(L,0) THEN GOTO 8200
8160 REM OLD SEQ NOT IN TABLE
8200 NS=T(L,1)
8210 A$=A$+STR$(NS)
8220 IF CH$="" OR CH$=CHR$(0) OR TF$="Y" THEN RETURN
8230 GOTO 8030: REM RETURN FOR NEXT CHARRUN
9000 CLOSE 15: OPEN 15,8,15,"S0:PROGRAMNUMBER": PRINT#15,"I": CLOSE 15
9010 SAVE "PROGRAMNUMBER",8: VERIFY "PROGRAMNUMBER",8: END
```

View from the Hold

Where have all the programs gone, long time passing? Being a rat and of a cunning and mendacious nature, I follow the adventures of the underworld with fervid interest.

I am not one to blow the whistle, but there are now clear signs that the piracy of programs has got to such a state that the sale of new programs throughout Australia is definitely being affected.

This would not be a great problem, were it not for the fact that if computers are to improve there have to be programs to go with them.

If the situation continues we are going to see a lot of software suppliers go down the gurgle.

Is there any solution to this problem?

Probably.

Rat friends of mine who are involved in program writing say that the search is on for a bigger and better dongle which will defy the efforts of the smartest pirate.

Which is one way of tackling it, although informed money is on the fact that there is no device that can be invented by man which cannot be broken by some rat, somewhere. We shall see.

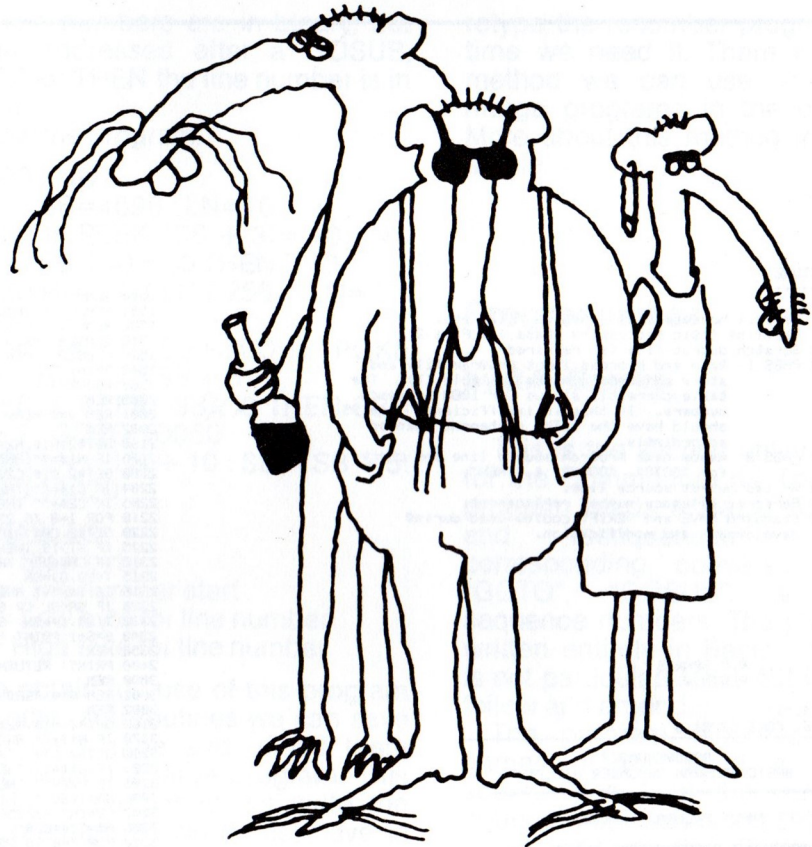
Another way is the reduction of software prices, which will make it less worthwhile to copy a program.

Finally, there is the probability that in future programs will need reference to extensive documentation, so that copying the disk will not be enough — you will need to copy all the documentation as well.

We will see in the coming year which of these approaches work.

Commodore competition

This rat followed with great interest the launch of the Cat by Dick Smith Electronics which, according to the advertising, was set fair to destroy Apple sales. It is now past history to note that nothing of the sort happened and this rat is willing to bet his cheese ration there will be no more Cats — nasty, furry



creatures — imported into Australia in the future.

My Rat informant within Dick Smith tells me that the reason for this is not the complicated legal situation regarding Apple's copyright, but rather that the machine simply did not sell in enough quantities to be viable.

Seems the customers were comparing the price of the Cat against the price of a Commodore rather than against the price of the Apple. The result was, of course, no contest and the Cat retires from the scene mortally mauled.

This leaves a gap in the Dick Smith line-up of computers which has to be filled — and filled before the Christmas season.

This rat's information is that although Dick Smith stopped selling Commodores some months ago, they are re-evaluating the situation in light of their feline experience and the machine they may negotiate to sell instead of the Cat will be none other than the Commodore 64.

The wheel turns full circle.

Business Commodores

The frightening news is that the publisher of this magazine has started to inflict his boring and tendentious copy on the inhabitants of New Zealand. His meretricious and misleading ramblings are already published in Japan, Hong Kong and the Philippines. Now it is New Zealand's turn to suffer the slings and arrows of his outrageous puns.

This rat's guess is that his column will be concentrating heavily on the Commodore 64, because in New Zealand the Commodore 64 is widely regarded as a serious business magazine and has been the best selling computer there since its inception. Rumours that Nigel Shepherd is going to arrange to have a sheep engraved on the casing in recognition of this achievement should be treated with the contempt that they deserve.

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