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INDEPENDENT COMMODORE  
PRODUCTS USERS GROUP

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(continued on inside back cover)



# INDEPENDENT COMMODORE PRODUCTS USERS GROUP

VOL 5  
No 6

## Newsletter

NOV  
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Europe's first independent magazine for PET users

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*caveat emptor*

In the last issue the name of the next Editor was given as Ron Barrett, of Brixham, but unfortunately through ill health Ron was not able to take over, and I, who had been making some discrete enquiries whether limited help on the production side would be welcome, found myself landed with the whole shooting-match at 5 minutes to midnight. Which accounts for this issue coming out well after midnight, and must be taken as the reason for any shortcomings.

It is very clear to me, even after short experience of ICPUG, how much Ron Geere has done for the newsletter, and at the AGM it was obvious how much this was appreciated by the Committee, who really know. ICPUG owes him a considerable debt, and I am glad to say that he will continue to advise.

My own interests are in the applications of computers rather than how they work (my pastures are the beginners' features). This means I am not able to fill up the corners with technical erudition as he was, and we shall be even more dependent on you, the readers, to keep the pages filled. Don't worry if you haven't got a disk drive: you can put text on cassette or, unless your piece is very long, or contains listings, you can use the old technology and put pen to paper. Obviously we prefer machine-readable material, and for listings of any length it is well nigh essential, but above all we want contributions. This issue contains a reminder of the various ways in which you can supply material (p. 554). Issues are put together in the even months, but give us as much time as possible, especially if using the old technology.

Costs are rising all the time - hence the small rise in the ICPUG sub - and in order to be able to print more (if you contribute it) for your money, the next issue will look a little different. No details now, but expect a new look. Between now and then, however, is Christmas and the New Year: the Season's greetings to you all!

H. de G.

THE 64 COLUMN

by Mike Todd

AN ELEPHANT AND A MOUSE

Those members who watch proper television (rather than 64-television) during the evenings will no doubt have seen the commercials for the 64.

These ads are based on the ideas that the Commodore 64 has an enormous memory, just like an elephant, but with the agility and compactness of a mouse.

Press advertising is also being based on the same comparison and it is all part of a major campaign to keep a reasonably high profile in the media in the run up to Christmas.

There will also be a campaign to promote the range of peripherals available, and it is all aimed at keeping the name of Commodore at the front of people's minds - of course, it should also increase sales!

MORE TV COVERAGE

On September 29th, viewers of the Thames television programme, DATABASE (which I suspect is not seen in all ITV regions), will have seen John Baxter (Commodore's Marketing Manager) being brow-beaten by Tony Bastable.

The programme was a visit to the PCW show at the Barbican Centre and there were several interviews with key men from a couple of the major micro manufacturers, although Commodore got significant coverage with the Vic and 64.

The Commodore interview was centred around the new portable 64 (the SX64). At present, the SX64 is not truly portable since it requires a normal mains supply.

On the programme, it was stated that a battery version of the SX64 would be available soon but, as the discussion developed, the implication was that the battery option would be for a battery back up rather than true portability.

The power requirements of the SX64, with a colour monitor, single disk drive and the computer are probably quite substantial, and to power this from a battery pack to make the machine completely portable will be a major engineering feat.

That is not to say that the task is impossible, since devices to convert battery power into mains voltage are widely available - but they are bulky and heavy. Maybe we will see a truly portable SX64, but as I write this, the idea is still being developed.

#### SIMONS SAYS

On the same programme, there was an interview with David Simons who was giving the story behind the development of Simons' BASIC.

Originally, David produced a software package for the PET computer aimed principally at improving graphics on the PET. This he presented to Commodore and they published it in the Commodore user club magazine several years ago.

He then went on to expand and develop the package for the Vic-20, but when Commodore saw it, they asked if he would take it away, together with an early 64, and produce the package for the 64, which is precisely what he did.

There is no doubt that Commodore saw this schoolboy protégé as an excellent advertising tool and, despite the problems that were inherent in the package, committed themselves to it.

I don't know if they had any qualms about the package, but rumours abound about the fact that Commodore had to do

much of the cleaning up work themselves. Even so, the results are far from impressive and my review in an earlier newsletter needs no further comment.

### SIMONS' 2

Commodore have now sorted out some of the bugs and 'subsequent cartridges' will have these corrected.

The bugs that Commodore say they have corrected are the fact that BLOCK & REC do not work with the LOWCOL command; problems with ONKEY which may hang the keyboard; incorrect handling of SIMONS' keywords in DATA statements; and the DUMP command failing to show the minus sign in negative numbers.

They also have an error list available for the manual which should be available from dealers or through the Commodore Information Centre.

### BRIAN CANDLER, WHO IS HE?

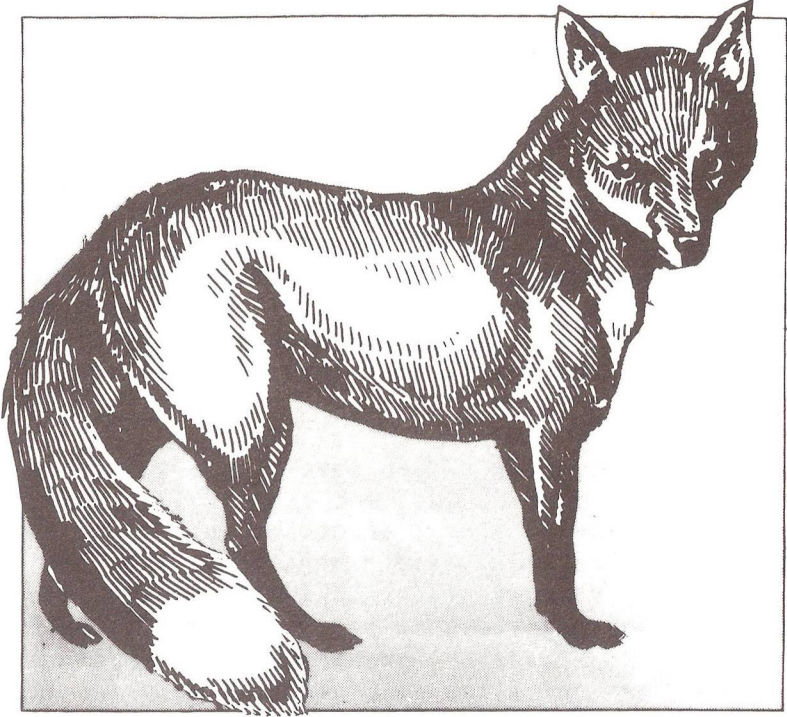
Well, Brian is also a schoolboy who, by my reckoning, is actually younger than David Simons. He too has written his own BASIC extension package (BC BASIC) which is available on cartridge at about the same price as SIMONS' BASIC.

Time does not allow a full discussion of BC BASIC (BCB from now on), but it has many of the features of SIMONS' BASIC (SB) without the hassles. The commands are more thoughtfully constructed, and this is a package which I could recommend.

Its repertoire of commands includes the ability to define sprites and characters in a very versatile manner and one which should make programming easier than the method used by SB. The commands allow individual rows to be defined as numeric variables, but since numeric variables can be hex, binary or decimal and up to 32 bits (or 8 hex characters) long, the programmer has a wide range of choices of how to define them.

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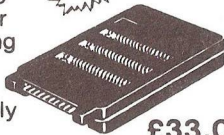
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Sprites can be moved - not just singly, but several at a time, and under interrupt control. This means that you can tell the 64 to move one or more sprites from one point to another, and it will go away and do it, but the program can, if you wish, continue without having to wait for the completed move. The sprites can also be moved on and off the screen smoothly without having to resort to keeping an eye on the co-ordinates in case they turn into illegal quantities.

The normal high and medium resolution plotting commands are available, with the extra ability to operate two separate graphics screens and switch between them. It is even possible to plot onto the screen not currently displayed.

There are commands for sound generation, although there is no ability to play tunes as there is in SB, but the range of commands available covers all aspects of sound generation including filtering and ring modulation.

There are structured programming commands available, including REPEAT...UNTIL, named procedures with the ability to pass parameters to the procedure, and to define specific local variables, and an IF...THEN...ELSE structure.

I've already mentioned that hex or binary can be used in arithmetic expressions, but it is also possible to convert numbers back into hex or binary, and to specify the form of the resulting string. There is nothing like this in SB.

There are no specialised input commands, although joysticks, paddles and the light pen can be read and there is the ability to read the code of any key currently being pressed. This is not like the GET command, which only returns the key value once - it actually repeatedly returns the value until the key is released, which can be very useful.

There are also no programming aid commands, such as TRACE or RENUMBER, but then on SIMONS' BASIC, these aid commands are rather poorly implemented and I feel that it is no great loss compared with the huge overall gain in quality.

SUMMARY OF BC BASIC COMMANDS

I suppose that the best way to describe BC BASIC in some useful detail is to give a list of the commands available. Note that I have only given summaries of each command, and many are much more versatile than the descriptions imply.

Also, I have given minimal details of the parameters required, and many parameter definitions are extremely versatile. For instance SPRON turns sprites on, and can actually be in three different forms:

```
SPRON 4,1      turns sprite 4 on, 0 would turn it off
SPRON 4 TO 6,0 turns sprites 4, 5 & 6 off
SPRON=%00000111 turns sprites 0-2 on and 3-7 off
```

PROGRAMMING COMMANDS

```
IF...THEN...ELSE
REPEAT...UNTIL      repeat loop until condition is true
RESTORE nexp        set to READ DATA from specified line#
GOTO(nexp)          computed GOTO
GOSUB(nexp)         computed GOSUB

KEY nexp,strexp     implant string into F-key specified
KEYLIST             show all F-key definitions
KEY$(nexp)          returns specified F-key definition
KEY                 returns ASCII code of key currently pressed
KEY$                returns character of key currently pressed
KEY(nexp)           returns true/false if specified key pressed
```

GRAPHICS COMMANDS

```
MODE nexp [,nexp]  select graphics mode
CLC                 clear the current hi-res screen
PAPER nexp          set colour of background
BORDER nexp         set colour of border
INK nexp            set character or plot colour
```

SETCOL nexp,nexp	set all hi-res/multicol colours
GCOL nexp	set default plotting method
PMODE nexp,nexp	select current screen for plotting commands (need not be one currently displayed)
PLOT x,y	plot a point onto current screen
DRAW [x,y] TO x,y	draw a line onto current screen
HPRINT....	Print text onto current screen
POINT (x,y)	returns state of specified point on screen
CHARSET....	determine where current character set is
COPY....	transfer all/part of ROM char gen to RAM
DEFUSR...	define all/part of a specified character
DEFSPR....	define all/part of sprite
SPRPOINT....	assign definition block to given sprite(s)
SPRON....	turn one or more sprites on or off
SPRPOS spr#,x,y	position given sprite at x,y
SPRX and SPRY	alternative to just set x or y co-ord
SPRMODE....	set sprite as normal or multicolour
SPREXP....	set x and y expansion of sprite
SPRGO....	select which sprite(s) are to be moved
SPRV....	set x and y velocities of sprite(s)
SPRSTOP	stop all sprites and restore interrupt
SPRTI....	set sprite(s) to stop after given time
SPRINK....	set sprite colour
SPRGCOL....	set colour for multi-colour sprite
SPRPAPER....	set sprite/character priority
SPRSPR & SPRPAPER	used to determine sprite collisions
SPRCLR	reset all sprites

NB: most of the sprite commands can also be used to read back the sprite parameters

SOUND\_COMMANDS

SOUNDOFF turns all sounds off, and clears registers  
 VOLUME nexp set overall volume level

WAVEFORMnexp,nexp select waveform for specified voice  
 ADSR v,a,d,s,r set up ADSR for voice v  
 PWM v,width set pulse width if pulse waveform selected  
 PITCH v,pitch set pitch of voice v

ATTACK voice# start ADSR envelope on specified voice  
 RELEASE voice# start release phase of envelope  
 RINGMOD.... set up ring modulation  
 SYNC.... set up synchronised sound generation

FILTER nexp select voice(s) through filter  
 FMODE nexp select filter mode  
 RESONANCE nexp set filter resonance (the filter Q)  
 CUTOFF next set filter cut off frequency

INPUT/OUTPUT

JOY JOYX JOYY read specified joystick setting  
 PADDLE read specified paddle setting  
 PORT PORT← set or read whole user port or bit by bit  
 PRINT AT x,y set up to print from x,y on screen  
 PRINT can contain INK, PAPER & BORDER

ADDITIONAL\_COMMANDS

SCRWAIT waits for screen blanking  
 MSAVE.... saves a specified block of memory  
 HIMEM=nexp set upper limit of RAM available to BASIC  
 INSTR.... find position of one string in another  
 CODE.... converts an ASCII code to its POKE value  
 BIN\$..... convert numeric expression to binary string  
 ! equivalent to a four byte PEEK or POKE  
 ' equivalent to a two byte PEEK or POKE  
 \$ indicates hex number (max is \$FFFFFFF)  
 % indicates binary number (max 32 digits)

Distribution of the package is by

KUMA Computers,  
11 York Road,  
Maidenhead,  
BERKS SL6 1SQ

'phone Maidenhead 71778

### PROBLEMS WITH SID

Commodore have pointed out that there are variations between different SID chips and that this is causing some problems in commercial software.

The problems are in the filter section of the chip and they point out that the differences can cause filtered sounds on some 64's to either be inaudible or produce unexpected results.

Their advice is to avoid the use of the filter for software that is for distribution, although it must be stressed that programs written and then run on the same computer will have no problems.

### CLEARING THE SCREEN

Those who do a lot of POKEing to the screen will be well aware of the need to set the colour RAM every time, since clearing the screen resets the colour memory to the same colour as the background and POKEd characters are invisible.

This did not occur on earlier 64's, notably those first released in the USA, and so some programs originating from the USA have not been written to take this into account.

One of these is the PET EMULATOR which reconfigures the 64 to make it look as near to a PET as possible so that PET software can be run with minimal alteration.

By moving the screen to start at 32768 instead of 1024, PET program screen POKEs should work - but they don't. The answer is to either rewrite the program so that every screen POKE is accompanied by a colour POKE, or to reset the colour memory every time the screen is cleared.

The obvious way to do this is to set up a FOR..NEXT loop and execute it every time the screen is cleared, but this is rather slow and cumbersome. An alternative is to set up the following subroutine and by replacing all screen clearing instructions with GOSUB 63400.

```
63400 ZZ=PEEK(53281): POKE 53281,PEEK(646)
63401 PRINT "[clear]";
63402 POKE 53281,ZZ
63403 RETURN
```

Line 63400 first notes the current background colour, then sets the background colour to the current character colour from location 646. The screen is cleared, so that the colour memory is filled with the current background colour, and then the background is restored.

There will be a brief flash while the screen is cleared, but any future POKEs to the screen will be visible - at least until a normal screen clear command is issued.

Incidentally, moving the screen to 32768 is very simple, and can be incorporated at the start of a program as follows:

```
1 POKE 648,128: POKE 56576,5: POKE 53272,4
2 PRINT "[clear]" : POKE 56,128: CLR
```

This will not reposition the start of the BASIC program to the same location as on the PET, but this should cause no major problems. If it does, then

```
POKE 56,128: POKE 44,4: POKE 1024,0
```

will do this, but it must be done before loading the program.

PICTOGRAPH

Doodling on the screen of the 64 is a popular pastime, and one which children and adults seem to love to do.

Daniel Cohen, son of our membership secretary, has written a package called PICTOGRAPH which is available as a cartridge at 25.00 plus VAT. ICPUG members can obtain it for 19.95 (inc VAT) by sending their membership number to Jack Cohen, or by writing to John Bickerstaff, our discounts man.

The package uses a joystick to manoeuvre a small cursor around the screen at a speed which can be easily changed, and the outlines of shapes or objects drawn.

Lines can be drawn at a variety of different speeds (making fine detail easy to generate), in a variety of different thicknesses and in the range of colours available in the 64's multicolour mode.

As well as drawing lines with the joystick, lines can be drawn automatically from point to point, and circles be drawn by specifying the centre and a point on the circumference.

The program has two different basic modes of operation. The first, which I've already described, is the DRAW mode; but there is also a FILL mode where the cursor can be moved to any point on the screen, the fire button pressed, and the shape will be filled with the current drawing colour.

Although a little on the slow side (but then aren't all FILL routines?) the fill is fascinating to watch as it doesn't fill vertically or horizontally. Instead, it works outwards in a diamond pattern, filling all the nooks and crannies it can get into. But beware, because FILL will find any tiny cracks in your drawing and the colour will simply 'ooze' out and spread all over the picture.

One of the facilities I haven't mentioned in the description of the DRAW mode is the ability to 'pick up'



shapes drawn on the screen, and move them around the screen, depositing images of them at the press of the fire button.

This 'potato print' mode can be extremely useful for generating repetitive shapes, and, if required, the shapes can be inverted horizontally and/or vertically.

If all this wasn't enough, typing any keyboard characters while in DRAW mode will print that character on the screen at the current cursor position, and the cursor then moves ready for the next character. There is only one thing to watch out for in this mode; when the cursor is moved, a little dot is deposited on the screen at the last cursor position, although this can be avoided by suppressing the line drawing by keeping the fire button pressed.

Despite the fact that the package was initially seen as a fun thing, it is possible to draw pictures or diagrams with a fair degree of precision and it is possible to save these pictures to tape or disk. Then, using programs available as a small extra, they can be incorporated into user programs without even needing PICTOGRAPH installed.

This is a good 'fun' package, and I have a friend who will sit for hours playing with it. But that is not to say there is not a serious application too, especially when designing backgrounds for games or business programs.

The program is not always user friendly, and so sometimes a little awkward to use, but this can be overcome with a little practice.

### THE TOD CLOCK

Inside the CIA is a TOD clock - now, let me first of all point out that, despite the name, I have no connections with the CIA, KGB or any other such organisation.

In fact TOD stands for Time Of Day, and CIA for Complex Interface Adapter and both are inside the 64.

The TOD clocks are registers inside the CIA chips, and they count time in hours, minutes, seconds and tenths of seconds. They are independent of normal 64 operations and are locked to the mains frequency of 50 cycles per second.

There are three problems to be overcome when setting up or using the clocks. The first is that the 64 initialises the clocks assuming the American mains standard of 60 cycles per second and this must be changed. This is controlled by the most significant bit of control register A of the CIA.

All the time registers are set up in binary coded decimal form, which makes life a bit awkward, and the clock is a 12 hour clock, with the most significant bit of the hours register indicating PM or AM.

The last problem occurs because the registers must be set up in a specific order. As soon as the hours register is set, the clock stops and doesn't restart until the tenths register is set. This means that it is possible to identify the precise moment at which the clock restarts. Reading is done in the same order and the registers are 'frozen' when the hours register is read, and do not continue counting until the tenths register is read, although the clock continues counting through all this.

Since there are two CIA chips, then there are actually two TOD clocks, and the registers involved are as follows:

register	contents	CIA #1	CIA #2
10ths	0000 LLLL	\$DC08 (56328)	\$DD08 (56584)
seconds	0HHH LLLL	\$DC09 (56329)	\$DD09 (56585)
minutes	0HHH LLLL	\$DC0A (56330)	\$DD0A (56586)
hours	P00H LLLL	\$DC0B (56331)	\$DD0B (56587)
50/60	Sxxx xxxx	\$DC0E (56334)	\$DD0E (56590)

In the register contents, H and L stand for the high and low portion of the binary coded decimal value, P is the AM/PM

indicator (PM=1) and S is the clock speed (50Hz=1). The x symbol is for bits that should not be tampered with.

I've written a subroutine for setting up the TOD clock in CIA #1 and this starts at 60000 in the following program. It takes the time from a variable TT\$, which is in a similar form to the TI\$ variable, with the addition of two characters for the tenths of seconds and two to specify AM or PM.

To read the clock, use the subroutine at 60100 which returns the variable TT\$ to the current clock value.

I have not tried to optimise the routines in any way, and so they are rather slow and the time is actually set a little too late. There would be several ways of speeding this up significantly and I leave it to enterprising programmers to do this themselves.

The principles involved could well be incorporated into a fairly simple machine code program, with the time value being set from, or put into a specified variable. Again, perhaps someone would like to do this - I would very much like to see the results.

Both subroutines assume CIA #1, but could easily be changed to work with CIA #2.

These two clocks run continuously, and are not affected by cassette or disk operations, unlike the TI\$ variable. This means that it would be possible to keep timing accurately over such operations.

However, be warned that resetting the 64 using the SHIFT+RESTORE keys resets the control registers of the CIA chips, and so will revert the timers to 60Hz.

Finally, the CIA chips have the ability to set a flag and/or interrupt machine code at a specific alarm setting and there is scope for some experimentation here.

```

60000 REM ***** SET TOD #1 FROM TT$
60010 POKE 56334,PEEK(56334) OR 128 : REM *** SET 50HZ OPERATION
60020 PM=0: IF MID$(TT$,9,2)="PM" THEN PM=128
60030 POKE 56331,((ASC(MID$(TT$,1))-48)*16 + (ASC(MID$(TT$,2))-48)) OR PM
60040 POKE 56330,((ASC(MID$(TT$,3))-48)*16 + (ASC(MID$(TT$,4))-48))
60050 POKE 56329,((ASC(MID$(TT$,5))-48)*16 + (ASC(MID$(TT$,6))-48))
60060 POKE 56328,((ASC(MID$(TT$,7))-48)*16 + (ASC(MID$(TT$,8))-48))
60070 RETURN

60100 REM ***** SET TT$ FROM TOD #1
60110 PM$="AM": IF PEEK(56331)AND128 = 128 THEN PM$="PM"
60120 XX=PEEK(56331) AND 31: TT$= CHR$(XX/16+48)+CHR$( (XX AND 15)+48)
60130 XX=PEEK(56330) : TT$= TT$ + CHR$(XX/16+48)+CHR$( (XX AND 15)+48)
60140 XX=PEEK(56329) : TT$= TT$ + CHR$(XX/16+48)+CHR$( (XX AND 15)+48)
60150 XX=PEEK(56328) : TT$= TT$ + CHR$(XX/16+48)+CHR$( (XX AND 15)+48)
60160 RETURN

```

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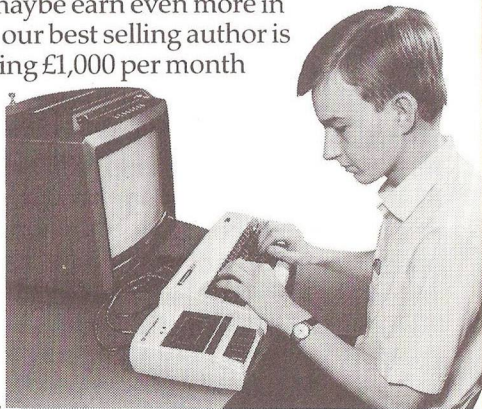
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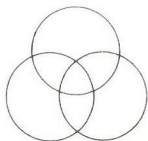


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CLUB SOFTWARE NEWS

by Brian Grainger

This time I want to try and answer a question that has cropped up many times recently. What free software is available for the C-64? The software library has two disks of C-64 software as well as about half of Jim Butterfield's 1983 disk being dedicated to C-64 programs. Some of the latest programs from the Commodore Workshop are also written for the C-64.

In this article I want to run through the more interesting programs. The disks are not prepared in any special way so do not expect to get all the games on one disk for example.

MUSIC

Jim's disk has a selection of simple music - YANKEE DOODLE - DIXIE-64 - LINCOLNSHIRE - BIRTHDAY.64. The Danish disk includes the US National Anthem with a picture of the 'Stars and Stripes' without the stars! (AMERICAN FLAG). The KEYBOARD program in the 64 instruction manual is also included.

EDUCATION

MATHS MAZE is a game with simple arithmetic (e.g. what is 85 minus 23?)

GEIGER COUNTER is a demo suitable for physics students.

BAR GRAPH will draw just that for given input.

REMEMBERING.C2 is a version of the memory game where one turns over two cards, getting another turn if they match. If not your opponent has a go. Suitable for younger children.

READER.C2 is a program to allow the teacher to create text that can be read by the younger pupil at various speeds. The speed can be adjusted as ability improves. A test of whether the student takes in what is read is made.

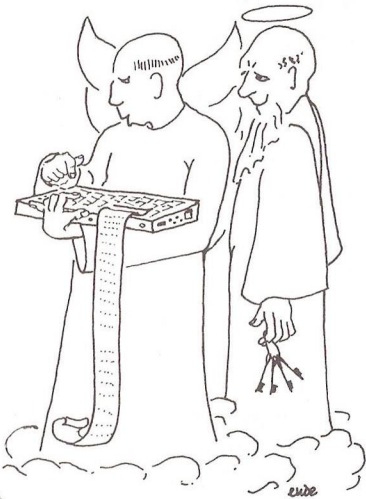
MORSE CODE TEACH is a very basic program for learning text to Morse conversion.

HOME PROGRAMS

MORTGAGE works out mortgage payments, prepares amortization

tables for those with loans or who lend money!

LIFE EXPECTANCY will ask you some questions and calculate when you will GOTO your maker (apparently I'm not going to draw my pension!)



That reminds me that I came across an interesting little BASIC program the other day in a medico-legal journal, to tell you how long you've been dead.

All you have to do is to take the ambient temperature (let's hope you're not in the Other Place), and then that of your remains four times at 15-minute intervals as they cool, feed in the data and press RETURN. I don't think it is meant to work for long after your demise, but if St Peter (or Ould Nick) turns out to be pernickety about precise times . . .

H. de G.

## DEMONSTRATIONS

64 MEMORY CHART is a Butterfield program that shows the 64 memory organization pictorially for various settings of the 3 control bits.

HI-RESOLUTION 1 is a slow BASIC version of my Hires plotting program.

3 D SPRITE H is a demo of what you can do with sprites.

SHOW DEMO is a demonstration of the 64. It is spoilt by not having the sprite definition files and other files called from within the program on the same disk!

## UTILITIES

CHRED is a character editor that looks to be quite a good program. Unfortunately it does not come with instructions and does not tie up with notes I have seen from Commodore on a similar program with the same title! It is used to create user-defined characters and store them for use with your own programs.

64 BASIC MON is a program from PCW that is a monitor program written in BASIC. Far better is ...

SUPERMON64.V1, which is a nice little machine code monitor for beginners in Assembler to try out their skills. Be sure to ask for SUPERMON INST, the instruction file. This is just one utility from the master of utilities - Jim Butterfield.

COPY-ALL64 will enable users with TWO 1541 drives (who are surprisingly large in number) to copy programs from one drive to another easily. It does NOT work with a single drive.

LISTER.V64 is a super program for those with non-Commodore printers who want to produce program listings. It will read the program from disk and translate all the peculiar control graphics for cursor control and colours into meaningful words like wot the newsletter programs look like.

C-64 WEDGE is a BASIC loader for DOS 5.1, invaluable for disk users who have not seen the COMAL light! It is the good old DOS support.

MERGER is a program that will read two program files from disk, do a true merge (not APPEND as in that well known utility cartridge nobody Tikes), and store the result to disk.

GAMES (for those with nothing better to do)

LUNAR 64 - Simple lunar lander

BLACKJACK! - Pontoon to you and me. Does include some witty comments.

TWIN BAGELS - Play mastermind with your computer. It will try and guess your number as well and it knows if you cheat!

BATTLESHIPS - Play the classic game against the C-64

CAT & MOUSE - CHAR PACMAN - JOTTO - GOLF - HANGMAN -

NIBBLERS (slight bug in it) - STARTREK (No instructions!) -

OTHELLO - THREEDOX (3D Noughts and crosses) - AIRCRAFT

LANDER (complicated instructions!) - EPIDEMIC - FLIGHT -

FOREST WALK.

I give special mention to two games I found interesting.

Firstly CONNECT 4, which is a nice computer versus player translation of the game of the same name in the shops. The graphics are quite good. The idea of the game always



struck me as quite good but the price was excessive. Now you can play it for nothing!

Finally, BABY CARE, which I think is the most original game I have seen for ages. Ideal for impending mothers and fathers! The idea is to amass 300 sanity points and a similar number of points for time which you can spend free from baby. The baby has a nasty habit of continually getting hungry or wetting its nappy (or diaper as the US originators would say). The worse it gets the more you lose your sanity (and more difficult to regain it). The idea is to judge the best times to feed the baby, change the nappies, have a nap, or simply do nothing. The first three will help to lessen the loss of sanity (or even regain it when having a nap) at the expense of losing time. The last one will gain time at the expense of the lowering of your sanity - baby tends to wet itself quite frequently!

Being a bachelor I do not know how realistic this game is, but it was fun playing! I kept going insane which may be telling me something!

All the above programs are available from the 64 Software librarian:

Brian Wise, 17 Knighton Close, Sth. Croydon, CR2 6DP

PLEASE read the notes on p380 of this year's Newsletter, which say what you must send to receive free software. Commodore 64 software is not supported on 8050 disks.

--o0o--

#### COMAL NOTE

There is no COMAL Corner this month but many thanks to all those who requested disk or cassette copies of the COMAL semi-compiler after the July Newsletter. A point to note for cassette users: the file COMALGENERRORS that was provided is meant to be LISTed and the error numbers and meanings noted. Do NOT run the program as it will only function with systems including disk drives.

B.G.

COMAL - COMMANDS THAT HAVE BASIC EQUIVALENTS

By Brian Grainger

(With COMAL now available on the 64, it seems a good time to reprint this article, which first appeared in January 1982.)

In the following article I will show on the left side of the page some COMAL statements. On the right side of the page I will show how the same result is obtained in BASIC. In this way you should be able to see how to convert BASIC programs into COMAL and also get some idea of the use of some of the COMAL commands. I shall show the COMAL statements as they would appear on the screen should they be listed. As you will see in the article on features unique to COMAL, it is not necessary to type all you see. It still works if you do though.

<u>COMAL</u>	<u>BASIC</u>
0010 CASE A OF	10 ON A GOSUB 30,40
0020 WHEN 1	20 PRINT"A IS OUT OF RANGE":
0030 PRINT"A IS ODD"	GOTO 50
0040 WHEN 2	30 PRINT"A IS ODD":RETURN
0050 PRINT"A IS EVEN"	40 PRINT"A IS EVEN":RETURN
0060 OTHERWISE	50,,,,,,
0070 PRINT"A IS OUT OF RANGE"	
0080 ENDCASE	

---

A:=1 ; B:=2	A=1:B=2
CHAIN "FILENAME"	LOAD"0:FILENAME",8:RUN
CLOSE	DCLOSE
CON	CONT
DEL 100	100 <RETURN>
DIM MATRIX(0:100,0:10)	DIM MATRIX(100,10)
A DIV B	INT(A/B)

---

0010 EXEC SUBPROGRAM	10 GOSUB 100
;	;
0100 PROC SUBPROGRAM	100 , , , ,
;	;
0200 ENDPROC SUBPROGRAM	200 RETURN

---

0100 FUNC FNR(X)	100 DEF FNR(X)=INT(X*100+.5)
0110 RETURN INT(X*100+.5)	
0120 ENDFUNC FNR	
NO:=FALSE	NO=0
FOR I=1 TO 10 DO PRINT I	FOR I=1 TO 10:PRINT I:NEXT
-----	
0010 FOR I=1 TO 10 DO	10 FOR I=1 TO 10
0020 PRINT I	20 PRINT I
0030 PRINT I*2	30 PRINT I*2
0040 NEXT I	40 NEXT
-----	
0010 GOTO FINISH	10 GOTO 110
;	
0100 FINISH:	
0110 PRINT"END OF PROGRAM"	110 PRINT"END OF PROGRAM"
-----	
0010 IF A=B THEN	10 IFA=BTHENPRINT"A EQUALS B"
0020 PRINT"A EQUALS B"	:GOTO 40
0030 ELIF A>B THEN	20 IFA>BTHENPRINT"A GREATER
0040 PRINT"A GREATER THAN B"	THAN B":GOTO 40
0050 ELSE	30 PRINT"A LESS THAN B"
0060 PRINT"A LESS THAN B"	
0070 ENDIF	40 ;;;;;
-----	
INPUT"WHAT IS NUMBER? ":NO	INPUT"WHAT IS NUMBER";NO
LOAD"O:FILENAME"	LOAD"O:FILENAME",8
A MOD B	A-INT(A/B)*B
OPEN 2,"FILENAME",READ	OPEN2,8,8,"O:FILENAME,SEQ,R"
OPEN 2,"FILENAME",WRITE	OPEN2,8,8,"O:FILENAME,SEQ,W"
OPEN 2,"FILENAME",APPEND	APPEND#2,"FILENAME"
OPEN 2,"FILENAME",RANDOM 100	DOPEN#2,"FILENAME",L100
ORD("A")	ASC("A")
SELECT OUTPUT "LP"	OPEN1,4:CMD1
followed by	followed by
SELECT OUTPUT "DS"	PRINT#1:CLOSE1
PRINT A\$;B\$;C\$	PRINT A\$;" ";B\$;" ";C\$
PRINT A\$,B\$	PRINT A\$;B\$
-----	
0010 ZONE:=10	PRINT A,B
0020 PRINT A,B	
-----	

0010 REPEAT	10 I=I+1
0020 I:=I+1	20 PRINT I
0030 PRINT I	30 IF I<>10 GOTO 10
0040 UNTIL I=10	
A=RND(X,Y)	A=X+INT((Y-X+1)*RND(0))
p=RND(0)	A=RND(0)
SAVE"0:FILENAME"	SAVE"0:FILENAME",8
SIZE	PRINT FRE(0)
PRINT STATUS	OPEN15,8,15:INPUT#15,A\$,B\$,
C\$,D\$:PRINTA\$;B\$;C\$;D\$	
:CLOSE15	
PRINT STATUS(2)	(e.g.)INPUT#2,A\$:INPUT#15,ER
:PRINT ER	
(e.g.)PASS"C1:*=0:FRED"	COPY "FRED" TO D1,"*"
NO:=TRUE	NO=1

---

0010 WHILE I>0 DO	10 IF I<=0 GOTO 50
0020 NO:=NO+I	20 NO=NO+I
0030 I:=I-1	30 I=I-1
0040 ENDWHILE	40 GOTQ 10
0050 PRINT NO	50 PRINT NO

---

INPUT FILE 2:A\$	INPUT#2,A\$
PRINT FILE 2:A\$	PRINT#2,A\$
READ FILE 4,12,3:A\$	RECORD#4,12,3:INPUT#4,A\$
WRITE FILE 4,12,3:A\$	RECORD#4,12,3:PRINT#4,A\$
EDIT	LIST
CAT	CATALOG
CAT 0	CATALOG DO
CAT 1	CATALOG D1

---

PRINT NAME\$(1:N)	PRINT LEFT\$(NAME\$,N)
PRINT NAME\$(M:M+N-1)	PRINT MID\$(NAME\$,M,N)
PRINT NAME\$(END-N+1:END)	PRINT RIGHT\$(NAME\$,N)

---

A# (integer variable)	A%
N.B. This uses less storage than A	N.B. This uses same storage as A

Some of the COMAL examples above may look clumsy compared with the BASIC equivalents. This is because I have contrived

to present exact equivalents. In practice the COMAL program would be written bearing in mind the use of the 'COMAL commands, not the use of the BASIC equivalents. Some of the COMAL commands shown above have extra uses. See the article on features unique to COMAL.

(More in the next issue)

--oOo--

## THE ICPUG ANNUAL GENERAL MEETING

by a Fly on the Wall

A subterranean room in the North London Polytechnic was more than large enough for the ICPUG AGM. We mustered 65 members, some from far places, which is more than in recent years, but where were the rest of you? Perhaps it was too near Hallowe'en, when computers turn into pumpkins (or into Apples).

Our illustrious Chairman, Wings Ryan, was on the rostrum flourishing his gavel, and he got off to a good start by conning the meeting into accepting last year's minutes. The outgoing Minutes Secretary was heard to mutter "How could they swallow that?"

A big news item from the committee members' reports was the Treasurer's not standing for re-election. He was at the meeting, however, not in the Bahamas. That was not all. Ron Geere pleaded Editor's Exhaustion and escaped after only 5 or so years of his sentence. He had taken a pot shot with his sandbag at Ron Barrett in Brixham, missed, and ended up by hitting Hugh de Glanville and slipping him into the job when he wasn't looking.

Your indefatigable reporter's pen ran hot trying to get the names of the new committee down, but having managed it, just, there's nothing for it but to inflict the lot on you, but I'll spare you the names of the proposers and seconders.

Mick Ryan	Chairman	David Jowett	S'ware Libr. 64
Mike Todd	Vice-Chairman	Brian Wise	.. .. VIC
Alan Birks	Treasurer	John Bickerstaff	Discounts Officer
Jack Cohen	Membership Sec.	Fred Oflfer	Projects Organiser
Hugh de Glanville	Editor	Alfred Minter	Pet S'ware Organiser
Henry Velleman	Asst Editor	Dave Broughton	Minutes Secretary
David Annal	ACC Rep.	Harry Broomhall	Communications
Will Light	Publicity	Ray West	Software Advisor
David Harrow	Publicity	Terry Devereux	Regional Organiser
Jennifer Tregarne	Exhibn Organiser	Brian Grainger	Comal and Micronet
Bob Wood	S'ware Libr. 4040	John Collins	CBM liaison
Joe Griffin	.. .. 8050	(vacant)	Technical Secretary

It is odd that there was only one candidate for each post... Not really - there were no candidates for most posts until the persuaders went in - "Pity if your computer got dropped, squire - get my drift?". You could say that a Club with a committee like this mob deserves what it gets. First thing they did was to put the subs up to £10 for UK & Eire, £15 for the rest of Europe, and £26 for all other airmail destinations.

I guess other things of importance must have been discussed at an AGM that went on for over 4 hours; no doubt they will be faithfully recorded in the minutes. The only other thing I can remember is drooling over the portable SX64 that John Collins brought along to demonstrate the new modem and Z80 cartridges.

--o0o--

#### CHARGES FOR BACK NUMBERS

From January 1, 1984 the price of back issues will be increased in line with the increase in annual subscription to ICPUG. The new prices will be:

UK £1.50 Europe £2.00 Elsewhere - Seamail £2 Air mail £4

--o0o--

Delph Converter Board Additions

By Brian Grainger

Those of you who attended the ICPUG stands at the Commodore show will have seen the Delph Converter board in use on the ICPUGSE stand. That particular version was available from Mick Bignall. The board is also available from Supersoft but remember discounts are only available through ICPUG (contact John Bickerstaff).

Since the review I have been told that some additional products will be available for the board. To remind you, the basic board turned a 9" 4032 into an 8032 machine. The price of this was £149 (excl. VAT). It is now possible to switch between the 40 column and 80 column facility. To do this you will need a switch board and a separate character generator as the basic board uses the character generator from your own machine. The switch board comes at £9, the character generator at £4 (for the 2K version) or £7 (for the 4K version).

I mentioned in the review of the product (Vol.5 No.3) that a 4K 'E' ROM was available to provide screen changing and flashing. If bought with the initial order this costs £2 extra. If bought later it costs £7 (because you already have a 2K ROM!).

By the time you read this there should also be a version of the board for the 12" forty-column machine at the same price. I know it can be done more cheaply by having your machine modified by, for example, Windmill Electronics in Blackpool, but not everybody can get their machine to such places for conversion.

For information on any of the products mentioned above, contact:

Delph Electronics  
4, Deeping Rd., Baston, Peterborough  
Tel. (0733) 07786 53

--oOo--

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announce

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\_\_\_\_\_ (DEALER ENQUIRIES WELCOME)

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- ability to layout full screen of inputs, simply and efficiently and then move up/down screen or end at any point
- audible warning of any errors
- ability to disallow any character e.g. comma

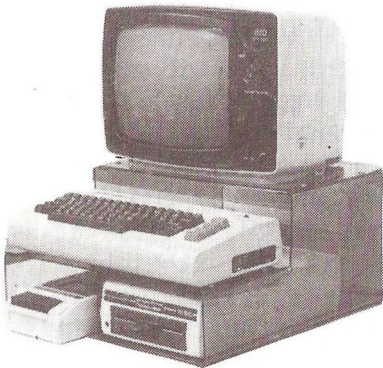
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KEYBOARD PROTECTION

Do others have trouble with their keyboards? Mine, which receive fairly continuous and heavy use, all begin to play up after about 18 months. Commonly used keys begin to fire twice of their own accord, which is nuisance enough for a text character, but makes life very difficult when it spreads to the RVS/OFF key, because at one touch it puts itself on and takes itself off again, which plays havoc with various control functions in word processing.

The first remedy is to clean the keyboard, which in my case is usually full of a gunj of dust, hair, biscuit crumbs, and tobacco ash. It makes one wonder why there isn't one of those protective sheets of foam plastic around the key necks as in the better electric typewriters. Cleaning improves things for a while, and may work several times, but sooner or later there's nowt for't but to get a new keyboard at just under 60 quid.

After my last, I wondered if the silicone cover mentioned in last January's Shop Window would help. So I bought one. This consists of a piece of about 1mm silicone that has been pressed to provide a neat rectangular cover over the keys. It certainly keeps everything out, but unless you are a slow two-finger key-pecker, it is like trying to type with gloves on (to put it politely).

Having consigned that to the back of the drawer on the second day, I then got me a sheet of thin plastic about 7" by 21" (I actually used a length of three bags from a continuous bag-roll we keep in the kitchen). If the top of the computer is lifted, the strip can be tucked under either side and under the lower edge and is held firm when the top is closed again. A piece of selotape then fixes the free edge an inch or two above the top row of keys - don't pull it tight, leave some play. The result doesn't look very beautiful but it's functional and scarcely impedes keying at all. At least it doesn't feel like you-know-what.

H. de G.

BASIC AID

by Joe Griffin

(By courtesy of the South East Regional Group)

Basic Aid is a programmer's utility package, initially developed at about the same time as the 'Toolkit'. However, unlike the 'Toolkit', Basic Aid is loaded into the top of RAM, rather than being supplied as an eprom. ICPUG's 'Plusdos' is based on an early version of Basic Aid.

Although a number of sources claim that Basic Aid is not in the public domain, this is based on the fact that for some time Commodore were selling the program. I am told that Commodore withdrew it when the authors complained. Certainly, an early revision of the program has been published, quite recently in Commodore Computing International (N\*\*k H..... again!) and versions for different machines are available on Jim Strasma's HELP disk (available in the library).

I recently obtained a copy of the source code for the same revision and have converted this into CBM assembler files. At the same time I tried to remove a few 'nasties' from the command list.

For example to switch between UPPER and lower case you issue the commands 'upper' or 'lower' - very logical, until a little later you want to load a file; so you type in '10 "file",8' and the screen drops into lower case and tells you of a syntax error.

I have placed copies of the source files (both original commands and my revisions) in the library. I would recommend them to anyone wanting some useful utilities, as you can specify your configuration in some detail - the source file needs you to supply the following:

BASIC (2 or 4)

If B4, screen type 40, fat 40 or 8032

Keyboard type (Business or Graphics)

Printer type (ASCII or CBM)

Thus a non-standard machine can be catered for by specifying:

BASIC 4  
8032 screen  
Graphics keyboard  
ASCII printer

BASIC-AID COMMAND LIST  
As of October 12, 1981:

AUTO	Auto line number.
BREAK	Calls the monitor with cmds left open.
CHANGE	Changes BASIC text.
CRT	Prints screen to printer.
DELETE	Deletes a given line range.
DUMP	Lists variables in use, & values.
FIND	Finds occurrences of a parameter.
FLIST	List a program on disk to the screen.
HELP	Highlights last statement executed.
HEX	Hex to Decimal conversion.
KILL	Kills Basic-Aid.
LOWER	Drops into lower case mode.
MERGE	Merges program off disk with program in memory.
OFF	Cancel repeat and scroll.
PACK	Removes waste spaces etc. in program.
READ	Reads and displays a sequential file
RENUMBER	Renumbers program.
REPEAT (SCROLL)	Enables repeat key. Scroll is for 12" screens.
SIZE	Gives size of a program in memory or disk.
SPOOL	Send a file directly from disk to the printer.
START	Gives load address of a program on disk.
TRACE	Does a program trace.
UN-NEW	After NEW, Un-new will recover a program.
UPPER	Goes into upper case mode.
> @ / ↑	The wedge commands are also supported.

The following features are also provided:

Stop key (Escape key)   Escape quote mode or insert mode.

Keyprint                   Dump screen to printer with  
a single keypress.

Scroll                    The Up and Down Cursor keys  
scroll the listing.

A number of these commands clash with BASIC. The revised version of B-AID has changed the name of these to avoid clashes, has changed two other names, for consistency and has added one new command.

FREAD            replaces READ  
(to avoid clash with data read)

TEXT            replaces LOWER  
(to avoid clash with LOAD):lnl

RE-NUMBER       replaces RENUMBER  
(to avoid BASIC 4 clash with RENAME)

ROLL            replaces SCROLL  
(to avoid BASIC 4 clash with SCRATCH)

GRAPHICS        replaces UPPER  
(for consistency with TEXT)

OLD replaces UN-NEW  
(as it's shorter, and space is tight!)

AID has been added. It displays new commands available.

-oOo--

ATTENTION ALL VIC MEMBERS

At the recent AGM, some concern was expressed about the lack of material for VIC members in the newsletter. This is despite comments from some VIC members that they find the newsletter extremely valuable.

One of the problems that we have is that we are an organisation of volunteers, all of us in very similar positions to everyone that reads the newsletter.

We have only a certain amount of time and effort to devote on providing material for the newsletter and so there must come a point when we have to stop and think about our homes, our families and our jobs.

OK, but this doesn't help our problem of providing the material that you want to see.

Looking at VIC owners in ICPUG, there are probably three identifiable categories of user. The first, and with the VIC a minority, is business users; the second group is those who use their VIC's as entertainment machines, playing games and little else, although there are those in this group who are starting on the path to programming and are using games to gain experience; the third group comes in the middle.

These are the computer enthusiasts who enjoy computing primarily for its own sake. They can sometimes be exceptional bores, but it is they whose skills and interests extend the frontiers of the machine, making it do things that were never intended and in a position to help both games and business ends of the computing spectrum.

It is these people who are the most vociferous and whose articles appear in the newsletter more often than any others.

The main reason being their enthusiasm and the excitement which new discoveries generate.

Those at the outer extremes are probably happy playing games, or using the latest business programs and so feel that they have nothing to contribute; nothing to say to the others with their interests.

But this is untrue since many of the discoveries a games player makes, whether it be a problem with a joystick, a bug in a commercial program or simply a comment on a game just purchased, there are always others who would like to share that experience.

The business users, who tend to be older and possibly wiser than the young games player, can martial their thoughts and put them down on paper, onto cassette or onto disk and send them to the editor. But, a youngster with something to say may find it difficult to express himself in a way that he feels confident to send to us.

Those still at school who are members themselves, who see the newsletter through contacts at school or who have members of their family in the group, all these younger element have as much of value to tell the rest of the membership and I would very much like to see some of their contributions appearing in the newsletter.

They don't have to be pieces of prose that would get top marks in an English lesson, nor do they need to be written on a top rate word-processor. They could be some notes written in a letter, or a hand written article - or any other means of communication.

So, if you feel that there is little in the newsletter for you, why not put something in that you would have liked to see when you were newer to the game and it will not be long before others see your example and start their own contributions so that the gap will be filled.

\*\*\*\*\*

10 STILL WAITING TO AFFORD YOUR COMMODORE 700,  
500 OR EVEN C-64?

20 IF A VISIT TO YOUR BANK MANAGER IS  
LIKE A RETURN WITHOUT GOSUB ERROR  
THEN STOP.

30 BREAK OUT OF THE CONTINUOUS LOOP.  
GET AN INCOME FROM YOUR PROGRAMMING  
SKILLS.

\*\*\*\*\*

If you think that your programming ability could provide you with an income, but are hampered by lack of expensive hardware, then **Mr. Software** may have the answer.

We're currently looking for programmers, skilled in both "BASIC" & 6502 Assembly Language who have a flair for graphics and a lively imagination. If the description applies to you, why not send **Mr. Software** a sample of your program at the address below.

If your work shows talent and promise we will lend you the hardware to enable you to earn an income from your programming skills.

**Mr. Software**

18-20 Steele Road,  
Park Royal Industrial Estate,  
London NW10.



## USER PORT POWER

Those intending to use the power supplies available on the user port should be aware that some sources of information are rather misleading when it comes to the 9v supply on pins 10 and 11.

Some copies of the Programmers Reference Guide, as well as many other reference sources, imply that there is 9v DC available on pin 10, with pin 11 at ground (0v).

This is not the case, as was pointed out to me at the recent ICPUG AGM. In fact, pins 10 and 11 of the user port are connected directly to the incoming AC line from the transformer and are therefore balanced AC.

Anyone connecting anything to this supply assuming that it is 9v DC is likely to damage the device.

There is +5v DC available on pin 2, and this should be adequate for most uses.

## VICMON

The machine code monitor cartridge for the VIC has what is known as a 'virtual zero page' facility intended to allow the normal BASIC pointers and so on, normally held in page zero (ie addresses 0 to 255), to be preserved while using the monitor.

The principle is fairly simple in that it puts the entire contents of zero page into an area of RAM specified by the user, and this location should be out of the way of any BASIC program currently in RAM.

It is necessary to reserve 256 bytes for this, and the choice of which 256 bytes depends upon how much RAM is available, and the current configuration of the VIC.

Here are some ideas of where to put virtual zero page:

+ 3k only	- \$1D00
+ 8k only	- \$3F00
+16k only	- \$5F00
+24k only	- \$7F00
8k+3k	- \$0400
16k+3k	- \$0400
24k+3k	- \$0400

### INCORPORATING MACHINE CODE INTO BASIC

It is extremely useful to be able to incorporate machine code routines into BASIC programs. Not only is it possible to make significant speed improvements, but the BASIC section of the program can often be used to perform complex tasks that are beyond elementary machine code.

The most obvious way of doing this is to include the machine code as a sequence of DATA statements and then POKE these back into the appropriate place in RAM during the set up part of the BASIC program.

This has some disadvantages. Most obvious is the need, once the machine code has been perfected, to PEEK at all the bytes of the machine code, note their values and then to incorporate them into DATA statements.

Another method, which requires two LOAD instructions, is to save the machine code section, using VICMON, and then SAVE the BASIC program. To load them back again, use:

```
LOAD "machine code prog",1,1
NEW
LOAD "BASIC program",1
RUN
```

This way, the machine code is loaded first, the NEW command sorts out any pointer problems and then the BASIC program is loaded.

Remember that if the machine code occupies space at the top end of RAM, the BASIC program must start with the necessary POKEs to lower the top of RAM in order to protect the machine code from being over written by strings.

A third way is to incorporate very short machine code programs into REM statements. By this, I mean that a REM statement is first set up containing the maximum number of dummy characters. Anything will do, it's just to pad the line out so that there are a number of unimportant bytes in RAM reserved by this padding.

The machine code can then be POKEd into the bytes following the REM token in RAM and the program saved and loaded in the normal way.

This will not work if any of the program bytes are zero or if the routine is longer than 80 bytes or so.

There are other, more complicated, methods but my preference is for the DATA statement technique, at least for beginners. With experience, more adventurous techniques can be tried, such as including the machine code at the end of the BASIC program, but before the variable storage.

In this method, it is essential that the BASIC program moves the necessary pointers to beyond the machine code, otherwise it would be trampled on by BASIC variables.

This technique is only of any use once the program is completed as insertions or deletions of BASIC program lines will alter the position of the machine code in RAM.

Also, remember that machine code must normally be executed in exactly the same area of RAM that it was written in and so should be loaded using the 'absolute' LOAD command:

```
LOAD "prog name" ,1,1
```

FINALLY - WITHER THE VIC?

I chose the word 'wither' deliberately as there are many who are predicting the discontinuation of the VIC in the not too distant future.

It is extremely difficult to consider what Commodore are likely to do with the VIC, but the fact that they are continuing their advertising campaign must surely indicate that a cessation of VIC production cannot be imminent.

The starter pack that Commodore originally introduced has been phenomenally successful and there is little doubt that this success will continue until Christmas. Not only are they promoting the hardware, but much of the material is aimed at increasing the awareness of their software products.

With all this advertising, is it likely that the VIC will die at the end of the year as some magazines predict?

But then, sometime in 1984, Commodore are expected to release a new down-market computer which was featured in the company's annual report.

It is expected to be a 16k machine, with very similar facilities to the VIC, but with 40-columns instead of 22. And the name of the new machine? .... well, it hasn't been decided but TED or possibly the VIC-40 are front runners.

If it is called TED, then there is a lot of scope for links with SUPER-TED - one of Channel 4 Wales' creation, and a character now making a name for himself on BBC television!

But whatever happens, the VIC will not die. It will most surely be supported by all sides of the market for, with a million and a half VIC's in circulation, there will be an enormous market for VIC related products for quite some time to come.

C-64 A TIP AND A QUERY

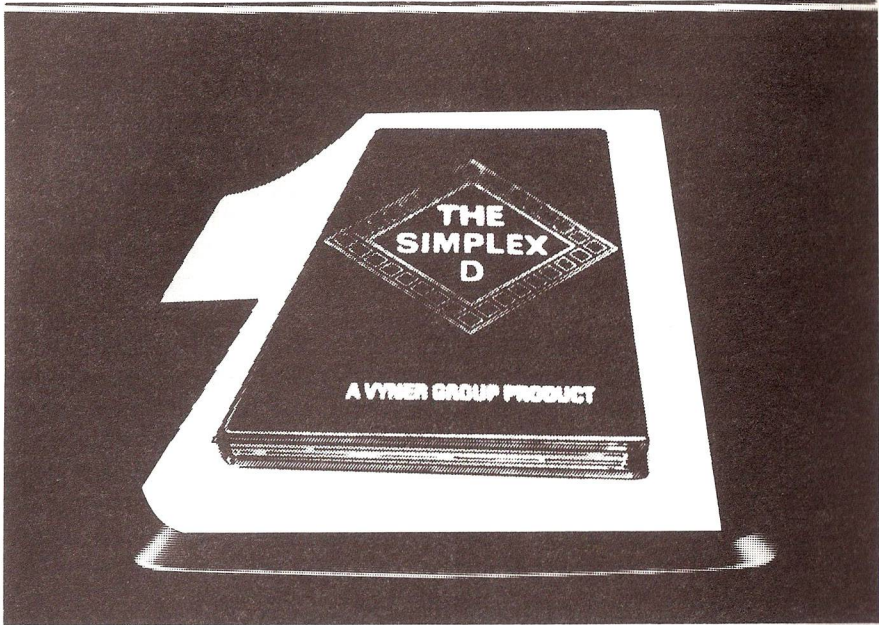
By Brian Grainger

From my own experiences, and questions from members, it is clear that in one area the colour on the C-64 causes a problem. Those of us used to the PET have sometimes needed to POKE to the screen in order to display what we want. On the C-64 one must not only POKE the screen memory with the character code but also the colour memory with the colour of the character required. A simple point but easy to miss when trying to debug programs.

One does has to be careful with the C-64 screen. If one clears it, then the colour memory is filled with background colour and characters POKEd to the screen do not show up until the colour memory is POKEd as well. If however one PRINTs spaces to the screen, or just holds down the 'space' key then although the screen still looks blank a character is there and the colour memory has been changed to the foreground colour. Now when a character is POKEd to the screen it will show up immediately as the colour memory already has a value in it. I hope this helps to explain some of the difficulties you may be having when using this technique.

I myself have a question which is related to the above. If anyone knows the answer, let me know.

I typed in the program to redefine characters on p207 of this year's Newsletter and ran it. A very instructive demo program. However, when it finished I cleared the screen and POKEd what should have been a THETA to the screen. Of course it cannot be seen because I have not POKEd the colour memory. However by placing the cursor where I POKEd the character I could see a normal 'O' and NOT the THETA. When the colour memory is POKEd then the THETA returns. Will somebody tell me why a revised character set does not take effect unless the colour memory is POKEd?



# The Electronic Cash Book

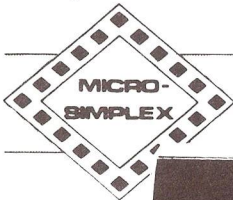
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TEACH YOURSELF PROGRAMMING - LESSON 2

By Brian Grainger

PRECEDENCE

Any expression can be made up of the various operators but the computer will evaluate them in a particular order of precedence. Brackets can be used to ensure the calculations are done in the correct order as brackets have highest precedence. The full precedence order is:-

- 1- Brackets ( )
- 2- ↑
- 3- \* / DIV MOD
- 4- + -
- 5- = <> < > <= >= IN
- 6- NOT
- 7- AND
- 8- OR

Operators of equal precedence are evaluated left to right. Some examples follow:-

$2*6+3*4$  evaluates to 24

$2*(6+3)*4$  evaluates to 72

Note that expressions such as  $2(3+4)$  are illegal. You must specify the multiply sign (\*) when required. It should NOT be regarded as implicit in the expression.

GETTING DATA IN AND OUT

One of the main points about a program is that written properly it will not only perform operations on a specific set of data but can do it on different sets of data given to it. Thus, before we can write simple programs we must learn how to get the data into and out of the computer. In this lesson I want to cover simple input and output and not concern myself with the storing of input/output data on a cassette or disk. I will cover that in a later lesson.

INPUT

There are two simple ways of giving the computer data. We can actually write the data into the program using the DATA statement. An example is :-

```
DATA 123,"BRIAN D. GRAINGER",12.5
(*7)
```

You will see that we can mix number and string data on the same line. Strings are always enclosed in quotes(""). As a line of program can only hold 80 characters we shall probably need more than one line of DATA. The computer does not 'execute' DATA statements. It just stores the values in a queue. We can assign these values to appropriate variables by the READ statement:-

READ NUMBER,NAME\$,VALUE will read a real number from the top of the queue and assign it to the variable NUMBER. It then reads a string next in the queue and assigns it to the variable NAME\$. Finally another number is assigned to the variable named VALUE. When using DATA and READ you must ensure that the value you read is assigned to the right type of variable. An error will occur if you try to read a number into a string variable for example.

.....Note that the first item READ is the first item in the first DATA statement in the program. The second item read is the second data item and so on. It is sometimes convenient to reset things so that the next item read would be the first in the data queue. This can be done by means of the command RESTORE.

.....The trouble with DATA and READ is that to change the data we must change the program. A better way of doing things when we are constantly changing data is to get the data from the user when the program is RUN. We can do this by the INPUT statement:-

```
INPUT NUMBER,NAME$,VALUE
```



When the computer comes to this line in the program it will print a question mark on the screen and expect the user to type in 3 values. The first value typed should be a number that will be assigned to NUMBER. The second should be a string that will be assigned to NAME\$ and the third should be a number that will be assigned to VALUE. Again if you give the wrong type of input an error will occur. When you give your input you may give each value one at a time or if you only have to type numbers you can give them all on one line provided you separate each number by a comma. When entering character data you must type it on a separate line as a comma would be taken as part of the string (\*8).

In order to remind a user what we want to be typed a message may be printed instead of a question mark. We can do this as follows:-

```
INPUT "PLEASE TYPE YOUR NAME"; NAME$
```

In BASIC a space and question mark will always be added to your message when displayed on the screen, even when you do not want it!

### OUTPUT

In order to display the results or output of a program on the screen we shall use the PRINT statement. Examples of this statement follow:-

```
PRINT VALUE1,VALUE2,VALUE3
PRINT "MY NAME IS";NAME$
```

In the first example 3 values are output. The first value will be displayed in print zone 1. The second in zone 2 and the third in zone 3. In BASIC the zones are always 10 positions wide so value 1 will start in position 1. Value 2 will start in position 11 and value 3 will start in position 21. In COMAL you can specify how wide the zones are by, for example:-

```
ZONE 10
```

ZONE can also be regarded as a variable that has the value of the current ZONE width.

If it is NOT set the width will be assumed as 0 and numbers or strings will be printed with no gaps in between.

The second example prints the string constant (MY NAME IS) and the string variable (NAME\$) following each other. In BASIC there will be NO gap between the two results. In COMAL a single space will be printed when two values are separated by a semicolon.

To print a blank line simply say PRINT.

#### INPUT/OUTPUT COMPLETION

In all the INPUT/PRINT statements given above the display moves to the next line after the INPUT or OUTPUT. If we terminate the statement with a semicolon the display will stay on the same line positioned immediately after the last value if in BASIC or one space further if in COMAL.

#### HOMEWORK!

I have now given sufficient guidance for readers to start writing their first program so I am going to set some homework. I will give the answer next lesson.

.....Write a program that will set up an initial value of your bank balance (use DATA and READ) and then ask you to input 3 pieces of information for each transaction.

(a) Description of transaction (cheque no., to whom paid, etc. - allow 20 characters maximum)

(b) Type of transaction - Expect C for credit and D for debit.

(c) Value of transaction

Dimension the program to accept 3 transactions and when it

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This book provides the reader with an introduction to programming techniques used to generate graphics displays on a Commodore VIC. Topics covered include: Using colour—Two dimensional shape plotting—Shape plotting—Shape scaling and stretching—Shape movement—Shape rotation—Plotting using matrix manipulation—Three dimensional shape plotting  
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**DUCKWORTH**

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has got the information produce a display that shows:-

INITIAL BALANCE IS : ??????

1:XXXXXXXXXXXXX (Description)  
 ?????? X (print zones are 10 positions)  
 (Value) (Type of transaction)  
 Blank line

(repeat the above 3 lines for the 3 transactions)

Finally print the final balance

FINAL BALANCE IS : ??????

### Tips

(1) Do not worry that you have to repeat some more or less identical statements. I will show how to make the program shorter after a future lesson.

(2) When calculating a new balance use the fact that the expression:-

Type="C"

will be TRUE if there is a credit transaction and FALSE if a debit transaction. Remember the numeric values of TRUE and FALSE.

### NOTES FOR BASIC PROGRAMMERS

\*7) String data need not be enclosed in quotes but must not contain the characters ', ' ': ' '; ' or start with a space if this is done.

\*8) When strings are typed the following characters will not be accepted in BASIC- ', ' ': ' "' ' '; '.

\*9) The way of giving prompt messages in BASIC is for example:-

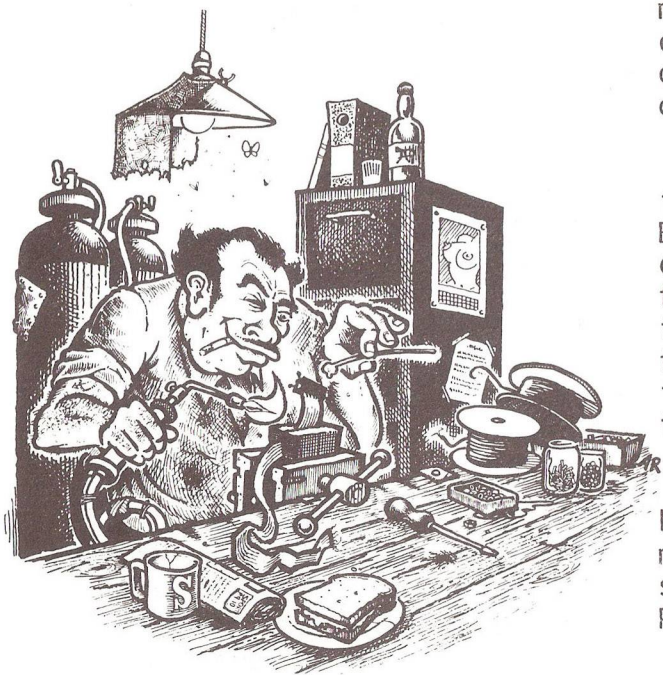
INPUT"PLEASE TYPE YOUR NAME";NA\$

NA\$ must be a string constant and not a string expression.

## PRINTER POINTS

Someone wrote in one of the monthlies that Epson ribbons can be rejuvenated with a spot of WD40. It's true. Stuck over the weekend recently, with print becoming invisible, I opened up an MX100 cartridge and gave it 10 seconds of WD40 and a few minutes to stand. The result? Instant black print, blacker than when new, if a little patchy in places, and slightly oily at times, with letters tending to 'bleed'. Not to be recommended for prestige correspondence but quite adequate for drafts and home use for a few days until you can get a new one.

Talking of new ribbons I must say I wish Epson would supply refills. The lookalikes I have been offered are not of equivalent quality and for some reason tend to jam in the MX100, though usable in the 80 series machines. On the other hand the price of a steel MX100 cartridge is stiff.



A very useful tip this year was Barry Biddles' way of not wasting the first sheet of continuous paper on a friction-feed Epson, in the January 1983 issue (p6).

On the other hand I haven't had much success with soldering up my own RS232 cables.

H. de G.

USING THE SOFTWARE LIBRARY

If you have read the AGM report, or looked at the inside of the back cover, you will have noted that we now have four software librarians - the increasing work required further division of labour. If corresponding with the librarians, please read the various notices and instructions published from time to time and make sure you send the necessary postage for whatever you want sent to you.

## Overseas members

Please use international reply coupons (unless you can get UK stamps or money). For your information in estimating return postage, the following are the current rates from UK to Europe/beyond:

## Europe

20g 20½p; 60g 35p; 100g 49p; 150g 66p - that should cover a cassette or 2 disks and a jiffy bag comfortably.

## Further afield - Letter and small packet rates

(1) Zone A (covers Mediterranean and Middle East)

Letters: first 10g 26p then 11p per 10g

Packets: first 10g 18½p then 5p per 10g

(2) Zone B (Africa, Asia as far as Hong Kong, USA)

Letters: first 10g 28p then 14p per 10g

Packets: first 10g 20½p then 7p per 10g

(3) Zone C (Pacific, Australia)

Letters: first 10g 31p then 15p per 10g

Packets: first 10g 21½p then 8p per 10g.

You may also notice that Alf Minter has taken over from Carl Millin as Software Organizer. If anyone is willing to help with sorting out the software and making sure that each program has a standard header that tells what the program is meant to do and how to use it, please get in touch with Alf Minter. This is a vast job and he can surely do with help.

H. de G

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Customer Files	Purchase Ledger
Diaries	Rota Planning
Equipment Leasing/ Rental/HP	Route Planning
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Estate Management	Sales/Purchase order files
Expense Accounting	Service Records
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and many others

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WRITING FOR THE NEWSLETTER

Contributors to the Newsletter can save the editor considerable typing time if items submitted for publication are in a form that can be read by the computer. If your item is more than say, half a page, send it on disk or cassette (returnable) if you can. There is no need to have a word-processing program, you can record it in the form of a simple program. For cassette, for example, thus:

```
10 OPEN1,3:CMD1
20 PRINT"The text of your article here."
30 PRINT"More text, etc. using UPPER and lower case"
40 PRINT#1:CLOSE1
```

If possible, enclose a hard-copy listing of your program or text in case we have difficulty. Keep a back-up copy yourself, and include your name and address on the cassette/disk so that it can be returned to the rightful owner. 4040/8050/1531 disks are all acceptable. Do take adequate steps to discourage the GPO from folding or rolling up disks!

If you have a word-processor, text can be accepted from Papermate, Superscript, Wordpro, and Wordcraft, or from any program that will put out an ASCII file, but to save much detective work, do please say which you have used.

Formatting should be kept to a minimum since it differs for each word processor and it will probably be changed anyway. Do not include cursor controls in ASCII text strings, they may stop your printer producing graphics, but they can produce havoc with ASCII printers!

Note that the language BASIC is upper case (Pascal is not), flat round objects are discs, but the floppy variety are, by convention, 'disks'. Please use k = kilo = 1000, and 'K' for Kbyte = 1024. Note that the last date for machine-readable material is the 2nd week of even months, otherwise, the first week.

But when all is said and done, if you have something to say, send it to us one way or another.



## THE COMMERCIAL SCENE

'Our' manufacturer is tops in the world home computer market and expected to have 50% of the market by the year end; over 1¼ million VICs have been sold. Texas Instruments was the runner up, with a little under a quarter of the market but, of course, it is withdrawing from this field. In the \$1000-5000 bracket Commodore comes fourth (in units sold) to Apple, IBM, NEC.

As you probably know, Britain leads the world in home computer-ownership. Latest figures are that 5.7% of Brits have a home computer, as against 5.1% of Yanks, with the Germans and French positively lagging at 0.9%.

IBM seems to be causing a stir at the moment, having first announced its mainframe-linking 3270 PC, which the financial commentators have been twittering about, and now its 'Peanut' - officially the PCjr - based on the same 16-bit chip as the PC, on November 1st (in the US only). There is a 64K model that runs cartridges only and a 128K model for cartridges or disks. Extras include an internal communicating device and - wait for it - the battery-powered keyboard communicates by infra-red with its computer up to 20ft away. 'Hundreds' of PC programs are said to be able to run on the PCjr. Starting price \$669, which may be why other manufacturers are said not to be too worried. No plans for the UK.

Victor - in financial trouble - has none the less announced a new 16-bit portable, the Vicki, with 256K RAM, two 1.2 mega floppies, and a 9" screen. It was shown recently at Munich and has been launched in Germany and Austria. UK's ACT say they will not touch it until Victor's troubles are sorted out. By the way, it seems the Sirius is largely a British taste: it does not figure in the world charts.

An invasion of new Japanese home computers based on the MSX standard (whatever that is), from at least five manufacturers is expected in the New Year. One, the Sanyo, can interface with TV/video equipment and store and reproduce individual video frames.

MEMBERS' PRIVATE SALES AND WANTSFOR SALE

8096/8050/TP1

Rear Admiral Baxter is offering a virtually new 8096 computer (.600), an 8050 disk drive (.700), and a Smith Corona TP1 daisywheel printer (.350).

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8096/4040/MX80

The Editor has surplus to requirements an 8032 upgraded to 8096 (.500), a 4040 disk drive (.400), and a 110v MX80 printer with IEEE card (.200, transformer included). Wordcraft/8096 could be added. Tel: 0932 47629 (Weybridge)

PET-IEEE cable

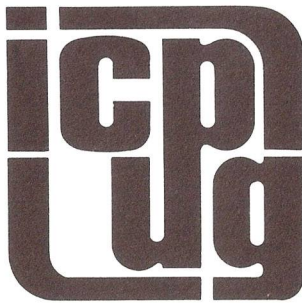
David Harrow has a new PET-IEEE cable for .20. Tel. 0734 790 184 (Farnham)

WANTEDBack numbers

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