

Vol 5 No 2

The Australian

February

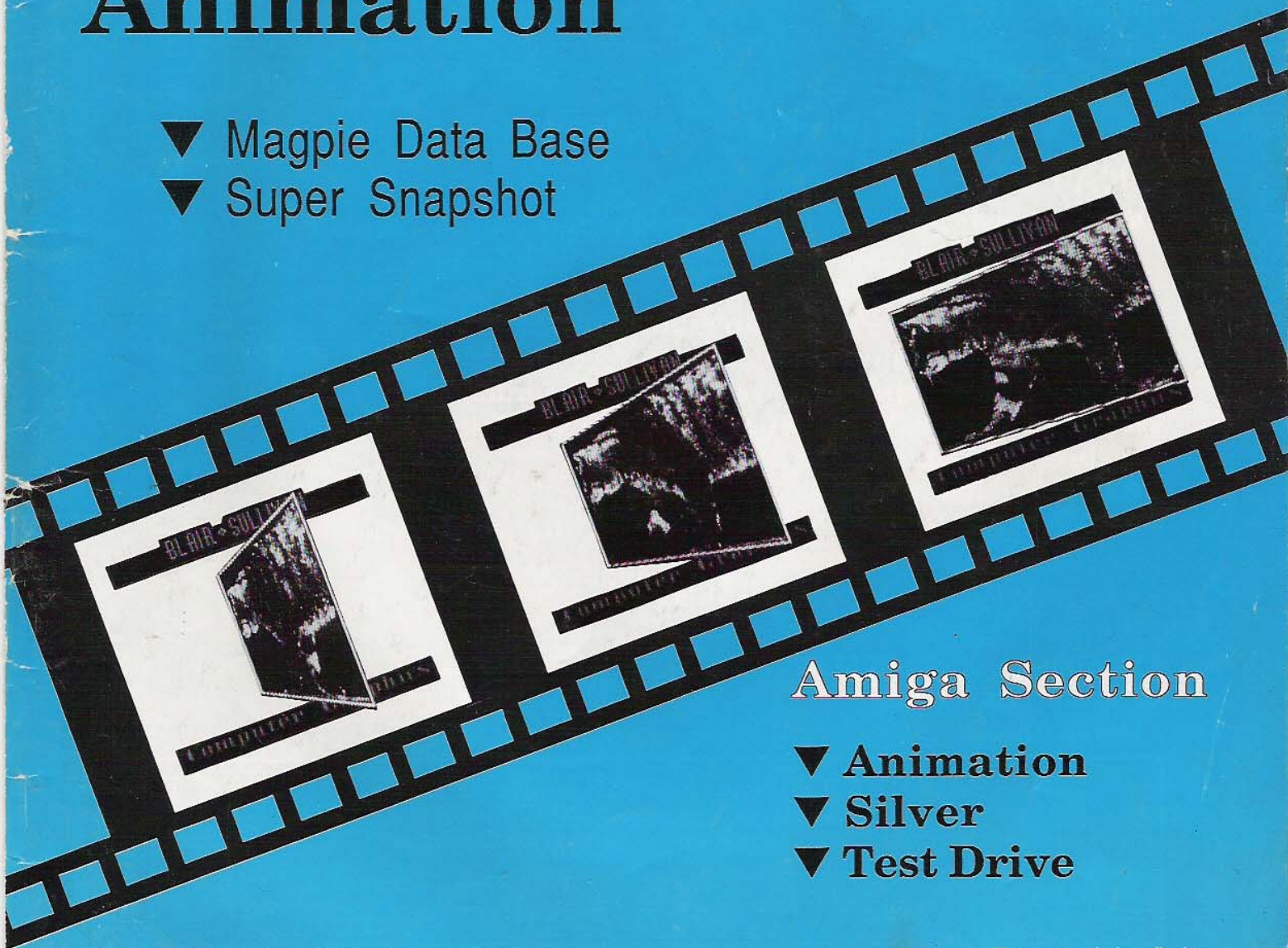
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The Australian Commodore and Amiga Review

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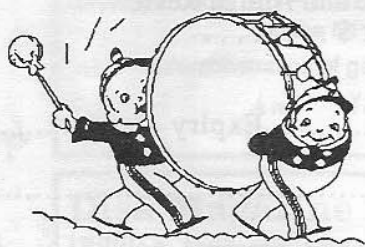
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Australian Commodore Review
21 Darley Randwick, NSW 2031
Phone: (02) 398 5111

Published by: Saturday Magazine Pty Ltd.

Editor: Andrew Farrell

Advertising: Ken Longshaw
(02) 398 5111 or (02) 817 2509

Production: Brenda Powell

Layout: Amanda Selden

Subscriptions & back issues:

Tristan Mason (02) 398 5111

Distribution: NETWORK

Printed by: Ian Liddell Pty Ltd

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Editorial



ALTHOUGH officially with us since the January issue, I would like to welcome to the stage Adam Rigby, our newly installed Assistant Editor. Adam has appeared in these pages many times over recent years. His experience with home computers goes as far back as the Sinclair ZX-80 days.

Whilst originally an adventure freak of the worst kind, his tastes have mel- lowed to include all forms of software, including that written by himself.

Scanning back through editorials of yesteryear, I found Adam described as a refugee from *Wumpas*. Ah, but so few of you have probably ever heard of, let

alone played the game *Wumpas*. A whole generation of computer users growing up without those classic experi- ences with *Adventure*, *Wumpas*, *Lemon- ade Stand* and other exotic favourites.

For those who do reminisce over the good ol' days, inside this issue there's a review of a new game suite containing some of the classic arcade greats.

In itself that would be an event of small to medium proportions. However, take careful note of the author's name. It is that of another new staff writer. She is one of the few women who dared enter the world of computing, which is pre- dominantly filled with male inspired ide-

as. Her writing is a refreshing change from the flippancy normally found in our game review pages.

And what of the rumour that J. Mark Hunter is considering retiring from writ- ing game reviews? Could such a thing ever occur? Could a sudden influx of fan mail encourage him to push on? Only the March issue will tell. ■

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Ram rumblings

New headsets

RECENTLY IMAGINEERING invested in telephone headsets for the staff of its Technical Support Department (who previously had to juggle telephones, computer keyboards, technical manuals, cups of coffee and paper aeroplanes with only two hands).

Following this display of managerial largesse the following memo appeared on the Company's 3Com internal PC network. A witch hunt for the author is still under way!

These marvelous new pieces of technology must be handled with Tender Loving Care lest they break. Following these few simple rules will give you hours of uninterrupted listening pleasure.

“1. Do not attempt to plug your Headset directly into the back of your PC. Although they are RS-232 compatible (especially with judicious use of Superglue and a Big Hammer), they are not designed for a direct interface. One user managed to plug himself in, but accidentally typed "FORMAT Z:" and wound up with a frontal lobotomy. He has since been transferred to the Complaints Department and is leading a rewarding career as a Dial Tone.

2. If your caller is giving out strange gurgling sounds, then put your coffee down immediately. You have probably immersed your microphone extension in your coffee which is being sent via Telecom into your listener's left ear. Apart from being a waste of Bushells Industrial Grade Coffee (Not to be taken Internally), it has become necessary to drain the switchboard twice a day. The down time for this vital piece of equipment is becoming a worry.

3. Do not answer callers with phrases such as "Starfleet Command, Commander Spock speaking . . ." or "MoonBase Alpha . . . Launching all Interceptors." I realise that new technology can be fun, but there are limits.”

Amigas storm the market

THE COMMODORE Amiga range of computers has seized a major share of personal computer sales in the short time it has been on the market, says Commodore's Managing Director for Australia and Asia/Pacific, Mr Tony Serra.

Mr Serra said the Amiga success rate has been especially notable in the Small Business sector.

No less than five models of Commodore computers are listed in the most recent national survey of the Top 10 in Small Business sales.

The Amiga 500 alone has sold more than 15,000 units since its release on July 1.

The Amiga range has sold 40,000 units in the Australia and Asia/Pacific region since the first of the three Amiga models was launched a little more than a year ago.

And latest sales figures show the Amiga 1000's rapidly rising sales reached almost 1000 units in Australia during November - taking it to number two in the Small Business market.

"The Amigas have taken the market by storm," Mr Serra said. "Not only have sales been excellent through the Christmas buying period, very large forward orders show the Amiga record continuing to rise through 1988.

"With more than 700 software titles released commercially world-wide, Amigas have been given a remarkable reception in Australia."

Among major purchasers, BHP has chosen Amigas as the workstation system providing operator control at a new \$110 million heavy plant project in Newcastle.

Recently the CSIRO and development partners commercially released an exciting new Amiga-based image processing system linking space satellites and the powerful Amiga's graphics capabilities. ■

Update

One of the things that has always amazed me is the comparative lack of interest in, what I consider a great invention, the Voicemaster.

This ingenious peripheral allows you to speak to the computer and have it answer you in your own voice, language, etc. This can be saved to disk and sent to another C64 user who does not even need the hardware to play it back.

Imagine the Christmas or Birthday greetings!!!!

It can also be used to give oral commands, thereby partially eliminating use of keyboard. You can also incorporate sound in your own programs and games.

Musically speaking, the Voicemaster is tremendous! - you can whistle or hum a melody and the music will be scrolled up on the screen for you to edit or change keys and you can have it played back using any of the built-in Commodore instruments, and you can dump it to printer giving you professionally written music, or save it to disk.

The Voicemaster comes complete with headphone, microphone, its own software, with full instructions and demonstrations.

It is much more fun than a game and has many useful features as outlined above, although I am sure there are more, as witness a customer of ours who bought one, rang to tell me that he used it to put a voice code protection on all his programs which he said was totally uncrackable.

Actually, in general terms, I feel that most C64 owners miss out on so much of the potential of their computer and rather than spending a lot of money on buying a new machine, they could upgrade and expand their C64 with things like the Final Cartridge, which even gives you 24K more memory; Magic Mouse which gives you the potential of great graphics, and many more excellent programs for all fields of endeavour, business, graphics etc.

S.Y.S.I.H.

P.S. Look out for next month's great news on our new Amiga products.

P.P.S. Don't forget to join our Update Club. ■

LETTERS

TO THE EDITOR

Disk Magazine — and tips for C128 users with ESCOS

I've just received my much awaited Disk No. 8 (how about a more specy name?!). It's absolutely fantastic, even though it didn't have as many demos as No. 7, it made up in other areas.

I sat down at the computer, put on a David Meece tape, forgot about exam revision and absorbed myself with the variety of programs. "Strike me up a gum tree, that's mighty sneaky," said I, as I gazed, agape at the screen of my '128 in '64 mode while Ecos plonked sprites out all sides of the screen. It was my favourite on the disk, but I bet there's a few frustrated '128 users out there - to get Ecos to work in '64 mode correctly punch in this sequence:

```
When the choice (ie 1, 2 or 3)
menu comes up, hit run/stop - re-
store, then type POKE 36976,0
<RETURN> then RUN
<RETURN>
```

This will get it working, but it's a little inconvenient. The problem has to do with that pesky I/O register which "leaks" through into '64 mode at \$D030. It enables 2MHz mode, in a pyrotechnic flourish, if bit 0 is set, but if bit 1 is set an unusual screen blank is invoked. I say "unusual" because the screen seems to "flutter". These are poked by Ecos (with #255) and cause the problem. Do you know any use for this extra screen blanking ability, or what it is actually for?

Oh, by the way, I use our fami-

ly's TV with our '128 but I cannot use 80 columns (there's no RGBI input on it). I was wondering, though (seeing we're going to buy a new TV soon) if there are any monitors which allow RGBI input and also can function as a TV (channel selector and RF input). I've heard you can connect a VCR with the 1901 monitor to enable it to work as a TV, but we don't own a VCR. Can you help?

To top off this prolific letter I would like to know if anyone can tell me where I can get an assembler/disassembler for the Z80 on the the '128. It seems an excellent machine language especially at an hipopotamic 4MhZ! Much obliged if you can help me! (One like Monad or Supermon).

You've got a great magazine going, keep the deadlines short and the subscription list long! Great work.

Michael Bone
Burnside Road,
Strathalbyn, S.A., 5255

Ed — Never seen the assembly you need. Any one else help?

Ideas

Thanks to one and all for your great magazine. As one of the "oldies" (at 38) who are into computers, I find your articles, games reviews etc, invaluable in learning what is around, and how good, (or bad) it is.

With four anklebiters, my wife and I all using our 64 outfit it gets a fair bashing, and ACR gets read from cover to cover several times

over each month. This creates a problem in trying to keep it in good order, and I was wondering if any thought had been given to marketing hard covers to hold a year's supply of copies. This would not only keep them in good order, but make them easier to store.

The other question I want to raise is when people write in requesting reader's help, as with Sonja Taylor in the November issue, would it be possible to include their full address, so that other ACR readers can write directly to them offering any help they have.

Keep up the great work at ACR. Your magazine, beats all others hands down, regardless of their price, and I look forward to what you have in store for us all in the New Year.

John Casey
Torquay, Qld

Ed — Good idea about the holders. We'll have to look into the possibility. As for names and addresses, we've started putting them in from this issue.

C128 users

As a subscriber to your magazine, may I congratulate you for your ability to tread the thin line between each of the contrasting demands your readers must make on you. As a C128 owner I get just enough interesting information to keep me going, and my adventurer wife and daughter enjoy the Realm, etc, as well.

To push that thin line around a little more, I would like to see more dedicated 128 applications, especially utilities, if they are around, since the main source of these other wise seems to be from the U.S., with all the problems that causes.

Keep up the efforts, we don't want to lose our Australian Content in a Commodore-specific magazine.

Ed — Next month we promise a whole regular column dedicated to the C128 - so stay tuned.

Old Timers

Since buying a secondhand Commodore 64, DD & MPS 803 printer last April I have spent prac-

tically all my spare time learning to use it.

My wife says she is a computer widow (although I do send her cards made via *Printshop* now and then).

I subscribe to *ACR* and buy your Disk Magazine and enjoy both and must admit I am gradually learning about the capabilities of the 64, all in all not bad for an over 50's square!!

Do you have any more Old Timers amongst your readers and do they have trouble understanding computer language?

I tend to misunderstand or mis-read instructions and after two or three hours of one finger typing some filing, I hit the wrong key

and all is lost, still it is fun and feels good when I finally get it right.

Merry Christmas and a Happy New Year to you all at *ACR* and all your readers.

Dave Evans
Ballarat, Victoria

Ed — How about it? Let's hear from all the old timers out there. What do you use your machine for? How are you going at learning to program?

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Animation on the C64 using sprites

For speed, ease of use, and flexibility, you can't beat a sprite. These little objects are great for animation, especially using this program by Andrew Farrell.

SPRITES are one of the most powerful features of the Commodore 64 - yet they are another of the many features which are not easily used from BASIC. The Sprite Animator will allow you to animate, with the minimum of fuss, all eight sprites at varying speeds and directions.

The entire process is interrupt driven, which in laymen's language means it is virtually transparent to the normal operation of your Commodore 64. Interrupts control things like flashing the cursor, talking to your disk drive or cassette player and managing the internal timing system.

How does it all work? How do we design a Sprite? How can you ANIMATE it? Good questions. Let's tackle them one at a time.

How a sprite works

Firstly we must understand how a sprite works or why it can do what it does normally.

Inside your Commodore 64 is a powerful hunk of silicon known as the Vic II chip. You've probably already played with it a little by changing the screen colours. (POKE 53280,n : POKE 53281,n)

The Vic II chip also manages the operation of sprites. Up to eight at a time may be displayed under normal conditions. (It is possible to display more - but that's fairly tricky.)

For a sprite to be displayed we must first tell the computer where the picture of that sprite is and what colour we want it displayed in. To do this we must use a POKE command. POKE 'a memory location', 'with a number'.

The memory location is the number or address which corresponds to a certain storage area inside your computer. A 64K

computer has some 65536 locations to chose from! Some of these are already used up by your program area, the ROMS (Read Only Memory) and the Operating Systems scratch pad or work area. The text screen and colour of each character on it also take up space.

Remember each one of these locations is made up of bits. A sprite is turned on using location 53269. Each bit in this location turns on or off a certain sprite. (See Figure 1.1)

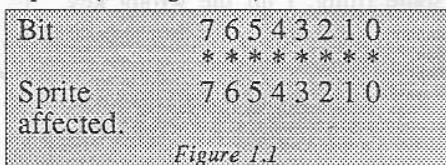


Figure 1.1

To turn sprite zero on we must set bit zero to one. So we POKE 53269, with what's there already but turn bit zero on. The command would read POKE 53269,PEEK (53269)OR21sprite (sprite should be the sprite to turn on from 0 to 7.)

Setting the colour is a little easier. There are eight sprites and there are eight colour registers starting from location 53287 and ending at 53294. Use POKE 53287+sprite, colour. Sprite is from 0 to 7 and the colour from 0 to 15.

Next comes the sprite pointer which tells the computer where your sprite picture or design actually is.

If you have used a Sprite Editor to design your sprite you must first raise the lowest memory location used by BASIC, above your sprite definitions. Now that you have LOADED your designs into memory you must point the Vic II chip to the area of memory they are stored in.

There are eight sprite pointers from locations 2040 to 2047. The number you

place in them is multiplied by 64 to point to your sprite design. Your designs will probably start from location 2048. Since 2048/64 = 32 the first Sprite Pointer should contain 32. You may of course point it somewhere else, as long as the value is somewhere in your sprite designs.

Last of all the sprite must have a position on the screen. The screen is divided up into a grid 320 x 200. Therefore each sprite's X value may be from 0-320 and the Y value from 0-255, to be visible. These registers start at location 53248. (See Figure 1.2)

Setting the corresponding bit on in the MSB register adds 255 to the sprite's X position. Use the command POKE 53264,PEEK(53264)OR21Sprite.

When using the Sprite Animator this is done automatically, but you must set the initial value of each sprite. This works like this: (See Figure 1.3)

So if we wish to position our sprite at the X position 280 we would set that sprite's extra register or MSB (Most Sig-

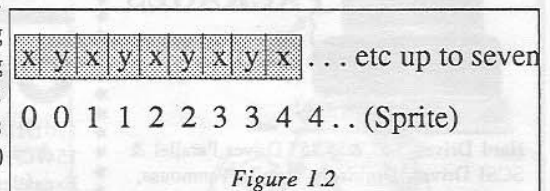


Figure 1.2

nificant Bit) on - and put the value of 280-255 in the normal X register.

```
POKE 53248,25
POKE 53264,PEEK(53265)OR 210
```

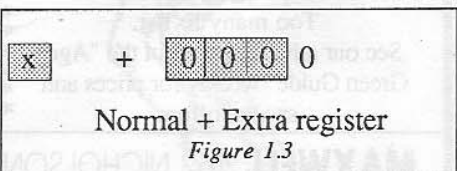


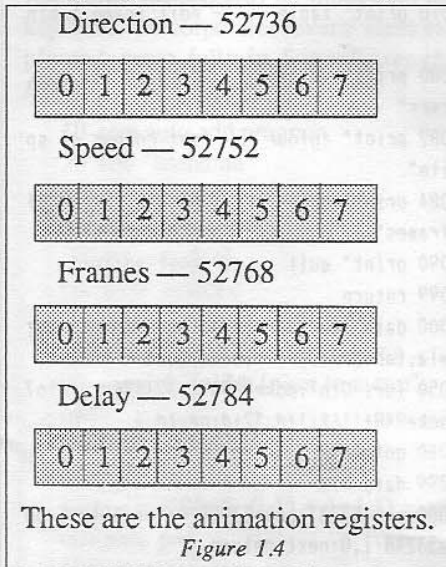
Figure 1.3

Well, that's enough on getting started - for more information read pages 68 to 78 in your User Manual.

How to use the Animator

See Figure 1.4. These are the animation registers.

The first register - speed - is fairly simple to use. Placing a value greater than zero in here will move that sprite at that speed where 1 is the fastest and 255 is very, very slow. In fact you will prob-

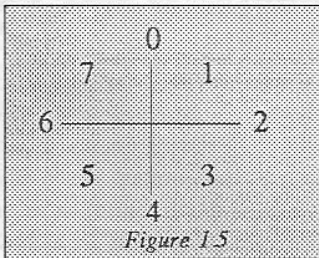


ably find values greater than 20 are not worth playing with. So to set the speed of a sprite:

POKE 52752+sprite,speed.

Next up we have direction. (See Figure 1.5)

The direction of each sprite may be set from 0 to 7 according to the chart shown in Figure 1.5. Increasing the direction by one adds 45 degrees to the sprites present direction. Be warned. Values greater than 7 produce strange re-



sults!

So direction is set by:

POKE 52736+sprite,direction.

Next up we get to the fun bit. Animation! (See Figure 1.6)

POKE frames+sprite,0-15

POKE delay+sprite,0-255

Make sense? It works the same as our speed and direction registers except now we are entering the number of frames in our animation sequence and the delay between each frame.

All we need now is the list of frames

to display. There are a series of 16 byte registers for this starting from location 848. (See Figure 1.7)

These are important registers. You must put the sprite pointers from the normal sprite pointer registers into the first register of each frame table.

Here we go. First of all our speed:

For I=0 to 7:POKE 52752+I,I=1:NEXT

We have just set all our sprites to run at different speeds from 0 to 7. Now the directions. For this example everything will go across the screen (a direction of 2) - for i=0to7 poke 52736+i,2:next. And now the number of frames.

fori=0to7:poke52768+i,8:next .. and the delay for i+0to7:poke52784+i,10:next

Now a little complicated one to set up the frame tables.

fori=0to7:poke2040+i,32:ford=0to7:poke 848+(i*16),32+d:nextd,i

Next the colours.

fori=0to7:poke53287+i,i+1:next

And the actual X,Y positions.

fori=0to7:poke53249+i*2,i*20+60

poke53248+i*2,50:next

Now for the big test.. enable the sprites with:

POKE 53269,255

and set it in action with SYS 52224.

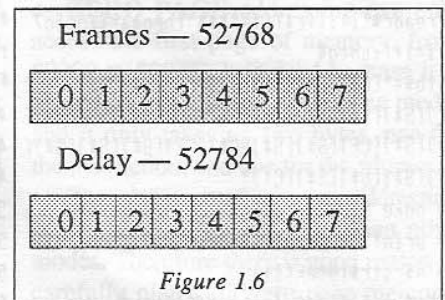
What to do?

When entering program listings, do not type the square brackets and their contents. These refer to special keyboard symbols. For example [CD] means press the Commodore key and D at the same

time to produce a specific character. [SD] would be shift D.

1. Type in the animation routine's basic loader. Double check your data statements for errors. No number should be greater than 255. If you get an OUT Of DATA error, you've either missed a comma, or an entire number, or line.

2. SAVE the loader program. Then RUN it. The animation program is now in RAM at SCC00 to \$CD4F. Use an assembly language monitor to SAVE



this area of memory as "animate.mc".

3. LOAD and RUN the raise basic program. This will move the start of BASIC from \$0800 to \$1000. This leaves space for your sprite definitions. If you plan on using sprites 13, 14 and 15 only there is no need to use this step.

4. You are now ready to use the animation editor, or to write your own program that makes use of the animation routines.

If you have difficulty, the animation editor, and animation program appear on Disk Magazine Number Four as part of the Graphics Workshop. ■

Sprite	Location	Range
0	848	to 863
1	864	to 879
2	880	to 895
3	896	to 911
4	912	to 927
5	928	to 943
6	944	to 959
7	960	to 975

Figure 1.7

Animation Editor

```

0 ifz=0thenz=1:load"animate.mc",8,1      310 poke52736+sp,d:goto1030              3020 print" display - set display co-
1 ife=1thene=0:goto1030                  350 poke19,255:input" # Frames (0-15):";rdinates"
2 sp$="      ":t!$="[CA][S*][S*][S*][CR]  d:ifd<0ord>255thengosub6000:goto350      3030 print" speed - modify speed"
[S*][S*][S*][CR][S*][S*][S*][CR][S*][S*] 360 poke52768+sp,d:goto1030              3040 print" direction - modify direction
[S*][CR][S*][S*][S*][CR][S*][S*][S*][CR] 400 poke19,255:input" Delay (0-255):";d: "
[S*][S*][S*][CR][S*][S*][S*][CR]"        ifd<0ord>255thengosub6000:goto400      3050 print" frames - set number of fr
3 dim c$(20):i=0                          410 poke52784+sp,d:goto1030              ames"
4 readc$(i):ifc$(i)="***"thenm=i:goto7    450 zz=peek(52768+sp):print:fori=0tozz-1  3060 print" delay - set delay"
5 i=i+1:goto4                               :                                           3070 print" table - edit frame table
7 tb$="[CZ][S*][S*][S*][CE][S*][S*][S*]  460 print " Frame"i" -";:inputf:         "
CE][S*][S*][S*][CE][S*][S*][S*][CE][S*]  465 iff<0orf>255thengosub6000:goto460      3080 print" values - display all regi
S*][S*][CE][S*][S*][S*][CE][S*][S*][S*]  470 poke848+(sp*16)+i,f:nexti             sters"
CE][S*][S*][S*][CX]"                    480 goto1030                               3082 print" colour - set colour of sp
10 poke 53280,0:poke53281,0:goto1000      500 print" Direction":pk=52736:gosub20    rite"
20 printt!$:print"[S-]";:fort=pktopk+7    510 print" Speed ":pk=52752:gosub20       3084 print" order - display order of
30 n$=str$(peek(t))                       520 print" # Frames ":pk=52768:gosub20    frames"
40 n$=left$(sp$,4-(len(n$)))+n$          530 print" Delay ":pk=52784:gosub20       3090 print" quit - quit editor"
50 printright$(n$,3)"[S-]";:next:print:p  540 goto1030                               3099 return
rinttb$:return                            600 print" Frames for Sprite "sp:pk=848+  4000 data load,spri,disp,spee,dire,fram,
150 poke19,255:input" Sprite (0-7)";:sp:  (sp*16):gosub20:pk=pk+8:gosub20:        dela,tabl,valu,colo,orde,quit
ifsp>7orsp<0thengosub6000:goto150        610 goto1030                               4050 fori=0to7:poke2040+i,32+i:ford=0to7
160 print:print"[DOWN] Sprite to edit ="  700 goto9500                               :poke848+(16*i)+d,32+d;nextd,i
sp:goto1030                               1000 print"[LBLU][CLR] Sprite Animation  4060 goto1030
200 poke19,255:input"[DOWN] Enter X,Y co  Editor - Version 1.4":sys52224:goto4000  4099 data ***
-ordinate:";x,y:poke19,0                 1010 input"[DOWN] sprite set to load ";n  5000 sys 52237:poke53269,0:fori=0to15:po
210 ifx<0orx>319ory<0ory>255thengosub600  a$                                           ke53248+i,0:next:return
0:goto200                                 1020 e=1:loadna$,8,1                       6000 print:print"[LRED][DOWN] Unacceptab
220 ifx>255thenx=x-255:poke53264,peek(53  1030 print:poke19,255:input"[ORNG][DOWN]  le value.[LBLU]";:return
264)or2↑sp:poke53248+sp*2,x:goto240      (Type 'h' for Help) Command-->[LBLU]";c  9500 gosub5000:print"[CLR][BLK][DOWN][DO
230 poke53249+sp*2,y:poke53248+sp*2,y:po $:poke19,0                                WN]p044,98:p0642,98:p056,128:sys24862:ru
ke53264,peek(53264)and(255-(2↑sp))      1040 ifc$="h"orc$="help"thengosub3000:go  n"
240 poke53269,peek(53269)or2↑sp:print:pr  to1030                                       9510 poke631,13:poke632,13:poke198,2:pri
int                                        1050 c$=left$(c$,4):i=0                    nt"[HOME]";:end
242 poke19,255:input" Colour (0-15)";:c  1060 ifc$=c$(i)thenprint:print:goto1090
poke19,0:ifc<0orc>15thengosub6000:goto24  1070 i=i+1:ifi<=mathen1060
2 1080 print:print"[DOWN] I Don't Understa
244 poke53287+sp,c:goto1030              1090 oni+1goto1010,150,200,250,300,350,4  nd that.[DOWN]";:goto1030
250 poke19,255:input" Speed:";:s:ifs<0ors  00,450,500,242,600,700
>255thengosub6000:goto250                3000 print: print"[DOWN] load - loa
260 poke52752+sp,s:goto1030              d a new sprite set"
300 poke19,255:input" Direction (0-7)";:  3010 print" sprite - set sprite to ed
d:ifd<0ord>7thengosub6000:goto300        it"

```


BASIC Loader for Animation routine

```

100 for a=52224 to 52559:readb:pokea,b:n 1260 data 64, 206, 168, 189, 55, 205, 1
exta 33
1000 data 120, 169, 204, 141, 21, 3, 16 1270 data 254, 189, 63, 205, 133, 253,
9 177
1010 data 26, 141, 20, 3, 88, 96, 120 1280 data 253, 157, 248, 7, 254, 64, 20
1020 data 169, 234, 141, 21, 3, 169, 49 6
1030 data 141, 20, 3, 88, 96, 162, 7 1290 data 189, 64, 206, 221, 32, 206, 1
1040 data 189, 16, 206, 208, 8, 202, 22 76
4 1300 data 1, 96, 169, 0, 157, 64, 206
1050 data 255, 208, 246, 76, 49, 234, 2 1310 data 96, 162, 7, 189, 47, 205, 45
54 1320 data 16, 208, 208, 8, 169, 255, 15
1060 data 96, 206, 189, 96, 206, 221, 1 7
6 1330 data 112, 206, 76, 241, 204, 169,
1070 data 206, 48, 61, 169, 0, 157, 96 91
1080 data 206, 189, 0, 206, 168, 185, 3 1340 data 157, 112, 206, 202, 224, 255,
9 208
1090 data 205, 141, 241, 206, 41, 128, 1350 data 230, 96, 169, 0, 162, 255, 15
208 7
1100 data 59, 173, 241, 206, 41, 64, 20 1360 data 0, 206, 202, 224, 255, 208, 2
8 48
1110 data 60, 173, 241, 206, 41, 32, 20 1370 data 96, 141, 242, 206, 138, 10, 1
8 68
1120 data 61, 173, 241, 206, 41, 16, 20 1380 data 173, 242, 206, 121, 0, 208, 1
8 53
1130 data 69, 173, 60, 3, 201, 1, 240 1390 data 0, 208, 173, 242, 206, 48, 12
1140 data 3, 76, 113, 204, 74, 74, 74 1400 data 144, 9, 173, 16, 208, 93, 47
1150 data 74, 201, 0, 240, 245, 76, 64 1410 data 205, 141, 16, 208, 96, 144, 2
1160 data 204, 254, 80, 206, 189, 48, 2 44
06 1420 data 96, 16, 144, 128, 160, 32, 96
1170 data 221, 80, 206, 208, 3, 32, 176 1430 data 64, 80, 1, 2, 4, 8, 16
1180 data 204, 76, 33, 204, 169, 1, 32 1440 data 32, 64, 128, 3, 3, 3, 3
1190 data 4, 205, 76, 78, 204, 169, 255 1450 data 3, 3, 3, 3, 80, 96, 112
1200 data 32, 4, 205, 76, 78, 204, 138 1460 data 128, 144, 160, 176, 192, 224,
1210 data 10, 168, 185, 1, 208, 24, 105 255
1220 data 1, 153, 1, 208, 76, 92, 204 1470 data 208, 230, 96, 16, 144, 128, 2
1230 data 138, 10, 168, 185, 1, 208, 56 34
1240 data 233, 1, 153, 1, 208, 76, 92
1250 data 204, 169, 0, 157, 80, 206, 18 ready.
9

```

Raise BASIC

```

10 rem basic boot
20 rem raises bottom of basic to
30 rem $1000 (out of the way of
40 rem character sets!)
50 rem
100 rem loads next program
101 poke53272,23
102 m$="*****":rem prog name
103 dv=8: rem device number
105 poke 53280,0:poke53281,0
110 print"[CLR]Please Wait"
120 print"[DOWN][DOWN][DOWN] poke44,16:p
oke642,16:poke16*256,0:new"
130 print"[DOWN][DOWN] load"+chr$(34)+m$
+chr$(34)+",dv
135 print"[DOWN][DOWN][DOWN][DOWN][DOWN]
run"
137 poke198,5
140 poke 631,13:poke632,13:poke633,13:po
ke634,13:poke635,13:print"[HOME][DOWN]":
end
ready.

```

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Andrew Farrell's Sprite Quick Reference Sheet

0340 — 037E
0380 — 03BE
03C0 — 03FE

832 — 894
896 — 958
960 — 1022

Sprite 13
Sprite 14
Sprite 15

(Cassette buffer, useful for small numbers of sprites.)

07F8 — 07FF

2040 — 2047

Sprite Pointers

(Points to 64 bytes of each sprite definition.
24 bits x 21 bits = 504 bits per sprite)

sprite

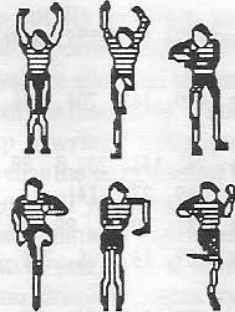
1
2
3
4
5
6
7
8

x pos.

d000/53248
d002/53250
d004/53252
d006/53254
d008/53256
d00a/53258
d00c/53260
d00e/53262

y pos.

d001/53249
d003/53251
d005/53253
d007/53255
d009/53257
d00b/53259
d00d/53261
d00f/53263



d010/53264 MSB (Most Significant Bit of X register. Allows sprites to travel past X-255. Each bit corresponds to the same sprite number.)

d015/53269 Enable Sprite. One bit for each sprite. 1 = displayed.

d019/53273

Bit 1 - Sprite to Background Collision IRQ

Bit 2 - Sprite to Sprite Collision IRQ

(IRQ means interrupt request - only used in advanced programming)

D01B/53275

Background sprite priority

(One BIT per sprite. Allows sprites to pass in front of or behind background information, such as text or bit-mapped graphics.)

D01C/53276

Multi-Colour Sprite select

(One bit per sprite. 1 = Multi-Colour on. Each pair of BITS in the sprite definition decide which colour. Effectively halves sprite X resolution.)

D01D/53277

Expand sprite in X direction

(Doubles size toward the right of screen.)

D017/53271

Expand sprite in Y direction

(Doubles size toward the bottom of screen.)

D01E/53278

Sprite to Sprite collision detect. 1 = collision.

D01F/53279

Sprite to Background collision detect. 1 = collision.

D025/53285

Sprite Multi-Colour. Register 0 (Value 0-15)

D026/53286

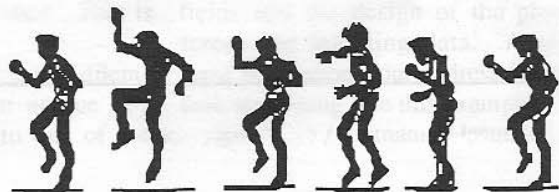
Sprite Multi-Colour. Register 1 (Value 0-15)

Sprite

0
1
2
3
4
5
6
7

Colour Register

d027/53287
d028/53288
d029/53289
d02A/53290
d02b/53291
d02c/53292
d02d/53293
d02e/53294



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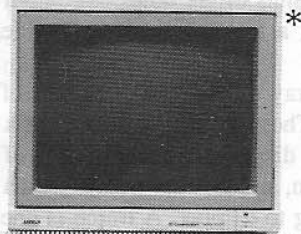
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Animation for BASIC beginners

by Andrew Farrell

If you're new to the world of BASIC programming, this one is for you. A simple look at animation using the print statement. The results are surprisingly good, opening the way for a host of other ideas.

IN ANIMATION using direct screen access, such as with the print statement, there are four basic processes.

The first involves defining the shape and scenery of any graphics to be displayed. Next we start the animation by calculating the frame we're on, then working out where everything should be. Next the graphics are actually drawn. After a short delay, they're erased. Then the entire process goes back to step 2.

We could define our own character set, however for simplicity, it's best to start with the reasonably flexible graphics characters which appear on the front face of each key on the keyboard.

In the two examples included, I've used data statements to store these definitions. They're easy to modify, easy to read, and make sense when you list the program.

Looking at the program titled "Tread Mill", let's examine what takes place.

Line 5 DIMensions an array. These are simple two dimensional storage areas inside the variable memory of your C64. You might describe an egg carton as having two columns of six holes to contain eggs, giving a total of twelve possible locations.

In our array there are six columns of four rows. These correspond to the six lines of text displayed in each frame of the animation, and the four frames which we are going to display. A frame is one entire part of a sequence of animation, just like a movie frame.

Lines 10-40 contain our data state-

ments. Each line has data entries, one for each frame. Inside the quotation marks, you can include colour, or cursor controls, as well as the usual graphics characters or text. Graphics characters are in fact text, since they may be printed as a string variable (\$).

Line 100 reads the information stored in data statements into the array DIMensioned in line 5. Since the array has two dimensions, we use two FOR... NEXT loops to read the information. The first loop, or outer loop, counts the number lines in a frame, whilst the inner loop counts the number of frames.

A FOR... NEXT loop within another FOR... NEXT loop is nested. You must be very careful when nesting loops like this. Be sure that they don't cross over each other such as in figure 1.

```
FOR J = 1 TO 10  -----:
:
FOR K = 1 TO 3   ----: :
: :
NEXT J          -----:
:
NEXT K          ----:
:

```

Figure 1. - Not allowable!

```
FOR J = 1 TO 10  -----:
:
FOR K = 1 TO 3   ----: :
: :
NEXT K          ----: :
:
NEXT J          -----:
:

```

Figure 2. - Correctly nested loops.

Rather they should be one within the other (figure 2.).

Lines 400-440 sets the scene for our animation sequence. The screen is cleared, and any variables to be used are set to their initial values. In this case S will be used to count the current frames being displayed.

Lines 450-480 are the main animation sequence. The cursor is correctly positioned in line 450, and the current frame is displayed using a single FOR... NEXT loop. Line 470 increments our frames counter by one, and checks that it hasn't exceed the maximum frames displayable. Line 475 provides a short delay to make sure we get a chance to see the graphics just printed. Line 480 jumps back to line 450 to start the process all over again.

Type in the program now and try it out. You should see a person jogging along what looks a little like a castle wall, but is my representation of a treadmill. The result is surprisingly good. To get the right graphics characters inside the data statements, you'll need to use both the shift or commodore keys. Don't worry if it's not exactly right.

Try changing the shape of the data statements for different results. Or redesign your own animated figure altogether.

The second example is called Across Screen. In this program, the same figure used in the Treadmill program, is seen running across the screen. The result isn't quite as good, but nevertheless it's worth looking at. Type it in after entering NEW, and see if you can work out how it's done. ■

READY.

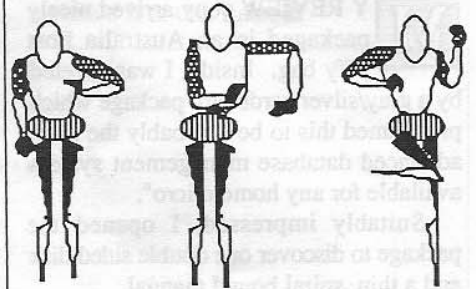
```

5 DIM F$(6,4)
10 REM BASIC ANIMATION
11 DATA " # ", " # ", " # ", " # "
12 DATA " | ", " | ", " | ", " | "
15 DATA " . ", " . ", " . ", " . "
20 DATA " < ", " < ", " < ", " < "
30 DATA " > ", " > ", " > ", " > "
40 DATA " : ", " : ", " : ", " : "
100 FOR I=1 TO 6:FOR F=1 TO 4:READ F$(I,F):NEXT F,I
120 GOTO 400
400 REM WALK
440 S=1:PRINT"[CLR]"
450 PRINT"[HOME]";FOR I=1 TO 6:PRINT F$(I,S):NEXT I
470 S=S+1:IF S=5 THEN S=1
475 FOR I=1 TO 80:NEXT I
480 GOTO 450

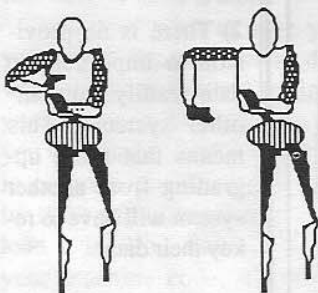
```

READY.

Treadmill



Across Screen



READY.

SEARCHING FOR \$\$

READY.

```

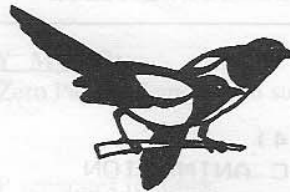
5 DIM F$(6,4)
10 REM BASIC ANIMATION
11 DATA " # ", " # ", " # ", " # "
12 DATA " | ", " | ", " | ", " | "
15 DATA " . ", " . ", " . ", " . "
20 DATA " < ", " < ", " < ", " < "
30 DATA " > ", " > ", " > ", " > "
100 FOR I=1 TO 5:FOR F=1 TO 4:READ F$(I,F):NEXT F,I
120 GOTO 400
400 REM WALK
440 S=1:PRINT"[CLR]":X=1
450 PRINT"[HOME]";FOR I=1 TO 5:PRINT TAB(X)F$(I,S):NEXT I
470 S=S+1:IF S=5 THEN S=1
475 FOR I=1 TO 20:NEXT I:PRINT"[CLR]":X=X+1
478 IF X>35 THEN X=1
480 GOTO 450

```

READY.

ADDRESS: ASSEMBLY CODE: REMARKS:

Micro Magpie Database



by Peter Gallen

MY REVIEW copy arrived nicely packaged in an Australia Post jiffy bag. Inside, I was greeted by a gray/silver cardboard package which proclaimed this to be "probably the most advanced database management system available for any home micro".

Suitably impressed, I opened the package to discover one double sided disk and a thin, spiral bound manual.

The disk contains the program on one side and help data on the other.

I had seen advertisements in UK publications recently and looked forward to putting it through its paces. Resisting the urge to load the program, I sat down to read the manual. While on the thin side, it contains sufficient information and tutorials to get started and actually commence tailoring the system to your own requirements.

There are good sections on programming and use of index files and complex reporting. *Magpie* supports two disk drives, a very welcome feature in database systems, and supports both serial and centronics type parallel printers.

Templates are included with the tutorials and cover both simple applications like mailing lists to more complicated ones such as constructing graphs (scatter, horizontal and vertical bar charts) and an extensive stock control application.

Features

Some of the better features incorporated in the package are:

User Programmability - Audiogenics have employed

their own program language which, while designed with the non-programmer in mind, is quite powerful and easy to use. Statements are selected from a list on screen and, via several menus, these are used to build your program.

Some of the application procedures are impressive, eg graphing capabilities which include scatter graphs and both vertical and horizontal bar charts, although in the short time available, I wasn't able to get a printed report of graphics data.

The ability to manipulate data between two files is a definite plus, which is missing from many more expensive programs. This is a must not only for the ability to handle invoicing, but other more complicated applications such as stock control. This facility also means that large data files can be broken down into smaller files for both quick access and to save disk space.

Pop-up menus are another plus, especially for the first time user. The manual not only explains each menu

item in the tutorials provided, but shows each menu in an appendix for easy reference.

Function keys - an unusual "feature" was the use of the function keys to move around and select options. It felt strange to use F5 (the GO key) to enter data or run programs, and not the usual RETURN key.

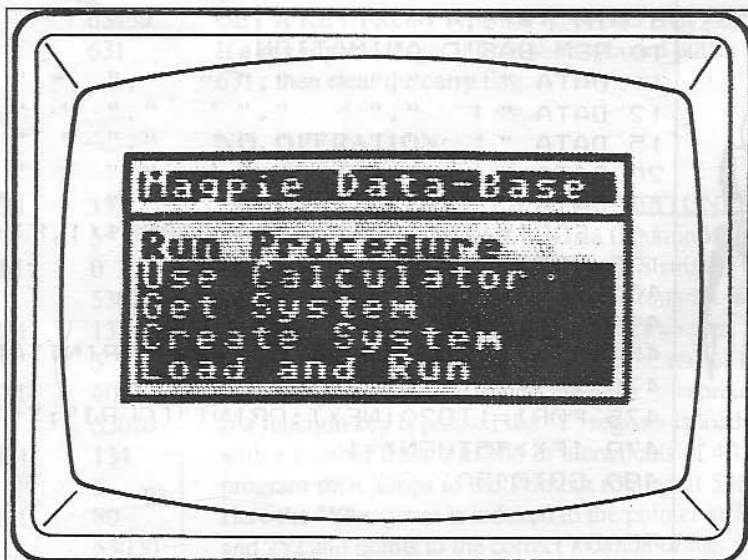
The manual is adequate to get started and the templates provided allow you to "get the feel" of the system quite early on. I should add that being spiral bound, the manual easily lies flat when in use.

Shortfalls

I was disappointed to find misspellings in one of the help screens - a small gripe but indicative of inadequate proof reading.

There are several omissions I find quite important for serious users:

- 1) The mailing list procedure is designed to handle one-across labels only. After checking the programming section, I could not find an easy way to overcome this problem.
- 2) There is no provision to import/export data readily from another system. This means that those upgrading from another system will have to re-key their data.
- 3) Also, there is no provision to browse through reports on screen. There should be an opportunity to

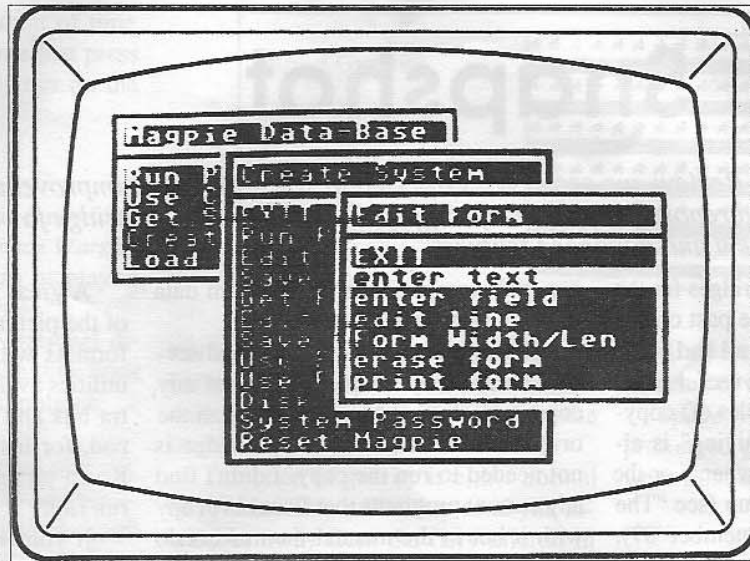


view on-screen before getting a printout.

4) There are no technical details listed about the system. From personal investigation, I found that data are stored in relative files. I would have like to have seen information related to maximum number of fields, field length, file structure, etc.

Conclusion

Magpie is somewhat of a curate's egg. If it were priced in the \$30-\$50 range, I would recommend it as good value for money. In its present form, it sits between the cheaper electronic card index type programs and



truly professional database managers. It introduces some very powerful features

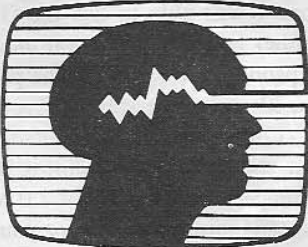
Price: \$64.95 recommended retail

while retaining some that are almost rudimentary and cumbersome.

For those whose needs are fairly straightforward, this is a good package. It would also be suitable for the novice who wants to gain database management experience using smaller data files before moving on to more powerful (and much more expensive) packages.

Published by: Audiogenic, United Kingdom
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Super Snapshot

Here at the Commodore Review, we are never surprised to see yet another improvement on an old idea. Eric Holroyd reports on a memory-capture & utility system cartridge for the C-64 that boasts many new and advanced features.

I'VE SEEN several cartridges for the good old C-64 over the past couple of years or so, they've all had some good features and have very useful in archiving (making backup copies of) copy-protected disks. This "archiving" is always a bone of contention whenever the subject of copyright comes up (see "The 128 Cannon" in ACR of September '87). But it's something we all need to do from time to time.

Copying methods and tools vary, but the latest version of the Snapshot cartridge is the best and most effective I've seen for the C-64 for a long time. I highly recommend it to beginners and experienced 64ers alike.

It's now called Super Snapshot and it's a very neat-looking cartridge with a flush-mounted button on top. As with previous memory-capture devices, the idea is to load the program to be copied completely to memory. In other words get it running up to the actual game screen or the Main Menu, then press the button to capture it. You're prompted then to put your destination disk in the drive and the program is saved for you under whatever name you designate.

If you use two drives you may specify at this time to save the backup to drive nine simply by pressing Shift/3 to change the device number. Change the drive number back again after saving the backup by pressing the same keys to "toggle". When saving is finished you're given several choices, one of which is that you may resume running the program you've just archived. Great stuff!

I've never seen a cartridge that would do that before. It's able to resume running the program because it uses a special chip inside the cartridge housing as

external storage space for program data whilst it does its copying work.

The saved copy has a loader and several files and is completely free of any copy protection and loads faster than the original in most cases. The cartridge is not needed to run the copy. I didn't find any current programs that I couldn't copy with it but in the manual the makers do say that modern copy-protection methods are such that there are some such programs.

These use disk-access routines after the program has loaded or look for a "dongle", or "security-key" before proceeding with program execution and therefore need special treatment. For this, Computer Mart supply a special disk along with Super Snapshot which contains 40 "parameters" for current software. A parameter is simply a type of copy-protection "fingerprint" which the software needs to identify before being allowed to run. The disk has both a fast-copy program and a nibbler to let you make a copy of your software before loading the appropriate parameter and completing your working copy. Very easy!

Screen copy

The excellent copying facilities of the Super Snapshot are only the start of the goodies in this cartridge. There's a "Screen Copy" feature on the menu which relates to the picture on screen at the moment you pressed the button. The menu offers choices of (a) saving the picture to disk, or (b) sending it to a printer. If you choose (a), and the picture was a bit-mapped screen, it will be saved as a Koala or a Doodle file, depending on whether it's Multicolor or Hires format.

A great idea as further manipulation of the picture is possible in both of these formats with a range of programs and utilities available to add text or other extra bits and pieces. Dig out your Koala pad, for instance, then load up a saved Koala picture and let your imagination run riot.

If you choose (b) to send the picture to the printer, you'll find that three types of printer are supported: Commodore 1525, 1526 and Epson compatibles. Three dump sizes are offered and most of them use a "grey scale" for accurate representation of the shades of various colors. I was able to use the Gemini 10X either in 1525 emulation mode or as an Epson type for most of the printout sizes so it's pretty versatile. If you're using a C-128 (in 64 mode of course) you're given the option of running the printer dump in "fast mode" of 2.0 MHz which speeds things up a bit for you.

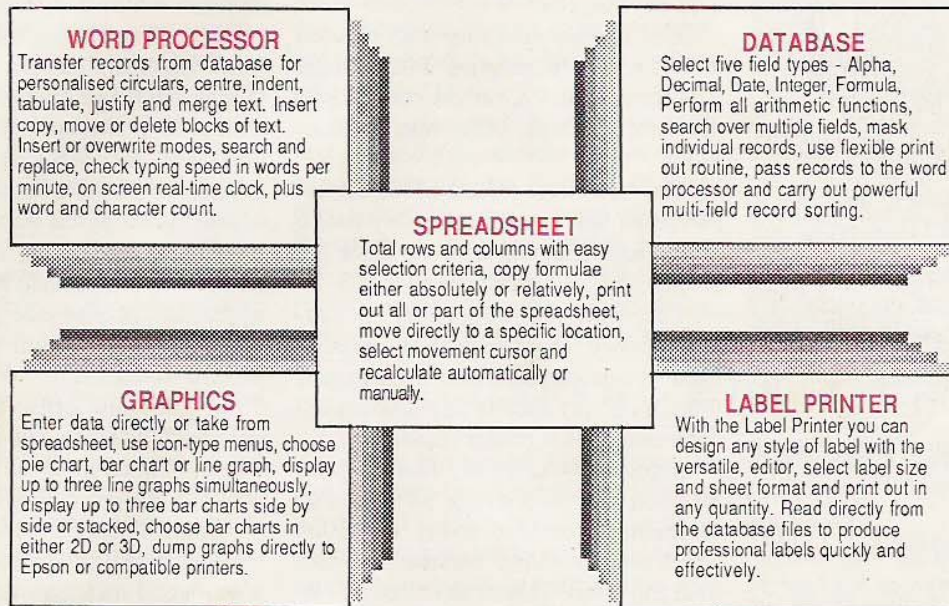
C-128 users may choose (when ordering) to have a switch fitted which then tells the computer to ignore the cartridge if you wish to work in 128 mode. No need to unplug the cartridge, just flip the switch.

The cartridge has 40K on board, 32K ROM and 8K RAM with space still available on the 32K chip for further developments. There's a continuing update policy to Super Snapshot owners, with a very reasonable changeover fee. Owners may send in their current cartridge and \$20 for an updated chip to be fitted and it's returned complete with a new manual in a quoted turnaround time of 48 hours. My review unit is V2.0 (PAL) and apparently V3.0 will be ready for shipping by the time this review is printed. It's nice to know that there's a full support
(continued on page 18)

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policy with further upgrades planned when you purchase a computer related product as things seem to change so fast in this field.

TurboDos

There's still more in this multi-function cartridge. The makers (LMS Technologies, New Brunswick, Canada) have included a fast loading system which they've called TurboDos. It loads at about five times the speed of a normal 1541 disk drive and is automatically enabled when the C-64 is switched on with the Super Snapshot in place. It's claimed to be compatible with the vast majority of software currently available.

There's a menu option to disable it if you need to (some weird copy protection methods will conflict with all types of fast loaders!). Super Snapshot itself checks for the type of drive being used and will turn off TurboDos if it's not compatible. This is the case with the MSD drives.

The manual says Super Snapshot will work with the following drives: 1541, 1571, 1581 FSD, Indus, Commander etc. (1541 "compatibles")

The 1570 is not mentioned in the manual but I should imagine it would work OK, being a cross between 1541 and 1571 as it were. Neither is the Excelsior mentioned, but a review of that drive in a previous issue of ACR seemed to indicate a high degree of 1541 compatibility.

Another useful inclusion in the Super Snapshot is a "fast" format routine which prepares or "news" a disk for use in around 30 seconds (as opposed to the 90 seconds or so needed by the 1541 under normal circumstances).

In addition, the function keys are pre-programmed to perform the following:

F1 - Basic load of first program on a disk
 F2 - Display current function key settings
 F3 - Display disk directory
 F4 - Display "selective" disk directory F5

- Run a Basic program in memory
 F6 - Save a file to disk
 F7 - List a Basic program in memory
 F8 - Jump to the built-in monitor (Code Inspector)

The load with F1 is the same as typing: Load "PROGRAM",8 . To load with: ,8,1 (otherwise known as an "absolute" load) the first program on disk, you use Commodore key and Run/Stop keys together.

This combination may also be used to load a specific program. First you get a directory with F3, run the cursor up to the name you want then press C=/Run-Stop.

The "selective" feature of the current F4 means that to see a directory listing of all files beginning with the letter "P" simply press F4/P*/Return.

The function keys may be re-programmed very easily at any time to whatever tasks you'd like them to perform. You may specify any disk-related command but not printer commands.

Many C-64 users are familiar with the good old "DOS wedge". This is a set of memory-resident utility operation which use "shorthand" commands to save time and effort. There's an enhanced version of the DOS wedge built in to Super Snapshot which uses the following commands:

\$ - nondestructive directory (doesn't overwrite memory)
 / - loads a Basic program (same as LOAD"progname",8)
 % - loads a M/L program (same as LOAD"progname",8,1)
 > - open 15,8,15
 - close 15
 > - read error channel
 >Q disables Dos Wedge
 >#n changes drive number (where n is 8 - 11)
 >I0 initializes drive
 >TD disables TurboDos
 >TE enables TurboDos
 >K display current F-Key settings
 >Kn display setting of F-Key n (where

n is 0 - 8)
 >KD disable function keys
 >KE enable function keys
 >FN turbo format (FN0:diskname,id [return])
 S:P* directory display of files starting with P

It's a pretty slick DOS wedge but nice and easy to use all the same.

The built-in M/L (machine language) monitor is also known as the Code Inspector. The manual says that it's a "hacker's dream come true". As I'm not familiar with M/L (I'm completely in the dark to be perfectly honest!) I'll have to take their word for it. I understand enough, however, to appreciate the value of this: Pressing the button whilst holding down CTRL during any running program takes you straight into the monitor which then displays the status of all the registers at the point at which you pressed the button.

If you know M/L you'll be able to see straightaway what was happening when you interrupted the program, which won't be corrupted by your stopping the program. You can now make a few changes (infinite lives, change sprites around, add messages etc.) then resume the program just where you left off. This has got to be a great idea for those clever guys who like to play around with code and in fact for all "hackers". On the "serious" side, it could be equally as useful to "patch" commercial software, for example, by adding a different printer driver to an existing word-processing program.

The manual gives a complete list of monitor commands including some features not seen in other M/L monitors such as the ability to omit leading zeros when typing commands. For instance, to display memory at 005F you need only type M 5F instead of M005F as in most other systems. You may also enter POKE commands direct in the monitor with :+53281 0 being the same as POKE 53281,0. The colon is the memory modify command and the + sign

converts the decimal figures into hexadecimal.

Another useful feature is the ability to read and write sectors to and from a disk and at the same time use all the monitor's commands for editing the disk sector. Pretty powerful stuff, eh?

I said above that Super Snapshot V3.0 should be available by the time we go to press (the price is \$54.95) and refinements in the new version will include:

- Screen Dumps with sprites included
- Support for more types of printers
- Copy utilities (filecopy and diskcopy) More features in the Code Inspector
- Turbo Save feature

If you're only going to buy one cartridge/memory dumper/utility system for your C-64 this year then I'd recommend that it be this one. It has much to offer and it's a breeze to work with.

Super Snapshot is available from Computer Mart, Dept. G, 2700 NE Andersen Road, Vancouver, WA 98661, USA. Phone 1-206-695-1005

All prices quoted are in US dollars. An Australian distributor is expected to be announced soon, so stay tuned. ■

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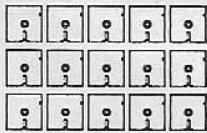
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9

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Telecommunications Tips by Tony Smith

WITH THE current upsurge in the use of modems with home computers, there are a few pointers which may help to keep your (or your parents') phone bill within realistic limits. The Viatel Network, operated by Telecom, is an ever expanding database of incredible complexity and with a base of over 100,000 pages of information!

When I recently obtained a modem, I took out a subscription to Viatel. Within seven days I had my number, PIN number and password. I could hardly wait to log-on but as it costs nine cents a minute during the day I decided to wait till 6 pm when it becomes six cents.

Within minutes of my first log-on I was hopelessly entangled in an incredible array of menus, sub-menus, sub-sub-menus and so on,

into such a maze as I have never encountered in several years of adventure games. I was getting nowhere fast, so I quickly saved a few frames for later perusal, dialled *90# and was given the sign-off page, whew! At least the cents per minute indicator had stopped. Then the pages I had saved were read and page numbers were jotted down for later calls.

The Terminal Program which came

and find that the pages can be called up instantly with just a quick press of two keys. The program even removes the necessity of entering a star before the number and a hash sign after it.

The Meta-keys are called into action by simply pressing the Commodore key and any number from 0 to 9 and also the Control key and same number combinations. The time saved here can be spent finding out more about Viatel.

A good feature of Viatel is the discount rates which are offered from time to time. The Spring Racing Carnival had a one cent weekend during which I made the most of the discount rates and had a great time familiarising myself with the system. Your favourite computer publications are also on Viatel, on *666112# and *666113# with edi-

- | | |
|----------------------|-----------------------------|
| What's New *123# | Micro-bug *25306# |
| Trading Post *774# | Cableshop Prizes *345508# |
| Fishnet *590# | Telemart *220128# |
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| Recipes *1271# | Viatel statistics *11818# |
| Adventuretex *34569# | Commodore connection *6917# |
| Gayline *691# | Swans Sanctuary *25303# |
| Lotto *2201271# | Bulletin Boards *126# |

with my modem is a brilliant piece of work, programmed in good old Australia and called *GP Term*, or *The Netcomm Program*. It comes as standard with Netcomm's fine range of modems. One of the numerous features of this program is the ability to enter up to 20 of your Viatel page numbers to be called up simply and quickly once you are on-line. These can also be saved to disk as an "environment" so you can recall your favourite pages whenever you like.

The time spent checking the Viatel printed index and entering the page numbers into *GP Term* is paid back in full when you do log-on

torial comments and subscription offers.

The verdict after a couple of months on the system is favourable. I haven't received an account yet, but you can keep an eye on the bill by dialling *92#.

In one month I racked up a total of \$20, which is not too bad considering my ineptitude, and included the cost of a few pages of racing information, \$4 to place an advert in the for sale column and a few goes on the quiz pages at 40 cents a frame - so \$20 is not excessive.

During one of my forays into the network I found my way onto the bulletin boards, and as it was only one cent a minute I had a good look around. After reading a few of the messages I came across the Real-Time Idiom. Imagine my surprise when I realised that I was logged onto a GAY Bulletin Board. The point being made is that Viatel really does cater for everybody!

There are recipes, home hints, adventure games, motoring columns, trading posts, weekly and general, book exchange, jokes, lotto and more. Above are a few handy numbers for those of you who use Viatel and also to whet the appetites of those who are considering becoming users. ■



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(We have found this to be "unstoppable", it even preserves the tape buffer).

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Copies highly protected disks in 3-4 minutes. Handles the latest types of disk protection completely automatically. This often involves the use of the "PARAMETERS", these add the vital secret code that the highly protected programs check for. (This is the important difference that makes this the best.) At the time of going to press this program copied virtually all the English and American programs available for testing, including the latest in games and business software.

"DUAL DRIVE NIBBLER" allows the use of two drives to make even faster back ups. Incorporates device number change software so no hardware mods necessary.

"EVESHAM 8 MINUTE NIBBLER" still very powerful and has been improved. Copies a few that the three minute version won't.

Many, many other useful utilities are included on the disk, including SELECTIVE MENU MAKER, FAST FORMAT, FAST FILE COPY, NOVATRANS, DISK ORDERLY, DISCMON+, UNSCRATCH, ETC, ETC.

The whole package is menu driven and has its own fast boot system built in for your convenience. Pays for itself the first day you receive it.

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Customers with earlier versions may return them along with a payment of \$25.00 to receive V5.0. Most routines are CBM 128 and 1570/71 compatible in '64 mode.

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Crossword Magic

by Tony Smith

CROSSWORDS have always been a fascination to me - I always wondered how people could put them together so there were not too many black squares. I also wondered what type of person would write those terrible cryptic crosswords.

Well that was many years ago, and now, after twenty years working for the Government, I find that I can sometimes nearly complete a cryptic crossword puzzle. I still wonder at the deranged people who would write such devious creations.

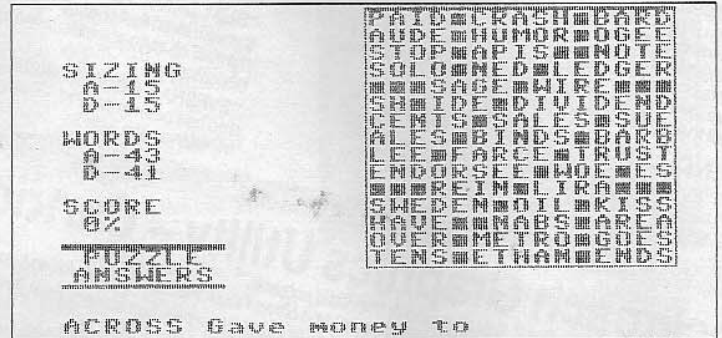
Now here comes a computer program that will produce crosswords, easily, and in a manner so friendly, that it is a pleasure to use.

to main menu.

The editing facilities are tremendous, about the only thing you can't change easily is the name of the game, but that's easily possible with the copy and then save and rename features.

The puzzle size is adjustable from 5 x 5 to 20 x 20.

It can also be left in automatic if size



Print Menu

activities - it is suitable for all ages and can be tailored to suit all levels of difficulty.

The hardest part is supplying the words and sometimes the computer cannot fit them all in, nevertheless, just enter manual mode and enter it yourself.

If you are keen to write crossword puzzles then this is the tool you need to further your development. ■

```

Current Printer Settings
(A) Printer.....1525/MPS-801
(B) Device #.....4
(C) 2nd Addr #...7
(D) Line Feed....NO

Current Print Mode
(E) Puzzle...YES      (I) Blackouts.....YES
(F) Clues....YES      (J) Box numbers...YES
(G) List.....NO       (K) Section wait..YES
(H) Answers..NO       (L) Copies.....1

Select item to change (A-L)
Press RETURN to continue...f1 to exit.
    
```

Edit Menu

We've all seen programs which are user-friendly but still let you down by not having an 'escape' key to take you instantly back to a main menu, but this program has that feature and more.

The most complicated manoeuvre I could find to put it through was to attempt to write the same file name back to the same disk - and was immediately asked if I wanted to re-name it or return

is unimportant. The print menu gives many options for printer specifications etc. followed by the second menu, which gives you choices of printing word lists and answers, numbers of copies and many more.

This is a highly usable program which produces good crosswords. It could be used to good effect by teachers and students for vocabulary expanding

Ratings

Graphics:
They're crosswords 80%

Sound:
A beep for a null key 75%

Originality:
Not really 75%

Usability:
Limited market 75%

Friendliness:
The best 100%

Overall:
An excellent package 80%

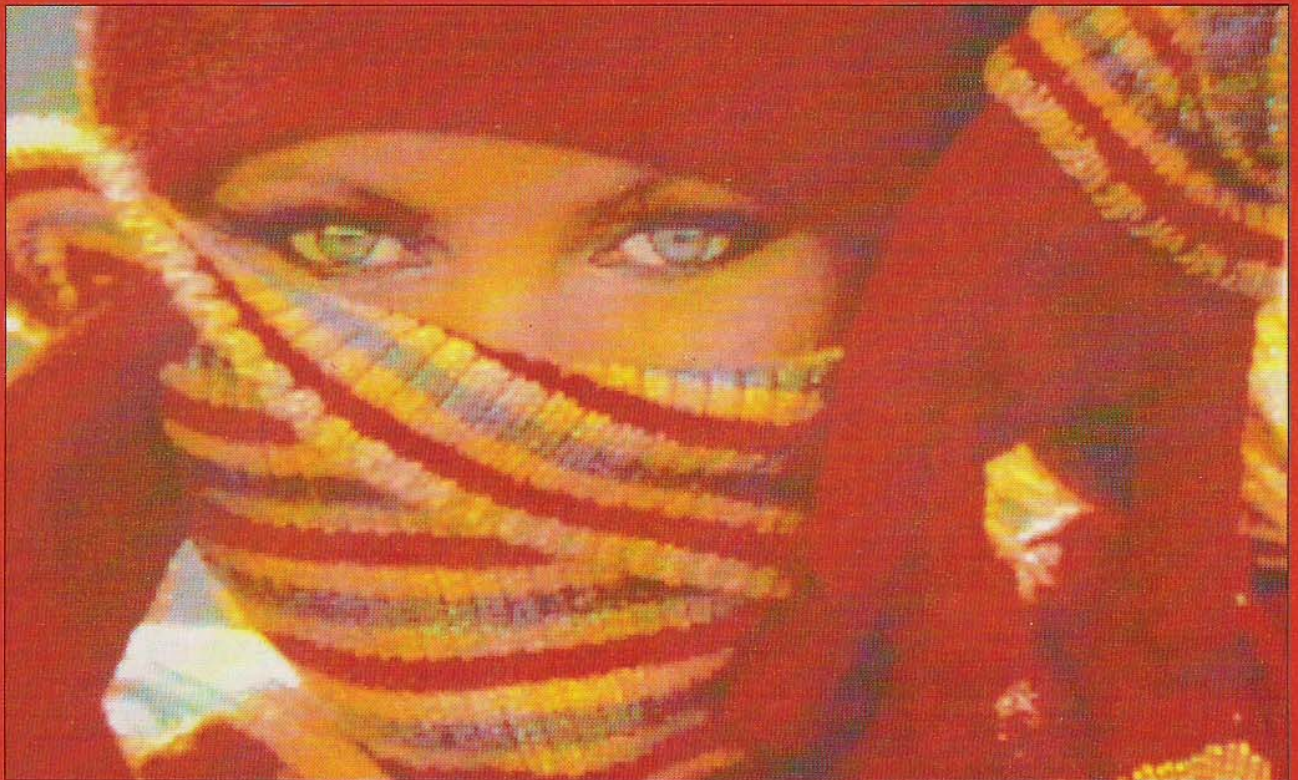
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Amiga Review

Animation - a case study

Best of Public Domain



Games Roundup

- ☛ Test Drive
- ☛ Challenger
- ☛ Vader
- ☛ Phalanx
- ☛ Sky Fighter
- ☛ Dr Fruit

WordPerfect

Silver

DISKWORKS

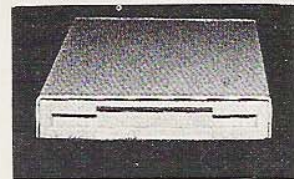
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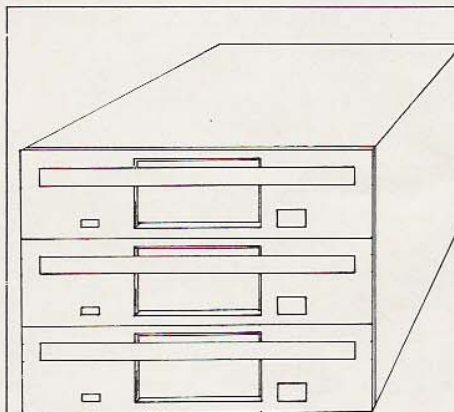
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Editorial

MISCONCEPTIONS plunder the reputation of Commodore's Amiga, with terms such as "limited software supply" and "ideal for entertainment use" still frequently used about the machine.

Have these writers not seen the extraordinary speed of a spreadsheet on this machine, or the vast range of software titles which appeared in our own Amiga Annual? Only a small portion of these were games, and most were applications your average home computer would never see.

Choice magazine describes the Amiga as a machine with "lots of possibilities, some still unexplored due to the limited supply of software..". Come on, guys, surely we're past the possibilities stage. Amiga has long been demonstrating what it can do, not what it *will* do. On that note, check out this month's front cover (*Commodore and Amiga Review*).

Many of you will have seen the "CAT DEMO" produced by digitising a series of pictures, and then animating them using *Aegis Animate*. It's astounding stuff. It's available right now.

For all those who collect such amazing sequences of sock-removing animation, check out the new two-reel demonstration disk from Newtek, the people who produce such brilliant packages as *Digipaint* and *Digiview*. They are about to release a new gem called *DigiFX*. The demonstration on the aforementioned disks was produced using this package. It allows music and pictures to be combined using a variety of fades and wipes. Great for producing serious presentations for business, or just fooling around. ACME software should have copies of *DigiFX* late February.

Andrew Farrell

Australian Amiga Review
21 Darley Road,
Randwick, NSW 2031
(02) 398 5111
Published by:
Saturday Magazine Pty Ltd.
Editor: Andrew Farrell
Publisher: Gareth Powell
Advertising: Ken Longshaw
(02) 398 5111 or (02) 817 2509
Production: Brenda Powell

Layout: Amanda Selden
Subscriptions & Back Issues:
Tristan Mason (02) 398 5111
Distribution:
Selected dealers
and as part of *Australian Commodore Review*
Printed By:
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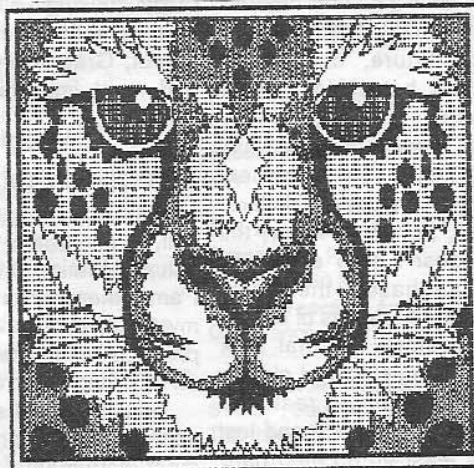
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Animation on the Amiga - a case study

by Michael Hassett

Everyone knows that Amiga has huge graphic and sound potential, especially in the area of animation. What follows is a case study of a person that has put his Amiga to a practical use.

I SUPPOSE it was about eighteen months ago now that I first became involved with this computer. I was looking for a solution to a problem and a tool to create with for both music and graphics.

When I first saw the Amiga I thought my prayers had been answered. Had they? or was I to discover that beauty is only skin deep.

The first big decision was based purely on emotion, I saw and I wanted. Then came the reality - what the hell I was going to run on this beast?

In those days software was really limited - you could get a couple of paint programs, animators and a word processor that almost worked.

There were lots of promises, the sales teams insisting that we would be able to become Mozarts or Rubens overnight by using this new and almost useless software, but looking through the sales pitches and amazing demonstrations I was able to see a realistic future, maybe not right away, but within the next few years.

Well, I was committed and had to justify the investment of several thousand dollars. After all, as we all know, the buck doesn't stop once you have purchased the basic hardware - there was of course the obligatory external disk drive, printer, followed closely by more memory, a real time clock, SCSI interface and last but not least an 85 meg hard disk. The latter four items all came at once and in only two packages.

As you can see, I have a fairly potent hardware combination, large mass storage with extremely fast data recall and a meg of memory, I suppose you are wondering what the hell I am doing with it.

Sometimes I wonder myself.

Word processing, databasing, all those sort of things, the things computers are made for, right?. That was only the beginning.

I didn't realise the vast quantities of time, the uncountable hours, days, weeks and months that would be consumed behind the keyboard, or should I say mouse. I thought that I would just have to insert the magic disk and then the Amiga would do the rest.

This is not so. Do you know how many pieces of software were actually written with hard disks considered? Not many, so this was the first major time - consuming task, to make my software actually work.

Without going into details, it took a lot of time and frustration, but with the help of some very knowledgeable friends I was able to get this computer really cooking. All that I am looking for now is the ultimate output, Graphically, sonically and most importantly to me visually.

Visual delights

Yes, you may say to yourself, it looks like this guy is actually coming to some point. I am - the main utilisation of my rather expensive tool is to produce visual delights both on tape and direct on screen.

Several months ago I was approached by some Government instrumentalities to produce a graphic presentation of some of their products. They too, had seen the Amiga and thought that this little whiz would be just the trick.

The first thing to convince them of, was that we could not get what we see on screen onto tape, and that it would be best for everyone concerned

that the video should be designed to run on the computer.

So we, a friend of mine who is actually the artist, designed the first three minute product demonstration that was shown around the country at various exhibitions on the big 1081 monitor screen.

The first version ran on a single disk machine, very slow with lots of blackout between screens.

The next step was to move it all onto a hard disk, interfaced through SCSI and a DMA chip. The change to the animation was dramatic, so dramatic in fact, we had to spend many more hours re-ordering the load times of images and effects what we had happening were severe software limitations - it couldn't cope with the speed with which new screens could be made available. After all I had data being transferred at a rate of 2 meg/sec. With a little bit of cheating the system finally ran smoothly.

Now for the ultimate challenge - put it on tape for national distribution, are you kidding? They weren't. This led to the next greatest investment in time.

Have you ever plugged or should I say interfaced your Amiga with a video recorder? Awful, isn't it? How would you like to pay for it? No one would.

To get the vision to an acceptable level required the use of megabucks' worth of gear.

Firstly a Genlock with RGB output. This is necessary to supply a stable signal that can then be read by a broadcast composite converter. The converter takes the RGB signal and combines it into a regular (composite) video signal that can then be recorded onto tape.

So far the results have been only just acceptable, co-

lours bleed into each other, and there is still the evidence of a herringbone effect on the vertical axis of an image.

By the way, you can get a reasonable result with no colour bleeding but a nice pattern effect by shooting straight from the screen with a video camera. The only other drawback is the scan line that moves up the screen - this can be removed if you have access to an edit suite and cut the offending frames out of the image.

Where next?

Where can I go from here?. There is still one other possibility, another Genlock produced in Australia. At the time of writing this I was still waiting for the said device to be delivered for assessment.

The original idea of this story was to give people an insight into the real everyday use of a computer like the Amiga. I suppose I didn't quite get that specific, but I do hope that you gained some erudition (that's one of those words you can look up in your *Word Perfect Thesaurus*) from it.

For those that thirst for the cold hard facts about software and hardware delights, I thought I might just mention the items that make up my system - or rather those that are worth mentioning. I don't want to bore you with the listing of the 100 odd pieces of software that have come my way over the years, just those that have developed into real usable ones:

Amiga 1000, Expansion System SCSI Interface with 512K memory and DMA, Expansion System 85 meg voice coil hard disk, *WordPerfect*, *Dpaint* (PAL), *Climate*, *Pagesetter*, *Deluxe Video Construction* (but really need PAL version in better resolution), *Digipaint* and *Digiview*. □

SILVER

3D Graphics Processing

by Michael Hassett

SILVER can be described as a ray tracing 3D Graphics and animation package. Quite a mouthful and quite a lot to achieve from one piece of software.

From initial impressions of the striking graphic on the front cover, one's imagination is set to catapult into another dimension. The hard realities of this software become apparent on page three of the manual. Written in not so fine and not so friendly letters are the words "It is mandatory that you study this user's guide".

With such a stern warning I set out to read the manual. The manual itself is not very large, 125 pages.

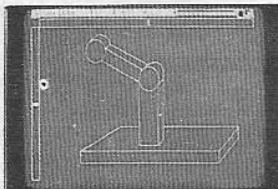
Heading into it, there were descriptions of the concept of 3D and explanation of X,Y & Z axis and an introduction to ray tracing. Next came the function and effects description of the software and then sections about shape creation, light as well as animation and camera positioning.

After reading the manual from cover to cover I was ready for the first tutorial. Yes, this software does have a tutorial, well, actually three.

Cells

Going into *Silver* I was firstly confronted with a very simple looking screen containing several boxes. These boxes represented the cells or parts of an animation.

Clicking on one of the cells



causes it to turn white, a second click will take you to another screen, that of the editor. This is

the area in which you create your images.

The images you create can only be designed from geometric objects (circles, rectangles, triangles, tubes and rings). This limitation in design tools requires a lot of imagination to create.

The Juggler was created in much the same way from the same range of objects and that was an amazing creation. I could not confirm that the Juggler was actually created using *Silver* but it would be quite possible.

Basic creation can be achieved simply by selecting a shape, placing it in the position you wish relative to a light source and then assigning it a colour.

Close the editor screen by clicking in the upper left corner you will now be returned to the main *Silver* screen. Frame one Cell one remains highlighted indicating that something has been created in that cell.

To see what has been created requires the pulling down of Generate function from the menus. This can be achieved by using the mouse's right button or by one of the many HOT keys

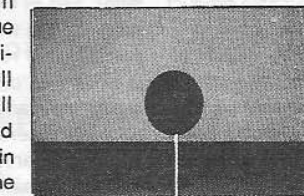
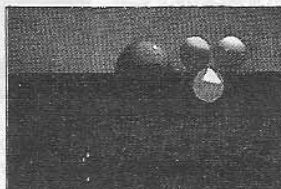
Upon selecting Generate *Silver* will go about calculating every detail of light, reflectivity of image, position and so forth.

This does take some time, in fact about 10 minutes for a simple single object to 36 hours for multiples, and that is just one cell in an animation of up to hundreds of cells (memory permitting). As the cell is being created a clock appears counting off the percentage of image that has been created. Once created you are able to view your masterpiece by selecting display by mouse or hot key.

Animation

Basically to be able to animate your image from here requires you to create the next cell with a slightly different object position or viewing position. The smoothness or complexity of your animation is based purely upon the number of cells you create. The next and subsequent cells do not have to be created totally.

For example, if a sphere was to be made to bounce, this could be developed quite quickly indeed after the first cell had been formed by duplicating the first cell to the next and then changing the X value of the objects position by a small amount. This cell could be duplicated to the next and again a small change in the X value will give the object a slightly different position than that of the previous cell. This method of duplication and movement develops the cells of animation.



These cells are then able to be replayed in any sequence by the usage of a script. The script determines in

which sequence the cells are replayed. A simple movement may involve only eight movements but those may be reversed or inverted to give the appearance of continuous movement. The script is created by placement of the cells into their relative frame position by the duplication of previous cells within the main *Silver* screen.

Although the manual appears to cover all the facilities within *Silver*, there seems to be something missing, the very secrets that make the software work to its full potential. Perhaps this information is revealed in a section called Hints, Tips and Magic, which can

only be obtained by filling in the registration form and sending off to the States.

For the creation of glasslike reflective images *Silver* is the best I've seen to date. The usage of both hot keys and menus allow for speed and flexibility once keys are learned as well as the continuation of the user friendliness of the mouse/menu system.

Memory

This program is not for the impatient nor the standard Amiga. Amongst the minimum requirements is 1 Meg of memory and an external floppy or hard drive. Even with this amount of memory all the

examples in the tutorials can be completed.

These include creation of multiple objects, animation and Fly By, which is the movement

of the camera or view position rather than the object.

Memory availability of about 4 Meg would make a great difference to the creation of objects, as the waiting can be quite frustrating at times.

The addition of a high speed wire frame type view mode would be helpful, especially after the initial frame has been constructed and viewed, as it can be quite frustrating to wait for half an hour to view a sequence only to find out that the object's movement is not correct.

I must stress the requirement of reading the manual first, at least once if not twice, before launching into your first solo creation.

Silver is but a first in this type of software for the AMIGA and very well displays the power and potential of this great computer. All you graphic experimentalists out there — *Silver* will allow you to explore the world of 3D and ray tracing as well as animation in the one pack, and this is just the beginning. □

Which wordprocessor?

WordPerfect - Not a casual affair

by Andrew Farrell

Amiga owners can now wade through a strong selection of wordprocessors and desktop publishing packages. How do they choose? Start by keeping up with a new regular feature of the Amiga Review where we keep tabs on all the available choices, as well as reviewing the newer entries to the market. Andrew Farrell begins with a review of WordPerfect.

AT THE top of the range, in both features and price, is WordPerfect.

We shelved our first copies of this hybrid cross between Big Blue "lack of imagination", and Amiga's "hard act to follow" windows and icons. It just didn't work all the time.

Reports of bugs and regular visits by the infamous guru error reached our offices often. It seems the simple job of translating a successful IBM product was not so simple.

Then came news of an update, and a chance for a second look at what may now be a usable product. The verdict was far better.

WordPerfect is no casual affair. It arrives complete with four disks and a hefty bookshelf style box containing the 600 plus pages of documentation and keyboard overlays.

Whilst such a weighty manual may be enough to instil fear and trepidation in timid users, those with an ounce of bravery and courage will quickly discover the pages are well arranged and the examples simple to follow.

The manual is divided into three main sections: learning, reference, and installation. An appendix and glossary/index is also included.

Installation on a hard disk is simple and painless. The entire process is described step by step in the appropriate section. The disks are unprotected, there isn't even a dongle to plug in, or a page in the manual to refer to every time you run the thing.

A workbench is included on the program disk. Just insert it, and power on. Click on the icon, or execute from the CLI, and in true multi-tasking style, the first of a possible 32 other windows opens to reveal the perfect power and grace of this mammoth program.

A plain but effectively arranged screen. There's no obvious bells or whistles, although they are there. A quick perusal of the pull-down menus demonstrates in an

instant the many features available. For experienced WordPerfect users making the transition to Amiga's class and style, all the old key strokes have survived.

File access is elegant. A list of files may be obtained, and subdirectories moved between at the click of a furry rodent. Other types of files may be imported with no hesitation. Disk access is fast, and compared to the IBM PC version, the Amiga leaves nobody waiting.

On-line help is a cinch. Once called up, you simply press any letter, and all the commands available starting with it are displayed. For speedier reference a template is provided: one for Amiga 2000 owners and another for Amiga 500 and 1000 users.

The chart thereon is colour coded, explaining both the control and function key combinations. As well as shift and alt keys. The left and right Amiga keys provide short cuts for the pull-down menus. Of course if you want to avoid this cumbersome setup altogether you can just point and click like any other wordprocessor.

Learning

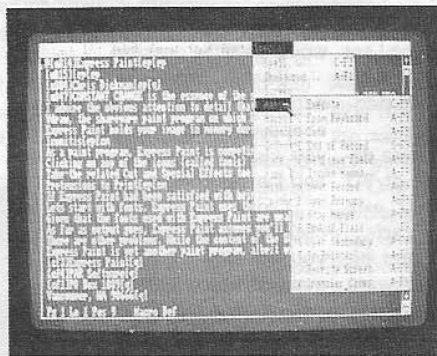
A series of tutorials cover everything from file handling, font selection and page formatting to use of the thesaurus, and using math and text columns. Variations in the style of text are reflected on the screen giving a degree of WY-SI-WYG.

Another topic discussed at length is the macro. It's possible to create multiple macros and you can chain them together for continuous operation. A complex example could even include nested macros or performing the job of indexing large files. To create one of these powerful monsters WordPerfect simply records each keystroke into a special file for later reply. The simplest and the best method.

Spelling

Excel is what this program does best. Like all others of this genre there is a glitch, the spell checker. Here the problem is not that it doesn't work but that the process of it working is such a time-consuming affair. There is a way to overcome this problem which involves creating a RAM disk, and copying the entire spell checker software into it. Speed is now not a consideration.

However, for the average user who must wait for a window to open every time a word is to be



questioned, the entire process could imaginably be far more elegant.

Oh, but the thesaurus is its saving grace, for it is fast and powerful. Both synonyms and antonyms are available and are grouped by related sub-categories within each class. Like the spelling checker the thesaurus has a pool of over 100,000 words to choose from.

Printed copy

One of the four disks contains nothing but printer drivers to suite your particular make and model. These are not the sort which integrate with the preferences of Workbench, but separate arrangements. The list is long, with a possible six which may be installed at one time ready for use.

Having selected to print, a

complex array of options appear. Once you've seen the task work, it all makes more sense. Several print jobs may be queued, with each assigned a different priority. In fact, for busy people, you can even print a batch of files in the background. Very professional.

Conclusions

There can be no doubt that WordPerfect treats wordprocessing perfectly. From a short memo to a 100 page manuscript, it is equally at home. I would recommend this package for the serious typist, novel writer and all editors of computer magazines.

For the casual user this is not. There are no pretty graphics to fool with. The commands are powerful, functional and must be learnt, not guessed at. Time spent learning to fly WordPerfect is well worth the effort. Amiga will be given serious attention by longtime critics thanks to this best selling IBM wordprocessor being ported and improved.

The bottom line is always price. As I mentioned, this one ain't cheap, but it's probably the only word-processor you'll ever really need. All those fancy font efforts might look pretty, but they're not real practical.

Here's the clincher - \$595 ex tax. Businesses only perhaps, but if you can afford to buy a copy, don't hesitate. For user groups who are set up as a giant partnership, there's no harm in purchasing one copy for the group, and sharing it around. After all, you are all part owners of the product. There are ways to afford these top line packages with resorting to completely unscrupulous means.

Our review copy was provided by the Australian distributor, SourceWare. You can contact them on (02) 411 5711 or (03) 600 0344. Available through most reputable Commodore dealers. □

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Best of Public Domain utilities

by Tim Strachan

THERE is a wealth of excellent Public Domain software available for the Amiga, including Fred Fish's collection of 118 (as I write), and 23 disks from the Amicus group, along with other compilations, such as the Theme Disks from Megadisc.

The problem for the enthusiast with limited time is to sort out the good from the bad, the relevant from the weird, the stable from the not-so-stable. So here I'll note down a number of pearls from the profusion, where to get them and why they're good. This list doesn't nearly exhaust the programs of quality available, but they are classics of Amiga PD and many have found them very useful.

Printpop

Written by a New Zealander, Robbie J Akins, he describes it as a "Printer Setup Utility", and it allows you, when called up with a simple key combination, to send setup codes to your printer, totally bypassing Preferences.

A window pops up where you can select various gadgets to set up draft/letter quality; set tabs; change print pitch (10/12/15/prop. spacing); enlarged printing and so on. The program can be found on Fish Disk 108.

WB-Lace

This is a neat way of switching back and forth between interlace and non-interlace screens, rather than changing Preferences and then having to re-boot. Just double-click on the *WBLace* icon, having made sure that you have no other windows open, and your screen toggles from one to another. Useful if you want to switch to interlace for some word processing, for example.



Diskman 2.0

This is the latest in a long line of "Directory Utilities" (see MD3 for a full discussion), ie tools which allow you get most of the power of the CLI while still using your mouse on a specially

devised screen which lists directories and possible commands. To act on any file you simply click on its name, then click on the "command button" you want, eg, show, type, print, makedir, copy, etc. No typing!

This particular one brings up a hi-res, 8-colour screen with two windows for two separate disk/directory listings and a series of command buttons down the middle. The program is very fast and makes file handling a breeze.

ASDG-RAM

For those with a megabyte of memory or more this is a very useful way of using your expanded RAM more effectively. Essentially, it allows you to set up a "virtual ram disk" (vd0:), which acts just like a normal disk drive, but has the advantages of 1. being much faster 2. surviving gurus - ie, when you re-boot, you'll find everything still

there in vd0: and 3. it frees up a disk drive.

So you can set up vd0: in your startup-sequence with, say, all the C commands you use, then remove the disk and they're all there when you want them, and blindingly fast! For those with stacks of RAM, you can load your entire Workbench disk into vd0:.. Anyone with an A500 with one Meg and only one drive would be advised to have a look at this one. Find it on Fish Disk 58, by the Software Distillery. Also a shareware program.

Conman

One of the most useful utilities around - it's a CLI "shell", meaning it allows you to recall, edit and re-issue commands from the CLI without retyping. Extremely convenient, small and very stable, you can use insert or replace mode for editing, press the arrow keys to recall previous commands, get automatic sizing of the CLI window with a key press and any other function key macros you've set up will not be affected. For anyone using the CLI at all this program is a must.

It's shareware, is by William S. Hawes (PO Box 308, Maynard, MA 01754 USA) and can be found on Fish Disk 100.

GOMF

Acronym for "Get Outta My Face!", this program tries to trap the Guru when it visits. It tries to de-allocate all resources and memory from a crashed program. The SOFTWARE ERROR appears

as usual, but the GOMF requester then pops up with more detail on the error and what you can do about it. Make sure you read the docs first. Find it on Fish Disk 95.

POPCLI III

A very handy program to have in your Utilities drawer - either by placing the command > run popcli in your startup-sequence or by clicking on its icon, you have a "screensaver", ie, after a specified time during which the computer hasn't been touched, the screen blanks out. This saves wear and tear on your monitor, and as soon as you move the mouse or touch a key, the screen re-appears.

There is also an automatic command (such as NEWCLI or whatever) which is executed with a two-key combination, so that you can get a NEW CLI window wherever and whenever you want. By the Software Distillery, find it on Fish Disk 84.

PRTRVGEN

This is a program that allows you to specify the command set of a printer in text - the program generates a printer driver, such as those you see in the devs/printers directory on your Workbench. You need to know a fair bit about printers and the Amiga to do it, but the effort is repaid once it works. Find it on Amicus Disk 22.

Blitz and Blitzfont

These two programs work together - *Blitz* is a utility that lets you read any text file, and its great advantage is that it is extremely fast. When run with *Blitzfont* (by placing *Blitzfont* in your startup-sequence) it is even faster, as is any other text display on the Amiga. Find them on Fish Disk 60, which also contains Handshake, an excellent PD communications program.

DIRMASTER

This is a specially written database/recorder for making catalogues of your disks and their contents. It is set up for ease of use

tents. It is set up for ease of use and has many options for saving, sorting and displaying. If you find your disk library is getting out of hand, and you can't find that program when you want it, this is the one for you.

Find it on Fish Disk 108, along with a number of other good utilities such as *Sectorama* (a sector editor), *Zoo* and *ARC* (programs to compress and decompress files, especially for use in telecommunications).

Where to get them

OK, so where do you get them? Your local User Group and/or Bulletin Board Service may have a full library of the Fish and Amicus disks - certainly Club Amiga BBS (phone (02) 5216338) has them all. Otherwise Megadisc Digital Publishing will send them out to you - check the ad in this issue. □

Hints and tips

Read/write errors

When you have a read/write error on an important disk, follow these steps -

1. Write-protect the offending disk before you do anything.
2. Make a copy of the disk immediately via HACK, or any copier program which can place formatted tracks instead of errored tracks from the source disk - such as DUTILS by Mike Hansell (see Megadisc 5).
If using Hack, select the VALIDATE DISABLE option from the menu. Note that HACK is available from COMPUMED in the USA (Address: PO Box 6939, Salinas, CA 93912 TEL: (408) 7582436).
3. From the CLI do a DISK-COPY of the dumb copy you just made, to be used for retrieving data.

4. Use DISKSALV (or perhaps RECOVERALL) to retrieve the data on the disk. You'll find DISKSALV on Fish 20, though I believe there's another more recent version. DiskSalv will do a better job than DISKDOCTOR, although the system tells you to try that. In fact, I tried Diskdoctor before I wised up - at the end it still couldn't "validate" the disk, so I couldn't do as it recommended and copy all the retrieved files to another formatted disk.

5. You should now have a reasonable retrieved copy of your original. If you want to investigate further, you can use FM off Fish 36 to have a look at where the various files and their directory tracks are on the disk, and how much of the damaged files still remain. (That is, number of blocks indicated multiplied by 512 bytes to give approximate size in Kilobytes, as compared to the original file.)

With an "executable binary file" any little problem of scrambling/deletion or whatever will render it useless since it's all of a piece; but with a text file you might have lost a bit here and there. If you want to look a bit further into the disk structure, get the program HACK, or a variety of other PD sector editors such as SECTORAMA on Fish 102.

Control key combinations in the CLI

LEFT-AMIGA N : Workbench window to back - works with most programs
LEFT-AMIGA M : Reverse the above - works with most programs
CTRL-D : Abort a command sequence file/batch file, such as the startup-sequence, say to get straight into the CLI rather than loading Workbench. CTRL-C : Stop any CLI

operation

CTRL-X : Erase an entire line in the CLI

STOP-SCROLL : Press any character key once to stop a file scrolling
BACKSPACE KEY or RETURN. (BACKSLASH ^ and BACKSPACE is a good combination to start and stop, since they're beside each other on the keyboard)
CTRL-O : Enable the Alternate Character Set - try it, and press a few keys!

CTRL-N : To undo the above situation, ie get the normal character set back.

ESC-C : Clear the screen and display normal text.

CTRL-L : Clear the screen, cursor to top (form-feed)

CTRL-J : Linefeed, ie one line

down CTRL-K : Up one line

CTRL-H : Delete a character

under cursor (ie backspace)

CTRL-G : BELL character -

flashes screen on the Amiga

CTRL-M : Carriage return

CTRL-\ : End of file indicator -

ie if you enter a command

such as > copy * to prt: all

keyboard input goes to the

printer. To stop this process

use CTRL-\ and you'll be back

in the normal CLI. □

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S	Sport	SI	Simulator
AD	Adventure	U	Utility
H	Home	A	Art & Graphics
BU	Business	M	Music
ED	Education		

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Test Drive

by Robert Kelso

ARE you sick of your '76 mustard-yellow Toyota Corona station wagon? Perhaps a Porsche 911 turbo is more down your alley, or a Lotus Turbo Esprit. Well now's your chance to try one of these super-cars of European breeding in the privacy of your own home, on your Amiga.

The brilliance of this game is its realism, such has not been found on any other computer racing simulation. It is a real shame that the Amiga does not have an ignition switch just to add that extra touch of authenticity.

You can pick one of five cars to race along a mountain path avoiding the police and other traffic as well as the odd pothole and the mountain cliff. Doesn't sound like much really, does it? Perhaps not in the family sedan at 60km/h, but in a Ferrari Testarossa at just under 250km/h things can get a little tricky. Of the five cars, four are European whilst one is American.

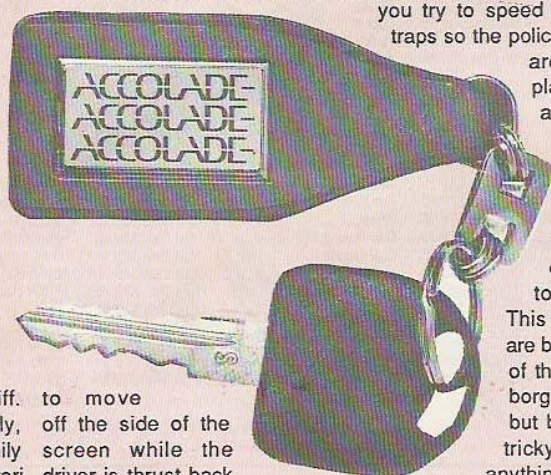
The list is impressive and probably includes every car that you'd ever want to push to the limit, Lamborghini Countach, Ferrari Testarossa, Lotus Turbo Esprit, Porsche 911 Turbo and a Corvette make up the grand list of test drive options. Since I am a Jaguar devotee myself it would have been nice to see a Jaguar XJS amongst the list.

Once through all the title screens and whatnot, including a rather neat voice digitisation of "Accolade presents", you are given your choice of the five different cars in the game. This is done by displaying a picture of the car in the top section of the screen whilst a specification chart is displayed in the lower half of the screen.

Once you have chosen your

machine a neat piece of animation follows. It comprises of the car starting up with a sporty sounding engine, the electric window lowering to see a cool looking chap wearing dark sunglasses.

Following this, the car starts



to move off the side of the screen while the driver is thrust back into his seat.

Next thing you see is the mountain road ahead of you and the dashboard of the car that you have chosen. You can almost smell the leather interior of the dashboard as the engine purrs in idle. Rev the engine and you can hear the carbies suck the air hungrily, you drop it into first and the tyres

scream under the engines power.

As you tear down the road you reach 100km/h in under six seconds, with a bit of help from someone at home you can achieve a G-force effect with the chair even moving back - that's if you have a rather abled bodied friend. You can even hear the tyres screech on the corners, the sound of the wheels crossing the centre line bumps.

As your European thoroughbred races down the mountain

road you can smell the brakes burning and perhaps the clutch if you can't drive a manual. A radar detector is at your convenient disposal, to keep you from confrontations with the boys in blue. In this game however, opposed to reality, you try to speed past the radar traps so the police think that you

are a low flying plane rather than a speeding motorist.

If the police do nab you for speeding you can always try to outrun them. This is easy if you are behind the wheel of the Ferrari, Lamborghini or Porsche but becomes a little tricky if you are in anything else as it requires quick acceleration up to a speed of about 250 km/h.

The idea is to get to the next petrol station on the road in the least amount of time possible. Getting booked by the police

takes quite a long time, as does getting back into your car after a head-on with a truck or a quick scenic route off the side of a cliff. The whole game consists of five stops, the last one being the dealership. If you have done well you are allowed to go home and keep the car.

The most unique virtue of the game is that every car handles and drives differently. The Porsche handles better than all except the Lotus Esprit which is unbelievable (quote from Vince Sorrenti). Lotus is probably the best car for beginners mainly because it is one of the slowest. The Lamborghini and Ferrari are too big and tend to slide over the road at the exces-

sive speeds they are capable of.

The top speed that you attain is about 270 km/h in the Lamborghini - unfortunately there is nowhere that you can take the cars any faster in the game as the roads are just too winding.

One complaint that I do have however is that the mountain scenery is quite boring. On the package there is a scene of a raceway that I certainly haven't seen in the game. Rumour has it that there is a scenery disk that contains such areas which would bring the oil to the boil in your Countach.

The top score that I managed was 49,191 in the Lotus Esprit. And the best run between gas stations is 17,744 in the Countach.

Test Drive has a lot to offer, it is a game that I thought I would tire of quickly, but that was not the case. The variations of cars, all of which are truly different in speed and handling, make *Test Drive* a winner. If the mysterious scenery

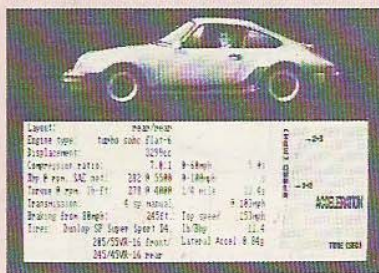


disks appear then it will be extremely hard to beat indeed. Hopefully not a vapourware product!

Test Drive was produced by Accolade and is distrib-

uted by Ozi Soft, RRP \$49.95.

Ed - Many other magazines have canned this game. My first impressions were certainly negative. Whilst the opening screens are brilliant, the driving sequences seemed to lack. After my first fifteen minutes behind the wheel, I still wasn't convinced, until I changed cars. "It's different", I exclaimed. Sure enough *Accolade* have gone to great lengths to make this game more than just a flat car race. It is a true simulation. Now I'm hooked. Top fun, although there can be no doubt that we will see far better racing games in the future. For now this is it. □



Info files...

What are they?

IF YOU normally use the Workbench while operating the Amiga, but move into the CLI environment once in a while, you may notice a bunch of files that have the same name as the actual files on the disk but with .info appended to them.

These are the files that contain information for the Workbench environment and tell the Amiga what type of file it is (Disk, Draw (Drawer), Tool, Project or Garbage), what the deletion status is (Protected or Deletable), and, in the case of Tools, how big the stack should be and any default settings to use when entering the program. If the file is a Project, it will include information concerning the Default Tool (which program to run to make use of the file), a comment and any specific tool types.

To see what I am referring to, single-click an icon and then select the INFO option from the Workbench menu. All of the pertinent data will be displayed in various areas of the INFO screen. Of the items displayed, the Status is the only on-off type gadget. Click it and it will change from PROTECTED to DELETABLE.

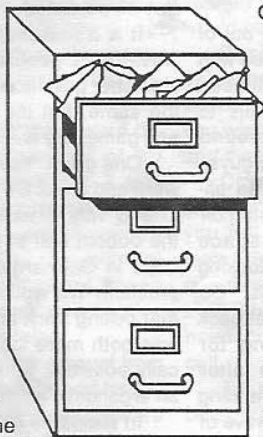
The other gadgets are of the STRING type where you would click somewhere inside of the border and then enter text or numeric information. In the case of the TOOL TYPES gadget, you have four additional gadgets. These are set up to allow you to add information that will be passed to the appropriate program to set up any defaults that you have selected.

In the event of a custom program, the creators of the program will probably tell you what to place in this section for their specific program. As an example, let's take a look at a *Notepad* file that sets

up some defaults before entering *Notepad*.

Notepad defaults to Topaz80 for its font, so your file will be saved with Topaz80 as its default font also (unless you change it in the actual file). If you were using a font called Pica and wanted this to be the default for your file, you would follow these steps:

- 1) Select your file's icon by single-clicking on it.
- 2) Choose the INFO option from the Workbench menu.
- 3) Click the ADD Gadget in the Tool Type section and click in the text entry area.
- 4) Type in "FONT=pica.8" (assuming an 8 point version of the font is to be used) and hit return.
- 5) Select the SAVE GADGET>



Now, when you open the file, Workbench will open *Notepad*, your file and automatically use the Pica font as your default font.

Amiga-N and Amiga-M:

Even Workbench users touch the keyboard occasionally and here's one good instance.

If you run a program that opens a new screen, not just a new window, then you may be at the mercy of the program as to whether you can get back to your Workbench screen without quitting or deleting the software. Even worse, you may be stuck in a public domain demo program that won't let you quit without rebooting Workbench!

If you press and hold down the left Amiga key (right next to the spacebar) and then press N, you will flip screens. Use left Amiga and M to flip back. This is a keyboard equivalent to the pop and push gadgets in the upper right hand corner of most screens and windows.

Throwing it all away:

Remember that dragging icons into the Trashcan is not the last step in throwing away files. The Trashcan icon really represents a drawer on your Workbench disk. When you put things into the Trashcan, you are simply moving them to the trashcan drawer. Try moving a couple of icons to the

Trashcan and then double-click on the Trashcan icon. You'll see a window open with the icons in it.

To actually delete the files or programs in the Trashcan you must select the Empty Trash item in the Disk menu. Once you do this, the files are destroyed, and the disk will reclaim the space. □

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Amiga games - latest roundup

by Andrew Farrell and Adam Rigby

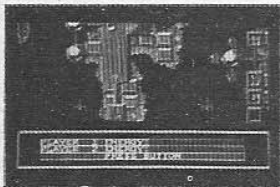
OVER the past few weeks, we have received an absolute onslaught of new Amiga games. Most are only average, there are a few gems, and the occasional clunker. On the whole, it's a very encouraging collection.

We have also seen sneak previews, of some very hot titles likely to hit our shores within the next two months. Amongst these was a Grand Prix game with a difference - you're in an aeroplane.

And now for a round-up of what we found kicking around the floors, desks and disk collections of our editorial offices. It was no easy task. So, with joysticks ready to blast, here we go.

Challenger Publisher:Anco

Are these guys serious? This is only half a game. All the usual super sound effects, which as usual we were wrapped in. But the game play? Judging by the opening screen there's nothing serious about this game. The logo displayed is a chicken head in a cir-



cle. As for the game, it's a classic silver range effort. It's probably the worst of the lot. Described as a fast reaction game for one or two players, we preferred to think of it as an unfinished version of a dozen other games.

The concept is strange. Whilst guiding your ship with left and right movement of the joystick, a landscape with a large space ship above it scrolls down the screen. Up and down movements of the joystick controls the space ship, or landscape depending which player you are.

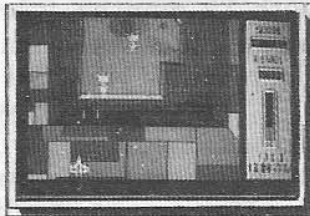
Totally bizarre, unplayable, and mundane. We gave this game the big thumbs down. Apologies to all involved. RRP \$29.00

Vader Publisher:Anco

A catchy piece of opening music is the prelude to this straight out shoot-em-up type game. A personal choice. You either love them or hate them.

It's top to bottom screen scrolling, with aliens swooping into view, and firing at you, before diving precariously close as they make their way past.

Your ship may only move left or right. Rather than direct hits on your craft being fatal, they dimin-



ish a shield, and only when it reaches zero is your life lost, so to speak. The aliens are sluggish, with predictably unchallenging movements across the space ahead. At least it's playable. All the usual digitised sound effects that the Anco silver range boasts make this yet another amongst many.

Just scrapes through on the graphics, sound and playability scores. Overall, well, we've seen better. A bit of a maybe, but budget priced, so it could be a yes I'll have it for real hard core game players.

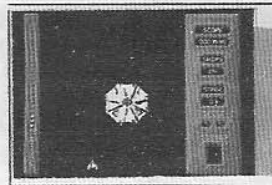
RRP \$29.00.

Phalanx Publisher:Anco

Name sound familiar? Could this be a take off of the arcade classic of the same or similar title?

The title screen is great. The word *Phalanx* has a kind of wave going through it. The credits cover everyone, right down to the guy who created the flying objects, of which there are a good number in

any game. We didn't realise there were so many people involved in creating this sort of quality game.



The main title screen fades out and you're ready to play. A background of stars remains static as the alien shapes swoop and twirl their way onto the screen. They're fast, unpredictable, and they come at you from the top and bottom of the screen. Your craft can move up and down as well as left and right - an essential ability to dodge these critters.

A rain of bullets pours out of the sky. Your ship is endowed with similar fire power. But you'll need excellent maneuvering skills to get around these guys.

The aliens start off as space ship looking things. So we sat back waiting for wave after wave of metal-plated marauding aliens, when down came a wave of Atari symbols. Now this is what we call fun.

Overall a top shoot-em-up. Quality arcade action, with variation and challenge. We recommend this baby of the video game boom on the Amiga to all shoot'em up fans. If you're peace loving, just turn the sound down.

RRP \$29.00

Sky Fighter Publisher:Various

We have two versions of this game, seen from a different supplier. In one package there were no instructions, in the other there were some. In both the instructions proved to be incorrect, or insubstantial. What's going on?

Furthermore, on one the back-

ground story reads, and we quote:-

"Backgroundstories are stupid and senseless, therefore there is no backgroundstory" (spacing theirs).

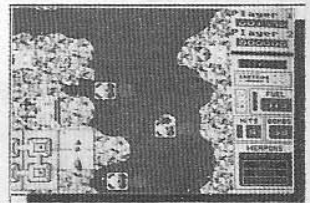
J. Mark Hunter would be saddened beyond hope. Nothing on which to base his review. No story line to follow. Nothing to be flip-pant about. To top it off, Rainbow Arts are offering 1000 DM to the person who can come up with a good background story.

The rest of the documentation continues in the same smarty pants vein. Fortunately the game play is relatively easy to pick up. It is however, umpteen times more complex than any other game we've reviewed recently. It nearly ended up in the too hard basket. But we persisted.

It is a reasonable imitation of *Xevious*, a popular arcade classic. The graphics aren't exactly the same, but the basic concept and game play is.

One glitch. You must push forward and press fire to drop bombs. That is very difficult down here on the bottom half of the world. Perhaps in Germany it's not such a problem. We would have thought that pulling back and pressing fire was both more logical and physically possible. Some would call it an ergonomic arrangement.

In short, the landscape scrolls



down the screen. Various installations appear and you must bomb these. Craft fly down the screen, and you must shoot these. Bullets fly toward you and you must avoid these. It's an old idea, but it works, and sadly rates as one of the better games so far in this series of reviews.

It's kinda little awkward to play, but snugly fits in our almost recommendable basket. Good graphics, O.K. sound FX. Get the

version with the most instructions if you have a choice.

RRP \$39.00

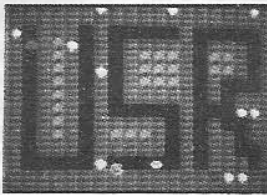
Dr Fruit

Publisher: Anco

A mouth watering treat with a difference. Welcome to *Dr. Fruit*. The quack who attacks. Eat the fruit or be eaten by the fruit. Watch

out for falling rocks, and be totally amused by the comical sound effects of eating, munching and chewing. Keep those seeds handy too, they are great for knocking out the attacking party.

A static screen



display with various frames, and levels of increasing difficulty. We loved it for total comical value. Right up our alley. Good game for parties or late nights after bashing out a few assembly

language sub-routines. Graphics are good, the music is perfect. Overall, we recommend it. A winner amongst fruit lovers the world over. Why not taste it and see if you get a bright out of it. You'll need 512,000 bytes to run it. Ok... we're going. Until next month, happy game hunting.

RRP \$29.00 □

Australian Amiga groups listing

IF YOU'D like your Group or BBS to be included in this list, please send in the details to *The Australian Commodore and Amiga Review*, 21 Darley Road, Randwick 2031.

● Brisbane Amiga Users Group
P.O. Box 853, Toowong Qld 4066

● Amiga Users Group
P.O. Box 48, Boronia, VIC 3155
Associated BBS:
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● Canberra Amiga Users Society
36 Ambalindum St,
Hawker, ACT 2614

● Waite Amiga Users
C/o Curtin University
14 Colonial Drive
Bibra Lake, WA 6163

● Amiga Users of Northern Territory
C/O 4/4 Armidale Street
Stuart Park NT 5790

● Mount Isa Amiga Users Group
C/o 147 Fourth Avenue
Mount Isa Qld 4825

● Adelaide Amiga Users Group
GPO Box 332, Adelaide SA 5064

● Amiga Users Group of South Australia
PO Box 486, Glenside SA 5064

● Burwood Amiga User Group
Meets 2nd Monday each month at the Burwood R.S.L. 7.30pm. Ring

Peter Anderson H:6271596.
Has about 60 members.

● East Coast Amiga Group - Wyong NSW
Meet 2nd Friday each month 7 p.m.
Cnr. Alison & Rankin St, Wyong
TEL: (043) 907090;843429; Jeff Campbell (043) 418140 Also meet 4th Friday each month at 7 p.m. Niagara Park Public School, Niagara Park.

● Hills District Amiga Users Group (NorthWest Sydney) For details, call Wayne Frew on (02) 875 4189

● North Sydney Amiga User Group
Membership is \$20 per annum. They intend to establish a BBS, print a newsletter and get members' discounts at certain computer stores.
Mail to: N.S.A.U.G.
c/- Computerscope. Shop F1, Tower Square Arcade, 155 Miller Street, North Sydney, 2060.

● Sydney Metropolitan Amiga Users Group
Membership \$10 per year to: SMAUG Membership, 8 Ross St, Dulwich Hill NSW 2042.
Meet 2nd Sunday each month at the back of 1128 Botany Road (entry by Chegwyn St) - check before going.
Contact: Richard Simpson (02) 5245056 (ah), Greg Kable (02) 558 0638 (ah); 923 9549 (bh)

● Ace User Group
Enquiries: P. O. Box 938
Bankstown NSW 2200.

● Goulburn Amiga Owners Group
Meet 1st Wednesday of the month at the Southern Tablelands Education Centre. General interests - all topics covered. They have 22 regularly turning up of about 50 Amiga owners in Goulburn. Contact: Rob Wilkins (Publicity Officer) (048) 442251

● C Language Users & Enthusiasts Society (CLUES)
Meet first Tuesday of the month in Frenchs Forest in Sydney.
Contact: Jim Sharples (02) 9584705

● Australian Amiga Users Association
P.O. Box 389 Penrith NSW 2750
Associated BBS:- AmigaMan BBS
Sysop: Ron Carruthers
Tel: (047) 588006

Other Amiga BBS

● Club Amiga BBS
SYSOP: Ross Kellaway and Ken White (02) 5216338
NB >> Megadisc has a section on this board for messages and uploading and downloading files. The board itself is very active and has an excellent message and file section.

● Brisbane Commodore Club BBS
SYSOP: Colin Camfield
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● Softech Fido BB(Scarborough)
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● ACT Amiga BBS No. 1
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Greg Hudson also runs a software club

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Notepad

Contributors wanted

Now that the *Australian Amiga Review*, and the Amiga are starting to sell in big numbers, we're expanding. Real soon now there'll be extra pages, full of fascinating uses for your favourite home computer. Before that happens, we need more writers.

If you consider yourself well versed in any particular area of the Amiga, and have been known to keep copy deadlines, and make adequate use of the English language, please contact the editorial offices of *The Amiga Review* on (02) 808 1860. We gladly accept unsolicited manuscripts, preferably on disk, on just about anything. So why not give it a try. Things can only improve. You'll be getting in on the ground floor of a whole new era.

Rent an Amiga 500 - on a screen near you

If you're waiting to be thrilled by the Amiga's brilliant graphics, and blown away by the astounding stereo music and sound effects, you need to rent an Amiga 500. Commodore are releasing, even as I write, a video that promises to permanently "blow your socks off" into the neighbours backyard. It's just like renting an Amiga for a few days.

You get to see and hear what it's all about, and be thoroughly convinced that you're about to or just did spend that next \$999 well. The video will be available from leading Commodore dealers, and selected video stores, for a nominal hiring fee. Some dealers may also require a deposit.

I've seen the video, and it's worth hiring just to entertain all your Apple, Atari and Amstrad friends next time they drop around. No need to get their grubby hands on your keyboard. Just sit them in front of the TV screen, and listen to them shriek!

New Amiga logo

Yes, the rumours are true. The old Amiga tick is to be done away

with. Enter the new sleeker, faster, smoother, classier version. We were going to show it to you on these pages, but why spoil the fun of making you wait.

Workbench 1.3

Not even Commodore Australia have seen the latest improvement to Amiga's personality - Workbench 1.3. Well, neither have we. But a good source informs us that it is umpteen times faster at loading software than version 1.2. Something which could be a mixed blessing.

It seems many protected programs have problems running under version 1.3. Hard disks will also need reformatting, according to another source. What is the truth of the matter?

The facts seem to make sense. The right improvements are being made. And software houses are releasing versions of programs that work on the most recent Workbench. *Flight Simulator II*, and *Leader Board Golf II*, both work fine under version 1.2 on their latest release. An encouraging thought. So, whilst the transitional period may be an awkward thing, we will win out in the long run.

The question comes to mind of upgrade paths. Will Commodore offer a simple update service? Or will we be charged an additional \$39.95 for another four disks? Watch this space for further updates.

Fat Agnes

Sources with an ear inside Commodore's engineering department report that they have developed working prototypes of the long-anticipated Really Fat Agnes chip. This chip will be a drop-in replacement for the current Fat Agnes chip in the A500 and A2000, and will let those machines address a full megabyte of chip RAM for graphics and sound.

Whether or not the new Agnes will allow higher resolutions or more colours is still up for grabs. There is also no word on when the chips will be available.

Activision and Micro-Illusions

In the latest saga of gobble and devour, Activision has signed over MicroIllusions under its Affiliated Publisher program. Under this new arrangement, MicroIllusions remains an autonomous company, and separate identity, but Activision takes over distribution of MicroIllusion titles. These include a number of new releases yet to hit Australian shores. However, we are already familiar with *Faery Tale Adventure*. Newer titles are not of the same genre theme-wise, but are certainly of equal if not greater quality.

Both MicroIllusions and Activision products are distributed in Australia by Imagineering through Questor. At least a dozen hot new titles are due to hit soon, including the *GeeBee Air Race*.

Mindscape signs Atari coin-classics

Hit games such as *Road Runner*, *Rolling Thunder*, *Road Blasters* and *Gauntlet II* will appear soon after *Paper Boy* and *Gauntlet* - all under the Mindscape banner. The company recently acquired rights to port some of Atari's most popular coin-op arcade games to personal computers. I can't wait to see my favourite, *Road Runner*, on the Amiga.

Broderbund go back to basics

Board games have always been big sellers, with popular titles such as *Monopoly* selling thousands every year as happy players replace worn-out boards.

In a bid to spread their eggs around, large US software company, Broderbund have diversified into the board game world. Their first product is *Personal Preference*. The game teaches communication skills and involves 800 cards and a folding playing board.

Buying a computer

A recent C&SN consumer survey, conducted in the United States, indicates that most consumers who are in the market for a personal computer expect to pay less than \$1500 for it. 29% of respondents had a price of \$751 - \$1500 in mind, while 17% wanted to spend from \$250 to \$750. 22% expected a \$1501-\$2500 pricetag on their system, while 20% expected to pay even more.

That's good news for Commodore, since they offer computers in all the most popular price ranges. Apple and IBM can't compete at the low end, and Atari offers nothing at the high end of the range. Many of Apple and IBM's computers fall in a price range of over \$3500, a price only 7% of consumers indicated they would be willing to pay. (All \$ are US).

Activision posts profit

Activision are back in the black. It was the first time in four years, they had posted a quarterly profit. They made a half million dollars the first quarter of '87 on sales of \$8.7 million, nearly double the sales figure they reported for the same quarter a year ago. It looks like the hard times are behind them. Congratulations, and keep those top class software titles rolling in. Activision software is distributed by Imagineering through Questor.

European sales

Unconfirmed statistics from a source on Wall Street show that Commodore sold 70,000 A500s and 15,000 A2000s in Europe in May/June, the first two months the machines were available there. That's more than all the A1000s sold in Europe over the past year.

It looks like all the promised internal A2000 boards (the Bridge, the hard disk controller, and the 2 meg memory board) will be available simultaneously with the release of the A2000. That's good news!

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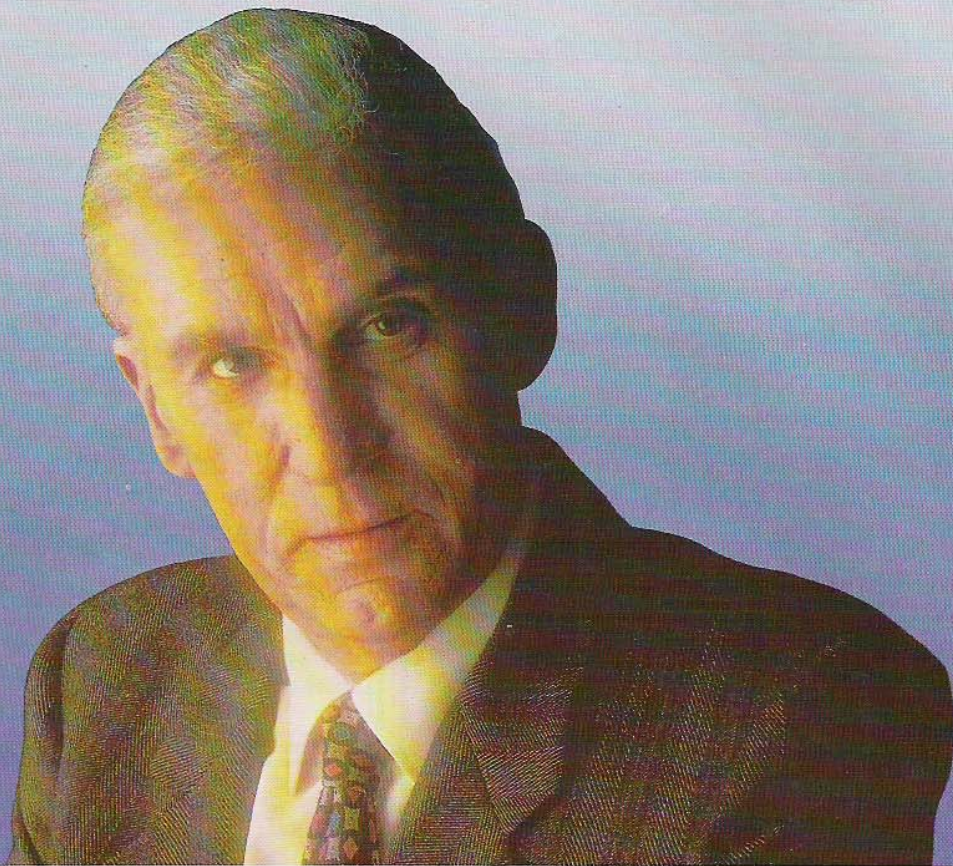
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COMMODORE
COMPUTER LEARNING CENTRE



Arcade action

February arrived and with it came some pretty hot new software. *Out Run* on the C64 is the talk of the town at the moment. Andrew Farrell looks into this souped-up software that was converted from the Arcade Legend.

Last month we looked at *Skate or Die*, a top new game from Electronic Arts, this month we look at its latest competition - 720°.

Sebastian Bass graces our pages again with a look at *Ramparts* from Future

Concepts. On the topic of writers, a new one joins us this month, Justine Tiana, who examines *Arcade Classics* from Firebird.

In this issue we have made sure that the Amiga has been accounted for (see the Amiga section), we hope this makes up for last month's inadequate Amiga coverage.

Whilst on the subject of Amiga games, I was fortunate to see some pre-release copies of a couple of games on

the weekend. I was astonished at the quality of these new Amiga games, soaring to equal even that arcade quality that is so much talked about.

One of these games was a biplane racing game. Picture a three dimensional version of *Pole Position* with biplanes instead of Formula Ones. The sensation of flight is astonishing in its realism. Watch out for a review in the coming months.

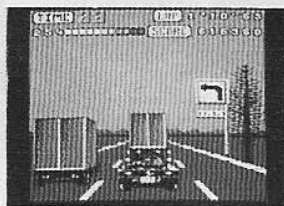
Out Run

by Andrew Farrell

From the arcade masterpiece by the same name, comes a conversion for the Commodore 64 that promises to turn many heads. Andrew Farrell strapped into the Ferrari Testarossa Convertible to file this roadside report.

ACCORDING to the included documentation, *Out Run* is the product of nine months' work by a team of programmers. The Sega game machine that takes you to the very edge of driving thrills and spills, has sold some 20,000 units world wide, making it the largest selling arcade game ever.

Although no longer manufactured, many coin-op arcade game proprietors will search high and low to acquire one of the existing units. If you haven't played the original, collect a few dollar coins, and head down to your nearest ar-



cade alley. This one promises to impress.

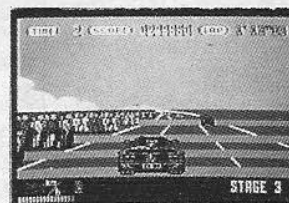
As you race along the landscape, complete with hills and dips, the seat moves and the steering wheel shudders. Total realism like you've never before experienced in an arcade game.

And what of the Commodore 64 conversion? The seat might not move, although with some help from office staff here at the *Commodore Review's* dizzy editorial offices, we did

manage to add some of the original machine's flavour.

There can be no doubt that this is the best ever car racing type game for the Commodore 64. Whilst the graphics and animation are not perfect (the Amiga version will fix that), the realism and overall simulative value are both high.

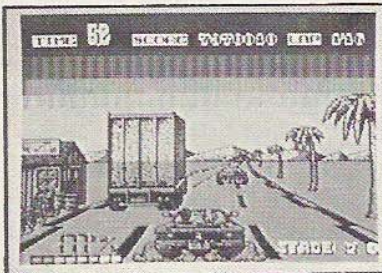
Like the arcade original, there are a variety of possible courses, each including a variety of landscapes. You must choose your desired course prior to the outset of the game. To change your course later on, you must switch off and re-



“There can be no doubt that this is the best ever car racing type game for the Commodore 64.”

load. Each course is in itself a self contained game.

A soundtrack of the original arcade game music is included - but it's not in the game, it's on a separate tape. If you're serious about hearing it, pop the cassette into your ghetto blaster. Personally, I



preferred the tinny popsicle C64 sound track. Sound effects are average, bordering on substandard, but the music isn't bad.

Now you're ready to play. It's the only two-speed Ferrari of its type. But it'll still do over 240K's, so do your belt up tight. The road is fully three dimensional, complete with hills, dips and bumps. Scenery passes by, which although a bit jagged looking, provides more than ample reassurance of your extraordinary speed.

Each of part of the course must be completed within a prescribed time limit. If you fail, the game ends. Succeed, and you progress to the next part of the course.

All the courses begin at Coconut Beach, lined with palm trees and spectators.

Later on, there's everything including cliff edges, overhead gates and houses to provide that extra obstacle. Hit one at the right speed, and your Ferrari will flip and spin, tossing the occupants onto the road. You've got your girl friend with you too. She just loves to point the finger when something goes wrong - a nice touch.

The car handles well. With the right line and speed, the Ferrari loves to hug the inside bend. Take it wide, and she slides out of control. Other cars on the track prove hazardous, especially through the bends. Bump one and you quickly lose speed.

The sensation of hills is exceptional. On the original arcade game it's umpteen times better. All I can say is - where is the Amiga version?

Overall a top game. One that I'll be playing many more times. If you're into driving, this is the ultimate for C64 owners.

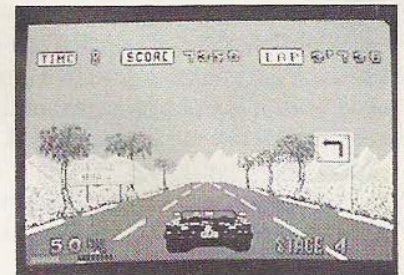
Tips on Playing :-

Stick close to the inside of each corner. Try to anticipate each bend and be in the inside lane before you approach it. Start turning slightly before to start the Ferrari in a slide. Keep your accelerator flat to the floor.

Only use the gears to slow

down when desperate. Don't touch the brakes, except in a total emergency.

Keep cool. Play it calmly. Radical driving will get you smattered on the side of the road. Ease around each car gradually. A quick bump of the joystick

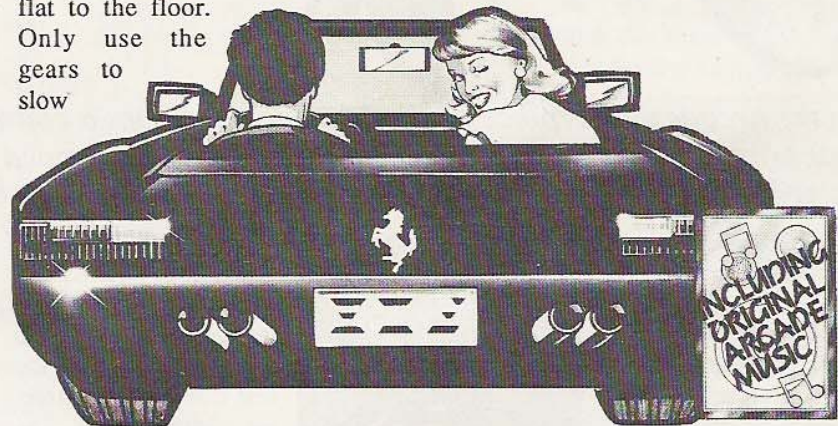


at the last moment will often sneak you past even the trickiest of traffic hassles.

It's a conversion of sorts that promises the best possible, and comes very close to delivering just that.

Distributed by OziSoft.

Price c \$29.95, d \$39.95. ■



Graphics	★★★★★★★★★★★★★★★★★★★★
Music	★★★★★★★★★★★★★★★★★★★★
Presentation	★★★★★★★★★★★★★★★★★★★★
Documentation	★★★★★★★★★★★★★★★★★★★★
Overall	★★★★★★★★★★★★★★★★★★★★

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720°

The ultimate aerial experience

Flipped out by Adam Rigby

TAKEN from the arcade original, this new skating game has much to offer, but is it enough to compete with the recent release - *Skate or Die?*

This radical arcade game has caused many a schoolboy to go broke or without lunch. With the terrific music and sound and the superfast gameplay, it is no wonder that it has the longest queue at the parlours. Many an executive has fulfilled his childhood dreams on this amazing classic of the coin-ops.

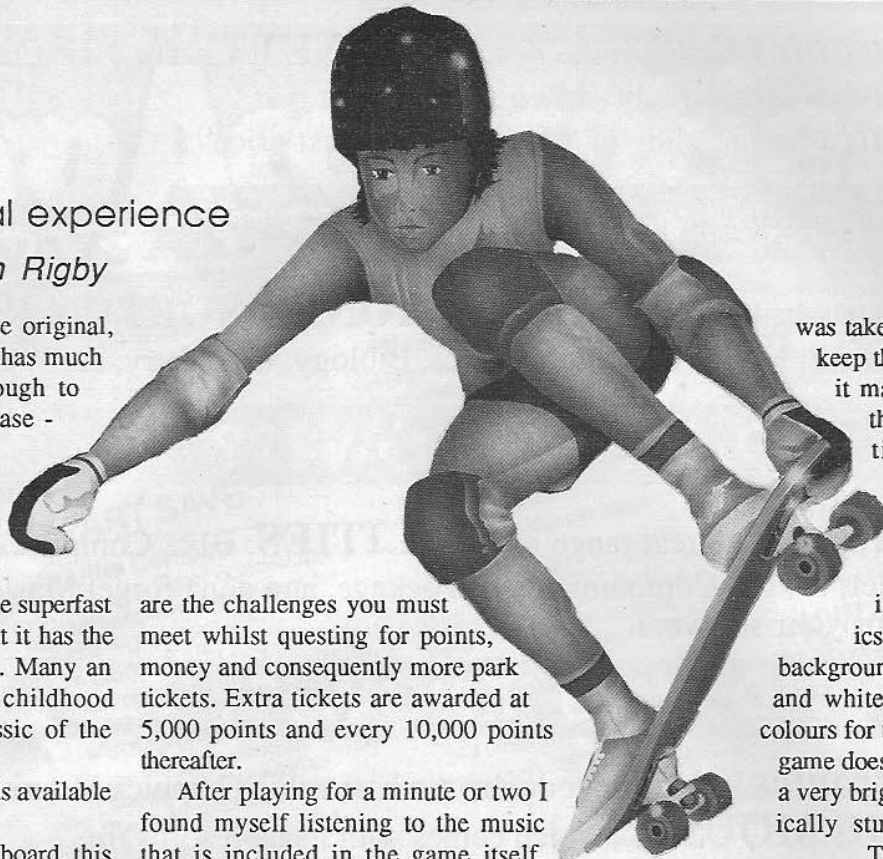
Now this hot arcade game is available to the C64 computer owner.

The player controls a skateboard, this is pretty reasonable and expected considering that the game is based on skateboarding - nothing complicated about it really. The object is to perform stunts, accumulating points for which park tickets are obtained - these allow you into the park areas in which you can try to qualify for medals and cash prizes.

Cash is not used for taking girls out or putting a deposit on that seaside unit, but buying better equipment for your skating fiend - skaters are not renown for their financial planning. With this better equipment, however, you can perform even more radical tricks and generally perform at a higher standard - this makes the impossible 720° aerial suddenly seem a remote possibility.

At the beginning of the game you skate around a place called, ironically enough, "Skate City", in which you can visit four parks or four shops, the parks can only be visited once per level as the game continues.

The parks test different abilities of the skater and demand different tactics to succeed; Downhill, Jump, Ramp and Slalom



are the challenges you must meet whilst questing for points, money and consequently more park tickets. Extra tickets are awarded at 5,000 points and every 10,000 points thereafter.

After playing for a minute or two I found myself listening to the music that is included in the game itself, which I might add was very impressive - it consisted of the usual guitar solos and the like. And if this isn't good enough for you, you can insert the included audio tape of the music from the original arcade game and be blown away by some pretty zany music.

On the way to work the other morning, I inserted the tape into my 100W car stereo - unfortunately the volume had been bumped and I still keep hearing in the back of my mind "skate or die" followed by heavy metal guitar solos.

At this point you may well be quite confused, why would the words "skate or die" be on the competition's audio tape? Well, apparently the name "skate or die"

was taken from 720°, keep this in mind as it may well be in the next question set of *Trivial Pursuit*.

The main lack in 720° is the graphics, the all black background with brown and white as the main colours for the rest of the game does not make for a very bright and graphically stunning game.

The gameplay itself is quite good but unfortunately the graphics and animation just do not compare with the vivid colours and the extremely high standard of motion in *Skate or Die*.

720° is a fun game to play but does not compare with *Skate or Die*. If you are a real skate fiend perhaps you should buy both - but make sure that you buy *Skate or Die* first.

Publisher : Atari Games
Distributor : OziSoft
Price : c \$29.95
d \$39.95
Machines : C64/128■

Graphics	★★★★★★★★★★★★★★★★★★★★★★★★★★
Music	★★★★★★★★★★★★★★★★★★★★★★★★★★
Presentation	★★★★★★★★★★★★★★★★★★★★★★★★★★
Documentation	★★★★★★★★★★★★★★★★★★★★★★★★★★
Overall	★★★★★★★★★★★★★★★★★★★★★★★★★★

Airborne Ranger

Sebastian "prone to joystick fatigue" Bass looks into this new game that has more strategy and skill than your average "kill everything that moves and then some" game.

AFTER much deliberation and floating around Adam's pool with a faithful companion - Cooper's beer, we actually made it upstairs to look at some of the new software that arrived in our absence. *Airborne Ranger* happened to be one of them, so read on for a totally unsolicited review of this great new game.



"Okay, so I can't make Waldorf salad, but can you out of one apple, a handful of sultanas and a dollop of mayonnaise? - anyway, let's have a beer."

These famous last words from Adam Rigby began the ritual, the C64 was switched on and we were away. Ready to infiltrate enemy camp sites and bring enemy officers and secret documents from the comfort of the office chairs.

However, one thing eluded us - how to play. We had yet to read even the instructions on "How to play without read-

ing the manual". (Obviously such things must now be included in games for over-anxious journalists too keen for their own good.) But instructions didn't even get looked at until after a good half hour

I found the harder missions more challenging not only because there were more men to kill, but because the timing factor sometimes involves stealth, thus killing requires the use of the knife to

"My next attempt was soon ended by a land mine, the game after that was shortened by a proximity mine."

of frustration. Ironic really, considering that it was only a brief paragraph that would have saved all that hair-pulling.

Airborne Ranger is actually quite an exciting game, with no shortage of action. The fact that you are an American Ranger almost justifies the fact that your mission includes shooting, stabbing and bombing. After you have eliminated a soldier, his unsightly body is removed from the battleground, probably so there is no guilt associated with the game.

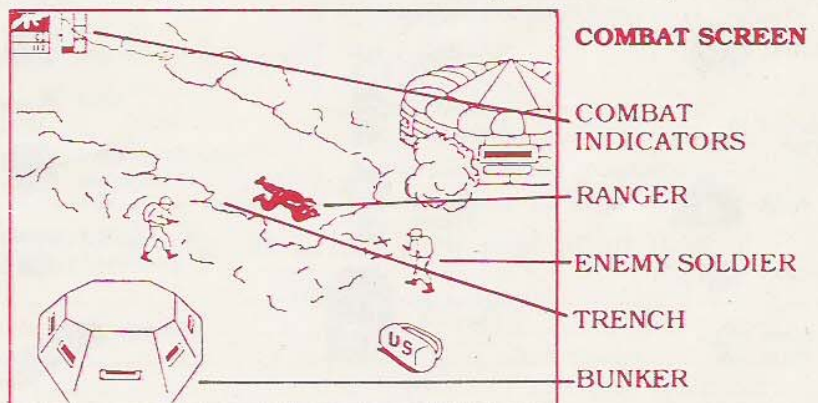
Upon loading the game, you are presented with firstly an option of type of Ranger, and then a choice of 12 missions, varying in difficulty. These missions include capturing an enemy officer, freeing hostages, and destroying enemy munitions depots, just to name a few.

avoid being noticed.

The Ranger is first flown over the enemy territories, and must make his way back to the top of the screen, which is where the objective of the mission lies. On the way, you can pick up brownie points by killing and blowing up installations. After the mission is completed you can call the aeroplane to come and pick you up.

There are four weapons in the game, which are renewed by finding one or all of the supply bags dropped on your way into enemy territory. The supply bag contains one grenade, one time bomb, a few magazines of ammunition, one first aid kit, and a law rocket.

The grenades are useful for blasting through barbed wire, whilst the time



bombs are, depending on the mission, useful for sabotage or blowing away heavy-duty installations. The law rocket is used for blowing shelters, guard houses, and so on.

The Ranger is controlled by a joystick, the firebutton shooting your weapon. There is a sight in front of the Ranger, which makes it easier to see which way he is shooting. Changes in weapons are controlled by the function keys, whilst first aid, stance and speed are controlled by various keys on the keyboard.

The commands for your Ranger, whilst not enormous, are nonetheless extensive. Apart from running and walking, the Commando can crawl in a sniper stance and often avoid being noticed.

After a morning on the Coopers, I felt stealth was for wimps, and proceeded to "Rambo" my way through the enemy. Disaster occurred when I ran out of all forms of weapon except my knife. It was then that I realised that this game is not like most other Commando games in that you must use a bit of nous to survive.

My next attempt was soon ended by a land mine, the game after that was shortened by a proximity mine. Then I realised that the map key shows where the mines are all situated, and what type they are. It also

shows you where the supply bags are. Actually, I had a bit of trouble finding the bags, as sometimes, when they are dropped out of the plane, they drift into a trench or lake.

When the Ranger is shot, once by a tower or several times by the ordinary footsoldier, a box at the top of the screen

ed you pick up all your supply bags.

You have a choice of playing with either a veteran ranger or a "practice" ranger. The advantage of a veteran ranger is that you can work him up through the ranks to being a full-on Colonel, and gain medals on the way. There does not appear to be any difference in the game difficulty.

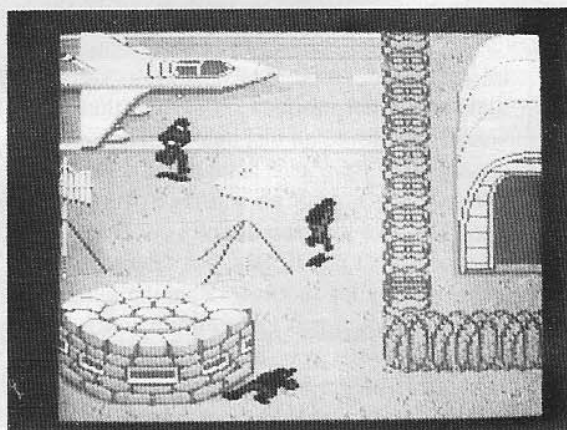
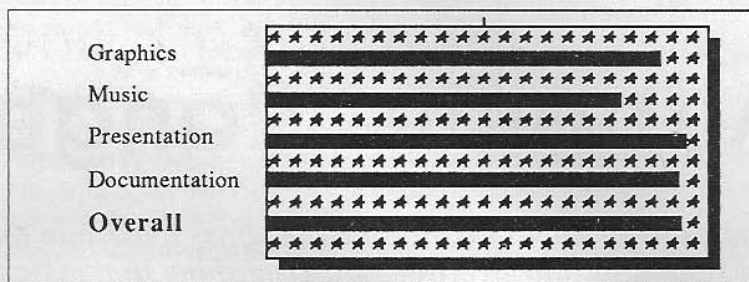
The packaging for *Airborne Ranger* is of a high standard, and includes a keyboard overlay which adapts to either C64 or C128. The documentation is also very good, giving two pages of loading instructions, as well as an introduction to the game called a field manual.

The field manual gives a detailed history of the American Rangers, including their origins, involvement in wars from the American civil war right to the present date, and a code of rules

that every ranger must abide by (most of which do not apply to this game). The field manual also tells you how to play the game without actually reading the manual (which seems a bit of a contradiction to me). All in all, the manual helps in to getting you into bloodthirsty traditions of the game.

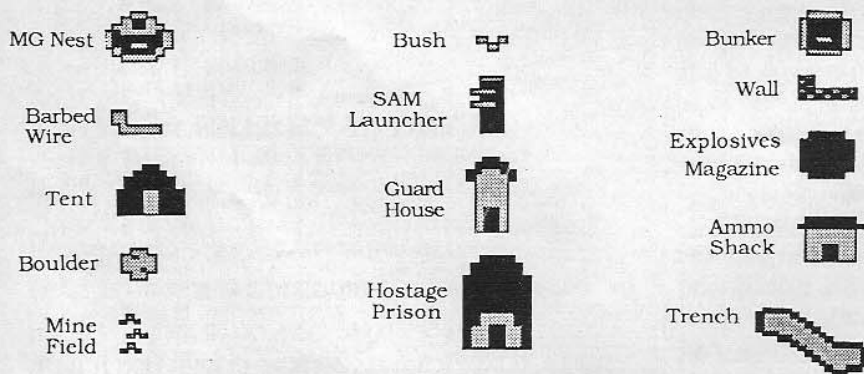
Overall, *Airborne Ranger* is an advancement on all other games of this calibre, such as *Commando* and *Who Dares Wins*, simply because there is an actual objective, and the commando can do more things. As far as shoot 'em down, stab them and blow 'em up games go, this would rate as one of the best so far.

Publisher: Micro Prose
Distributor: Imagineering
Price: d \$49, c \$39 ■



is coloured in. There are three such boxes. However, a box can be removed by using the first aid kit, of which there are a total of four in any one game - provid-

Desert Map Symbols



RAMPARTS

Sebastian Bass looks at this new game from Future Concepts. Read on, as this man has experience with crunching buildings.

RAMPARTS: a game for those who would rather beat up barons and witches than cities and helicopters.

Somehow, the ingenious games writers of Future Concepts have managed to stretch the idea of a berserk giant monster into yet another "simulation". This time, instead of monsters such as Godzilla and King Kong, you play the part of Sir Griswold and Sir Larkin. These two rather unfortunate knights have been enlarged to the size of a small castle by the Evil One (a name of much imagination). Their mission is to find this Evil One, and in order to do this, they must beat up many baron's castles.

To stop you wrecking the castle, there are the baron's henchmen. These little men come fully equipped with catapults and cannon, and have a scaly friend who breathes fire, which cooks you inside your suit of armour. Merely touching one of these will cost you many strength points.

As a direct take off of *Rampage* (and many other games), *Ramparts* has few differences in the game set up. Instead of helicopters dive-bombing the giant, there are witches dropping objects from their flying broomsticks. I didn't work out what the witches were dropping, but seeing the amount of damage they cause the knights, it's probably a lead cauldron.

Compared to *Rampage*, the plot leaves a little to be desired. It seemed a little too purposeful for my liking, but then I like wanton destruction without purpose.

Ramparts only has the choice of a two player game, and there are no computer controlled monsters, which makes it a lot harder to get through frames. It also makes you feel a little lonely; kind of like a freak in a side show.

Ramparts, however, does have its ad-

vantages, as well. For a start, the resolution is a lot clearer, and the graphics, on the whole, are a lot better. *Rampage* had small troubles controlling the monster, whilst this version is a lot easier to control. The music is a lot more advanced, and the sound does not fluctuate as *Rampage's* tended to do.

Before the game begins, you must first move the joystick to the sound effect that sounds best. The sounds range from a deep banging to a sort of sweeping sound. I chose the banging because it's probably a lot more effective to pound castles than sweep them to the ground. The system for dying is similar,

ground for your abnormal size, and how to go about fixing the predicament.

This was the cause of my initial confusion with the game. I immediately started playing as if this were *Rampage* without a huge gorilla and lizard.

My first reaction was to beat up those pesky witches, and jump on the dragon. When a man pushing a cannon onto the screen appeared, my first reaction was to think "food!", and try to eat this tasty morsel. This is when my damage became too much even for a knight of dynamic proportions. It was then that I realised that although witches are worth 50 points, they are definitely detrimental

“... dragons are fun to squash...”

although it too has marked differences. The "Damage" marker is there, although it works in a different fashion. Destroying buildings seems to get strength back again, as opposed to eating little men and other assorted goodies that are found in *Rampage*.

Jumping off a tower onto the dragon will squash him, but again, this makes your giant knight take a lot of damage for not a lot of gain, as another fire-breathing pest soon appears.

Packaging for *Ramparts* is reasonable without being anything too spectacular. The documentation must assume that you have played something similar, because it omits to tell you how to play the game. Basically it tells you the back-

to your health, and although dragons are fun to squash, they'll eventually get to you as well.

Although the graphics are more vivid, and the movement smoother, *Rampage* has something that *Ramparts* lacks: humour. *Ramparts* relies less on being fun to play, and more on looking good, whilst *Rampage* concentrated on simplistic fun.

All in all, *Ramparts* contains more advanced programming, and perhaps even more thought (though with names like the Evil One, I doubt it) than *Rampage*, but is somewhat lacking in enjoyment and playing durability.

Distributor: OziSoft

Price: c \$29.95, d \$39.95 ■

Graphics	★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★
Music	★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★
Presentation	★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★
Documentation	★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★
Overall	★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★★

Arcade Classics

Justine Tiana looks into this new version of four of your favourite old-time classics.

RECALL the days when video games were the "new thing", when you could still play the latest games for twenty cents, and you spent hours in the video arcades trying to crack the high scores on space invaders, asteroids and all the other shootem-up greats?

Well, Firebird has created a neat little package for the Commodore 64 which boasts four of your favourite, old-time classics - *Space Invaders*, *Snakes*, *Asteroids* and *Space Wars*.

It is available only on tape and takes around five minutes to load. After which, you are blasted away by some pretty insane guitar music and confronted with a really nice title page consisting of the four appropriate video machines and a neon sign above saying "ARCADE".

A flashing box just large enough to surround an entire machine also appears on the screen. This may be moved left or right by use of the joystick. Once it surrounds the desired game push either the "RETURN" or the "FIRE" button to play your choice. You may hit "RESTORE" at any time to return to this main menu.

All games are easy playing and can be operated with the use of either the keyboard or the joystick. I will now go into some basic detail about each one.

Space Invaders:

This is one of the more true to life versions of *Space Invaders* that you are likely to have seen on this computer. When this game is selected from the menu we are swept from a glossy title page into that computer green that we all know and love.

We are firstly presented with a page showing the little green space monsters

with their respective assassination scores. The appropriate keys for the keyboard are also given. To exit this and enter the game press either the "RETURN" key for keyboard use, or the "FIRE" button for joystick playing must be pressed.

Once you are in the actual game you will notice that the monsters, barricades and bullets are all similar in overall shape to the arcade version, although they are larger and far more chunky than those in the video machines.

Also, although emerging slowly at first, once you begin shooting the monsters down they begin to speed up quite rapidly, and you will find that by the end of the frame these creatures move at quite a threatening speed. This helps to keep the game challenging, so that long term playing does not become a bore.

The sound effects in this game are not as good as they could be.

Asteroids:

Or, as they describe it on the instruction screen, *Rocks in Space*, is as fast and as hard to control as the real version. You will discover your ship zooming off in the wrong direction heading for a rather large asteroid only after it's too late.

Those of you who like me are not overly coordinated when it comes to these type of things, will probably find in this game the joystick a much better tool than the keyboard. If, however, you feel you can cope with pressing up to three keys at the same time, whilst remaining in a pleasantly relaxed state, pressing "F1" will allow you to change or alter the keys used.

The sound for this game is limited to a laser - sounding shooting noise, an "asteroid" blowing up noise and a "you"

blowing up noise. The aim is to successfully destroy all the rocks in the frame without hearing the "you" noise.

If you can accomplish shooting all the asteroids in a frame with at least one man remaining, the next frame will follow with a greater multitude of "rocks" to exterminate. This circle of events will continue ad infinitum until you are blasted from all existence, as these good old-fashioned games never have any set conclusion.

Snakes:

This is the most exciting of all the four games to watch. Two snakes, one of mainly blue and yellow flashing colours and the other of mostly red and yellow flashing colours, roam the screen in search of absolutely anything to eat. You, of course, direct their movements in this frantic search, but beware as all is not as simple as it seems.

Eating the food, which at a random time and place appears on the screen, makes your snake grow longer and also awards you with between one and nine points. The food looks like a funny coloured, square patch of fabric and it displays the number of points it will award you in its centre.

You may eat any portion of the end half of the opponent's snake, which will make you grow longer. To do this you must direct your snake's head to any place on the second half of the other snake. If you miss, which is not hard to do, you will either find yourself trapped in the front half of the other reptile or squirming frantically in the middle of nowhere. Trapping the other snake earns you twenty points.

There is an adjustable time limit for

this game. To alter the amount of time you are allowed in your game just press the indicated right and left keys on the keyboard.

Space Wars:

Two space ships fight it out whilst revolving around the sun. *Space Wars* is a two player game which can be played under many variable conditions.

Gravitational pull, gravitational direction, Universe type and the time limit can all be changed by the simple use of the joystick.

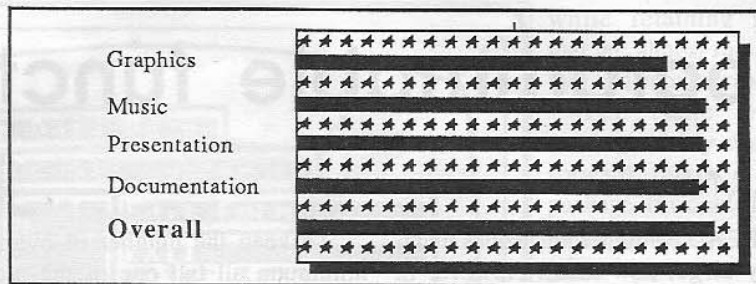
The amount of gravitational pull differs from "none" to "small" to "medium" to "large". If there is gravitational pull you will notice that even if you have not physically thrust your space ship for-

ward you will be drawn in toward the vibrant sun. Failure to fly out of this pull will see you instantly scorched in the sun's intense heat.

Direction of gravity is either normal or reverse. This will either send you toward or away from the fiery inferno in centre screen. Time may be altered according to your own personal wishes and

the Universe may be changed to either bordered or wrapped.

Space Wars is an enjoyable game but prolonged playing could see its appeal wear thin. ■



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Programmable function keys

by A.J. Nix

I READ computer magazines mainly to get new ideas. However of late not many NEW ideas have been printed.

Take the Function Key programs, for example, they always follow the same old tired ideas. Eight function keys preset by the machine code programmer, (LIST,RUN,LOAD,etc.)

So I decided if no one else would come up with some NEW ideas, I would.

So here's a machine code program on function keys.

If you type LOAD"*",8,1 it will load directly into the Top end of "C" Block. This is out of the way from most other programs. SYS52900 will activate it.

What is it, I hear you say - well, I'm getting to that, just be patient. To get some ideas going, I took what I was finding very tiresome, and decided I would change some of the things wrong with it.

The first thing that had to go was fixing the keys to do set jobs, like RUN, LIST, etc. This had to be the choice of the user.

Okay, so what did I have to do?

1) Make the keys programmable from the keyboard.

2) The code must be kept very short, no more than 300 bytes. Nobody likes typing in long programs.

3) It must be written so it's easy to understand.

4) Let's do something crazy to give people IDEAS. Let's double the function keys and have 16 function keys.

Having decided what I wanted, all I had to do was write it. I succeeded on all counts but one, I missed the 300 byte limit by 2, it is in fact 302 bytes long.

To keep the number of bytes to a minimum, all but one of the prompts and messages had to be eliminated. The only prompt is READY, and that's already in rom.

So what have we got in the program? Well, ten of the 16 function keys are fully programmable from the keyboard. The other six keys are used to WRITE, READ THE BUFFER, and CHANGE from one mode to the other.

Keys F1 to F5 in either mode (there are two modes), can be programmed from the keyboard with up to 40 characters per function key (that is one full line). You can enter any basic you like, no matter how complex. You may enter plain old text if you like, the only limitation is it MUST be letters or numbers or other text that is on top of the keys. No crazy symbols from the face of the keys.

F6 in either mode changes you from one mode to the other. Because no text is printed to show what mode you are in, the cursor will change to the colour CYAN when in mode 2. If you don't like writing in this colour, no worries, just change the colour in the normal way. The cursor may not change straight away, but it will change when you start typing.

F7 will read the function key buffer for the mode that you are in. It will clear the screen and write the full buffer to the top five lines. The cursor will be at the

beginning of the sixth line. When the program is first typed in the buffer will contain only blank spaces, so all you will see is five blank lines, with the cursor on the sixth line.

F8 will write to the function key buffers in either mode. It's very simple to do, all you do is write to the top five lines and then press F8. The screen will clear and say READY. The top five lines are now in the function key buffer.

Although you can do this at any time it is better if you use F7 first. This is because if you change only one function key and leave the other four lines blank, the write routine would overwrite what's in the buffer with four blank lines. Remember the write routine writes all five lines to the buffer at the one time. So if you read first, then change what you want, when you write to the buffer, it simply rewrites what you haven't changed as well as what you have. For example see Figure 1.

You notice the tkey, this tells the program to print a RETURN so basic will be activated. The ← key tells the program to leave the cursor there. EXAMPLE: PRINT PEEK (you would want the cursor there so you can write a number straight in. If you don't use the ← key, EXAMPLE: JUST ANY OLD DATA, the cursor would be at the beginning of the next line. Why? I hear you say. Well, all 40 characters in the buffer

Figure 1

```
RUN↑
LIST↑
PRINT PEEK(←
FOR F=1 TO 100: PRINT F;: NEXT ↑
JUST ANY OLD DATA
.....This is F1
.....This is F2
.....This is F3
.....This is F4
.....This is F5
```


will be printed, and there are blanks after DATA (a blank is a character).

Getting started

The first thing you have to do of course is type in the small Basic program. Okay, so you've done that and it's 15 minutes later. Now if you own a disk drive type in the small Basic program after the DATA statements as well.

Save the entire program to disk or tape, (use whatever name you like, but NOT FUNCTION KEYS), before you attempt to run the program.

Okay, so you've typed it in and saved it. Now RUN the program. If you have not made any mistakes the basic program will load the machine code to the top end of "C" block, where it will later run. The basic program will also set up the function key buffer by filling it with blanks. If you have a disk drive it will save to disk your machine code program in such a way that it will not be necessary to use data statements again.

If you have typed everything right you can now type SYS52900 RETURN and you will activate the machine code. Remember you have NOTHING in the function key buffer, you will have to write it there.

You may wish to save your version of the program to disk, when you have finished writing in your function keys. To do this you will need a section of the basic program you have just typed in. If it's not still in memory then load it in. You will not destroy your machine code, it's safe in "C" Block. Now the section of basic that you will need is from 5000 up.

You must change the name FUNCTION KEYS in line 5010 to your own name, remember you

cannot save two programs with the same name. I suggest something very short like F/K 1 the next time F/K 2 etc.

To save F/K 1 type RUN 5000. From now on when you first switch on your computer, you need only type LOAD"F/K 1",8,1 - this will load your program into the top end of "C" Block.

Now type SYS52900 RETURN and it's activated with all your functions.

There is a way of making this program activate itself when loaded, without the need for typing in SYS52900. This would however make setting up more complex than it already is, so I have not included it at this time. ■

PROGRAMMABLE FUNCTION KEYS

```

10 PRINT"Q"
20 PRINT"***PLEASE WAIT ENTERING DATA***"
30 PRINT
40 FOR F=0 TO 301
50 READ A
60 B=B+A
70 POKE52900+F,A
80 NEXT F
90 FOR F=52500 TO 52899
100 POKE F,32
110 NEXT F
120 IF BC>40719 THEN PRINT"ERROR IN DATA STATEMENTS":END
130 PRINT"===DATA NOW ENTERED==="
140 REM : END
2000 DATA 169,14,133,253,234,169,19,133,251,169,205,133,252,234,120,169
2010 DATA 206,141,20,3,169,206,141,21,3,88,96,234,120,169,49,141
2020 DATA 20,3,169,234,141,21,3,88,96,234,32,159,255,173,119,2
2030 DATA 24,234,201,133,208,5,160,0,76,28,207,201,137,208,5,160
2040 DATA 40,76,28,207,201,134,208,5,160,0,76,28,207,201,138,208
2050 DATA 5,160,120,76,28,207,201,135,208,5,160,160,76,28,207,201
2060 DATA 139,208,3,76,167,207,201,136,208,3,76,83,207,201,140,208
2070 DATA 3,76,112,207,76,49,234,234,32,192,206,162,0,232,200,177
2080 DATA 251,201,94,240,14,201,95,240,19,224,41,240,21,32,210,255
2090 DATA 76,33,207,169,13,141,119,2,169,1,133,198,32,178,206,76
2100 DATA 49,234,32,178,206,169,0,141,119,2,76,49,234,234,32,32
2110 DATA 192,206,32,68,229,24,160,0,200,192,201,240,8,177,251,32
2120 DATA 210,255,76,92,207,32,178,206,76,49,234,234,24,160,0,200
2130 DATA 192,201,240,27,185,255,3,72,24,105,224,176,3,76,138,207
2140 DATA 104,145,251,76,115,207,104,24,105,64,145,251,76,115,207,32
2150 DATA 68,229,32,192,206,169,118,160,163,32,30,171,32,178,206,76
2160 DATA 49,234,234,169,3,197,253,240,15,133,253,141,134,2,169,219
2170 DATA 133,251,169,205,133,252,76,204,207,169,14,133,253,141,134,2
2180 DATA 169,19,133,251,169,205,133,252,234,234,234,76,49,234

```

READY.

DISC OWNERS ADD THE FOLLOWING TO ABOVE PROGRAM

```

5000 PRINT
5010 PN#="FUNCTION KEYS"
5020 SA=52500:EA=53201
5030 PRINT
5040 PRINT"***PLEASE WAIT SAVING TO DISC***"
5050 PRINT
5060 OPEN1,0,1,PN#
5070 HB=INT(SA/256):LB=SA-HB*256
5080 PRINT#1,CHR$(LB);CHR$(HB);
5090 FOR I=SA TO EA
5100 PRINT#1,CHR$(PEEK(I));
5110 NEXT I
5120 CLOSE 1
5130 END

```

READY.

ADDRESS: ASSEMBLY CODE: REMARKS:

52900	LDAIM	14	SET FUNCTION KEY MODE:
02	STAZ	253	14 = Mode 1 : Store it in Zero Page : Memory 253 stores the Mode : 14 = blue cursor.
04	NOP		NO OPERATION: NOP separates routines.
52905	LDAIM	19	SET POINTERS TO KEY BUFFER MODE 1:
07	STAZ	251	19 = LSB : 205 = MSB : Stored in Zero Page from 251:
09	LDAIM	205	Points to the function key buffer starting at 52500 :
11	STAZ	252	Mode 1:
13	NOP		NO OPERATION:
52914	SEI		SET INTERRUPT TO MY ROUTINE:
15	LDAIM	206	206 LSB : 206 MSB: Stored at interrupt pointer 788 & 789 :
17	STA	788	Points to my check routine at 52942 : It was not really
20	LDAIM	206	necessary to load the Accumulator a second time, as the
22	STA	789	LSB & MSB are the same. However for simplicity it was
25	CLI		left as is.
26	RTS		
27	NOP		NO OPERATION:
52928	SEI		SET INTERRUPT BACK TO BASIC:
29	LDAIM	49	Same as above routine except it points to the Basic
31	STA	788	Interpreter instead of my routine : This subroutine puts
34	LDAIM	234	everything back to normal.
36	STA	789	
39	CLI		
40	RTS		
41	NOP		NO OPERATION:
52942	JSR	65439	GET A KEY FROM THE KEYBOARD BUFFER:
45	LDA	631	If a key is pressed, get it from the keyboard buffer at
48	CLC		631 : then clear the carry flag.
49	NOP		NO OPERATION:
52950	CMPIM	133	IS THE KEY PRESSED A FUNCTION KEY:
52	BNE	5 F1	This routine checks to see if it was a function key that
54	LDYIM	0	was pressed : The routine is made up of 8 smaller
56	JMP	53020	subsections : If one function key is not found it jumps
59	CMPIM	137	forward 5 places and checks for the next Function key:
61	BNE	5 F2	If no function key has been pressed, at the end of this
63	LDYIM	40	routine it jumps back to 59953 the basic interpreter:
65	JMP	53020	If a function key is pressed the "Y" register is loaded
68	CMPIM	134	with a number from 0 to 160 in increments of 40 : The
70	BNE	5 F3	program then jumps to the Printout routine at 53020:
72	LDYIM	80	Here the "Y" register is indexed to the pointer at 251
74	JMP	53020	and 252 and points to the correct location of the

77	CMPIM	138	}
79	BNE	5 F4	
81	LDYIM	120	
83	JMP	53020	}
86	CMPIM	135	
88	BNE	5 F5	
890	LDYIM	160	}
92	JMP	53020	
95	CMPIM	139	
97	BNE	3 F6	}
99	JMP	53159	
53002	CMPIM	136	
04	BNE	3 F7	}
06	JMP	53075	
09	CMPIM	140	
11	BNE	3 F8	}
13	JMP	53104	
16	JMP	59953	

function key buffer: If F6, F7 or F8 are pressed the "Y" register is NOT loaded with anything, it just jumps to the routine that handles that section: This is why the forward jumps are only 3 places for F6, F7 & F8: The "Y" register is used in this routine because it has a different mode of operation from the "X" register when indirect indexing is used.

19 NOP

NO OPERATION:

53020	JSR	52928
23	LDXIM	0
25	INX	
26	INY	
27	LDAIY	251
29	CMPIM	94
31	BEQ	14
33	CMPIM	95
35	BEQ	19
37	CPXIM	41
39	BEQ	21
41	JSR	65490
44	JMP	53025
47	LDAIM	13
49	STA	631
52	LDAIM	1
54	STAZ	198
56	JSR	52914
59	JMP	59953
62	JSR	52914
65	LDAIM	0
67	STA	631
70	JMP	59953

PRINTOUT THE FUNCTION KEY:
 Jump to the interrupt routine at 52928 and return the interrupt to normal: Load the "X" register with 0 to start count to 40 (one line): Increment "X" to 1 : Increment "Y" : "Y" will be a number between 0 and 160 depending on what function key was pressed : Load the accumulator indirectly indexed with "Y", that is pick up the address from 251 and 252 then add "Y" to it : Memory 251 and 252 contain the LSB & MSB which points to the start of the function key buffer for which mode you're in : For example if F2 was pressed the "Y" register would contain 40, start of buffer mode 1 = 52500 plus 40 = 52540 which is the start of the buffer for F2 mode 1 : Before printing out the accumulator it is checked 3 times : First is it a 94 (r), which is used to indicate a return, If yes branch forward 14 places and load the keyboard buffer at 631 with a 13 (return), then jump subroutines 52914 to return interrupt to my routine, then jump to basic at 59953 : Second is it a 95(←) this indicates to leave the cursor here then exit routine as above : Third does "X" = 41 if yes then the line has been printed, jump out as above : If none of the 3 conditions exist then JSR 65490 which is the Kernal CHROUT routine which prints the accumulator : Now jump back to increment "X" at 53025 and do it all over again till one of the above conditions are met.

73 NOP
 74 NOP

NO OPERATION:

FUNCTION KEY BUFFER

MODE 1
 52500-52699

MODE 2

52700-52899

53104	CLC		WRITE TO FUNCTION KEY BUFFER:
05	LDYIM	0	Clear the carry flag : Load the "Y" register with 0 to
07	INY		start the count to 200 (five lines) : Increment "Y" :
08	CPYIM	201	Does "Y" = 201, if yes then all finished, jump forward
10	BEQ	27	27 places and leave this routine at 53139 : From 53139
12	LDAY	1023	the screen is cleared, the interrupt is returned to normal,
15	PHA		Pointers (LSB & MSB) are loaded into the "A & Y" registers
16	CLC		to point to the word READY, then jump to a sibroutine
17	ADCIM	224	that prints a string, then exit to basic as in other
19	BCS	3	routines : If "Y" does not = 201 then load the accumulator
21	JMP	53130	indexed with "Y" from the beginning of screen memory
24	PLA		at 1023 : Push the accumulator onto the stack (to save
25	STAIY	251	temporary) : Clear the carry flag : Add 224 to the
27	JMP	53107	accumulator, if the carry flag sets then its a number in
30	PLA		the accumulator, as numbers are the same for screen
31	CLC		codes as they are for ASCII codes nothing need be changed,
32	ADCIM	64	so jump forward 3 places, Pull the accumulator from the
34	STAIY	251	stack, store the accumulator indirectly indexed with
36	JMP	53107	"Y" into the function key buffer, then jump back to INY
39	JSR	58692	and do it again : If the carry flag didn't set then it
42	JSR	52928	was a letter, the screen code is different from ASCII
45	LDAIM	118	code, so add 64 to the accumulator to turn it to ASCII,
47	LDYIM	163	then store it in the function key buffer as before.
49	JSR	43806	
52	JSR	52914	
55	JMP	59953	

58 NOP **NO OPERATION:**

53159	LDAIM	3	CHANGE FUNCTION KEY MODE:
61	CMPZ	253	Load the accumulator with a 3 : Is it the same as memory
63	BEQ	16	location 253 in zero page : If yes then we are in mode 2
65	STAZ	253	so jump forward 16 places and change it to mode 1:
67	STA	646	At 53181 load the accumulator with a 14, store it in
70	LDAIM	219	zero page 253 (the flag for mode), store it also at 646
72	STAZ	251	(the colour of the cursor) : Load the accumulator with
74	LDAIM	205	a 19(LSB), store it at 251 : Load the accumulator with
76	STAZ	252	a 205 (MSB), store it at 252 : 251 & 252 are the pointers
78	JMP	53196	to the start of the function key buffers : If it doesn't
81	LDAIM	14	= 3 then we must be in mode 1 : So to change to mode 2
83	STAZ	253	we store the 3 thats already in the accumulator at 253,
85	STA	646	then store the 3 at 646 to change the cursor colour:
88	LDAIM	19	Load the accumulator with 219 (LSB), store it at 251 :
90	STAZ	251	Load the accumulator with 205(MSB), store it at 252 :
92	LDAIM	205	Exit to basic.
94	STAZ	252	
96	NOP		These 3 NOP are for future use.
97	NOP		
98	NOP		
99	JMP	59953	

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Superbase 64/128

Preliminary database design *by Peter Gallen*

AS STATED last month, this article will attempt to set out some important criteria in designing an address list, which is probably the basis of most database applications. The one we will consider could later be expanded for use with other files, eg. invoices, inventory, mailouts.

As the address file may be used to generate labels, it will need to be sorted by both post codes and alphabetical surnames. The first breakdown of data that comes to mind, and is often used in database tutorials, templates, etc., is:

Name / Street / City / State / Post Code

However, a closer look will reveal that even our first category, "name", is in fact composed of several sub-units which could include title (Mr or Ms), initials, first name, last name and possibly a suffix (B.A.). This emphasises a very important part of the process of file design: breaking down the data into its smallest discrete components. This will allow maximum flexibility, even if you don't need it for your present application. Luckily, *SuperBase* provides very good methods to rearrange your files, so don't despair if you find after a few months use that you need additional fields for information or sorting/selecting records.

A field labelled "name", which contains both first and last name, would be sufficient for a mail label but would be totally inadequate for sorting alphabetically or using to merge with a form letter. If you think this is being simplistic or even pedantic I can relate my experience with a local user group who actually used "first name" as an index field for over a hundred members!

Two more considerations: can we now 'find' exactly what we want and then obtain a screen display or printout of

only the records we need? For this purpose careful thought should be given to adding fields for special purpose finding/sorting. One might be "Date last mailed" or "status", which will hold specific information like a date or simply "y" or "n". If you do a lot of mailouts for clubs etc. with a registered publication you would save an enormous amount of time and energy by including an "area code" field.

It is not generally realised that for registered publications, Australian destinations and overseas countries are split into a mere 26 'super post codes' or specific mail exchanges. For club mailouts you would only need to sort by this field to save yourself, and Australia Post, a lot of effort!

Key fields

The use of key fields is an important topic which has caused much consternation among *SuperBase* users. I believe this is due to the unfortunate choice of "lastname" in the first tutorial in the manual. A key field must, by definition, be unique. This is also important when 'sorting' or 'finding', otherwise weird but not so wonderful results may eventuate.

Even a casual glance through the white pages of the telephone directory will reveal how often duplications occur, even including initials.

Allowing duplicate keys is a sometimes necessary but dangerous option. In three years of use I have only found one purpose for duplicate keys and that is an application program to create a temporary statements file from invoice and address data, where the invoices needed to be sorted, descending by date. This is not a common usage!

The only real solution to the dilemma is to create your own unique key field. It can be related to one of the

fields or be totally separate such as "A001". The important point is that the numbers (keys) are allocated sequentially, and this involves discipline. You will need to keep a written list/printout of your data so that the next number can be readily assigned. If you do enter a previously assigned number, *SuperBase* will reject it, but if you omit a number it will cause you sleepless nights trying to find out what happened to the data for a nonexistent person.

Avoiding trouble

The best way to avoid trouble is to maintain a manual system, either a regular printout of your data or a card index system for larger files. If you do have a system crash or corrupt your data disk (what backup?!), at least you still have your raw data. Using a manual system, updates and additions can be speedily made anytime with regular time set aside for computer file updating.

I keep a printout of key field and names and use it to assign the next key number. My wife always works from a card index system for her business. Not to have a hard copy / card index is to court disaster.

Of course, you could write a small program to automatically add the next key. This technique was successful used in an invoice application where unique invoice numbers are essential. A program to do this is listed later.

The *SuperBase* manual is very good in explaining the other types of fields: text, numeric, calendar, date, result, forced. Dr. Hunt's *SuperBase: the Book* is important for its discussion of key fields and the design of the physical screen for inputting data. Applying these suggestions, our address file could look something like this example:

Ref (key) / firstname / lastname / ad-

Machine Code

Part 5

This month Andrew Baines explores the world of addressing modes

dress1 / address2 / city / state / postcode / title / homehone / workphone / status / notes.

Two fields for addresses are to cover frequently encountered longer addresses. Text fields are easiest to manipulate in any output /import/export situation, so I use them wherever possible, even for post codes and phone numbers. This is a personal choice, but it does allow telephone numbers to be printed as "(02)", etc.

The following short program allows sequential numbers to be input into the key field, it incorporates several ideas explained more fully in *SuperBase: the Book*.

```

10 rem auto-add program
20 file "filename"
30 set "data"
40 n = n + 1
50 in$ = str$(n)
60 clear: select c
70 [key] = right$(in$,6):store
80 select [key]: select c: select r
90 ask &1 "[a]dd, [q]uit to menu";
op$
100 m$ = "aq"
110 for i = 1 to len (m$)
120 if mid$(m$, (i-1) + 1+1,1) =
op$ then p=i
130 next i
140 on p goto 40,150
150 dump "data"
160 menu

```

A brief explanation: in lines 40 and 50, "n" is set equal to one more than the start value. Line 50 converts the number to a text string which is used in Line 70.

In this case, a sequential file needs to be set up once only, containing the data "n=1000000". This is saved under the name "data" and used by both 'set' and 'dump' to input the next sequential number.

For next time, work through the other two tutorials in the *SuperBase* manual even if you aren't interested particularly in an invoicing application. I'll examine some of the features and commands discussed in greater depth which then leads us on to actual program design. ■

YOU may have been wondering just how the processor knows the difference between a LDA #01 and a LDA \$5632. The answer is that each instruction has its own set of numbers, and there is a different number for each different addressing mode of that instruction. Put another way, LDA #1 has the opcode (number representing an instruction) \$A9 and LDA \$5632 has the opcode \$AD. When placed in memory, they look like this:

```

A9 01 LDA #01
AD 32 56 LDA $5632

```

Notice how the address is stored in 6510 standard low-byte, high-byte format. These are only two of the thirteen different addressing modes available on the 6502 series.

The IMPLIED addressing mode has only single byte instructions. These carry out operations on registers or memory. The few which require memory access are: BRK, PHA, PHP, PLA, PLP, RTI, RTS. The others are: CLC, CLD, CLI, CLV, DEX, DEY, INX, INY, NOP, SEC, SED, SEI, TAX, TAY, TSX, TXA, TXS, TYA.

Accumulator

Instructions which fall in this category operate directly and exclusively on the accumulator, and are only one byte long. They are: ASL, LSR, ROL, ROR.

The ABSOLUTE addressing mode is the most used addressing mode. It is the mode of the instruction LDA \$5632. It takes up three bytes, one for the instruction, and two for the address. The instructions that fall under this category are: ADC, AND, ASL, BIT, CMP, CPX, CPY, DEC, EOR, INC, JMP,

JSR, LDA, LDX, LDY, LSR, ORA, ROL, ROR, SBC, STA, STX, STY.

ZERO PAGE addressing can only access the first page of memory, from \$0000 to \$00FF. It is used because it is faster than the absolute addressing mode, and it only takes up two bytes, one for the instruction, and one for the address.

The advantage of zero page addressing is that it takes up less time than other modes. Therefore there is good reason to carefully plan your zero page memory. Instructions are: ADC, AND, ASL, BIT, CMP, CPX, CPY, DEC, EOR, INC, LDA, LDX, LDY, LSR, ORA, ROL, ROR, SBC, STA, STX, STY.

The IMMEDIATE addressing mode is the addressing mode of the instruction LDA #01. Its instructions operate on registers with the values after the instruction. They are therefore only two bytes long, and instructions under this category are: ADC, AND, CMP, CPX, CPY, EOR, LDA, LDX, LDY, ORA, SBC.

The next two modes are really the same, with the only difference being one uses the X register and one uses the Y register. The modes are ABSOLUTE,X and ABSOLUTE,Y. They add the operator to the register (X or Y) to come up with the final address. For instance, if the Instruction LDA \$C000,X was executed, the contents of the X register would be added to \$C000 to give an address for the Accumulator to be Loaded with.

This mode takes up three bytes of memory, one for the instruction and two for the address. There are differences in the instruction list for these two modes, so, for the sake of space, an X will appear after the instruction if it is capable

of operating in ABSOLUTE,X mode, and similarly for the Y register: ADC (XY), AND(XY), ASL(X), CMP(XY), DEC (X), EOR(XY), INC(X), LDA(XY), LDX(Y), LDY(X), LSR(X), ORA(XY), ROL(X), ROR(X), SBC(XY), STA (XY).

(INDIRECT,X) addressing is two bytes long, meaning it deals with the zero page, the address being only one byte long. This mode is used in conjunction with a zero page table of addresses. The X register is added to the address, to come up with the indirect address. The memory at the indirect address holds the address we want.

Example. There is a table of addresses in zero page memory, starting at \$0010. The table points to various memory locations scattered around the memory. To access these routines, the X register must be Loaded with the index to the table (always an even number).

In this case we want the third number in the table. Since addresses take up two bytes of memory, we double this to come up with X holding the value 6. The instruction is then LDA (\$10,X).

The X register and the address \$10 are added to come up with \$16, and the Accumulator is loaded with the data in the memory pointed to by \$16 and \$17. If \$16 and \$17 hold the address \$5632, the accumulator will be loaded with the value in the memory location \$5632. Instructions are: ADC, AND, CMP, EOR, LDA, ORA, SBC, STA.

The (INDIRECT),Y mode is similar to the (Indirect,X) mode, with the exception that the address contained in the parentheses points to a pointer, and the Y register is then added to the contents of the pointer to give the final result. The following routine clears one page of memory.

LDA #0 ; First of all, we'll set up the zero page addresses 251 and 252 as our pointers.

STA 251

LDA #8 ; This is the page number: this program will clear from 2048 to 2303, wiping any BASIC program there.

STA 252

LDY #0 ; Load the Y register with the value (#) zero. We'll start at 2048 and work our way up.

LDA #0 ; Load the Accumulator with the value zero, ready to clear memory.

LOOP STA (251),Y ; Add the contents of the Y register with the contents of 251 together to come up with the final address for the Store the Accumulator.

INY ; INcrement the Y register. Add one to it. Remember that if it is 255 before an INY, it will be zero after the INY.

BNE LOOP ; If Y is not equal to zero, go back to LOOP. Since Y is INcremented straight after its used, it won't be zero until the job's done.

LDX 252 ; This next section of the program allows more than one page to be cleared.

INX ; Increment the X register.

CPX #10 ; Compare the X register to the value 10

BNE LOOP ; If Y is not equal, go to LOOP.

RTS

In the above program, the address of the beginning of the area to be cleared is loaded into 251 and 252, while the page after the last to be cleared is placed after the Compare X: i.e. 10 in the program itself. To clear the high resolution screen at 8192, change the eight to a 32, and the ten to a 63. The list of instructions is: ADC, AND, CMP, EOR, LDA, ORA, SBC, STA.

The ZERO PAGE,X and the ZERO PAGE,Y addressing modes are almost the same as the absolute,X and absolute,Y addressing modes, except that they deal exclusively with the zero page, saving time and memory. Both addressing modes are two bytes in length, one for the instruction and one for the address in zero page: ADC(X), AND(X), ASL(X), CMP(X), DEC(X), EOR(X), INC(X), LDA(X), LDX(Y), LDY(X), ORA(X), ROL(X), ROR(X), SBC(X), STA(X), STX(Y), STY(X).

Relative

This is the addressing mode of the various branch instructions. Branch instructions are two bytes long, the first being the instruction, the second being the direction and amount of the branch. The direction is bit seven of the second byte, and the amount is bits zero to six, meaning a branch is confined to within 127 bytes in each direction of the actual branch instruction. Instructions: BCC, BCS, BIT, BMI, BNE, BPL, BVC, BVS.

The last mode is used only for a variation of the JuMP instruction. It is the INDIRECT mode, and allows a jump to a location known only by a set of memory locations.

Example. The clear screen routine has a pointer (two memory locations that hold the start address of a routine) to it. Your program only knows the address of the pointer, and not the routine itself. You could place a JuMP instruction before the pointer and jump to that jump instruction which would in turn jump to the routine you wish, but this is inefficient, time consuming and assumes there is a free byte of memory before the pointer.

The way to do it is to JuMP to the routine indirectly: JuMP (POINTER). The brackets are the distinguishing feature of this instruction. The computer, when it sees this instruction, will JuMP to the location held within the location POINTER. This mode takes three bytes, one for the instruction, and two for the address of the pointer.

It should be noted that it is not really necessary to know the names of these modes, only what they do. This is important, as most of the well used instructions have several different addressing modes.

Arithmetic and logic

There are two arithmetic instructions on the 6510. One is the ADD with Carry (ADC) and the other is Subtract with Carry (SBC). Both use the carry, and it is vitally important to make sure the car-

ry is at the right setting before going ahead with one of these operations.

Unfortunately, the '64 doesn't have a multiply or divide instruction. Most good programmers write their own; I use BASIC's floating point routines which are much slower but less troublesome.

Addition example

CLC ; CLear the Carry flag ready for an addition. This instruction is a must before each and every sixteen bit addition, as ADC will add the two constants together as well as the carry flag, to allow for when the low byte flows over the 255 barrier. Then the carry is added to the high byte, just like adding on paper (dare I say paper in the day and age of the microchip) when one column adds up to more than nine, and you put a dash on the next column to be added to it.

LDA low1 ; LoAD the Accumulator with the memory location low1.

ADC low2 ; ADd with Carry low2 to the accumulator, leaving the result in the accumulator.

STA low1 ; STore the Accumulator in low1.

LDA high1 ; Now for the high byte.

ADC high2 ; ADd with Carry high2 to the Accumulator.

STA high1 ; Store the result.

RTS

Subtraction example

SEC ; The Carry flag tells the computer whether or not to borrow, if the carry is set the '64 won't borrow.

LDA low1

SBC low2 ; SuBtract with Carry low2 from the accumulator, leaving the result in the accumulator.

STA low1

LDA high1 ; Now for the high byte.

SBC high2 ; SuBtract with Carry high2 from the accumulator.

STA high1

RTS

Now for some logic instructions. Most BASIC programmers would have come across and fully understood AND

and OR. But the 6510 offers something extra, the EOR (sometimes called XOR) instruction. The truth tables are shown below, and after that, examples of them in use.

0 AND 0 = 0

0 AND 1 = 0

1 AND 0 = 0

1 AND 1 = 1

0 OR 0 = 0

0 OR 1 = 1

1 OR 0 = 1

1 OR 1 = 1

0 EOR 0 = 0

0 EOR 1 = 1

1 EOR 0 = 1

1 EOR 1 = 0

Example of Logical AND

LDA low1

AND low2 ; Logical AND with the contents of the accumulator, leaving the result in the accumulator.

STA low1

Example of Logical OR

LDA low1

ORA low2 ; Logical OR with the Accumulator, leaving the result in the accumulator.

STA low1

Example of Exclusive OR

LDA low1

EOR low2 ; Exclusive OR with the accumulator, leaving the result in the accumulator. The result of this operation will be to reverse those bits in low1 set in the operator low2.

STA low1

These instructions are particularly useful when dealing with the video and sound chips, as these have hidden surprises waiting to be accessed and distinguished from the mire of the other functions in the same location (especially as the 'Programmer's Reference Guide' provides all these free of charge).

If there is a POKE you would like to adapt to machine code, remember that the PEEK equals a LDA, the POKE equals a STA, and remember to follow the order of the brackets if there is more than one logical operator.

All instructions presented this month can be used under a number of addressing modes, including absolute, zero page, immediate and most (if not all) indirect addressing modes.

Next month - the last of the logic operators and Binary Coded Decimal, see you then! ■

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Adventurer's Realm

by Michael Spiteri

WELCOME to the Realm, Australia's only column dedicated to all Adventure gamers and strategists. This month we are going to take a look back at 1987's adventure games, and a quick look at what we are to expect in 1988.

The Realm's Help services

Just when I promised to answer all your mail quick flash, my printer had to break down. Even worse, all your letters decided to pay me a visit all at once. I have an enormous pile of mail from very troubled adventurers, as well as many, many tips. Everyone should have received a reply by the time you read this. If not, then it might be time to send me a reminder.

Hint sheets:

Realm hint sheets are now available by mail or from the Help Booth. We

have hint sheets for *Zork 1,2,3*, *Hobbit*, *Lord of the Rings*, *Castle of Terror* and *Hampstead*.

Help booth:

Now fully operational in Melbourne's TOYWORLD, Swanston St. It is open during normal shop hours. You can leave your mail in the Booth mailbox. Toyworld staff also have hints sheets & maps at hand.

Wanted:

Calling all stores in all states. We are looking for a place to set up more help booths around Australia following the great success of the Melbourne venture. Write to the Realm for more info, see address below.

Telephone Hotline:

Still in its planning stages. Operation times are the main problems at the moment. Keep reading this space for more information.

The help team:

Adventure games: Michael Spiteri and Garryck Osbourne
Strategy games: Barry Bolitho

The address to write to for all your adventure problems and queries is:
Adventurer's Realm(ACR)
Unit 1/10 Rhoden Court
North Dandenong, 3175
Victoria

***PLEASE ENCLOSE A STAMP
IF YOU EXPECT A REPLY***

Realm/Melbourne House super adventure contest

Next month we will be announcing Adventurer's Realm's first competition. With super software prizes, you'd be silly not to enter. ■

What's new in 1988

1988 is going to be a good year for Adventure Games, I can feel it. What with Infocom about to release *Beyond Zork*, (to all those who wrote in and are writing in, current indications show that the game will be too big for the Commodore 64).

Plundered Hearts (romance), *Nord & Bert* (Short stories), *Stationfall* (Sequel to *Planetfall*) and *Lurking Horror* (nasty one) should be out soon. Infocom are out to convince the world that the text-adventure is not dead yet.

Meanwhile, while the programming department of Melbourne House are creating Aussie wonders, the administration department are importing smash hits from overseas.

Activision's super space adventure *Space Quest* is soon to be released in Australia, as is *Yes Prime Minister*, by Mosaic Software. Based on the popular English television series, this is a true-blue comical political graphic adventure game. THE ADVENTURE ISN'T DEAD YET. ■



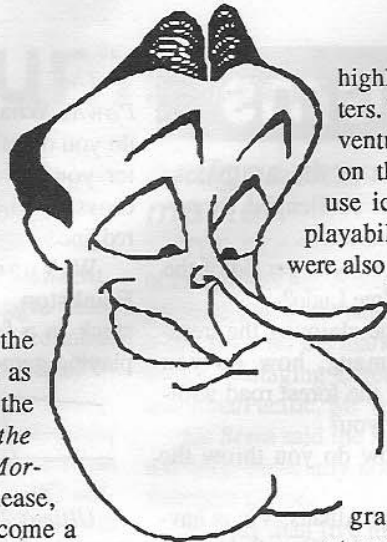
1987 - The year it was (for crazy adventure freakos)

AUSTRALIA RULED the world once again last year as Melbourne House released the second part of *Lord of the Rings*, entitled *Shadows of Mordor*. At the time of its release, *The Hobbit* had already become a classic, and *Lord of the Rings* part 1 had just finished sweeping the USA's market. *Shadows of Mordor* could do the same, as it is a great improvement on its predecessor. Full screen hires graphics, and faster game play. Part 3, I am told, is in its planning stages.

1987 also saw Steve Meretzky of Infocom fame shock the decent adventure-playing public with the raunchy *Leather Goddesses of Phobos*. An innocent looking game that makes the player think of all sorts of delightful things. A very, very hilariously funny product that left all adventurers in stitches. However it did put Infocom back one step with a vocabulary of smaller size.

Infocom also ran into serious financial trouble last year when they tried to release a program into the fierce IBM business market. Fortunately, Activision came to the rescue, and Infocom continued to come out with great adventure games - including the thought-provoking *Trinity*. An adventure that touched the tip of nuclear war. An adventure with probably the best parser and vocabulary ever created.

While Infocom produced the text adventure, Activision continued in the graphics division. *Tass Times in Tone Town* was their prize-winner. A great game with a highly original plot and



highly amusing characters. One of the first adventure games released on the Commodore to use icons for improved playability. Super sounds were also present.

Then we come to Magnetic Scrolls, who took Australia by storm with the release of *The Pawn*. Detailed graphics were the strong point of this adventure, as well as highly descriptive text passages and a fairly good parser. As the year drew to a close, *A Guild of Thieves*, the next Magnetic Scroll adventure game with better graphics, hit the shelves.

The Realm also faced many changes last year (including three address changes to fool the Zorkers). The mail reply service slowed down, and *GEM's* Realm sort of appeared when it felt like it. However, Barry Bolitho introduced us to strategy games and Garryck Osbourne created the Realm Database (in 100% machine code, I'd like to add). The reader DEBATES

grew strong, and the Realm finally got its own Help Booth. ■

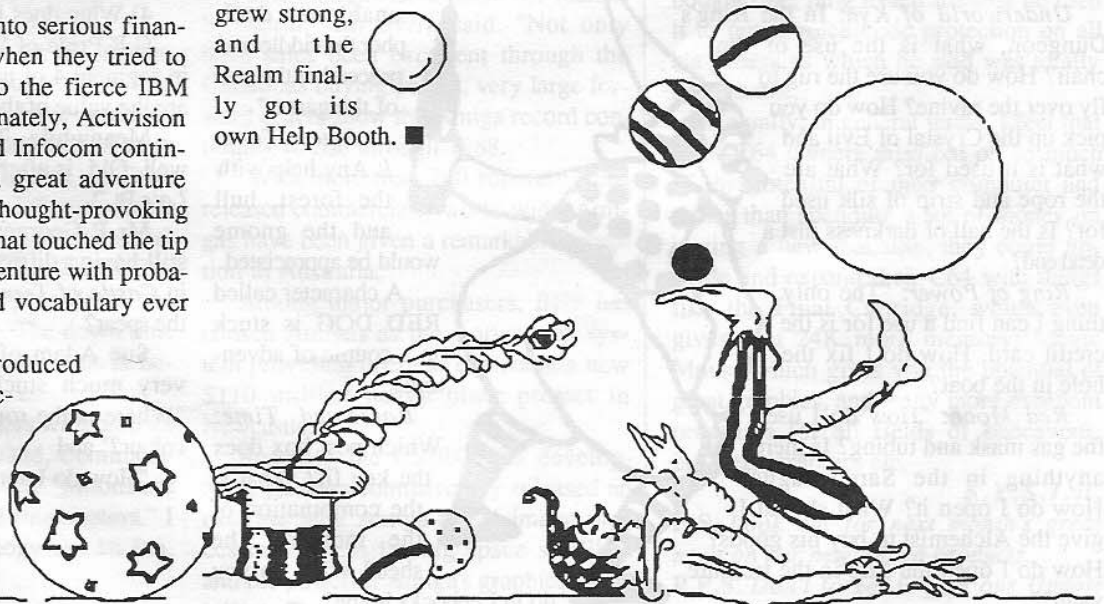
Plea to software and hardware buyers

1988 COULD see the year when small computer stores kick the bucket. Just remember next time you purchase your goods from huge department stores that you are slowly putting the small stores out of business. Don't forget that the smaller stores offer great service and advice, as well as a more personal approach to customers. You'll have time to try out your product and look at all the options.

You'll also be talking to experts, as computers are their only business. They may not be able to win in low prices, but they no doubt wipe the department stores away as far as service is concerned. Don't watch the little guys disappear off the face of the earth. ■

Adventurer columnist whinge of the month

MY WHINGE goes to Sonja Taylor who wrote to *ACR* (Christmas Issue) complaining that her hints were not published. Well Sonja, they were. Take a peek at the July issue of *Home Computer GEM*. ■



Problems Problems

EVERYONE SURE got themselves stuck this month, didn't they. Take Balrog Breath of NSW who is stuck on the following:

ZZZZZZ: Still having problems crossing the road.

The Helm: Exact command for excavating?

Classic Adventure: "I have a couple of problems here. Having followed advice given in the Realm, I gave the egg to the troll, got the bear, and used it to get rid of the troll. However, contrary to what I was told, I cannot find the egg"

Craig Mathieson of Mooroopna in Victoria is also stuck in a few games:

Borrowed Time: How do you open the equipment shed in the garden?

Big Sleaze: After the safe has been blown, how do you unlock and open the car outside your office at the start?

Scott Edwards (Garfmeld, Vic.) is stuck in *Necris Dome*. "Every time I go into the refrigeration plant, I die. I know that you have to wear the Thermo-Plas suit but I can't put it on. I can find it and lift it."

David Lear of Flagstaff Hill (SA) is stuck in a few cassette classics:

Underworld of Kyn: In the King's Dungeon, what is the use of the chair? How do you use the rug to fly over the ravine? How do you pick up the Crystal of Evil and what is it used for? What are the rope and strip of silk used for? Is the hall of darkness just a dead end?

Ring of Power: "The only thing I can find a use for is the credit card. How do I fix the hole in the boat?"

Red Moon: "How do I use the gas mask and tubing? Is there anything in the Sarcophagus? How do I open it? What should I give the Alchemist to buy his goods? How do I open the safe in the treasure vault?"

David Newmann of Muswellbrook, NSW has also been challenged by numerous adventure games:

Labyrinth: How do you get rid of the Goblin Guards and free Ludo?

Hobbit: After the claiming the treasure and killing Smaug, how do you make it back along the forest road without the eyes killing you?

Holy Grail: How do you throw the grenade?

Nick Mega of St. Albans, Vic is having great difficulties in *King Solomons Mines Part 1*: How do you cross the rope bridge? How do you stop drowning in the lagoon?

Noel McAskill was one of the first people to write to me with problems in *Murder on the Mississippi*:

"I have got to the end of the game but my problem is that everyone I accuse has an alibi. Any clues?"

Mrs M. Buchanan of Oak Flats, NSW is having difficulties in *Time Tunnel* and *Aztec Tomb I*:

Time Tunnel: "We have solved all the riddles and assembled the puzzle. We are unable to decipher the riddle and proceed to the end of the game."

Aztec Tomb I: Any help with the forest, bull and the gnome would be appreciated.

A character called RED DOG is stuck in a couple of adventures:

Borrowed Time: Which post box does the key fit? What is the combination of the lock on the shed? What do you do in Lecbocks home?"

The Pawn: What do you do after you have crossed the red line?

W. Yuan of Frankston, Vic is stuck in a few role-playing games:

Ultima 2: How can one increase the strength of the role-playing character during the course of the game? What equipment is needed to launch the rocket from Earth?

Beyond Castle Wolfenstein: Is it possible to eliminate Hitler in his chamber and is there any way to escape afterwards?

Famous Zorker Suzanne Parkes has transferred herself into the lower reaches of *The Pawn*, but is stuck in a few odd spots:

- 1) How do you get past the magician's workshop?
- 2) What do I do with Jerry Lee Lewis (G rated response, thankyou)
- 3) Where is the pedestal?
- 4) What does Devil want?

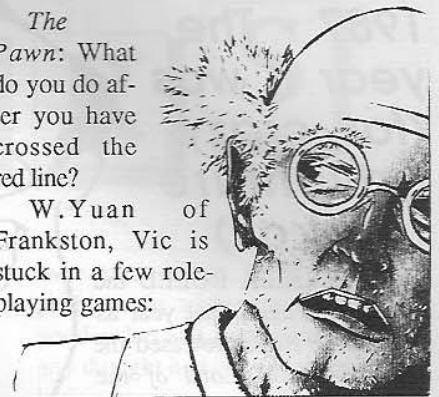
G.R.Pride of Wodonga, Vic, is stuck in segment 4 of the *Bards Tale II*. What are the value of the rote actions?

Meanwhile, Terry Gilroy of Rothwell, Qld. is after any hints on *Dragons Lair Pt 2*.

Mr P Georges of St Clair, NSW is still having difficulties killing the count in *Castle of Terror*. How do you break the spear?

Sue Adam of Wahroonga, NSW is very much stuck in *Kings Quest 3*. "Where is the rounded stone of unusual colour?" and

"How do I get past the spider?" ■



Don't miss out on these great bargains!

Australian Commodore Review Disk Mags Nos 1 to 7

Disk Magazine One

Features:

Forest Raiders - Full machine code shoot 'em up
Machine code paint, border, input and flash routines
Nice Lister - for readable listings on non-Commodore printers.
Recover II - for recovering deleted files,
and a catalog program - for getting a disk directory without losing your program

And More...

Disk Magazine Two

Features:

Programs demonstrating 3D graphic plots
A terminal program called Teleport
A tutorial on bits and bytes
Character editor - for designing your own custom alphabets and graphics
A full demonstration of Electronic Card File

And More...

Disk Magazine Three

Programs:

Hangman	Labyrinth
Calendar	Finance
Typing Practice	Roadblock
	Bird Invaders

Features:

Constructabrix - education and graphic construction program for younger users

And More...

Disk Magazine Four

Special Issue

Featuring:

Graphic Workshop - a complete design system for sprites, graphics, and character sets - with tutorials

Also:

Typing Tutor - a complete typing program
Works on errors, counts your speed

And More...

Disk Magazine Five Our Biggest seller yet...

Featuring:

Utilities for using Newsroom on an MPS 802 plus printing disk cover with directories, writing signs, printing Doodle and Printshop pictures and more all on the MPS 802!

A demonstration of games in the future

And More...

Disk Magazine Six:

Featuring:

Games:	Home Inventory
Bert the Bug	Graphics:
Hangman	Light Fantastic
Demos:	Utilities:
Amiga Pharoah	1571 Utility
Space Harrier	DIR@828 Disk Filer
Max Headroom	<i>And More...</i>
The Pacer Sade	

Disk Magazine No 7 - double sided, with some 128 software too - Featuring:

Utilities: Anti-Isepic, Sledgehammer, Fast Format, Renumber, PS/PM/NR, PS Printer, Graphics Editor.
Other: Joystick Tester, Irish Jokes, Convertor, Ultimate Writer, Home Finance, Oscilloscope, Dice Roller, Chord Maker, Dark Forest, Don Martin, Funny, Music Classics. **Demonstrations only:** Karate Kid II, Thrust Concert, 3D Demo, No More Heros, Recursion. **For the 128:** Bootmaker 128/64 Utility, Convert Basics utility.

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Help for Many Adventurers

For: Alf Hoop
Game: *Kings Quest III*

From: Sue Adam & Jim Fang

Help: The wizard's wand is in the locked cabinet in his study. Enter the study and turn left - the cabinet is in the corner. The key to open it can be found on the Wizard's wardrobe in his bedroom. To get into the cave you must be an eagle.

For: Steven Suthers
Game: *Seabase Delta*

From: Red Dog (plus some from Balrog Breath)

Help: Get air bottle and diving suit and connect hoses to swim under water. Shoot the octopus with speargun and fill pen to get ink.

Wear the flippers to get to the table.

Enter 104 and 109 in the tiger fish firing bay. Go to the wreck. Get wood.

Down. Lever cannon.

Get ball and go up. Remove nails with pincers. Get nails and plank and drop wood. Get hammer and barrel and make seesaw.

Go to missile and drop seesaw. Walk plank to get on seesaw and throw ball to get the missile.

For: Andrew Sopar
Game: *King Solomons Mines 2*

From: Ann Brownell

Help: To cross the bridge, throw spear, go bridge, run, jump.

For: Andrew Sopar
Game: *ZZZZZ*

From: Ann Frownell

Help: To get into the mansion, OPEN DOOR, CLIMB VINE, CLIMB DOWN, GET (funny little face symbol), WEST, WEAR TIE, ENTER BOX, OPEN HATCH, ENTER WAITER, REPLACE HAND, ANSWER PHONE.

For: Mario Moeller

Game: *ZZZZZ*

From: Ann Brownell

Help: After dropping the bull's eye on the bandit, go west and down the pit but you must have certain items with you.

For: Gabor Jakob
Game: *Demon Knight*

From: Ann Brownell

Help: There is a key on top of the post that is too high and too slippery to climb, is that any help?

For: All Stuck in *Bards Tale I & II*
From: C.P Allen

Help: "I am very good at these games. If anyone wants help then just send me a character disk and I will transfer some characters for them. I can also obtain any piece of equipment. Clues also given.

Write to: Lot 5 West Swan Road, West Swan, WA 6055

For: Kevin Emery
Game: *The Pawn*

From: Balrog Breath

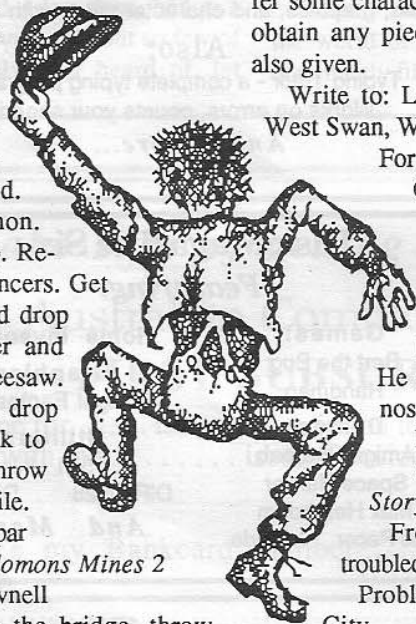
Help: The dragon is blind. Point out to him the humanoid shadows lurking in the darkness. He may think you are Kronos if you wear his clothes.

For: Karla Slack
Game: *Never Ending Story*

From: Troubled and Untroubled Adventurer

Problem: The Famous Spook City

Help: From the church in Spook City, go east. You will come across a graveyard and you will fall down a pothole. Now unless you have the Glowglobe you are in a real fix. The Glowglobe is situated at the end of the wall in Spook City. When you fall down the hole, go west. ■



Zorker of the Month

Sean Walsh of Wembley in Western Australia is this month's Zorker. Hints sheets for all three Zorks are available from the Realm. Just write in and ask for them. I enjoy giving them out cos it means I don't have to dig out solutions to individual problems.

Many tips for many adventure games

Supplied by Mark Glendenning of Warrandyte, Vic.

Kobashi Naru: Shoot computer in corridor but don't go onto yellow ring more than once or you'll sink.

Zork I: Say TEMPLE in temple. Say ECHO in Loud Room.

The Pawn: Metal Key is in your pocket and Wooden Key is under mat

Dallas Quest: Heat the eggs at the spider web.

Valkerie 17: To get the diamond, use mirror to reflect lasers then shake pedestal. Take the diamond and give it to the barman. Get poison, empty into fountain, take can, drink it, take ring pull, insert into telescope, turn scope. When at bottom of stairs in Scholls Drakenfield, shoot gun to kill guard behind door.

Robin of Sherwood: Talk to Friar Tuck. To get a lift to Sherwood, go to the serf and get horn and enter the cart. Siawrd opens chests.

Kentilla: In the room with the metal doors, turn the dial to 16 and push the button to make you appear at the base of the waterfall.

Boggit: To escape dungeon, dig the sandy door, smash trapdoor, take torch and examine it, then insert batteries in sword, throw rope at window, pull rope. ■

(To be continued next month.)

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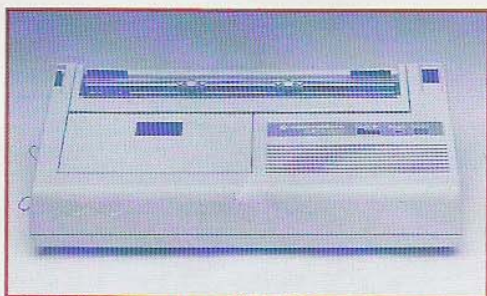
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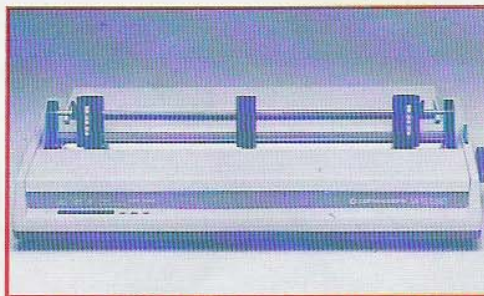
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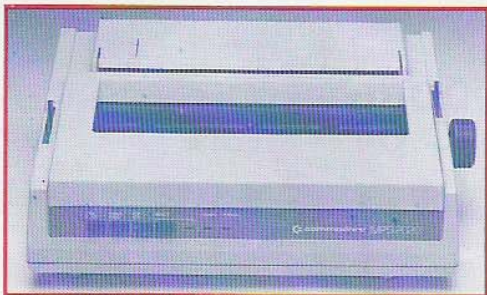
Commodore DPS 1101 Daisy Wheel



Commodore MCS 810/820 Colour Series



Commodore MPS 1280 Dot Matrix Printer



Commodore MPS 2020 Dot Matrix Printer



Commodore LP 806 Laser Printer

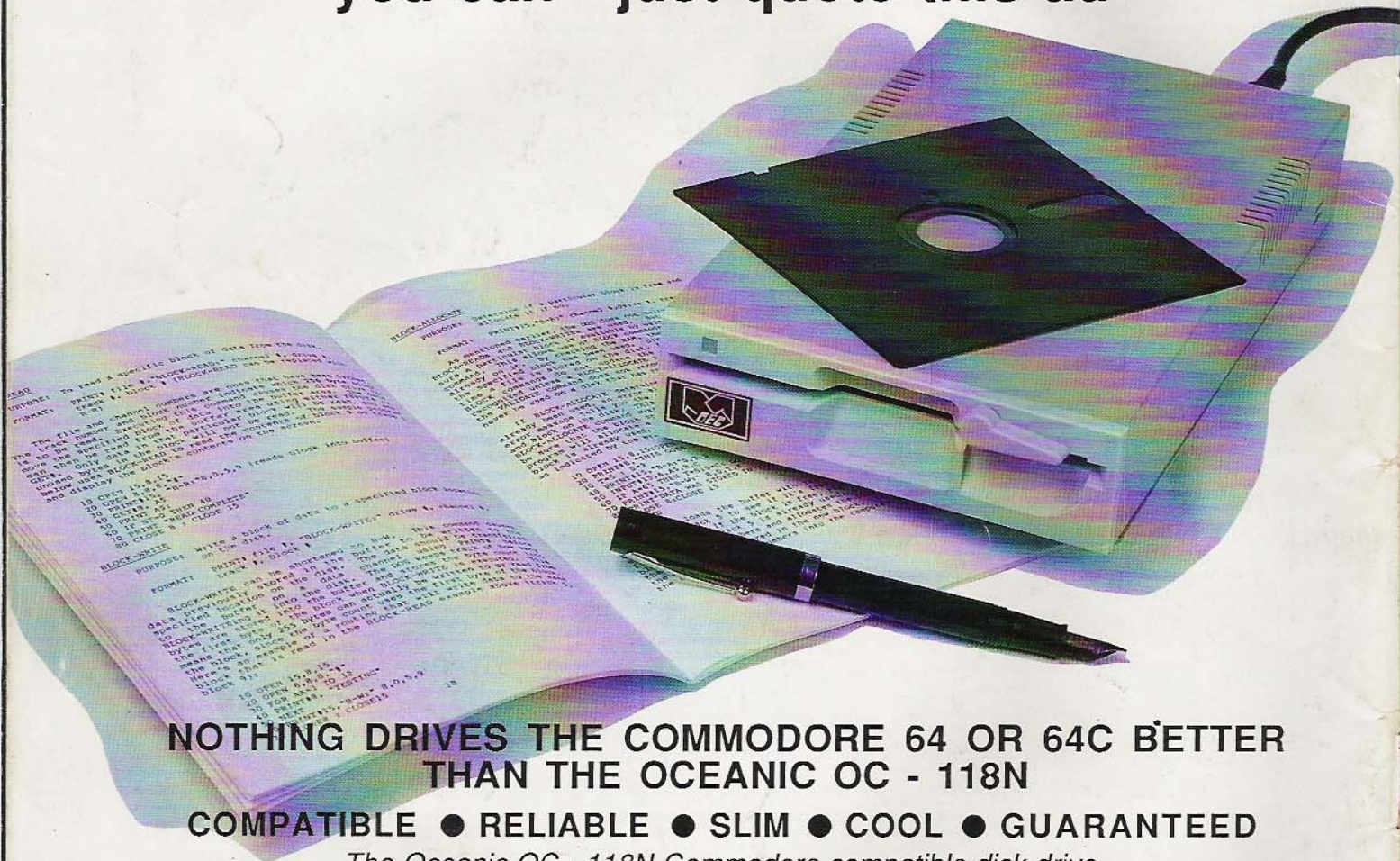
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