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# EREBUS

**£8.95**  
COMMODORE 64/128

This smooth scrolling blast-'em game features the very best in fast-arcade action by Steve Lee (journal of the Falcon Patrol series and Shogun) with stunning graphics by Martin Wheeler (famous for Spectrum Dan Dare and the original designer of Sorcery). It is a multi-sectioned game with many varieties of tough aliens to eliminate. You must fight through each wave in your highly manoeuvrable spherical space fighter and save Earth from the horrible fate of the noxious nerve gas being produced on planet Erebus.

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# DATA STATEMENTS

## Into the Arcades

Shoot 'em ups seem to be proliferating at the moment and are as popular as ever with the punters. Mameco has brought out a racy game called Cosmic Shock Shooter based around the character of the same name - also defined as a fourth division hero. It will be available for the C64.

Another unlikely hero is Inspector Gadget of children's TV cartoon fame.

Inspector Gadget is determined to pursue the agents of MAD who are at the moment taking over the circus. MAD have planted bombs over the circus and you, as Inspector Gadget, have to find and defuse them. If a bomb explodes you lose a life. The title of the game is *Inspector Gadget and The Circus of Fear*. It will be on the streets very soon for the C64 on cassette for £9.95 and disk for £14.95 and is from Melbourne House.

Another unashamed shoot 'em up is *Sigma 7* from Durell software. Durell describe the new game as a traditional shoot 'em up with today's demanding standard for graphics and sound. To increase your chances of success it can be played with an analogue joystick to avoid those cramps in your hand. *Sigma 7* is also for the C64.

*Ball Breaker* is a new arcade game for C64 which has a familiar feel to it.

The player controls a bat which hurls a ball against a wall of bricks. The objective is to destroy the wall and then to proceed to the next levels to repeat the task. Different coloured bricks cause the ball to react differently - some bricks send the ball off at an angle, others cause it to change speed or even break in half. An added dimension is that demolishing some walls releases monsters who then have to be killed.

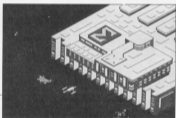
It will be available for the

Commodore 64 on cassette at £7.95 and disk at £14.95.

## Techline

**Mameco: Market House, Bay Terrace, Penzance Bay, West Sussex, BN27 4AA. Tel: 0125 786616.**

**Melbourne House: 66 High Street, Hampton Wick, Kingston-upon-Thames KT7 4BB. Tel: 01 942 8911.**  
**Durell: Castle Lodge, Castle Green, Farnham T11 4AR. Tel: 0825 34488.**  
**CRL: 9 Kings Road, Carpenter's Road, London E11 2AD. Tel: 01 517 2976.**



It's never about it...Sigma 7

## The Commodore Show

The UK Official Commodore Show was held at the Novotel, Hammersmith, London in November. We were happy to welcome our readers to our stand and would like to say thanks for everyone's comments (both good and bad, although we were pleased to note that most of you are happy with the direction that the magazine is taking).

Ben Wolfbay brings you the punter's point of view.

### Visitor's View

On entering the building on a very cold and windy day, we were not really surprised to see scantily clad females ready to thrust the official Show Guide in our hands. What we were surprised

about was that the Show Guide was free and so we ventured forth with raised hopes for a reasonably good show.

Alas this was not to be. We were immediately aware of the distinct lack of exhibitors, and the few modest stands that were occasional, seemed to be very similar both in content and theme. One really wonders why, when Christmas was so close and the show not clashing in any way with similar functions, so many of the larger Commodore dealing enterprises were noticeably absent. Is Commodore really becoming the dinosaur of the computer industry?

However, grumbles aside, mention must be made of the exhibitors who were present. First impressions of these



Cosmic Shock Shooter, art from Mameco.

## DATA STATEMENTS

were that most stands were offering generally outdated software or printer accessories at very low prices. The nearest stand, meant in the most possible way, must have been Colson's lot of flooz. Colson was promoting its *Music Creator* - an excellent package which contains a full tutorial on the rudiments of music together with the actual creator disk. Simple to use, the beauty of this program is that any music or sound-effects so created can be saved in compiled form and used as an individual module within your own programs. A beautiful rendition of Turpulis was being played through the stereo system, and a fine copy of Colson's Quilind adventure game, *Mystery Passage*, was given with every purchase of the *Music Creator*.

Trellege was in evidence at the foot of the stairs promoting *The Expert Cartridge* and the new anti-flooz *ESM Module* together with other add-ons.

When we went upstairs to the larger area, we located Everham Myers, demonstrating the excellent Dolphin DOS a very nifty chip which speeds up disk access so much that it's frightening! It could be seen in action within 1241, minus its lid, and it really was most impressive.

Moving to the Napressall stand, we could hear the strains of music belting out of the reverse expansion *Microson Digital Sound Editor*. We also noticed a few young budding *Cozy Powell* practising their art on the *Rhythm King*, a neat little package available on cartridge and disk/tape.

Even though there were several stands showing off the almost unlimited capabilities of the glorious Amiga, it was well nigh impossible to get close enough to one in order to sample the remarkable demo software being exhibited. It is debaucherising to realise that this machine is still beyond

the reach of most bulls even with the price reduction, but then when you see it in action, perhaps it does justify the price tag.

Overall the show was quite disappointing although there exhibitors who did turn up tried in almost every case to cater for everyone's needs and were in general very helpful. Bargains were to be had for the more discerning punters, prices varied considerably from stand to stand (for instance the tape version of *Crystal Castles* was on sale for £9.95 and £3).

I personally would hope for a more responsive attitude from the larger software houses in the near future to make greater effort in attending these shows, and would sincerely trust that the High Official Show will be more useful to all parties concerned, exhibitors and customers alike.

## Space Age

Into the realms beyond the atmosphere for a look at another batch of zappy games.

CEL's latest space action game is called *Death of Glory*. The player is the pilot of a *Space Doctor*, a small craft which charts up space, keeping it safe to travel in. Whilst out on route an invading fleet is discovered. There is no time to raise the alarm, the only action possible is to take them on alone. The only way to attack is ram the ships. The cassette version for the C64 is £9.95 and the disk version is £14.95.

*Starfighter* is a new science fiction game from Firibird. It's an anti-air air-to-ground flight simulation set on the planet *Norvina*.

Your task is to destroy the flagship, *Starfighter*, of the marauding *Egton* fleet. Low level flying, defence and



Great graphics in Firibird's *Starfighter*.

## Non-Physical Exercise



Brian Clough takes on the software charts.

*Brian Clough's Football Formers* from CDS is a computer game with a difference because it's a board game. It combines the speed and flexibility of a computer with the social aspects of other best-selling board games. Plus the game that it was written with plenty of advice from Brian Clough himself.

Two of five players take on the roles of team managers. Each one must steer his team successfully through the season and use his skill to make his team stronger. Some of the opposing teams are managed by fellow players, the rest of the 10 team league is taken by the computer.

The game package consists of a computer cassette or disk, a playing board, five coloured counters, a pack of football player cards, immunity cards and a bag of money. Release date is 14 January and the C64 version

will cost £14.95 cassette and £17.95 disk.

Now for the incredible martial arts maze.

*Fighting Warrior* is from Melbourne House and is now available in C16 format. As *Fighting Warrior*, champion of Egypt, you must use all your combat skills to rescue the beautiful princess. Armed with just a sword you are faced with ordeals and challenges from various creatures which cross your path. It's in the shops now and is £9.95.

## Tourists

CDS: CDS House, *Bracket Road*, *Dunstable* DN2 4AB, Tel: 0452 21134  
 Melbourne House: 60 High Street, *Hampton Wick, Kingston-upon-Thames*, Surrey, KT1 4PB, Tel: 01 847 3011.

## S O F T W A R E S T A T E M E N T S

attack manoeuvres and survival techniques are all part of the action. The CD version is £14.95 on cassette and £17.95 on disk.

In Mind Games' newest release, you are once more the lone hero attempting to safeguard the existence of the human race. *Mission Omega* is an action strategy game in which you must intercept a radioactive alien invader which is rapidly closing in on the planet earth. Because of the lethal radioactivity of the invader you must use robots to carry out the shutdown of the reactor by remote control. These are specially designed for the task however their movement is programmed by you. Available now, *Mission Omega* is for the C64 and costs cassette for £9.95.

Quikshin's latest game *Dayton*, looks at the possibility of aliens taking over the USA's defence satellites in the future and using them against the very

possible and then gain access to the dimension duct. The game is £8.95 and is for the C64.

### Truckline

**CRL: 9 King's Yard, Carpenter's Road, London E17 2JG. Tel: 01 332 2938.**

### War Gaming

P&G, the software house, which specialises in war games has added two new releases to its extensive range.

The *Annals of Rome* is a vast strategy game based on the rise and fall of the Roman empire. The game starts in the year 271 BC, when the Romans had just gained control of Italy. Your role is that of the ruling power as the Roman senate deploying commanders and troops in successive foreign and civil wars.

At any time you may be faced by up to 13 hostile enemies each fighting to extend its own sphere of influence. Your enemies are as diverse as the barbaric Gauls and the sophisticated Carthaginians.

At your disposal you have the incomparable Roman Citizen Legionaries and 21 individual officers of a wide range of ability and loyalty.

The *Annals of Rome* is a phased game and is controlled via the keyboard. It will be available for the C64 in the spring.

From *American Action in '41*, The *Four After One Year after the Battle for Midway*, the war is still raging in the Pacific. The Japanese Kamikaze pilots are at their worst. Commander R.R. Wildfire selects you, Berttram M. Digdale, the former elite pilot, to patrol the most dangerous part of the

**Published: 74 New Oxford Street, London WC1A 1PS. Tel: 01 240 8838.**

**Mind Games, Quikshin: Victory House, Leicester Place, London WC2E 7JH. Tel: 01 479 0966.**

**Virgin Games: 2-4 Foxton Road, Portsmouth Road, London W14 3JL. Tel: 01 737 6670.**

Pacific Ocean. Features include smooth fast graphics, status and map windows, handbooks as well as carriers and 999 levels and over six hours of background scenarios. Out now for the C64 on cassette on £9.95 and disk at £14.95.

Into the realm of fantasy with a new strategy, fast action game from Rainbow. *Traveller* is a tactical battle against an artificially intelligent enemy combining a high degree of strategy in a fast action 3D game.

The top half of the screen in *Traveller* shows an enlarged map of the start area and the bottom half displays a long range map. This shows the positions of the red Cycloids, the yellow communications links and communications centres. Plus the sectors and positions of your eight steamers. Your ultimate target is the large enemy headquarters. It's now available for the C64 on cassette (£14.95) and disk (£17.95).

### FaceMail

**P&G: 457 Stony Stanton Road, Coventry CV9 3DG. Tel: 0203 667176.**

**American Action: Box 10090, S-28045, Mishawaka, Indiana. Tel: 513 482 17 30.**

**Published: 74 New Oxford Street, London WC1A 1PS. Tel: 01 240 8838.**



Defeat the C64 with *Dayton* - see them U.S.

countries which they were meant to protect. The only way in which to regain control of the satellites is for one man to take them all on in his Single Class E751 fighter with the recently developed single beam - High Intensity - Anti-Aircraft weapons. The mission, nicknamed Skaggon's Run, is taken on by Nick Diamond, a leading space ace.

*Dayton* is available now for the C64 at £8.95.

*Archa* from Virgin Games is also a space scenario blasting game. *Archa*, a plant which has been used to convert earth's waste materials into useful gas and chemicals has now been utilised by the aliens from the neighbouring planet of Hadibus to produce a noxious nerve gas to obliterate the earth's population. The refinery is split into different levels of circular sections, interlinked by dimension ducts. You must completely orbit each section, eliminating as many aliens as



Watch the go of *Archa* of the Roman Empire in the *Annals of Rome*.

## D A T A S T A T E M E N T S

## Products and Accessories

In the winter months that flood, the most hated enemy of computer owners, static electricity. The cause of thousands of pounds worth of damage to computers both in the home and in the office. Perhaps the Static Buster could solve your problems. Produced by Integrity Solutions, this gadget may be able to save you money and frustration. Integrity Solutions press statement claims: "The simple act of walking over a carpet can generate a frightening 35,000 volts. Transmit that from your fingertips into a personal computer and the results can be devastating." The Static Buster, acting like a sponge, diverts electricity from the three vital elements of computer operation, from the three vital elements of computer operation, the keyboard, screen and operator. The price for this wonderful innovation, a mere £48.95.

One of the most popular cartridges of last year must have been The Expert, from Trilogic. A new update is now available to make the cartridge more efficient. The compact 10M ROM



Push computer furniture from Trilogic.

Now addition for the expert cartridge.

cartridge and has no effect on action and can be left connected and otherwise ignored. It's available by mail order and costs £7.95 including postage and packing.

And if you need somewhere to put all your equipment, then maybe you'll want to invest in light oak laminate computer furniture from Trilogic. The surfaces of the furniture are wipe clean and heat resistant and the bases are constructed from strong tubular steel fitted with casters at the rear for

mobility and anti-rick front legs and stability in operation.

## Touchline

Integrity Solutions: 304 Manchester Road, Salford, Stockdale OL1 3JF. Tel: 0756 34513.

Trilogic: 170 Yong Street, Bradford BD4 6QF. Tel: 0274 694788.

Twinklark: 28 Craydon Road, Brixtonham, Kent OX1 4BB. Tel: 01353 4816.

## Pocket Money Prices

Finally, a quick look at a few budget games to see you through a lean period.

Sparklers have released five C18 games at £1.99 each. *Area 51* is for the C64 and is about an archaeologist, *Islands 51*, in pursuit of hidden treasures from the past inside an active volcano.

*Slingsy* is about a greedy creature from the planet Glaxon who explodes if he has too much cash. Also for the C64, the *Attack*, another C64 game, is the classic story of castle siege by the demons once who terrorize the land, and *River Rescue* is a fast chase down a river dodging rocks and mines to reach

a safe haven.

Big Byte has launched six Commodore titles. *Swashbuckler*, *Polyn patrol II*, *Strangestop* and *Alien* for the C64 and *Zeppin Warrior* and *Amulet* for the C18. All are priced at £2.99.

## Touchline

Sparklers: 680 8/1, Armstrong Mill, Southwood Summit Centre, Southwood, Farnborough, Waverley, Dorset. Tel: 0252 222208.

Big Byte: Priority House, Leicestershire Place, London WC2E 7BE. Tel: 07 499 6665.



Model is fitted with LED, push button and connector. It fits between the cartridge port and The Expert



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It is very easy to transfer your '64 into this new case creating the feel of a new computer.



# Petspeed 128

*Writing programs in Basic is far easier than using machine code but the programs are also a lot slower. This new offering for the C128 will turn your Basic programs into machine code for extra speed.*

No matter what type of program you want to write it is far easier to tackle it in Basic than by using machine code. Writing in Basic on the C128 is even easier than its predecessor the C64 since it has a plethora of built-in sound and graphics commands. However, there's one big problem, a Basic program is excruciatingly slow. There's nothing worse than writing your latest space shoot-em up only to find that your hyper-galactic war cruiser takes no less than two minutes to go from one side of the screen to the other.

*Petspeed 128* is a Basic compiler program. A compiler takes a Basic program and turns it into a machine code program increasing the speed of operation dramatically. The manufacturers of this package claim that it is possible to increase speed of operation by up to 40 times.

Loading the program into the computer is a total blind. The disk isn't protected but there is a colour chart that you are asked for three colours from a set of four. I find this type of protection annoying and difficult to use. A friend who is colour blind only managed to get the program up and running once. Personally I would rather have the disk protected and be able to LOAD the program with ease.

## Compatibility

Obviously there must be some incompatibility between the compiler and the standard C128 Basic. Fortunately these are all quite minor and should cause no great headaches. Examples of the type of instruction that have to be altered are:

Arrays must be dimensioned at the time of compilation. You can not therefore have a command such as:

```
10 INPUT A: DIM N(A)
```

instead you would have to decide what *A* should be before you compile the program and enter it as

```
10 DIM N(100)
```

Basic instructions that use a line number as an argument, eg. RESTORE, require a constant after them rather than an expression. For example RESTORE N=1 would not be allowed.

RESUME NEXT is not supported.

As you can see none of the above should cause any problems and any occurrences of the above can probably be changed very easily.

## Added Extras

A number of extra commands have been added to the C128's Basic in order to make use of the compiler more efficiently, the following are examples of some of the new commands.

- 1) User defined string and mixed functions are available. For example: DEF FN A (X&Y) is now allowed.
- 2) You can have integer FOR NEXT loops which will give an increase in speed.
- 3) The IUN name will make all the letters of a variable name significant. Usually the C128 only takes out of the first two.

And there are many others including commands to disable and enable the STOP key, the & command which will allow input to be taken from a disk file. The % instruction allows the use of other companies' Basic extensions.

## Other Benefits

As well as speed there are a number of other benefits to using a compiler over standard Basic. For a start the IUN command allows you to use strings that use the same letters to start with, something that you can't normally do. This means that your programs can be made more readable since you can use variable names that actually mean some thing such as SCORE.

## Sorting Out Errors

When a *Petspeed* program is RUN and it comes across an error you will be given a report just like a Basic program. However, there's one small problem. *Petspeed* programs don't have line numbers only addresses so how are you going to find out where your problem is?

A program called ERRORS that is supplied on the program disk will look through a special *Petspeed* file and tell you in what line the error occurred and try to give you an indication as to where in this line the error was. Now all that you need to do is LOAD the original Basic program, find out what caused the error, correct it and compile the program again.

## Verdict

*Petspeed 128* is a program that is a must in any C128 owners software collection. OK so you may write all your programs in code but wouldn't it be quicker to write some of your programs in Basic and the compile them? If you are fairly new to computers and are just getting to grips with Basic then *Petspeed* gives you the opportunity to speed your program up.

## Touchline

Name: *Petspeed 128*. Supplier: System Software (Oxford) Ltd. Price:



# SIGMA

•••••



# 7

Commodore 64 available November 20th  
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# DURELL

*software getting harder . . .*

# Club 128

*News from CompuNet of new deals and new directions to keep you interested.*

*By Neil Day*

**I**nteresting things are afoot at CompuNet. Following a huge increase in the number of subscribers after the special free modem offer, the service is now on the point of a major expansion. A new mainframe, dedicated to the network, is proposed which will easily accommodate the increased numbers of users. The upside is the promised improvement in speed and service. The down side is the wait! Because the software running the system has to be largely rewritten, the new dedicated system won't be available until the projected date of mid 1987.

Recent deals offered by CompuNet suggest that the network might be going in some interesting new directions. One offer to Gold subscribers is \$3,080 page/days for us, additional payment of £16 above the quarterly charge of £15. User-selectable names and banners are now available. Another new service will provide closed user groups which would allow a number of users exclusive access to an otherwise protected area. Part of the present ICPUG area operates in this way.

It is interesting to speculate about who such services could be directed at: surely not spotty, juvenile, whizz-kid machine code programmers of all ages who hang the family telephone while they update the latest diagonally scrolling 15 mega-rap demo with 70 channel sound. I'd speculate that large-scale information providers are



being courted with these offers. Perhaps CompuNet has in mind something like the travel agents area on Prosal, or link up between schools or businesses.

The fact that a machine upgrade is proposed at the same time as services

are being extended in this way may lend some weight to these speculations.

One development projected for the short term is the establishment of an ESTEL node in Eire. This may well be set up by the time you read this. It is rumoured that the charge will be slightly higher than the node in Britain.

Again it is interesting to speculate about implications and future directions. The International Packet Switching Service allows me to log into a computer in Melbourne, Australia, for 16 per hour plus a small charge per byte of data transmitted. Electronic mail can be used to transfer files if large amounts of information are to be exchanged. This is cheaper still, and takes about 20 minutes. There is an apparent technical reason why, if this will work from UK, maintenance in Australia, it shouldn't work in the opposite direction allowing the cheapest diplopath of 14 million Annies to reverberate around CompuNet! Now there is an idea: given what Peter Ustinov can do with the Kibbutzar





Good. First, think of the comic possibilities of a multi-dimensional and multidropal Computer Partyline Second.

Leaving futurology and returning to the Computer of the here and now: There has been a lot of activity in the Network recently. GOTO PISON will take you a very interesting new area for users of the Pison Organizer, the pocket computer with inbuilt database software that seems to serve its owners' way so far into the owners' lifestyle that its just not worth their getting out of bed if the thing breaks down. As you'll gather, I don't have one myself, but seeing the information, programs and applications that FDI has updated in the PISON area shows just how versatile this little beastly is.

There are several frames about installing the Pison organizer to the C64 using a serial interface. You often hear about this sort of thing being possible, but FDI describes exactly

how he did it. Files prepared with Laserprint or any other wordprocessor can be transferred from the C64 into the Organizer, overcoming one of the main objections to pocket size computers: the sub-finger sized keyboards that make them infuriating to use.

As well as this general information, FDI had a directory of Procedures that includes a number of file handling routines for the Pison Organizer, a program to fit the diary stored in it, and, a couple of other programs to calculate petrol consumption and a timer and cost calculator for phone calls. Many thanks to FDI who has made all this information available for CNetters free of charge.

Among the many hundreds of additional items do check John's GOOD GOTOS guide; you'll find it a directory on the first page if you GOTO GOTOS. These frames, now free of charge, provide a compre-

hensive list of what is available on Computer, and classify some programs. The list of Utilities in Good Gotos 2 is particularly impressive. The large number of votes shows that users are hoping JMS4 is able to maintain this excellent service. JMS4 asks that you contact him when you upload anything of interest.

GOTO VISION and get a really unobtrusive view of the previously hidden toroidal interests of his family Wino. Be warned however that these uploads come within a whisker of being risqué and may make some readers blush.

If any of the uploads mentioned here is not available at the location given, please check the Club 128 update frames you'll find after GOTO YCOTM. If you find or upload anything that is vaguely non-recreational and likely to be of interest to Club 128 readers, please contact me on NADG.

## COMMODORE

### PROF-C/MS

#### FAST LOAD AND SAVE

Prof-C/MS is a software package that allows you to load and save files much faster than the standard Commodore software. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

#### SUPER SPRITE

Super Sprite is a software package that allows you to create and display sprites on the Commodore 64 and 128. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

#### ELECTRIC PENCIL

Electric Pencil is a software package that allows you to draw and edit graphics on the Commodore 64 and 128. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

### THE MIRROR - TAPE BACK UP

The Mirror is a software package that allows you to create and display a mirror image of your Commodore 64 and 128. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

### THE WARD - TAPE TO DISC

The Ward is a software package that allows you to transfer data from tape to disc. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

### MORLIN ASSEMBLER

Morlin Assembler is a software package that allows you to assemble and link programs on the Commodore 64 and 128. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

### BLACK CAT - CASSETTE CONVERTER

Black Cat is a software package that allows you to convert cassette tapes to disk. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

### BARGAIN JOYSTICKS - 3 GREAT DEALS

Bargain Joysticks are available in three different models. The first model is a joystick with a single button. The second model is a joystick with two buttons. The third model is a joystick with three buttons. All models are available in a variety of colors and finishes.

### CASSETTE INTERFACES

Cassette interfaces are available in a variety of models. The first model is a cassette interface with a single button. The second model is a cassette interface with two buttons. The third model is a cassette interface with three buttons.

### TAPE HEAD ALIGNMENT C64-II

Tape head alignment is a software package that allows you to align the tape heads on your Commodore 64 and 128. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

## COMMODORE 64

### EVER HAD A LOADING PROBLEM?

Ever had a loading problem? It's a common problem that can be solved with our software. Our software allows you to load and save files much faster than the standard Commodore software. It is designed to work with the Commodore 64 and 128, and is compatible with most operating systems. The package includes a manual and a demo diskette.

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# Turbo Menu Maker

*In a new series we bring you a selection of short utilities which should be invaluable for anyone wishing to handle large amounts of data.*

*By Les Allan*

Anyone wishing to store and process a lot of data is bound to come across numerous problems in an attempt to sort it into an accessible and economic form. This short series of utility programs is designed to place facilities at your disposal which will do just that. The first item is a Turbo Menu Maker.

## Turbo Menu Maker

This routine reads the current directory from disk and rearranges it such that the MENU file is moved to the first file and a straight line as the second. The total number of files read is less than 64 then the process can be continued. This is because sufficient room (eight blocks) must be kept clear for the MENU program in the directory.

A directory sort routine is selectable between either an alphabetical or manual sort. The

alphabetical sort ranks the directory in alphabetical sequence prior to re-writing the directory. Whereas the manual sort provides, in addition to the user being able to determine the sequence, the facility to insert a separating line/lines in the sorted directory. The type of separating line used is defined by the user from a keyboard character - if RETURN is pressed the default is a straight line. It should be realized that the limitation of 64 entries also applies to the addition of separating lines.

## Choosing Files

The choice for the MENU saved files is then made by selecting 'T' of 'N' to each of the directory files. The count of the total number of selected files is indicated adjacent to the current files and providing the selection does not exceed 64 in total then the process can be continued.

The directory plus the MENU straight line is then saved to disk.

The MENU program is then read from memory in 254 byte sections and written to the directory from the next vacant sector in the sequence.

The program, once loaded, displays only those filenames that were chosen. These are selected with the cursor keys and entered by RETURN. The program then loads a turbo menu of approximately five times with a flashing screen to indicate that a successful load is taking place.

The program as listed must be typed in exactly as written and saved prior to running. Error trap routines are included to ensure that the data as read is correct. The program when run stores the relevant code at a temporary address of 59000 and when prompted releases the working program to Bank (5000) and saves to disk the program TURBO MENU V3.0. ☐

```

PROGRAM: TURBO MENU MAKER

These read 128000 before starting this program

00 10 PRINT@SCREEN(0) "00-00"
01 11 READ@DATA(1) "000001100"
02 12 PRINT@ (1) "000001100"
03 13 PRINT@ (1) "000001100"
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05 15 PRINT@ (1) "000001100"
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# Repton 3

*This month we take a long look at  
Superior Software's fascinating Repton 3.*

*By Mark Curry*

**A**side action, strategy and games designer rolled into one. That's how you can sum up Repton 3 in one sentence.

The basic structure of the game is that of a maze which is check-a-block with various hazards. In fact virtually everything is potentially dangerous, so watch out. Having said that, don't presume that this is merely another version of pacman. It's not even vaguely similar to that old and hackneyed favorite. The colourful graphics and intricate maze are just a small part of the entertainment value of this game.

Once you've had a go at the first screen you will have the general idea. The most important objects on screen are the boulders. These block your path in many directions but you can move them about to make your way through the maze. However, they are often balanced very precariously and you will have to get the knack of which ones you can move without being flattened completely. For instance a boulder which is balanced on earth or on a barrier section will not move unless you push it, however a rock which is balanced on another rock or a diamond will slide off and if you're in the way that's the end of you.

When you start the first screen, my advice is to press 'M'. This will set up a map of the maze and you can work out your strategy. The problems which you face are many. If you grab the wrong diamond first there is could mean that there's no way that you can finish the screen as you may have dislodged a rock which blocks your path to some yet unclaimed gem.

The objectives of each screen are threefold. You must collect all the diamonds collect the golden crown and kill all

the monsters. This gives you quite a lot to think about but no matter how difficult it is there is always a solution, at least as Superior Software claims, although a great amount of lateral thinking is required to sort some of the mazes out.

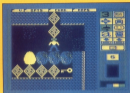
The hazards (other than falling boulders) come in many guises. The monsters, and vary in size looking they are too, hatch out of eggs and chase you remorselessly until you squash them with a rock. There is no way that you can avoid landing the eggs since there are a busy-diamonds which you need that are supporting them. You need to think ahead and spy out a convenient boulder to use when they come at you on the staircase.

There are also spirits, which are deadly, however these must be put in cages. The trick here is to clear the path to the cages so that when you let the spirits out they'll make a bee-line for imprisonment. As soon as they get into the cages they turn into diamonds and you're laughing. If you try and squash a spirit then you only win it and it gets a bit bewildered for a while.

You may think that if you've got a map to study, and can work out exactly what your strategy will be per screen then there's no tension in the game. However there is a time limit on each screen and sometimes, especially if you're a novice feeling your way, this is hopelessly inadequate. Would you in your race against the clock there are time-savers which you can pick up which add invaluable seconds to your deadline.

Remember that when you've collected the diamonds and crown and killed all the monsters, you must find the time bomb and defuse it (this is only a matter of passing over it).





Skulls are also deadly but at least they don't chase you and keys will open safes to reveal yet more diamonds. On at least one screen the timing of the opening of the safes is all important so beware. You must always look ahead to the consequences of your actions. A bit like chess but rather more light hearted.

A very important factor on some screens are the transporters. Some screens are divided into several sections and the only way to complete them is by whizzing around in transporters. However, each transporter can only be used

once, so that in most cases, there's no going back. If you enter the transporter too soon, e.g. before you've killed a monster or got all the treasure then you'll find that you cannot complete the screen, so once more there's a lot of knowledge involved.

There are 24 levels in all, each getting progressively more difficult. These are divided into three sections of eight. One of the best features about this game is that when you finish a screen you are given a password so that you can return to it whenever you like, saving you the boredom of completing the same screens over and over again every time you want to play the game.

A character designer and screen designer are also included so that you can create monsters for yourself if you get bored with the ones supplied on the original version. This gives another fascinating dimension to the game along with the possibility of infinite variations.

All in all this game has so many attractions that it cannot be too highly recommended. It's totally addictive and there is enough variation to suit several different kinds of game players. Superior Software lives up to its name. **TS**

#### Finalist

**Title:** *Pyrom 3*. **Supplier:** Superior Software, Regent House, Skinner Lane, Leeds LS7 1AT. **Machine:** C64. **Price:** £9.99 cassette, £14.99 disk.

**Originality:** 7/10. **Playability:** 10/10. **Graphics:** 8/10. **Value:** 10/10.

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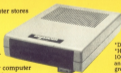
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# Word-Pro Add-On

*Many Plus/4 owners find the built-in word processor inadequate. Here, we bring you a program which will vastly improve the quality of the hard copy you can generate.*

*By William Sellers*

**T**he Plus/4 is now available at a very reasonable price as a word processing package, with a disk drive and MPS885 printer. The built-in software has been widely criticized, but, in fact the printer is probably the weakest link.

It has a rather unattractive character set which, due to economies on the printing head, only uses 74 dots per character which does not allow it to produce true descenders and so letters such as g and y are particularly ugly. This problem can be overcome by redefining these letters and using the graphics mode so that the descending parts can be printed on the line below. The improvement is really quite impressive.

The software itself is also not very well matched to the printer, and does not take full advantage of the printer facilities since the justification is performed on a whole character space resolution whereas the printer allows dot precision to be used for spacing. This allows a much more even layout to be achieved with all the gaps appearing exactly the same size. There is also no software underline function, but this can easily be implemented in association with the descenders.

## How It Works

The program works by intercepting the character output to the printer and stores a whole line which it can then compare if justification is required. The modified line is then printed character by character, replacing the

redefined letters and removing control codes.

After a graphics mode linefeed, the line is then printed again, this time taking care of the descenders and the underlining. Normally, such output redirection is achieved by changing the output routine at \$0034. Unfortunately, this general output routine is not called for printer output in this instance and the specific serial bus output routine is used which does not have a RAM vector. Thus the only way to redirect output is to find the output call in the built-in software and change it to jump to the new routine.

This would not, of course, be possible if the program ran in ROM but in fact the Plus/4 built-in software merely loads itself from ROM into RAM and once here can be altered. To do this, the subroutine call needs to be changed after the program has been moved to RAM otherwise the change will be overwritten. This can be done by changing the output vector to point to a short routine in the cassette buffer so that when the copyright message is printed, the program jumps to this routine which changes the required subroutine call and then resets the vector before returning to the main program. Now, when printer output is performed, the program jumps to the new output routine as required.

## In Use

Type in the Basic loader, save a copy, reset the computer, load it again and run it. After an initial wait while the

machine code programs are POKEd into place, the built-in software is entered in the normal fashion except that the copyright message has been altered. The word processor can now be used completely normally since the program is stored in an area of memory that appears to be unused. All normal word processing commands can be used, though the effect of printer control codes on the user defined characters are uncertain so that the ASC command should be avoided.

It was decided that the reverse graphics facility was not very useful but that the double width characters were needed for titles. Thus, they can be switched on by a `<C> - - -` character inserted into the text (not in reverse graphics) and off by a `<SHIFT> - - -`. Similarly the software underlining is switched on by `<SHIFT> - - -` and off by the `<SHIFT> - - - -` again.

The software underlining can be used anywhere, even for single letters within a word. Double width control is similar but it is not permitted in lines that are justified since there is no facility to correct for the double width characters. Double width is also switched off by a carriage return but the underline needs to be switched off specifically. If active, whole series of documents and also page numbers can be underlined.

All printing is performed with graphics mode linefeeds. Since two lines are printed per line of text the line spacing is .36 lines per seven inches so





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member of that race. Can you succeed where all the rest have failed?

To make the plot even more ludicrous, you go into the Tachon Caverns unharmed save for a faulty pan. This however only works against some of the creatures so finding a source of weaponry is of paramount importance. Fortunately, there just happens to be a series of power pyramids scattered around the caves. Collecting these will increase both your own power and give you extra firepower in increasing stages. The first pyramid gives you a suit of armour and a gun, the second an arc blaster and the third a white bolt neutraliser although these last two weapons only last for a short period of time. Losing a life reduces you to punching your way out of trouble again. Extra pyramids can also be gained by killing a blue monster with either fist or gun. At the bottom of each level is a multi-headed demon. Each of the heads must be destroyed in turn by jumping up and shooting in mid-leap. All this as you also attempt to avoid the lethal laser bolts the heads are spilling at you.

Graphically, the game is only average and that term can be used to describe Galban as a whole. Has anyone succeeded in destroying the evil? No-one knows but my guess is that they all died of boredom rather than at the hands of the demons.

G.R.H.

### Touchline

**Title:** Galban **Supplier:** Imagica, 4 Central Street, Manchester M2 1NS. **Tel:** 081 852 9855 **Machine:** C64 **Price:** £3.95 **Originality:** 3/10 **Graphics:** 6/10 **Playability:** 7/10 **Value:** 4/10

## AMERICA'S CUP

**T**he America's Cup is one of the most exclusive sports only fully appreciated by those who know the difference between light green's and spinners, gybes and tacks. Now the sailing crew have a computer game.

The rest of the world only discovered the America's Cup when the Americans were finally beaten after holding the trophy for over 100 years.

At the time of writing we might even stand a chance

through our boat White Crusader!

Now you can win this elusive trophy without getting your hulls wet.

Sailing is quite a complex process particularly when the wind is blowing in completely the wrong direction. To make things worse the America's Cup course is designed so this happens most of the time!

The secret appears to be in your initial sail selection and when you change them during the race.

This will be beyond most beginners and will only make sense after digesting the means of sailing theory that accompany the game.

Perhaps then you will be able to take on the Defender in a seven race series. To make things worse you're not even allowed to run your opponent!

Once you've mastered the controls and begun to put the theory into practice then the games mechanics and screens that plot the route and relative positions on the course begin to make sense. Unless you're a sailing enthusiast or are prepared to learn then give this one a miss.

T.H.

### Touchline

**Name:** America's Cup. **Company:** US Gold. **Cats:** 2/2 **Machine:** Mega. **Supplier:** Romington, 85 TAFE. **Price:** £8.99 **Machine:** C64 **Originality:** 5/10 **Graphics:** 4/10 **Playability:** 4/10 **Value:** 6/10



## CRYSTAL CASTLES

**W**hen Yogi Berra has a distinct preference for picnic hampers and Winnie the Pooh likes nothing better than getting drunk into a pot of honey, Bentley Bear has decided that there are more important things in life than his stomach. He collects diamonds. And rubies. And sapphires. In fact he collects any gem he can lay his paws on. Luckily for him, there just happens to be a whole series of planets just teeming with goodies if only he can avoid the prowling tigers.

After all the hype surrounding this game including such quotes as 'knocked me off my feet' and 'beyond description', I was expecting something pretty sensational. What did we



get? **JD Fawcett!** Yes, you can run round assorted areas collecting power pills, wavy diamonds, whilst avoiding passing enemies. OK, so there are extra touches such as lifts and secret passages and so on but not enough to make the game in any way outstanding. There are a variety of enemies to avoid – mad maddies, skeletons, live spines and bees. Some can be kept over rendering temporary paralysis and

delightful areas as the Norman Tubbis Block. Sump Industries and the swamp.

Arresting Judge Dredd style means beating the perp into a pulp or blasting him away if he "doesn't come quietly".

Some perks of the lesser crimes such as mugging may stop if you tell them to or perhaps fire a warning shot. However the hardened criminals such as murderers, tobacco smokers and smoke glands will shoot it out with you.

The well equipped Judge about town has six types of bullet designed to take out the most persistent perp. Normal, high explosive, and incendiary stop anything in their path, heat seeking bullets are useful for shooting around corners as are ricochet bullets but care must be taken not to shoot yourself. Finally armoured piercing bullets allow you to fire through the platemans.

Each building is divided into levels and so flows the crime report you can track down the perp. Once you've arrested him (pinned him down) you're returned to the patrol screen where you must rush to the next crime.

You have to be quick as crime reports constantly come through. If there's more than eight the city is swamped in crime and your game ends.

The game captures the spirit of crime fighting in the future although it has strayed from the 2000AD Judge Dredd character which will no doubt annoy comic connoisseurs. The rest of us will enjoy it.

#### Footnote

*Name: Judge Dredd. Company: Melbourne House, 60 High Street, Hampton Hill, Kingston-Upon-Thames, Surrey KT1 4DE. Tel: 01 843 2817. Machine: C64. Price: £9.95. Originality: 6/10. Graphics: 5/10. Playability: 5/10. Value: 6/10.*



they are magic bars which make you invincible – for a short while. These and the bonus honey pots should be collected carefully though as the warden cannot get past them whilst they are blocking the path. There are four different skill levels to choose from (all they do is speed up the action) and levels are locked in turn. At least on the mainland the levels must be played in turn. In fact on the mainland, anyway, you can play the sets of six levels in different orders.

Although the arcade remains may have been stunning, the 84 crimes is graphically very good indeed with wily wacky culprits and industrial spies. The game does have a wacky screen element of "just one more go" about it but the overall effect is one of huge disappointments.

G.R.H.

#### Footnote

*Title: Crystal Castle. Supplier: US Gold. Price: £12.95. Machine: Amiga. Developer: Birmingham DE S&L. Tel: 021 336 3488. Machine: C64. Price: £6.95. Originality: 3/10. Graphics: 5/10. Playability: 7/10. Value: 6/10.*

## JUDGE DREDD

**H**ere, at last, is your chance to patrol Mega City One as the one and only, Judge Dredd.

Your job is to cruise the city on your "lawmaster" motorbike looking for perps that need justice.

Crime reports flash up on your map warning that muggings, robberies, murders, alien seed deals and smoke glands are in progress and you must rush to the scene to arrest the culprits.

The scene of the crime is always part of the sprawling streets of Mega City One.

In the game these are presented by screens of platforms, fountains, lifts, and dubious-looking people of such



## WORLD GAMES

**F**ollowing on from the success of Summer and Winter Games, World Games gives you the chance to try your skill at eight more assorted events. And a strange mix of competitive sports, you could not hope to meet anywhere else. Six of the events are limited to the country of origin whilst only two have a more widespread appeal.



First stop is Russia, a country that has dominated weightlifting, especially at super heavyweight levels for some years now. You must compete in both the snatch and clean and jerk. Timing the various elements of the lifts is the key to success here and there is also considerable psychological strategy in selecting which weights to attempt to give you maximum success and put your opponents under maximum pressure.

Barrel jumping from Germany is the second event. Coordinate the movements of your skates to gain maximum speed and then time your leap in order to clear the chosen number of barrels. Cliff diving is Mexico's entry in the list of silly things to do. First contact with using a swimming pool like everybody else, they deem it to be more fun if you dive from a height of 108 feet, trying to miss the jagged rocks and judging it so that you land in the water when there is sufficient depth from the waves to avoid giving you a nasty headache. I'm only surprised that they didn't throw in a few sharks while they were at it.

Slalom skiing from France is an event often copied in computer games. Suffice to say that this is the hardest of the events and as yet, I have not even managed to complete the course, let alone do so without missing a gate. Many Python fans will love the next sport as it allows you to play a Canadian lumberjack trying to keep your feet as you go log rolling. Just to add to the fun, you must do this when there is someone else on the log, the game being to give him an early bath before he does likewise to you. Staying in North America, Bull Riding is the event chosen by the good old U.S. of A. You can choose from four different bulls of assorted severity, the object being to stay on its back for at least eight seconds as it rears and bucks.

Back to the land of the perestroika enters for tossing the caber. Run up holding a telegraph pole and flip it over as far as you can. Not as easy as it sounds. A successful throw is accompanied by a Scottish jig, failures result in the caber landing on your feet or head, knocking you gradually into the ground in best cartoon tradition. The accompanying music is authentic bagpipes - i.e. awful. Finally to Japan for Sumo Wrestling, an event that shows that there is hope for an athletic yet. Thirty five teams of balaban on either side of the ring attempt to make their opponent either topple or step out of the ring.

As with all these Egos games collections, you can have the most fun if there are several of you playing against each other. If you enjoyed the previous releases, then you will have to add this to your collection although personally, I

preferred Winter Games. Surely, there can't be many sports now that have not been used.

G.R.H.

#### Touchline

Name: *World Games*. Supplier: Egos/US Gold, Unit 2/3, Millers Way, Millfield, Birmingham B6 7AU. Tel: 021 854 1181. Machines: C84, Price: £70.95.

Originality: 7/10. Graphics: 8/10. Playability: 8/10. Value: 8/10.

### LEADER BOARD TOURNAMENT

**F**our new 18 hole courses to frustrate and annoy Commodore golfers are available on this first tournament disk.

Available in either tape or disk format the new courses load in from the original Leader Board program (which you must have and in the same format) Taps Leader Boards can only load in the courses from tournament tapes!

Naturally the game plays the same with up to four players competing in either a 18, 36 or 72 hole tournament.

Club selection, aiming and swing are all controlled from simple joystick actions leaving you to worry about the hole itself.

Like the original version the tournament holes are constructed from a series of islands surrounded in a lake that tries to swallow golf balls by the dozen.

Most of the game will be spent peering over the course diagrams working out which club is best to hop from one island to the next and if you can finally sink the ball into the hole. Your caddy's no use, he's obviously too busy rowing you around the course in a boat!



The original Leader Board stormed its way to the top of the charts. Leader Board Tournament is quite simply more of the same sold at a realistic price.

If you enjoyed the original then you'll enjoy these extra courses. If you haven't played Leader Board then you should get that, then buy this.

#### Touchline

Name: *Leader Board Tournament*. Company: US Gold/Egos, Unit 2/3, Millers Way, Millfield, Birmingham, B6 7AU. Price: £49.95. Machines: C84.

Originality: 8/10. Graphics: 7/10. Playability: 10/10. Value: 8/10.

## FIVE STAR GAMES

Five star games for the price of one is the claim of the latest collection from compilation kings, Brava Jolly.

Spindizzy, Batalya, Zoids, Scarsuborn and Equinox form the impressive line up of hits.

Spindizzy was arguably the pick of the Marble games that swamped the market before the ink on the official license dried.

The game features either a top, isometric or gyroscope exploring a 3D landscape of slopes, ledges and killing platforms while collecting diamonds for irreplaceable bonus rounds.

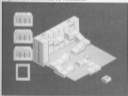
With over 385 screens to explore and solve it is unlikely that anyone will ever finish the game.

The same might also be true of Masterk's excellent game based on the Zoids battle robots.

Merged with only a massive Tank Zoid you must search the Red Zoid cities for eight pieces that once were the mighty Zoidella. Find all eight and you'll be in a one to one battle with the Redborn the Terrible but before then you must learn to control the Zoid you've merged with and then how to destroy the cities while fighting the red zoid patrol!

Loss controls monitor your Zoid's state of health as well as the position of enemy Zoids and the control and flight of your missiles.

Master has will reveal in the inclusion of Batalya which was a collection of Master mayhem tacked together as subgames and distributed by Arkidsoft.



This is probably his worst game but my favourite is still Attack of the Mutant Canals.

Mako-Gin's Equinox requires a curious mixture of avale skills and strategic thought if you are to clear the radioactive canisters from the mining complex before they explode.

To have any chance of success you must master the use of transporter terminals, train level transporters, credit dispensers and magnetic lifts while fighting off the constant barrage of energy draining aliens.

Sigari's graphics add to the incredible atmosphere of this game that drives you back for more despite dismal scores.

Finally the collection is completed by Arkidsoft's arcade adventure, Scarsuborn.

This exploration, 3D maze game challenges you to find one hexaglyph and use them to sought potions from

poisons, solve the pharaoh's puzzle to find the key that will lead you into the tomb.

A puzzle solving game that is hexaglyphics to me.

Individually these five games have each attracted its own cult following. Together they make a winning combination.

T.H.

## Touchline

Name: Five Star Games. Company: Brava Jolly. Price: £20.95.

Machine: C64.

Originality: 1/10. Graphics: 9/10. Playability: 8/10. Value: 10/10.

## BARD'S TALE

Skata Brax as a pleasant, sleepy little town. Or at least it was until Mangar arrived. An evil magician, he cast a spell of Eternal Winter over the town, thus effectively isolating it



from the outside world. The last living things to enter were Mangar's specially invited guests - evil creatures of the night and foul monsters. It wasn't long before the town's militia disappeared leaving Skata Brax even more so under the evil mage's control. Only a few dared to talk of resistance, retired warriors and conjurers. Few things already on the run and back who would sing of the elder days for anyone who would buy them a tankard of frothing ale.

For some reason or other, these rebel leaders look up to you as their leader. You must assemble a party of no more than six characters to go out and try to defeat Mangar. Of course, it is not going to be that easy. There will be his minions to defeat first and you will have to gain access to parts of the city not normally available to you. And then of course, there are the dragons. So the bard sings, for no-one has ever found the entrance and lived to tell the tale.

You start off in the Adventurer's Guild, a safe haven, one of the few left in the city. Here you can assemble a party to your liking. Your choice is considerable. Seven races including dwarves, elves and gnomes. There are also 18 character classes (although not all are available at the start). Each character has five different attributes - strength, intelligence, dexterity, constitution and luck. Different classes and races

are higher in some attributes than others. It is no use having a clumsy rogue for example who can't tie his boots; let alone disable traps. One characteristic to look out for when generating a new character though is the number of hit points he or she has. This is an indication of the amount of damage a person can take before dying. If a character only has a few HPs, take a tip and roll the dice again.

Although your party has gold, it has no equipment as the first journey is to Ganth's. An adventurer from years gone by, he has all the latest swords and armour. Gold can be pocketed within the part to buy these really expensive goods. Ganth will also identify unusual items for you - for a fee of course.

Magic plays an important part in the game. There are four different types of spell caster available, each with their own set of spells available - conjurers, magic users, sorcerers and wizards although you need to be a fairly experienced spell caster before you can become one of the latter two types. Books are used to inspire the rest of the party by singing one of their songs. They are reasonable fighters too but you will need to top them up with aid fairly frequently.

The display is in three main sections. Top left is a 3D picture of your surroundings or an illustration of your character or enemy. Top right is the description box - what you can see and what your choice are (all menu driven) and at the bottom of the screen is a quick run down on the status of your party. Movement is straightforward. Turn left, turn right, straight on or kick a door down.

The Bard's Tale is a superb role-playing game that will keep fans of this genre happy for months. That it is also the first of intended series is also good news. Despite the slowness of all the disk accessing (thanks Commodore) the game is excellent value for money.

G.R.H.

### Touchline

**Title:** *The Bard's Tale*. **Supplier:** Avalonsoft, 64 Long Arch, London WC2E 9AW. Tel: 01 838 2411. **Price:** £74.95. **Hardware:** C64

**Originality:** 8/10. **Graphics:** 8/10. **Playability:** 7/10. **Value:** 9/10.

### PSYCASTRIA

**T**his is the latest in a long line of clones that have tried to ride on the back of the phenomenal success of Huxson's *Uridium*.

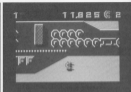
Once again you're flying a single fighter armed with twin firing lasers.

Once again you must breach the hordes of enemy fighters to take out land/ship installations to win the day.

Except in this game the fighters attack you in frightening hordes of one!

They do fire missiles so you still have to take them seriously but a greater threat is the raised barriers and walls that you can crash into.

Up to four players can share the "excitement" of it all and even marvel at the speech that says "tough luck sucker" at the end of every game. This rapidly becomes extremely annoying but can be turned off. So can the game unless you



like your games dull and unoriginal.

Later levels drift away from the designer Dreadsought look (*Uridium* style) with barriers forming for you to thread your way through. I don't think anyone will bother. If you want to play a *Uridium* style game then why not play *Uridium* or *Frederik's Warhawk* (a clone but at a budget price). This has nothing new to offer.

T.H.

### Touchline

**Name:** Pyrotech Company, Andropolis, 23 Station Industrial Park, London Road, Reading RG6 1AZ. **Price:** £7.95. **Hardware:** C64

**Originality:** 2/10. **Graphics:** 6/10. **Playability:** 3/10. **Value:** 4/10.

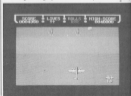
### 1942

**I**n 1942 and war in the Pacific is raging.

You must fly your lone fighter on a daring solo mission to destroy the enemy's fleet and airforce in Elmer's latest computer conversion.

Accompanied only by the wrong music (65) Squadron hardly ever fought in the Pacific) you must blast your way through from carrier to carrier in 24 daring combat stages.

During each flight you are assaulted by hordes of enemy



fighters flying at you in battle formation.

Each individual formation is quite easy to take out but the problems add up when you're swamped with three or four formations each swirling around you in different patterns. Particularly nasty ones suddenly appear behind you or dive in from the side.

Occasionally the enemy fighters are joined by bombs that take several shots to destroy and fire a hail of bullets at you from the rear gunner.

At the end of each stage the next carrier appears and a bonus is awarded depending on your kill percentage.

In later stages the skies are packed with enemy bombers and fighters all trying to blast you.

Luckily, help is at hand in the mysterious POW capsules that are dropped. Collecting these gives your plane added features such as an increase in firepower and just might get you through to the next carrier.

T.H.

### Touchline

**Name:** *Alien*, **Company:** *Elite*, 338 Bradford Street, Walsol  
WS1 2QS, **Tel:** 0422 35852, **Price:** £9.99 **Machine:** C64.  
**Originality:** 3/10, **Graphics:** 4/10, **Playability:** 9/10, **Value:** 8/10.

## THE MOVIE MONSTER GAME

**T**hree years ago, Epyx released an excellent game of monstrous proportions for the Atari called *Creech, Crumble and Chop*.

In the game you played a choice of monster from giant wasp to Godzilla who beat the hell out of the city of your choice.



Now the game has been revamped for the C64 and called the *Movie Monster Game*.

Now you can play *Godzilla*, a giant *Meringe*, *Spectra* the giant wasp, *Tarantula* a massive tarantula, a robot called *Mechatron* or a blob called the *Glog* in a variety of movies where your chosen monstrosity tries to eat/escape from/destroy/generally give a bad time to one of the six major cities.

Naturally the local army and airforce are called out to stop whatever's stomping their city.

Each monster is unique in its strengths and weakness, some even have special weapons.

*Godzilla* is big, very big and can breathe fire. However he is also very slow whereas *Spectra* is faster but a lot weaker, *Mechatron* fires lasers, *Mr Meringe* spits globs of goo, *Glog* chomps everything in its acid and *Tarantula* traps tanks in its web.

Despite such potential the game has a power stronger than all the monsters it contains, it bores its players.

Once you've selected your critter and his task and you've read the all purpose introduction your monster crawls around the city at snail pace on a poorly scrolling screen. Stomped buildings don't shatter forming interesting piles of rubble instead they collapse totally leaving not a single brick!

Pedestrians wander aimlessly, seemingly unaware of the giant looting above them, and the airforce quite happily bombs you yet doesn't even mark the cities point work!

Speed up the action and add some decent graphics effects and it could have been as good as the three year old original! It isn't and is Epyx's first UK monster flop!

### Touchline

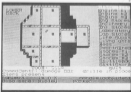
**Name:** *The Movie Monster Game*, **Company:** *US Gold/Epyx*,  
Units 2/3 *Walford Way, Walford, Birmingham B6 7AE*, **Tel:**  
021 358 2589, **Price:** £9.99, **Machine:** C64.  
**Originality:** 2/10, **Playability:** 4/10, **Graphics:** 3/10, **Value:**  
6/10.

## ALIEN

**F**or those of you who missed it the first time around, *Big Byle* has re-released the game of the film, *Alien*, at a budget price of £2.99. Having missed it myself I was looking forward to showing the alien just who was boss.

The aim of your mission is either to totally destroy the alien or else drive it out of the spacecraft, *Nostromo*. To escape you can leave the ship in the escape pod *Narriman* with at least three other crew members and so the ship's self destruct mechanism is safe.

The game supports what is generally termed as *Personality Control System - PCS*. This means that as *Commander*, you have to be able to read and understand the



personalities of each of your crew. For example, if one of the crew suffers from claustrophobia, you couldn't send that person into a narrow air duct. Likewise, if one of them is being slightly cowardly, you don't send them to attack the Alien. To aid you in this you are provided with a random of each of the crew members strong and weak points. Beware though, these traits are also as the game progresses, depending upon the situation at the time.

Control is by use of a joystick and a fire key. You may view all the decks of the Neostromo via a desk plan. This will show where grills, stairs and doorways are. The command monitor gives you all your options. From the command monitor you manipulate each crew member, ascertain which you have acquired and examine damage reports. One thing to watch for is TOOH (Time out of Hyposleep). If a crew member's TOOH falls to zero then they die.

I must confess that I did not do particularly well at this game. I found that the game play takes some getting used to. A map must be kept of where each crew member is and progress made. Otherwise you will get totally lost. All in all, not a bad game. The graphics are nothing to write home about and the sound, although functional is nothing special (except the nice intro).

Should you own and platform game players will not, I fear, get on with this game. However, strategists amongst you will find there is plenty here to keep you occupied for many an hour.

P.L.

### Touchline

**Title:** Alien. **Company:** Big Byte, Victory House, Leisure Place, London WC2H 7DB. **Tel:** 01-439 0168. **Machine:** C64 **Price:** £2.99 **Originality:** 5/10 **Playability:** 5/10 **Graphics:** 4/10 **Value:** 5/10

### BAZOOKA BILL

General MacArthur has been kidnapped and is being held by revolutionary forces on an island in the Pacific. You are Bazooka Bill, soldier of fortune, and it's your job to get him back.

Although unarmed you set off hoping you'll find sufficient weapons and supplies to survive the mission.



Waiting to stop you are hordes of heavily armed soldiers as well as tanks, planes and helicopters.

The game plays like a mixture of Green Beret and Commando, as Bill charges along a two level scrolling screen punching anything in his way.

Occasionally he will find a knife, flame thrower, machine gun or even a bazooka to help him in his cause but most of the time you'll have to rely on your deadly self-loading fists.

The screens can be a little confusing as, if you think you're running along the bottom level you may in fact be simply running around the same building. Therefore you must keep an eye on the background and if you see anything familiar simply keep up to the next level to get out of the rat.

This "feature" is obviously included as the bottom level is less dangerous than the upper level which is packed with machine gunning troops.

If you reach the airport you can steal a plane and blast your way through incredibly crowded skies.

You begin the game with five lives and can gain more by killing the enemy by the use (1000 corpses and you get a new life).

The action is fast, furious and a lot of fun accompanied by some boggy music to stir you on to heroic deeds and another game.

T.H.

### Touchline

**Name:** Broccoli Bill. **Company:** Melbourne House, 68 Wych Street, Mangrove Walk, Kingston-upon-Thames, Surrey KT7 0TE. **Machine:** C64. **Price:** £2.99. **Originality:** 4/10. **Graphics:** 3/10. **Playability:** 5/10. **Value:** 5/10.



### LEGIONS OF DEATH

The Punic Wars between the Roman and Carthaginian empires lasted for over 120 years. Carthage, on the North African coast, had established its empire through trading and the might of its navy. Rome depended more on the power of its army. That the Romans repaid the naval power of their enemy is now a matter of history, but here is your chance to see if things would have been different if you had been in command over two thousand years ago.

Legions of Death is a fully icon driven wargame and Lothlorion's most impressive result to date. Set in the control

Mediterranean, you take the side of the Carthaginians against either the computer or another human opponent as you struggle for mastery of the seas.

Before the game starts, you must first equip your navy. Do you go for lots of fast manœverable ships which are lightly armed or better specified but slower models. And how do you equip them? Should you use slaves to row the boats or hire expert oarsmen? How many marines or archers should you carry and have you left enough room to carry gold back from the tributes paid by friendly cities to your capital. This theme of spending your money wisely is crucial throughout the game.

The display is divided into four main boxes. On the left is a large map. This can be either a general map of the area or a close-up of a specific area when issuing orders. The box in the top right hand corner contains icons of the commands currently available to you while underneath is either another close up map or a picture of the ship currently selected. An information box is at the bottom of the screen.

Commanding your forces is controlled entirely by selecting the appropriate icon. Some of these lead you into sub-menus and the same icon has several different meanings according to where it occurs. A flow chart of the various permissions is included in the documentation. It is rather daunting at first but you soon get the hang of things.

Paper is by no means truly beaten the first few times that you play. Not only do you get the chance to set your own victory conditions (these are default values) but also the initial disposition of your forces and it takes some time to get used to the optimum strategy. Once you have that sorted out, all you have to do is sit cozier and spend for your ships, rebuild and repair them, collect your tributes, destroy the enemy fleet and generally become master of the Ancient World. You don't tell the pretty slaves that you want to go water skiing after a quick run to Rome and back.

Legions of Death is a very well presented wargame. A lot of thought has gone into the gameplay, and it shows. The amount of detail and available options are excellent and the displays are large and legible. Highly recommended to all wargamers and anyone else who wants to act out their Latin lessons. **G.R.H.**

### Touchline

**Title:** Legions of Death. **Supplier:** Lothorian, APF, Victory Point, Lothorian Place, London WC2M 7UB. **Tel:** 07 4396666. **Machine:** C64. **Price:** £2.95. **Originality:** 8/10. **Graphics:** 8/10. **Playability:** 7/10. **Value:** 8/10.

## NUCLEAR EMBARGO

**B**y the middle of the 21st century, the Earth was totally dependent on nuclear fuel for all its energy supplies. Its own resources having long since been used up, a trade agreement was struck with Saturn. We would give them the technology and they would give us the Uranium - their moons were full of the stuff. All went well until Raped the perverse ruled Saturn. He decided that he wanted payment in human flesh

for his axe, something that the powers that be naturally refused. As the situation was becoming desperate, the crisis



committee decided to launch a raid on Saturn's moon in order to liberate the Uranium supplies necessary. You are the pilot on that mission.

On first loading, I thought that this was going to be another Star Trek variant as I was presented with a 10 by 10 stellar map depicting the position of the various moons. Fortunately, this proved not to be the case and the rest of the game is highly original. Your first task is to select a planet to warp to. Preferably one with zero gravity. The view now shifts to a close up of the moon surface. This you must explore using your X-ray detector in order to find the location of the Uranium. Spy satellites try to pick up your trail, if they are successful, then the ground forces open fire on you and must be eliminated.

You can now switch to the transporter room. You have nine droids at your disposal and must attempt to teleport one on to the surface of the moon. This involves manipulating energy and beam levels while at the same time, making sure that the droid does not overheat. The lower the gravity of the moon, the easier it is to accomplish the transfer.

Once on the moon, you have remote control over the droid as it explores the surface looking for Uranium dumps. Look out though for the laser batteries that will try to destroy the droid. There are also computer rooms to be sought out. A mini-maintenance game allows you to temporarily disable the defenses. Once you have stocked up, its a case of beaming back up to the ship and on to the next moon. Extra energy can be picked up by visiting and blasting a pulsar.

Nuclear embargo is really a collection of mini games but they work well when viewed as a whole and the result is both original and fun to play. **G.R.H.**

### Touchline

**Title:** Nuclear Embargo. **Supplier:** Mirrored, 4 Mercury House, Aldershot, Berks RG7 6QH. **Tel:** 07536 77266. **Machine:** C64. **Price:** £12.95. **Originality:** 7/10. **Graphics:** 8/10. **Playability:** 8/10. **Value:** 7/10.





## Checksum Program

The hexadecimal numbers appearing in a column to the left of the listing should not be typed in with the program. These are merely checksum values and are there to help you get each line right. Don't worry if you don't understand the hexadecimal system, as long as you can compare two characters on the screen with the corresponding two characters in the magazine you can use our line checking program.

Type in the Checksum Program, make sure that you've not made any mistakes and save it to tape or disk

immediately because it will be used with most of the present and future listings appearing in *Your Commodore*.

At the start of each programming session, load Checksum and run it. The screen will turn brown with yellow characters and each time you type in a line and press the RETURN key a number will appear on the screen in white. This should be the same as the corresponding value in the magazine.

















If the two values don't relate to one another, you have not copied the line exactly as printed so go back and check each character carefully. When you find the error simply correct it and

















press RETURN again.

If you want to turn off the checker simply type STS48152 and the screen will return to the familiar blue colours. You can then do whatever it was you wanted to do and if this doesn't use the area where Checksum lives you can go back to it with the same STS command.

No system is foolproof but the chances of two errors cancelling one another out are so remote that we believe our listings are more reliable than any other magazine in the world. So get typing!

☐

Mnemonic	Symbol	Keypress
[RIGHT]		CRSR left/right
[LEFT]		SHIFT & CRSR left/right
[DOWN]		CRSR up/down
[UP]		SHIFT & CRSR up/down
[F1]		F1 key
[F2]		SHIFT & F1 key
[F3]		F3 key
[F4]		SHIFT & F3 key
[F5]		F5 key
[F6]		SHIFT & F5 key
[F7]		F7 key
[F8]		SHIFT & F7 key
[HOME]		CLR/HOME
[CLR]		SHIFT & CLR/HOME
[RVSON]		CTRL & 9
[RVSOFF]		CTRL & 9

Mnemonic	Symbol	Keypress
[BLACK]		CTRL & 1
[WHITE]		CTRL & 2
[RED]		CTRL & 3
[CYAN]		CTRL & 4
[PURPLE]		CTRL & 5
[GREEN]		CTRL & 6
[BLUE]		CTRL & 7
[YELLOW]		CTRL & 8
[POUND]		£
[LARRROW]		←
[UPARRROW]		↑
[F9]		SHIFT & ↑
[INST]		SHIFT & INST/DEL
[REV T]		see text
[Clear]		CBM + letter
[Store]		SHIFT + letter

# Hex Data Entry

*Introducing the Your Commodore Hex Data Entry Program to make our listings even more accessible.*

*By M.C. Stretton assisted by P.A. Eves*

**T**he Four Commodore Hex Data Entry program has been written with you, the reader in mind. No longer will it be a painstaking ordeal, typing in all the long lists of data. This program will ensure a 100% correct entry, each and every time you use it.

I have made this version as streamlined as possible so as to save you having to type in a large program. There are only four options in this version: LOAD DATA; SAVE DATA; ENTER DATA; PRINT DATA. There will be a much larger version coming shortly which will give you even more options and will have Windows, Redefined Chars, Scrolling Text etc.

On first entering the Hex Data Entry, only the LOAD DATA and DATA ENTRY options are available to you. This is because the buffer is empty, and the other two options require data to be present. On selecting the LOAD DATA option, you are asked for TAPE or DISK. Press either 'T' or 'D' then RETURN. The program remembers that last input/output, and so it is possible to just hit RETURN if the correct device type is being displayed. You are then required to enter a filename.

Type users please note, to cut down on errors for disk users, you will not be allowed to enter a blank filename. Filenames can be a combination of any characters, except graphics, up to 16 in number. If you should make an error in your filename entry, you may either delete single characters by the DEL key, or SHIFT/CLEARHOME will delete the whole filename. Be extremely careful when typing in your filename, errors can be fatal, so make sure you only use filenames that are stored on whatever device you are using. After the prompt, hit return and the file will be loaded into the buffer. The program will allow files up to 82 blocks in length to be loaded in. If you want larger programs entered, you will have to split them into two or more parts first. After the load, control is passed back to the main menu.

The save option is identical to the load, except that it takes the contents of the buffer and saves them out to the given start address. This will save an executable file, that can be loaded and

run, independent of the loader program.

## Data Entry

The Data Entry option is the option by which you can enter data from Your Commodore, or your own creations. Once this option is selected you are asked if you want to continue from the given address. If you have just 'LOADED' a file, this address will be the next available byte in the buffer. (Allowing you to add more data to the end of the loaded file. This is also true of the program currently in memory. Therefore, if you wish to continue typing in at the last address, type 'Y', if 'N' is pressed the program assumes you are starting a fresh entry. When this happens the buffer is reset to zero, thus losing any program currently in memory. (I have chosen \$C000 as the normal start up address purely because most M/C's prngs reside here.) After pressing 'N', you are then asked for the starting address, in Hex. Any valid Hex number is acceptable, e.g. 8400, 8300, 80400. In this example, the first figure, 8400, would be interpreted as 80400 by the program. Likewise 8000 is taken to be 80200.

Once the start address is given, you are asked if you want checksums or not. If you are typing in a program from Your Commodore your response will be 'Y'. If you are entering your own program then select 'N'.

The screen displays now changes to show the current address being poked into. Type any valid Hex number and the program automatically skips the next byte without the need to type commas, spaces or returns. If you make a mistake, one press of the DEL key will delete the whole number. If in the no checksum mode, when you get to the end of the line, the line will automatically scroll up ready for your next input.

If in checksum mode, after eight bytes are entered you must type the two digit checksum at the end of the line. Unlike the no checksum mode you now press return to enter the line.

If the program finds that the checksum does not match the line entered, a warning tone will be sound. You will then be asked if you wish to either: a) Re-enter the line or b) Re-enter the checksum.

After checking your line, if you find you have entered it wrongly, then press 'L'. The line will be erased and you then re-enter it correctly. If you find that you have only made a mistake in typing in the checksum, then press 'C' and re-enter it. Should you wish to stop entering data, simply press return or space bar on a blank line to get you back to the main menu. Here you may save your program so as to return another day, or you may wish to use a printer.

On choosing the print option, you have a choice of hard copy or screen copy. The listing can be paused at any time by pressing down and holding down any key. Pressing the RUN/STOP key and holding it down will break out of the print mode and return you to the main menu.

The left arrow key (top left of the keyboard), acts as zero when typing in your data. The space bar acts as the return key when entering data, thus leaving you free from searching for the return key.

The load option allows any program, less than 98 blocks, to be loaded into the buffer, so it is possible to load a basic program, obtain a Hex dump, then return the program out to another tape or disk without having to re-type any code.

I hope that this program will help to take the drudgery out of typing in long lists of data statements. TC

Please use EVIDENCE CHECKER  
when entering this program

```

READY.
00 10 8071 ----- SETUP --
01 00 000000,00,010
02 20 0000,00,0000,000000,100
03 000000,10,00000001,10,P
04 00000,1,PRINT"CODE,REV 2,00
05 000"
06 00 000"0000" -DEVICE,REV 0,
07 0000
08 00 00000000
09 00 0000"CODE"
10 00 0001 ----- OPTIONS
11 00 0000
12 00 PRINT"CODE,0000FF,0000,
13 0000"
14 00 PRINT"CODE,0000FF,0000,
15 0000"
16 00 PRINT"CODE,0000FF,0000,
17 0000"
18 00 PRINT"CODE,0000FF,0000,
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# USA Today

Your Commodore's US correspondent reports on the  
CBM scene from his hideaway in Parratt, Georgia.

By Lewis Tilley

**T**he uneducated youth of America is being quietly seduced by the computer. Lured into learning by programs they play as games. Students find themselves raising their scholastic scores higher than their non-computer orientated fellows.

Worst software offenders are historical simulations such as *Colonial Conquest* which lays the foundation for understanding some of the third world problems of today and *Raid Wars* which probes the pinpointed area of the US's development of its railway systems. Both of these games, developed around real periods of history, are published by Strategic Simulations, Inc. Cost is \$40 plus postage and handling.

Seven Cities of Gold by Electronic Arts doesn't really duplicate American history but puts the student into the boots of conquistadores as discover how the Americas were taken over in the 17th century, (available in the UK from Aristonsoft).

Recent history can be cribbed from the flood of war games which now include *Battleground*, a companion of *Kampfgruppe* in the fighting of World War II. Both are from Strategic Simulations. *Europe 48/49* which is the "bombard" war in Europe, is by Strategic Studies Group.

Older wars are remembered in Games Designer's Workshop's *Battle of Chancellorsville* for IBM and Strategic Simulations' *Battle of Arnhem* (both of which detail crucial battles in the American Civil War (or "The Split between the States", as we of the South prefer to call it).

The parents of the young US child have become involved in this educational scheme. They raise money with such projects as "garage sales" and "second hand" shops, rather of which sell either garages or second hand. In order to supply the school rooms of America with computers. Unfortunately, these computers are

usually Apples, not Commodores, but some states (North Carolina for one) are introducing an extensive use of IBM in their school art lessons.

One national magazine, *Family Computing*, is devoted almost exclusively to the use of computers in education. Its owners are the prestigious Scholastic Inc, long a publisher of books and magazines for school children. They now publish educational software as well. The *StudyStar* Software series is highly praised by educators across the country. *Teens Builder* is one of the newest. It "trains spatial relations and basic map skills" to the five to nine age group. *Car Builder* is for the older child but is also published by Workly Reader Family Software which is the name of Scholastic's software division.

S.A.T. does not abbreviate Saturday in the US, it stands for Scholastic Aptitude Test. It is a multiple choice test which our colleges use to predict performance of potential students. A high score helps a graduating high school (secondary school) student gain admittance to their choice of colleges. Naturally, the software companies of the US supply tutoring programs for the S.A.T. More than a dozen were reviewed in *Family Computing* recently. You might like to test yourself against the American level of secondary school education with one of these. *Mastering the SAT* was written by educators from the National Association of Secondary School Principals and is published by CBS Software and costs \$80. You think that's expensive? You could pay as much as \$28 for *Duol SAT Preparatory Course*, a 80-hour program from Digital Research. We take these things very seriously over here! Even our potential athletes are screened before they start their college careers by the Scholastic Aptitude Tests. "No pass SAT, no play football or basket ball first year in college."

Now, on to happier news. In the opinion of many, Commodore has it made. Well, maybe the Amiga isn't selling as fast as Commodore needs in order to assure a fat profit, and the Apple GS (the GS stands for GRAPHICS AND SOUND) is taking the Amiga out in the market place. But, born here at the end of 1986, it looks like Commodore is going to be around a long, long time.

Why does our old Faithful continue to flourish in spite of adversity? Software is why. First time buyers of computers are always advised to "Choose the software, then pick a computer within your budget that will run it."

GEOS is the easiest operating system yet devised for the beginner. Two new GEOS disks have been added to the system this month by Berkeley Software and more are promised by other programmers. The two new ones are *FontPack* which adds 20 new type faces or "Fonts" to *geoWrite*, the word processor, the *Desk Pack*. The latter is a four in one applications pack. *Art Grabber* gives access to the artwork you create using *Paint Shop*, *Print Master* and *Newsroom*. *Calendar* may be called upon when needed. *Iron Editor* lets "customize your GEOS file icons with the graphics of your choice. For good measure the creators of GEOS threw in a scunged up *Black Jack* icon/trad game. You may order *Font Pack* for \$29.95, *Desk Pack* for \$24.95. Add \$5.50 for overseas shipping and handling and wait at least six weeks. ☺

## Touchline

**Strategic Simulations:** 1646 N. Amersoyff Ave. Mountain View, Ca 94043. **Strategic Studies Group:** 1767 Orinda Court, Walnut Creek, Ca 94596. **Aristonsoft:** 98 Long Ave. Crown Garden, London WC1E 6JW. **Tel:** 41 836 3411. **Workly Software:** PO Box 37133, Hayward, Ca 94616.



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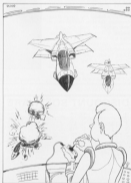
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*A good joystick is a must for any self respecting games player. Here's your chance to win a Speed King from Kentz.*



**T**his month we're offering you a chance to win a Kentz Speed King joystick. For anyone who loves top top this is the ideal accessory. It's available for the C14 and C16/Plus/4 so there's a chance for everyone.

The Speed King joystick has been well tested by Four Commodore. At a recent party in the Video Cafe, in London's West End, our editorial assistant, Stuart Kirkham beat all comers in a Daley Thomson's Death-in high score competition and walked off with a weekend for two in Amsterdam courtesy of Kentz, whose joystick had helped him to his 98,384 point victory. Our pic shows Stuart the staunch Westham supporter on

the left) and Wyn Holloway, Kentz's MD. The only question remaining is which of the editorial staff will be going on holiday with him? (The editor's decision is final!)

### How To Enter

To get your hands on a Speed King joystick of your own, just study the two cartoons. There are several differences between them.

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# Bare Facts

*A detailed knowledge of your computer is important when writing or translating programs. We provide memory maps of all the popular Commodore computers to help you.*

Many of the programs that are printed in Your Commodore can be used on more than one type of computer with just a few changes. The important thing is to know what you need to change and what it should be altered to. For example the command POKER \$12800 on a C64 would change the colour of the screen to black. If you were using a C16 or C128 you could replace the command with COLOR 16.

Over the next few months we will be taking a detailed look at the internal workings of the Commodore range of computers. This way, should you wish to translate a program from one machine to another, you should be able to

find what you are looking for.

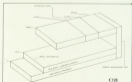
This month we are taking a look at the zero page memory maps of the various computers. This should help both machine code and Basic programmers find out just what those ever present POKERs do. The memory maps aren't complete. What is provided is a list of the memory locations that you will probably come across in your everyday Basic and Machine code programming.

In future issues we will be taking a look at the graphics and sound chips and providing memory maps for all of the popular Commodore mixes. 78

Commodore 128 (C128 Mode)		65-66	Line number of current DATA statement
LOCATION	DESCRIPTION	67-68	Address of current DATA
ALL BANKS		71-72	Variable name
		73-74	Variable address
		99	Accumulator #1: Exponent
0	8002 Data Direction Register	100-103	Accumulator #1: Mantissa
1	8002 Data I/O Register	104	Accumulator #1: Sign
2-4	SYS address argument	108-111	Accumulator #2: Exponent etc.
5-9	SYS register save area	112	Sign comparison, Acc#1 & Acc#2
15	Data type: ##-string, ^ 00-numeric	113	Accumulator #1 low-order [rounding]
16	Data type: 00-floating point, 80-integer	123-126	Basic pseudo-stack pointer *
21	Current I/O prompt flag	144	Status Variable ST
22-23	Integer value	145	STOP and 805 flags
43-46	Pointer: start of Basic bank 01	152	Number of open files
47-48	Pointer: start of variables bank 11	153	Default input device (00)
49-50	Pointer: start of arrays	154	Default output device (3)
51-52	Pointer: end of arrays	157	Flag: Messages 192-all messages, 64-errors only, 0-none
53-54	Pointer: string storage	160-162	Jiffy Clock
57-58	Pointer: limit of memory bank 11	176-175	Tape end address / End of program
99-60	Basic line number	183	Characters in file name
61-62	Position in Basic line	184	Logical file number
		185	Secondary address



186	Device number	886-895	Secondary address table
187-188	Pointer: Filename	896	CHGET routine
188	Number of characters in keyboard buffer	902	CHGET routine
		927-938	Subroutines to fetch from RAM banks
189	Flag: Function key		
210	Pointer: Function key string	991	Accumulator #1 overflow
211	Flag: 0=no shift, 1=shift, 2=Cornadore, 4=Control, 16=ALT	63280	MMU configuration register
212	Current key	63281-84	MMU load configuration register
213	Last key 88 if no key		
215	Flag: 40 or 80 columns - 0=40 col	BANK 0 (Basic programs)	
217	Character set - 0-ROM, 4-RAM	1024-2023	40 column screen memory
224-225	Pointer: Text screen line	2068-2509	Basic run time stack
226-227	Pointer: Colour screen line	2592	Size of keyboard buffer
228-231	Values of window: Bottom, Top, Left, Right	2594	Flag: Key repeat: 128=all, 64=none
232-234	Input location: column start, line start, line end	2595	Delay for repeat
		2596	Delay before repeat starts
235	Cursor position on line	2598	40 column cursor mode - blink or solid
236	Cursor position on row		
237	Max number of screen lines	2603	80 column cursor mode
238	Max number of screen columns	2604	Pointer: start of screen memory/ character data
241	Character colour		Pointer: start of high res screen
242	Flag: Reverse	2605	Pointer: start of 80 column screen
244	Flag: Quote mode		
245	Flag: Insert mode	2607	Pointer: start of 80 column screen
250-255	FREE SPACE		Pointer: start of colour screen for 80 column
512-600	Basic input buffer	2608	Cassette buffer
634-686	FREE any bank routine		Length of function key strings
687-702	FREE any bank routine	2844-3007	Function key strings
702-716	Compare any bank routine	4096-4106	Address of error variable ER
717-738	JSR to another bank	4107-4351	Line number of error (EL)
739-763	JMP to another bank	4616	Pointer: End of Basic program in bank 0
780-781	Vector: Crunch	4617-4618	Pointer: maximum Basic program space in bank 0
782-783	Vector: LIST	4624-4625	USR program jump
784-785	Vector: Execute		RND seed value
786-787	UNUSED	4626-4627	
788-789	Vector: DRQ		
790-791	Vector: Break	4632-4634	
792-793	Vector: NMI	4635-4639	
794-795	Vector: OPEN		
796-797	Vector: CLOSE		
798-799	Vector: CHRIN		
800-801	Vector: CHROUT		
802-803	Vector: GLACHN		
804-805	Vector: CHRIN		
806-807	Vector: CHROUT		
808-809	Vector: STOP		
810-811	Vector: GETIN		
812-813	Vector: CLALL		
814-815	Vector:USR vector		
816-817	Vector: LOAD		
818-819	Vector: SAVE		
842-851	Keyboard buffer		
866-875	Logical file table		
876-885	Device number table		



<b>Plus/4</b>			
0	7501 Data direction register	105-110	overflow
1	7500 8 bit I/O port (as 64)	111	Accumulator #2 as for #1
3-4	New start address (RENUMBER)	112	Accumulator sign comparison
5-6	Step width (RENUMBER)	113-114	Accumulator #1 rounding
7	Search character	115-116	Pointer: Cassette buffer
8	Flag: Searching for quote	117	Flag: AUTO command, 0=OFF
9	Screen column from last TAB		Flag: 1= OK reserved for graphics
10	Flag: 0=LOAD, 1=VERIFY	124-125	Pointer: CGSIB stack
11	Input buffer counter, No. of elements	131	Current graphics mode:00=text, 20=Hires,60=split hires,40=multicolour,80=split-multicolour
13	Flag: FF-string, 00-numeric		Current colour
14	Flag: FF-integer, 00-floating point	132	Multi-colour 1
15	Flag: Data scan/ LIST quote/ memory flag	134	Foreground colour
16	Flag: User function Call	135	Max number of columns
17	Flag: 00=INPUT, 40=GET,90=READ	136	Max number of rows
20-21	Integer value	144	Status word ST
22	Pointer:Temporary string stack	145	Flag: STOP and R/S keys
23-24	Vector: Last temporary string	147	Flag: 0=LOAD, 1=VERIFY
25-33	Temporary string stack	148	Flag: Character in serial buffer 00=no, 80=yes
34-37	Utility pointer area	149	Character in buffer for serial address
38-42	Product area for multiplication	151	Number of files open
43-44	Pointer: Start of Basic	152	Default input device
45-46	Pointer: End of Basic variables	153	Default output device
47-48	Pointer: Start of Basic arrays	154	Flag:80=Direct mode,00=monitor 00=program
49-50	Pointer: End of arrays	157-158	Pointer/Tape end/Program end
51-52	Pointer: Start of strings	163-165	JIFFY clock
53-54	Pointer: Current string	171	Length of filename
55-56	Pointer: Top of Basic memory	172	logical file number
57-58	Current Basic line number	173	Secondary address
59-60	Previous Basic line number	174	Device number
61-62	Pointer: CRT Basic line number	175-176	Pointer: Filename
63-64	Current DATA line number	178-179	I/O start address
65-66	Pointer: Current DATA address	180-181	Basic loading address
67-68	Vector: INPUT routine	182-183	Pointer: Load end address for tape
69-70	Current variable case		Flag: R/S (13=Yes,00=No)
71-72	Variable address	194	Cursor position (x,y)
73-74	Variable pointer for FOR/NEXT	196-197	Flag: Key pressed : 40=none
75-76	Y save, op save, Basic pointer area	199	Input from screen/keyboard
77	Comparison: 1=Larger, 3=Equal, 4=Smaller	200-201	Pointer: screen line
78-80	Misc numeric work area	202	Pointer: Screen column
81-84	Vector: functions	205	Flag: 0=root in quote mode
87-96	Misc work area	206	Length of current screen line
97	Accumulator #1 exponent	205	Pointer: cursor row
98-100	Accumulator #1 mantissa	206	Output character to screen
102	Accumulator #1 sign	207	Flag: Insert mode: >0=number of inserts
103	Series evaluation constant pointer	234-235	Pointer:Current screen colour
104	Accumulator #1 HI-order	236-238	Vector to keyboard decode
		239	No. of characters in keyboard buffer

246	Type of tape file	1343	Size of keyboard buffer
249	bit-1:Write, bit-1:Read	1344	Flag: Key repeat :80=all,40=
273-289	Colour luminance table in RAM		row,00=DEL,space,cursor
291-311	Processor stack	1345	Repeat speed
312-600	Basic input buffer	1346	Repeat delay counter
601-602	Previous Basic line number	1347	FLAG: shift,Ctrl,Cm key
603-604	Pointer: Basic statement for GOTO	1348	last pattern of shift
		1349-1350	Pointer: keyboard table setup
754-755	Pointer:Float to fixed routine	1351	Flag: SHIFT 80=no, 00=yes
756-757	Pointer: Fixed to Integer	1362	Program counter high
768-769	Vector: Basic error messages	1363	Program counter low
770-771	Vector: Basic warn start	1364	Processor flags
772-773	Vector: Basic token generator	1365	Processor A reg
774-775	Vector: Basic LIST	1366	Processor X reg
776-777	Vector: Basic command execute	1367	Processor Y reg
778-779	Vector: Basic token evaluate	1368	Processor stack pointer
780-781	Vector: Basic user token evaluation	2028	Current Key pressed
782-783	Vector: Create Keyboard		
784-785	Vector: Prepare user token		
786-787	Vector: Interrupt		
788-789	Vector: Hardware Interrupt		
790-791	Vector: BRK Interrupt		
792-793	Vector: Kernel OPEN		
794-795	Vector: CLOSE		
796-797	Vector: OPEN		
798-799	Vector: GOTO		
800-801	Vector: CLASH		
802-803	Vector: CHRIN		
804-805	Vector: CHRUT		
806-807	Vector: STOP		
808-809	Vector: GETIN		
810-811	Vector: CALL		
812-813	Vector: Monitor break		
814-815	Vector: LOAD		
816-817	Vector: SAVE		
818-1010	Tape buffer		
1179-1184	CHANGE subroutine		
1185-1186	CHANGE subroutine		
1263	Last error number		
1264-1265	Row number of last error		
1266-1267	Reference for ON ERROR GOTO		
1280	USR jump command		
1281-1282	USR address (low/high)		
1283	RND seed value		
1289-1298	Table of logical file numbers		
1299-1308	Table of device numbers		
1309-1318	Table of secondary addresses		
1319-1328	Keyboard buffer		
1329-1330	Start address of RAM for OS		
1331-1332	Pointer: End of RAM operating system		
1339	Current colour code		
	Bit 7 : 1-flash		
	6-4 : luminance (0-7)		
	3-0 : colour (0-15)		

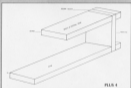


FIGURE 4

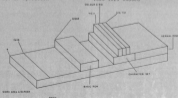
Commodore 64 & C128 in C64 Mode

LOCATION	DESCRIPTION
0	6510 On-chip Data Direction Register
1	6510 On-chip 8-bit Input/output register.
	0 LNKSW signal (0-BASIC ROM OUT)
	1 BRKSW signal (0-KERNAL ROM OUT)
	2 CHRSW signal (0-CHARACTER ROM IN)
	3 Cassette data output line
	4 Cassette switch advice (1-switch closed)
	5 Cassette motor control (0-08, 0-0FF)
	6 and 7 unused
2	Unused
3-4	Jump vector: Convert Floating point numbers to Integer.
	Jump Vector:Convert Integer-Floating
7	Search Character (24) quote
8	Flag:Scan for quote at end of string

# PROGRAMMING

9	Screen column from last TAB		BASIC code
10	FLAG: 0-LOAD, 1-ERRPT	123	Entry to get same byte of next again
11	Input buffer pointer/number of subscripts.	123-123	Pointer: Current byte of BASIC code
12	FLAG: Default array dimension - holds value of letters of most recent dimensioned array.	139-143	Floating 800 function read value
13	Data type: 235-String, 0-numeric	144	Reveal I/O status word: ST
14	Data type: 128-Integer, 0-Floating point	145	Flag: STOP key/ END key
15	Flag: DATA uses/ LIST quote/ Garbage call	147	Testing constant for LARG
16	Flag: Subscript red/ User function call	148	Flag: 0-LOAD, 1-ERRPT
17	FLAG: 0-INPUT, 64-CRT, 132-READ	149	Flag: Serial bus output other buffered
18	Flag: TRN sign/ Comparison result	150	Buffered character for Serial bus
19	Flag: INPUT prompt	151	Cassette sync number
20-21	Temp: Integer value	151	Temp data area
22	Pointer: Temporary String Stack	152	No. of open files/ Index to file table - Max number of files is 10
23-24	Last temp string address	153	Default input device 101
25-25	Stack for temporary strings	0 - Keyboard	1 - Cassette
34-37	addresses above here point to machine code routines in Basic ROM	2 - RS232	3 - Screen
		4 or 5 - Printer	6 to 11 - Disk drives
39-42	Floating point product of multiply	154	Default output (DMS) device 11
43-44	Pointer: Start of BASIC test - Normal value: 2000	155	Temp character parity
45-46	Pointer: Start of BASIC variables	156	Flag: Tape byte received
47-48	Pointer: Start of BASIC arrays	157	Flag: 800-direct mode, 800-program
49-50	Pointer: End of BASIC arrays *1	158	Tape pass 1 error log
51-52	Pointer: Bottom of string storage	159	Tape pass 2 error log
53-54	Utility string pointer	160-163	Real time 1000 clock
55-56	Pointer: Highest address that can be used by Basic	163-164	Temp data area
57-58	Current BASIC line number	165	Cassette open count/down
59-60	Previous BASIC line number	165	Pointer: Tape I/O buffer
61-62	Pointer: Basic statement for cost	167	RS-232 Input bits / cassette temp
63-64	Current DATA line number	168	RS-232 Input bit count / cassette temp
65-66	Pointer: current DATA line address	169	RS232 flag: Check for start bit
67-68	Vector: INPUT routine	170	RS-232 Input byte buffer/ cassette temp
69-70	Current BASIC variable name	171	RS-232 Input parity / cassette char. counter
71-72	Pointer: Current BASIC variable data	172-173	Pointer: Tape buffer/ Screen scrolling
73-74	Pointer: Index variable for FOR/NEXT	174-175	Tape end address/ end of program
75-76	Temp pointer/ data area	176-177	Tape ending constants
80	Floating point accumulator #1: Exponent	178-179	Pointer: Start of tape buffer
88-101	Floating Accumulator #1: Mantissa	180	RS-232 Out bit count/ Cassette comp
102	Floating Accum. #1: Sign	181	RS-232 Out bit to send/ Tape " EOT" flag
103	Pointer: Serial evaluation constant	182	RS232 Out byte buffer
104	Floating Accum. #1: Overflow digit	183	Length of current file name
105	Floating point accumulator #2: Exponent	184	Current logical file number
106-109	Floating accum. #2: Mantissa	185	Current secondary address
110	Floating accum. #2: Sign	186	Current device number
111	Sign Comparison Result: Accum #1 vs #2	187-188	Pointer: Current file name
112	Floating Accum #1: Low order (rounding)	189	RS-232 Out parity / cassette LARG
113-114	Pointer: Cassette buffer	190	Cassette read/write block count
115-118	Subscript: Get next byte of	191	Serial word buffer
		192	Tape motor interlock
		193-194	I/O start address
		195-196	Tape Load temp
		197	Current bus crossed; 84-no key
		198	Number of characters in keyboard buffer

199	Flag: Print reverse: 1=yes, 0=no		100 - disable repeat
200	Pointer: End of logical line for INPUT	651	205 - repeat all keys
201-202	Cursor X-Y pos. at start of INPUT	652	Repeat speed counter - Normal value: 4
203	Is no key	653	Repeat delay counter
204	Cursor blink enable: 0=flash cursor		Keyboard SHIFT key / CTRL key / CBN key
205	Timer: Countdown to toggle cursor	654	1 Shift pressed
206	Character under cursor	655-656	2 Commodore pressed
207	Flag: Last cursor blink default	657	3 Control pressed
208	Flag: INPUT or GET from keyboard		Last shift pattern
209-210	Pointer: Current screen line address	658	Vector: keyboard tabs setup
211	Cursor column on current line	659-767	Flag: 400 disable SHIFT keys, 480=disable
212	Flag: Editor in quote mode, 800=80	768-769	Flag: auto scroll Down, 0 - on
213	Screen line length	770-771	Unused locations
214	Current cursor line number	772-775	Vector: Print BASIC error message
215	Temp. data area	776-777	Vector: BASIC warn start
216	Flag: Insert mode 10=firmware	778-779	Vector: Tokamak BASIC text
217-242	Screen line lin table/ Editor temp	780	Vector: Basic test list
243-244	Pointer: Current colour RAM location	781	Vector: Basic character dispatch
245-246	Vector: keyboard decode table	782	Vector: Basic token evaluation
247-248	80-200 input buffer pointer	783	4502 A register
249-249	85-230 output buffer pointer	784	4502 X register
250-254	Free mem page	785	4502 Y register
255	BASIC temp data area	786	4502 SP register
256-311	Micro processor system stack		OSK function jump instructions (78)
312-600	System INPUT buffer	787-788	858 address low byte/ high byte
601-810	ERRR# table: Active logical file numbers	789	Unused
811-818	ERRR# table: Device number for each file	789-789	Vector: Hardware IRQ interrupt - Normal value: 59955
819-840	ERRR# table: Second address each file	790-796	Vector: 888 instruction interrupt
841-842	Keyboard buffer queue	797-797	Vector: 889
843-844	Pointer: Bottom of memory for OS	798-797	Kernel OPER routine vector
845	Flag: Kernel Variable for IEEE Unibus	798-799	Kernel CLOSE routine vector
846	Current character colour code	800-801	Kernel CRTCIN routine vector
847	Background colour under cursor	802-803	Kernel CLRCIN routine vector
848	Top of screen memory	804-805	Kernel CHRIN routine vector
849	Size of keyboard buffer - Normal value: 10	806-807	Kernel CHROUT routine vector
850	Flag: REPEAT key used, 0 = normal operation	808-811	Kernel STOP routine vector
		812-813	Kernel CRTIN routine vector
		814-815	Kernel CLALL routine vector
		816-817	User defined vector
		818-819	Kernel LOAD routine vector
		820-827	Kernel SAVE routine vector
		828-1019	Unused
		1020-1023	Commode buffer storage area
			Unused



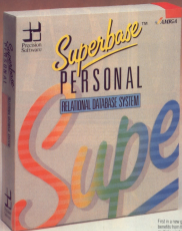


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# Your Amiga

**Y**our Amiga makes its debut amongst a rising tide of interest in this range of Commodore 68000-based computers.

Software companies are revelling in the power of the Amiga. Artists and musicians are making a name for themselves designing and composing for the new generation of software now being released. Games have taken on a new dimension. No-one is averse to the odd game, especially when they are as good as Marble Madness, The Sims or Lockboard.

Programmers will find an unequalled range of software development tools and for the amateur there are public domain utilities, picture shows, instrument samples, an almost overwhelming amount of software. Many have complained about a 'closed machine' and 'no documentation'. They haven't looked. There are official manuals and at least two other major publishers supplying detailed documentation.

The Amiga presents a problem for the serious user: how can something which looks so good be really practical? The answer is in the hardware itself, the interlocking parts for printers, modems, extra storage and memory expansion. Cheap add-on memory is still a twinkle in some engineer's eye but a relentlessly increasing user base will undoubtedly bring it forth.

The software key lies in the friendliness of user interfaces, which, when properly implemented, makes the most complex software easy to use. And in multitasking, the unique ability of the Amiga to do more than one task at once. What could be more practical, time saving and cost effective than that?

There's much to look forward to. Your Amiga will bring you the news. If there's a particular area of computing with your Amiga you would like covering then drop us a line. We'll do our best.

## NEW AMIGAS

American sources have revealed exclusively to *Your Amiga* the plans that Commodore has made for the new generation of Amigas. In essence, two new Amigas will be released to supersede the current A1000. Their working names are, at the moment, the A380 and A2500.

The A380 is Commodore's attempt to break into, and dominate, the Atari ST market. In effect the machine is a cut-down version of the current A1000, with the same 512K and single 5 $\frac{1}{4}$ " disk drive. To cut costs, and allow Commodore to reach their target of around \$500, the A380 has a greatly reduced power supply, and the Kickstart system disk has been incorporated in a ROM, rather than the current disks. Otherwise the machine is identical to the A1000, and will run all of the same software.

More important than Commodore, in order to ensure the success of the Amiga, there is the new top of the range A2500. In layman's terms, Commodore has attempted to release an IBM PC style Amiga. It features 1Mbytes of RAM,

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split into 512K, chip-memory, and 512K fast memory. When the individual orders the machine, they will be able to specify what disk set-up they require, which options of 3 $\frac{1}{2}$ ", 5 $\frac{1}{4}$ " or hard disk.

The real departure for Commodore is that the A2500 has a very open bus design, similar to the PC, allowing for much more expansion. Inside the A2500 are seven expansion slots, five of which are Amiga slots and four are IBM AT (not PC) compatible. As these figures would suggest, two of the slots can be configured either for the Amiga or a PC AT.

In order to allow the Amiga to act either in purely Amiga mode, or as Commodore sees it, as Amiga or PC mode, the Sidetec module has now been sufficiently reduced in size to fit into one of the available expansion slots, not as before in a bays and ugly box.

Although the A2500 will not come equipped with the notorious 68030 processor, it seems likely this too will be an option, and not at the current price of circa \$2000. Average price for the A2500 is expected to be between \$1200-1500, and sources suggest the new specification has been well received by everyone who has seen it, and this bodes well for the Amiga's future.

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...the Amiga place

# Amiga Leisure

*Not only is the Amiga a useful business tool, it can also greatly enhance your leisure hours.*

*By Anne Owen*

**I**t didn't take a genius to predict that the Amiga would inspire a new generation of games for personal computers. The sound and graphics hardware is begging to be used by designers and programmers. Of course the first batch of games are the offspring of earlier games for the Commodore 64, all improved beyond measure by the superior hardware. We've reviewed *One on One*, *Seven Cities of Gold*, *Skyfox*, *Arrows* 1 and *Martin Masters* already. Now there's *Arrows 2*, just as good as the original and perhaps a bit too much like it. The strategy has changed, the combat remains the same.

## Playovers

Coming soon... *Little Computer People*, that word game which makes you wonder who is watching whom as the computer people go about their lives, now and again tapping on the screen to attract your wandering attention!

*Adventure Construction Set* from Activision. Makers of *Castle of Amiel* and *Leatherboard*, perhaps UK Gold will also bring out *Egypt's Rapture*.

Infocom adventures, including those *Leather Goddesses from Planetia* and the *Blackthorne Guide to the Galaxy*, both £24.95.

Rainbird has just released *Level 9's Jewel of Darkness* compilation.

It combines *Colonel Adventure*, *Adventure Quest* and *Dragon's Ahoy*. There are over 600 locations, a 1000 word vocabulary and over 600 locations, a 3000 word vocabulary and over 600 illustrations.

You also get one of Rainbird's novella's *The Darker River*, Price £14.95.

The follow up, *Silicon Dreams* - consisting of *Snowball*, *Return to Eden* and *Worm in Paradise* - is under development.

Something to look forward to in the New Year will be *Jeremy Sans' Yorglider*, already an Atari ST hit.

The *Wallo Mission* is another American game which may make its way to these shores. A variety of flight missions have to be completed by the hyperspacing astronaut. Star maps and docking procedures beg comparisons with *Elite* but the overall look and aim of the game are sufficiently different to give the authors the benefit of the doubt.

The digital music recording which falls in and out during play is a great touch and a further indication that game designers are looking to television and video for their inspiration these days.

The *Jason* follow up from Magnetic Scrolls will be *Guide of Thrones*, planned for early 1987.

Activision has launched a game called *Tan Timer in Town*, a graphically superb game. Here's hoping it makes the trip East.

## Home Position

*Gamec* is a set of 15 desktop accessories which you might like to add to your collection. The unique alarm clock sums up the seriousness of the product and it looks a little conspicuous at £44.95.

For these names and addresses

there's *Mistmiga File* from Haba Systems. Data is held entirely in memory, which makes for speed, and is displayed in a spreadsheet format. Pricey at over £85 however.

## Instant Music

These days the more sophisticated bankers who entertain the crowds on the London Underground or Saturday morning shoppers up and down the country, employ technology to help them. Often a recorded backing tape accompanies them as they sell or guitar, saxophone or flute.

Now there's a computer equivalent in *Instant Music* for the Amiga. *Instant Music* can act as your backing track as you solo on the instrument of your choice. *Instant Music* will help you sound good too, masking any lack of real musical skills. And you can swap instruments rapidly. Imagine yourself a banker again, right foot pounding on a bass drum, symbols strapped to your forearms, strumming a harp, harmonica at your lips. *Instant Music* plays tirelessly, although sometimes literally, and lets you sit back and 'jam' with the mouse by moving the cursor up and down the screen (scale) and hitting the mouse button (hitting a key, plucking a string, strumming a chord).

Sequences of notes and chords play back at the press of a mouse button. The music is 'instant' because there are a half dozen boxes on the disk full of preprogrammed pieces, classical, jazz, rock and folk among them.

There are four instruments in the instant music band and you can take

one over and 'jam' with it. Your efforts will be intelligently incorporated into the tempo and rhythm of the piece (fixed melody), controlled according to a setting made at the keypad - one in time with a foot tap, six a rapid triplet sequence etc. - or 'beat' jamming - for experienced play-along-to-record musicians.

There's a whole library of instruments to choose from and most of the sounds are very realistic. The Amiga's digital to analogue converters provide for pretty accurate reproductions of sounds - witness the 'lively' flute playing in *The Power's* introductory sequence. Each instrument can be transposed and the volume safely controlled with slider switches. The colour representation of the instrument notes and notes appropriately with the change in volume.

There's conventional music notation in the tutorial and in the menus for edit but the music screen contains coloured blocks which represent notes. The duration of the notes is determined by the rhythm track currently active. Optionally an animated piano keyboard can be displayed along with the notes as they are played.



A song may be longer than the screen display. Small sections of a song can be 'magnified' to screen size for editing. Sections can be moved or copied in quite a sophisticated fashion, notes and rhythm, just notes or just rhythm, within the song. Preset

patterns of notes can be drawn on screen with a 'rubber band'.

In all honesty I've only just begun to adventure beyond the 'instant' in *Instant Music*. The manual is stunning and stores just the examples can read a little thin. We are hardly into the sweetest mini manual so what do we go from here? Go to editing the supplied rhythm templates to gain familiarity and then on to composing your own tunes and learning about music. There is a lot to be learned from the package.

You'd need a broad hat and a very long extension cable but basking with your Amiga isn't beyond the realm of possibility. And it's great at parties.

Other musical packages available are *The Music Studio* from Actvision and *Music Craft*. The former apparently allows you to design your own sounds, offer conventional notation on screen and in print and interfaces to MIDI. It certainly sounds like a strong competitor to *Instant Music* at £30.00.

### Conversation with a Computer

This is an amusing piece of software from Jendry Software, ideal for the computer beginner. The documentation and software go hand in hand, the main purpose being to introduce them in a slightly more friendly way than the manuals. The actual content is a memory test, a battle of numbers and a psychological game. The games themselves



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—MATTHEW LEEDS  
Commodore Microcomputers

Conversation With A Computer is a truly novel piece of software for male users of Amiga's special abilities. Not only is an entertaining word-processor conversation with your computer. There are wild graphics routines, color 14 color drawings, sound effects and animated scenes. It's all designed to give you a more complete game that are presented by using your own BASIC programming skills.

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are not particularly valuable although they are undoubtedly fun, but when combined with the documentation the Basic routines become comprehensive. Completing the conversation - the computer does literally speak to you - will result in an insight into Basic programming. Parts of the code may also be useful material for the amateur programmer.

The whole package is reminiscent of a well-written magazine article but with all the code on a disk ready to run or inspect. Since the C language is so important to the Amiga system, two programs identical in purpose, one in Basic and one in C, are also included so that the beginner can observe the differences in action. This portion includes an introduction to C commands. The execution speeds of the two programs is enlightening and C compilers are widely available for the Amiga if this sparks your interest.

Conversation with a Computer is a very laid back and humorous way of going to know a bit more about your Amiga and I would heartily recommend it to beginners, faced as they are with an incredibly powerful computer. This is the friendly face of the Amiga. It's marketed in the UK by Computash of Oxford. **TJ**

**Touchline**

**Current Commodore Centre-UK**  
Amiga Users Group: 65 London Road  
Leicester LE2 0JG. Tel: 0533 390 993.  
**Plus Software** Chatham House, 14  
New Road, Chatham, Kent ME4 4EP.  
Tel: 0634 43863.

**Computash Ltd** 75/79 Chadderton  
Way, Oldham OL9 6BY. Tel: 061 633  
8905.

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09 399 7768.

**Rama Computers Ltd** Fenchurch,  
Berkshire. Tel: 07537 4815.

**Rainbird Software** 34 New Oxford  
Street, London WC1A 1PS. Tel: 01 249  
8838.

**Club Amiga** 81 Upper Drumcondra  
Road, Dublin 9, Ireland.

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Surrey Group: 57 Gunpowder Avenue,  
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# Amiga Library

*More and more products are appearing for the Amiga, we take a look at two books from First Publishing and Precision Software.*

*By Anne Owen*

**A**miga for Beginners from First Publishing is a book of German descent. Written by Christian Spank, a German magazine contributor, and published by Data Becker, First's parent company. Though typeset, the layout of the book betrays its wordprocessed origins with block paragraphs. The subediting has overlooked a number of typing errors and inconsistencies - references to illustrations that don't exist, to the "magazine article", german captions on a photograph etc. Nothing of great consequence. The 240+ pages includes a group of colour photographs at the end of the book, all culled from Amiga introductory software and therefore nothing new if you've already got the computer.

Mr Spank intends, in his chunky, joke stacking style - e.g. "This makes it clear that in Basic one can make as many lovely RETURNs as Boris Becker" - to entertain as well as teach and he does both very effectively. The first 96 pages are a solid substitute for the flashier but less informative Amiga manual. The step by step look at Workbench is exhaustive and very useful for the beginner to computing on the Amiga and to Basic and disk operating systems, which is totally in line with how Commodore present the computer to the public.

The fun bits of Basic are covered. Under graphics there are explanations of commands like AREA, AREA/FILL, GET and PUT (for moving areas), PALETTE, COLOUR, CIRCLE, PAINT (good BB) and line.

Animation - an exciting topic for new computer programmers - is covered with looks at the object editor (dots or sprites) which itself has pen, line, oval, rectangle and erase to help you design your sprites. We find out how to read sprite data into a Basic program, assigning it to objects, giving priorities, moving in x, y with v (vertically, horizontally and at a specified speed). A simple rocket program is developed to demonstrate these principles.

On the similarly attractive subject of sound and speech there are brief tutorials on SOUND command parameters,



pitch, length and volume and on the SAY command parameters, male/female, human/robot, speed, pitch etc.

The text is occasionally livened by a "tip". There is also



Problem/Solution appendix for beginners and an icon index description. The author has used his "beginner" or "pious pig" to find out what jargon needs explaining to the inexperienced user and this results in an extended glossary, as well as a fairly jargon free text. A list of icons used in Workbench is spoiled because they are too small and indistinguishable from each other in the photographs, the opposite of the reality in which Workbench icons graphics are very detailed, in colour and clear.

The book rightly refuses to resist the temptation of looking at Amiga DOS, the disk operating system upon which the operation of the computer is based. Clearly the author deals with only those DOS commands which underlie the facilities looked at earlier in Workbench sections, functions such as copying, renaming, gathering information about a file, deleting a file etc. There are a variety of information sources for program or data files on every DOS disc. For instance, you can list files dated since 01 Jan '86 or run type in "list since Thursday" - it works!

The OPT command is the limit of the investigation of Amiga DOS. It acts, along with the DIR command, as a sort of disk menu program.

*Amiga for Beginners*, despite the production limits, printed out, is a delightfully easy read for the new computer user. It's not going to teach the hacker anything new but then this audience is catered for by the technical manuals. Commodore should have employed Peter Spinks' technique on making their documentation as user-delightful as their marvellous user interface.

#### Books

Company: First Publishing, Unit 208, Warwick Rd, Warwick PA, Poughmore, Bucks.  
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Price: £9.95

## AMIGA SYSTEM — AN INTRODUCTION

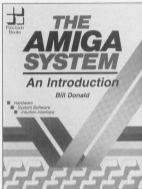
**B**ill Donald has quickly become the most prolific writer covering the Amiga in magazines and in his first book aimed at the owner and potential purchaser of the computer. He is technical of the machine and presents an enthusiast's view, impressed by the "open" nature of the Amiga operating system as well as the obvious graphical and musical capabilities of the machine.

The hardware overview makes it all seem very simple. The 68000, video co-processor and blitter chip are all explained in terms of their place in the architecture.

The specifications, we are told, is impressive. The blitter can achieve 30 times the speed of the 68000 alone doing the same bit memory moves. Four low noise digital channels (moving away from the idea of a customised sound chip offer high performance. The dynamic memory location (no hard memory maps), circuits (routines to call to perform functions) and the library of overlays, graphics, editors and fonts and disks make up a powerful system.

Graphics is the first major topic, with an explanation of "playfields", how they are constructed, their co-ordinate map, modes, screen memory requirements, colour control, scrolling and "hold and modify". Dual playfields are supported and a "square" playfield can be independently controlled.

Sprites are naturally part of a Commodore machine. Bit



plane, colouration and the technical aspects of the sprite editor are explained with full examples of complex bit patterns and formulae to design sprites. The registers for system sprite control are listed and there is no attempt to go beyond the system to directly addressing the 68000. Quite rightly since the technical material already presented is heavy going.

The chapter on system control deals with display, refresh detection (as used to drive Workbench), interrupts and direct memory access (for compressor and blitter).

Interfacing covers mouse, joystick and light pen, the hardware and the software registers and routines involved.

Since the Amiga is very much reliant on disk based software, the drives are of great interest. They are controlled by two 8250 control interface adapters, which can support up to four drives, 5.25" or 3.25". There is no real detail about directly addressing the controller chips but there are registers to achieve format control, a possible means of reading other disk formats, including previous Commodore formats. This could be a method for a business wanting to transfer large data files.



C Compilers,  
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# Lattice

## New Lattice Amiga C Compiler

A major new release of Lattice C for the Amiga is now available from Roundhill. Version 3.1 includes an enhanced C compiler, a full macro assembler, and a new, faster and more efficient linker. The library has over 255 functions (over 100 more than standard Amiga C), with many more functions written in assembler for efficiency, faster IEEE floating point routines, support for Amiga FFP floating point, and multitasking support via fork and wait.

The compiler is delivered as a two-disk package with a bootable system disk to simplify installation. A single command line can be used to execute the compiler, linker and librarian (with AmigaDOS wildcard characters).

New compiler features include direct support of memory type specification, custom segment names, and new addressing modes that can help reduce load module size by more than 20%. The linker will support intermixed base-relative and pc-relative addressing modes.

A Professional Developer's Package is also available, which includes the new Compiler, Lattice's LMK make utility, Lattice Text Utilities and Screen Editor, and the Metascope symbolic debugger from Metadigm. Metascope is also available separately.

We can upgrade your existing registered copy of Lattice C to the new version. Please call for full information.

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# Amiga Roundup

*If you own an Amiga or are thinking of acquiring one, you need to know what's available to make the most of its capabilities. We shed light on the matter.*

By Anne Owen

**W**hat Commodore at last launched the Amiga UK in May 1988 we finally discovered the specification and the price: 512K computer, internal 3.5" disk drive, colour monitor. Price: £1458. If you're intending buying an Amiga now then make sure you huggle a bit. The base machine (256K) is on offer at 1695+VAT. The upgrade to 512K will cost a further £1000+VAT and an external drive another £200+VAT. Other add-ons start in the over £500 category. So the Amiga is not a cheap computer. It is however unique in a number of ways and software is now starting to come on to the market which exploits this uniqueness.

Is it a business computer? Well, if your business means marketing, advertising, sales literature and the point of sale, as well as planning and personal productivity, then yes, it surely is. If you employ imagination in your business then you'll have no trouble in justifying your Amiga.

In this first *Four Days*, we'll take a look at the range of software now available. There's something for most tastes, from high level languages to arcade games and simple utilities. Some areas, such as graphics, are particularly well supported and new developments are on their way from America. So watch these pages as we bring you up to date with *Four Days*.

## Guru Meditation

When the Amiga - *Zero* it say it - crashes, the Guru takes over and gives

you an error code before rebooting the system. Hence the name for our look at programming tools for the Amiga.

## Seika Assembler

Kama's 68000 assembler is accessed via the CLI (command line interpreter) so you will have to enable CLI at the Preference menu. Typing SEKA takes you into the assembler. The Escape key toggles into a full screen editor which supports cut and paste and locate (or) (enter only), hit L for the next occurrence.

The commands K4 and Old load and regain your text and you can investigate the software or how much memory is left in the buffer. Syntax is standard 68000. There are useful labour saving devices such as pseudo opcodes, like EQUate, macros (which repeat routine sections of code) and conditional assembly (assemblies of certain routines only if circumstances require it). A symbolic debugger partners the assembler. You can 'step through' and 'trace' and breakpoints can be set.

Other commands (interact with DOS and deal with the assembling and linking of files. AmigaDOS entry points are documented and interaction with AmigaDOS and ENIC libraries explained in the manual, along with some examples to experiment with. If you are planning on starting out with 68000 assembler you will need a 68000 tutorial as well.

Although much of Amiga program development is being done in high level

languages, the combination of assembler and monitor in the package makes the Seika assembler a handy programming tool for the professional programmer and for the newcomer determined to learn 68000. Price is £68.52.

## Languages

*ACCOMTECH*, *Lattice C*, MCC Pascal and Cambridge LISP are amongst the languages commercially available for the Amiga. As a tribute to the development work taking place for the Amiga, there is a near finished version of Modula 2 in the public domain, as well as a *Pascal* and a variety of program editors. A professional editor is Micro Forge's *Programmer's Editor* (£89.95).

## Toolkits

Metacomco has released a programmer's toolkit for the Amiga. Developed by one of the major forces in Amiga software and producer of AmigaDOS itself, the Metacomco toolkit is likely to become one of the most used programming aids for the machine.

## Basic

For the average user Basic is the hatched language and should prove a more than adequate implementation. The original *Amiga* has been replaced with a Microsoft Basic which uses two windows, one for the listing of the

program and one for the results of the program. These are full cut and paste, cut and move, replicate, single step, back, stop and continue facilities. The two window scheme allows the user to watch the program output while the job of the listing currently being created is highlighted. Amiga Basic does not use line numbers. There are a wide range of loop structures such as WHILE...WEND and GOTO is used to jump to a label, the name of routine anywhere in the program.

### AmigaDOS

AmigaDOS is initially hidden away from the Amiga user, it has to be enabled from Profusion's - a complete Amiga configuration program - and it can then be entered via the system drawer on the Work Bench or you can create a disk which will go directly into AmigaDOS, opening a window on the screen with the character prompt, `D>`, in the top left hand corner.

In AmigaDOS you type a command and its parameters and press the Return key to make it work. If you get it wrong then an error message is printed and you will have to retype. The command 'help' will remind you what you are doing.

There are various commands such as dir, list and info which give details about disks and files. It displays a sorted list of files, some of which may be directories themselves containing further files and directories. This hierarchical filing system combines with the ability to use long filenames, to date stamp and to write notes for each file on the disk, makes locating and identifying files very easy.

AmigaDOS deals with devices, floppy disks, parallel and serial ports and RAM disk among others. The device can be specified in an AmigaDOS command. For instance you can type a text file to the screen (default device) with 'type filename', or to the printer with 'type filename to PRN', or to the serial port with 'type filename to SER'.

Of course the main feature of AmigaDOS is that it is multi-processing. You type 'newfile', missing opens up a new window with a new command line interposes into your first window and a second window opens with the prompt `D>`. Although the computer is in the process of, say, copying an important directory on to a backup disk in



another one, the window in which you are working is available for typing further commands or even opening another window, `D>`.

### Going Public

Bulletin boards are the main means by which public domain software is distributed. Despite the rather odd pinouts of the RS232 port, the Amiga is already a communications machine par excellence. The public domain itself contains many terminal programs, some very well implemented and with Kermit and XMODEM transfer. There's also a full Kermit, a communications standard so which data can be taken from another computer and translated into the correct format for the Amiga. *OnLine!* is a \$99.99 commercial product from Precision Software which adds the professional touch to your communications, including support for command-driven auto-dial modems.

### Inexpensive

Public Domain software for the Amiga is an inexpensive means of getting more from your expensive computer. I won't list, count them, 50 disks full of freeware from American sources. But I only had to send to Ceresdale Computers in Leicester.

The set of disks contains some odds and ends and full up to date sets of two American freeware distributors, the *direct club* and a gentleman called

Fred Fish. If you aren't advertising further than the Workbench then the Fred Fish disks will appear somewhat unimpressive. The Amiga software however is accessible through *Hardbench* and anything more complicated than a demo is well documented. There are also tips and technical articles and reviews in read in scores of printout.

Apart from the immediate entertainment value of pictures digitized with the *Digi-Pix* frame grabber, a Speech Toy which is much noisier than the Workbench demo and numerous instrument sounds, there is a variety of utilities, games and languages.

The utilities include printer drivers, disk screens and memory maps. Some are amazingly useful, others more tedious. There's plenty of sound software on nearly every disk!

Many take the form of a tutorial e.g. a font designer or a windowing demo. For programmers there is such material to get through and plenty of examples from which to learn.

The games are mainly Basic, card games, a Star Trek game, nothing special, and some in the original Amiga and unusable in Microsoft Basic. Back, on the Fred Fish disks, is a full dragons and dragons game, low on graphics, high on humor.

Graphics abound on the disk, from 'wallpaper' demos to three dimensional cubes which try and break out of the screen, to professionally

presented marketplace generators. There are also suites of utilities for handling screen graphics, in the standard IFF format which makes them portable between software packages.

Languages feature fairly strongly with attempts at *Lisp* and *Forth* - a pretty professional service - and lots of interest in C, routines, files and enhancements for complex and Unix style additions to AmigaDOS.

I would suggest that the Amiga disks are great value, bringing you right up to date with a year's worth of American material. If you have the time the *Fred Fish* disks are also interesting - but you'll need to get on with AmigaDOS if you want to use them. It's worth learning since the disks become ever more sophisticated with official Amiga programs from *Apple Animator* and *Apple Draw*, a full *Mandelbrot* investigation program and more and more impressive slide shows dominated by the work of computer artists, Jim Sachs, Sherry Knowles and Jack Blanger.

There are also tutorials, editors, terminals and utilities mixed in. Some of the more complex programs require the setting up of a new disk with elements copied from the library disk, *WordBreak* and *Draw*. There are full instructions in text files on the disks. The essential AmigaDOS commands to access the programs are:

```
cd < name of disk/directory > to
  select directory
dir < names > to inspect files
```

```
type < filename > to get on-screen
  instructions.
```

If you take your own disks along then you pay only duplication cost (and it is only cost). Postage and packing is extra. Media and duplication results in a charge of £24.70 per 10 disks.

Incredible value either way.

## User Clubs

Most important for new Amiga owners however is the source of this public domain software, the UK *Amiga Users Group*. Based in Leicester, the group is currently producing a bi-monthly newsletter. Its links with Leicester's Amiga dealer, Cascadish Computers, mean a 10% discount on a full range of Amiga products. There's also Club 44/C44 Amiga. The Irish

based bulletin board was quick off the mark with the Amiga. The club has extensive electronic links with America and has a library of Amiga disks. Its disk based news letters now contain information about the Amiga as well as other Commodore machines.

## Art and Crafts

The Amiga's graphics, number of colours, resolution and sheer speed of movement, quickly prompted the view that it could be a low cost graphics workstation with possible applications in the publishing and advertising industries. Commodore UK appointed some eight dealers to directly address this market. Multigraphic of Stevenage, London based CJ Graphic Supplies and Colver Graphic Centre, Bowville-Wright in Maidstone, Harvey Graphic Centre in Sheffield, Print Art of Beaconsfield, Granters of Blackpool and Glodhills in Bradford.

It is quite possible to see how the creative department of an advertising agency could use a program such as *Amiga Animator* to sketch out ideas for a television advertisement and how a page designer could benefit from experimenting with different layouts and sizes of type using *Deluxe Paint*. The Amiga might even contribute



something to the final product although the tools do not really exist for proper video production or desk top publishing, yet. Cymbol of London is reported to be developing a professional system called *Printer's Draw*.

At least those users have a wide range of software to choose from. The Amiga range comprises *Amiga*, the art package, *Draw*, the technical drawing software, *Impact*, the executive slide show, *Apple Animator*, the video/animation designer, and *DrawIt*, clipart for the Amiga

programs. *Deluxe Paint* and *Deluxe Video* are the other Amiga programs. The paint programs can be combined with the animation programs resulting in impressive demonstrations (for point of sale, window displays etc. *Deluxe Paint* is still number one in my book, even if it does cost nearly £50). The brush facility, which allows you to pick up any part of the screen and manipulate it, will keep me fascinated for months, if not years, to come. It combines ease of use for the amateur practitioner of computer art and control of fine detail for the professional.

Other more specific applications are also likely to find their way on to the Amiga because of its graphics abilities. For instance there is an English company developing a package for driving instructors. The system, Amiga and software, will be sold as a package. Just one example of a so-called vertical market.

## Series Staff

Perhaps the most widely used computer software, often bundled with the hardware, is the wordprocessor. Thus far the Amiga is a big disappointment none in this area. The Amiga owner can go out now and buy Terravix, the wordprocessor available from Commodore, with a manual which augments the *Word Break* and *Basic* manuals which come with the machine, or they can wait for the inevitable release of more powerful programs. *Scimitar* is an alternative already in the country and the other leading contender at the moment is *PixelWrite*. This is intended to be the start of a desk top publishing system.

The *PixelWrite* specification for the Amiga looks like this: combination of text and graphics (from other past programs) support for all font screen display as it will print bold, underline, page breaks, headers, footers etc.; ease of use, mouse and pull-down menus; ability to use other programs in multi-tasking environment; multiple documents; mail merge; configuration file; document history window; single keyboard recall of frequently used phrases; support for a variety of output.

Coming soon... *PaperClip* from Batteries Included is promised on the Amiga. Microsoft have published specifications for *Power Viewer Publisher* on the Amiga and it includes

interfacing with powerful typesetting matrices.

But in the meantime a quick look at *Textool* and what it can and cannot do for you.

### Textool

*Textool* is a 60 or 80 column - as you choose - wordprocessor with standard editing, formatting and printing features. It is extremely easy to use and if you don't immediately click with one of the facilities, there is an help screen and a set of one minute tutorials to make things clear. *Textool* is especially easy to use in most respects, especially the moving and replicating of text and the simple means of changing text styles (bold, italic etc.) and text layout (justified, ragged right, centred etc.). Different text styles and fonts are displayed within the document, boxes and pull-down menus are employed throughout.

When starting a new document in *Textool*, the user can choose from a number of standard layouts for business letters, curriculum vitae, technical documentation etc. Page length, margins, headers, footers and page numbering are all easily edited and the finished page layout displayed graphically on screen. The print option brings up a screen of options, including draft and final (PSLQ) text, multiple copies, continuous or single sheet.

What is unique about *Textool* is its file handling. The program takes longer and longer to display the text files on disk as they increase, while you lose your thumbs because the program 'takes over' the Amiga and so there is no way out of *Textool* to briefly perform another task. You have to reboot the whole system.

*Textool* has proved itself an adequate wordprocessor and is actually recommended to those who are new to wordprocessing. Users of more sophisticated packages on other machines will seem to be frustrated by *Textool*'s lack of features.

### Business

Other business applications are few and far between at the moment. Darr's Micro Systems' *Analyst*, a standard spreadsheet supporting up to 26 columns by 3182 rows. As well as pull down menus, commands are on function keys for quick entry. It

supports extended functions such as future value, date, standard deviation and variance. More promising is *Laplace* from Graftek, a powerful spreadsheet, database, and time manager with sophisticated graphics presentation. At a new price of £149 it should attract the attention of the business user.

Another alternative solution to the problem of business software availability is the Silicon 1084 compatible co-processor board. This runs IBM software in a window on the Amiga screen. At the time of writing deliveries of the hardware from the factory in Germany had not taken place.

### Logistic

*Laplace* is a power user's package. It is a worksheet upon which the screen acts as a window. The four applications which take place on the worksheet are database, spreadsheet, time management and graphics. The user makes choices by highlighting menu options but cannot see the mouse and therefore *Laplace* doesn't present as friendly a face as *WordPerfect*.

The Amiga version is not quite converted fully enough to completely gel with the documentation. An Amiga introduction manual would be



appreciated at the price of £149. It is however a powerful package. Given the appropriate setup period, you could compensate a number of business functions with this software. It is even a little less demanding for the standard memory size of the Amiga. Graphics appear in windows with drawing quite slow, redrawing from scratch when moved within the screen. Less overlapping of the program from disk would be necessary with an upgraded two Mbyte Amiga.

The documentation is occasionally good with fully worked example files

on disk to help you master the software. There is also an exhaustive on screen help facility to remind you of the commands available. The graphics commands can be inserted into the worksheet. They take a number of parameters and can result in sophisticated graphical representation of the user's worksheet.

It's not possible to do *Laplace* justice in a brief summary. Do not write off the Amiga as a business computer without trying this software. The business world is now very demanding of the presentation of its facts and figures. The Amiga/*Laplace* combination is ideally suited to this new role.

### Superbase

Precision Software has been quick off the mark in producing what is the most powerful Amiga database to date. *Superbase* is a relational database which can process saving, numeric and graphics records. It can process and present them in an astonishing number of ways and it has a new interface which dovetails perfectly with the Amiga system. *Superbase* has features of *Invision*, such as 'ghosting' of non-active features, menu hand and requester boxes. *Workbench* remains accessible for the activation of other tasks.

There are three screen display styles, record, form and table. The forms can be freely designed, the table fields rearranged. The fields on display can be specified from one of the full set of fields (underlined in number) in a record.

*Superbase* is a relational database. This means that a file can have connections with another file. In *Superbase*, this other file is described as an 'external' file. The most interesting example on our demo copy of *Superbase* is the picture file. A set of records describes the pictures, the title, the paint program from which they originate etc. The related file is that which contains the pictures themselves. When the 'external file' option is chosen, the pictures related to the descriptions are displayed.

Any create agent reading this? Well imagine the house descriptions, prices, addresses and features in your house record file. Now imagine the related picture file - architect's plans for a new development or a digitised photograph of an older property.



The records themselves can be subjected to various processes, adding, deleting (batch deletions available), duplication - very useful since the most time expensive task in any database is entering data - and sorting.

Each file has unrestricted indices, up to 999 per file are possible. These indices are updated as the data is updated and they provide a very quick 'looking' facility on those fields that you have chosen to index. The most likely field to index within a customer file, for instance, would be the surname.

More complex searches are carried out with the aid of the 'filter'. A variety of operators, mathematical, logical and string matching, serve to 'combine' on the records you wish to work with a filter command line like

Country LIKE "Kent" And Country LIKE "Lancs"

would result in all those customers with Kent or Lancashire entered into their Country field being displayed for further processing.

The printing options are second to none, including printouts of processed records, screen dumps and label printing. You can use import to load files from other systems and export to save data in a visible form for incorporating into other software.

Despite the power of Superbase, only touched on in this summary, the software is extremely easy to use. Everything you need to know is presented on screen. Moving around records is achieved with a set of 12 controls which mimic those of a Video Cassette Recorder with fast forward,

rewind, pause and stop. I didn't dare click on the Eject icon!

Joking aside, Superbase has transformed my opinion of the Amiga's ability to do the database job. The filing system/storage hardware is not the fastest in the world but Superbase appears to operate smoothly, at least with the tens of records in the demonstration files. I hope to build a larger test file to see how it performs with the floppy drives. Superbase is ideally suited to hard disk and is designed to make very large files manageable. With this one promise on speed with larger files and floppies, I would urge the business user to get a demonstration. The £149 price may to some extent reflect the current sales of the Amiga. It also reflects the very high standards of software design and documentation which Superbase provides.

### Expansion Boxes

The first add-on you know about is the memory expansion to 512K. Some games only require 256K but most of the major packages on the market lack important features if 512K is not available to them. Some, like Logotron, favour even larger memories and demand that the user go for even more RAM in the form of add-on boards. The 256K to 512K expansion is a painless plug-in module and UK machines sold thus far have usually come packaged with the expansion unit.

Micro Forge is the name to look out for in expansion boxes and Precision Software stock these products in this country. The single board adaptor and

power supply will set you back over £200. The seven slot expander is £266.95. Once you've got your board, hard disk (20 Megabyte) from around £1800, RAM expansion (about £1800 per Megabyte) and stereo sound digitiser can be added. An alternative! Megabyte expansion is that of Compact which connects directly to the Amiga but expansion port and costs £748.75.

How about a transparent - parallel processor - co-processor for your Amiga? Sophos demonstrated one attached to the Z8000 at an autumn show, to watch this space. Also expect the Amiga itself to be subject to 8000 and 68020 upgrades. These are not vital for normal use of the machine but will allow for even higher performance in certain applications areas such as graphics workstations.

### Peripheral Support

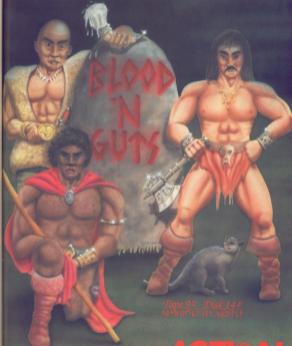
A quick look at Precision's - the Amiga configuration panel - indicated the high level of support for printer devices, including Laser. Sadly for Amiga's colour graphics are a vital feature, a colour printer seems the likely choice for many users. The Epson 8K is supported but not recommended. Precision is importing Canon colour ink-jet printers and supplying them with drivers for no much more than £200. The Okidata colour ink jet is a further alternative if this price bracket. Xerox and Mitsubishi printers are being used for more serious applications.

Storage can be extended via an external floppy disk drive (£249) or a hard disk unit. Amiga505 is optimally suited to the hard disk option with its hierarchical structure.



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# Amiga Games

*The graphics potential of the Amiga gives games designers an irresistible challenge.*

*We've reviewed some of their latest creations.*

*By Anne Owen*

## THE PAWN

**T**he Pawn is the first major adventure for the Amiga in the UK and is a promising start for the genre on a computer with great potential. The opening graphics and stereo music – suitable folk with a rooky flute sound – are signs that the Amiga's unique features are going to be used to the full.

The scenario is bizarre. The Pawn takes place in the kingdom of Kerroonia during a period of social upheaval. King Erik is the man you want to see. He has banished the dwarves who were suspected of the assassination of Queen Arndah II although the real facts have not come to light. The people of Kerroonia are not happy with the situation, a general election is on the horizon and King Erik becomes more unpopular every second and delays a decision on the return of the whiskey making dwarves!

The game screen has four components, description, response, graphic and pull-down menus. The current description is printed at the bottom of the screen, your commands or responses are typed at the cursor, a picture screen can be pulled down, like pulling down a blind, at any time to view. Various options can be set from pull-down menus. These include: the size of text, speech on/off – useful if away from the computer for some reason but it slows the game's responses; right down – range of description, whether

exits are displayed etc. The graphics display can also be turned on/off – the loading of a screen does show the progress of the game although some of the 30 screens are very pretty.

The game also provides an eloquent set of descriptions of this magical world. Though a little tawry for some tastes, the Pawn does succeed overall in casting a spell over the player, drawing him or her even further into the surroundings and the underlying plot. If it gets too difficult there is a cyphalic help feature. By typing in a king code you can get a set of three graded tips for specific locations.

The adventure itself has some interesting characters for you to meet on your quest to see the King of Kerroonia. There are the usual problems to solve in order to make progress geographically. I'd place the difficulty level at medium/hard. The much heralded parser is good, a far cry from the days of noun/verb input. It's not the 'intelligent' parser you might imagine from the publicity but I've seen no better. The ability to hold conversations with other characters through the SAY command and the recognition of synonyms are both strong points in its favour.

All in all The Pawn has done well to drag me away from the more immediately appealing software for the Amiga and set me thinking a bit. There's no denying that the atmosphere of the adventure is established by the 64 page novella, the graphics and the descriptions.

It's a fairtale world. Bizarre enough and, if you would care to try and attack one of the palace guards, not quite so harmless and passive as it might at first seem. An adventure with hidden depths.

The flawless finished presentation means that you get a price point of software for your money, £24.95.

## Verdict

Name: *The Pawn*. Price: £24.95. Machine: Amiga. Supplier: *Random*. Tel: 01 249 8817.  
Originality: 7/10. Graphics: 8/10. Playability: 9/10. Value: 8/10.





## LEADER BOARD

This is by far the best looking golf simulation around in my opinion and a relaxing way to spend an evening out on the course without requiring a fluorescent ball with a radio transmitter embedded in it. As well as enjoying the game challenge, the budding young golfer could learn from Leader Board the important lessons of thinking about his/her shots, using distance charts and concentrating on technique. It is a thoroughly researched and beautifully designed game.

Once you've got the player number(s), name(s), novice/amateur/professional, course options out of the way you are presented with your golfer at the first tee. A window along the right hand side of the screen contains the variables under your control and the course information you need, par, number of shots taken and current overall score. You use a click on the up and down arrows to cycle through your set of clubs, no sand wedge or two wood. You have information about how far you are from the hole and in which direction the wind is blowing. The novice need not worry about the wind or indeed anything else. Generously the shot will fly fairly straight whatever the circumstances. The amateur will have to master the 'swing' - a simulation of the action of the swing on the club at the moment of impact on the ball. This determines the 'hook' or 'slice' on the ball. Let's not be too pessimistic, it might go straight. The professional has to master the 'swing' and judge the wind.

All players have to watch the traps, the bunkers, the water and the trees. In Leaderboard the ball will come rebounding off the trunk of a tree most realistically, right down to the sound. The ball will also clunk convincingly into the hole. You eventually come on to the green within 10 feet of the flag.

The power of your stroke is determined by the point in the backswing at which you release the held down mouse button. The direction is set by dragging a set of cross hairs to the right position. You will have to take the prevailing slope into account on the greens.

I very much enjoy playing this game. The graphics presentation is very slick, the sound a little thin on the ground. The Leaderboard updates you on your progress after each hole is completed. You can skip holes on a course, jump out of the course entirely, get a bird's eye view of the current hole and practice your driving on the driving range.

When playing with more than one player the use of the mouse is much appreciated. Leaderboard is an all round winner for those who like to test their sports' skills at the computer. Those who like a time trial challenge or those who are up right to be put off by the gentle pace of golf. They should give Leaderboard a try, it might change their minds.

## Touchdown

Name: *Leader Board*. Price: £24.95. Machine: Amiga. Supplier: US Gold. Tel: 021 238 3388. Originality: 7/10. Graphics: 9/10. Playability: 5/10. Value: 8/10.

## ARCTIC FOX

This is an original for the Amiga and could be described as a ground-level Skyline. You control a rather unwieldy and slow super-tank in a hostile environment. There is lots of colourful instrumentation, a superb display of controls with robot hands reflecting your flexing of the joystick or mouse and aiming of weapons from the keyboard.



The three dimensional view of the world outside is nicely depicted but as you pan around it, the movement is jerky. Three dimensional rock formations and other geographical features have to be taken in your stride. A brilliant piece of simulation is achieved when Arctic Fox drives over a large object and the whole screen shakes as the tank bounces back to the ground with a loud thud. The sound of the tank engine rumbling in the background would do justice to any second world war movie.

You guide Arctic Fox around the Antarctic terrain (with its ridges, crevices, mud flats, snow fields, rocks and mountains) in search of alien installations. These include air converters which are busy converting oxygen into the deadly mix of gases found on the aliens' native planet. The more oxygen left, the longer you have to complete the mission. Arctic Fox is swamped by smiling, aggressive fighter planes, shot at by tanks and rocket launchers and tracked by floating mines. The mission is to disable your opponents by knocking out communications links and finally winning the battle by destroying the main fort - which is very heavily defended.

Fortunately the game offers a number of playing options which can vary the difficulty from game to game. In training mode for instance you can make Arctic Fox indestructible, make your task invisible, start/stop hitzard, smart bomb mine in your sector etc. This is a 'pro-games' level. In the game itself there are beginner and tournament levels. At tournament level the odds are further stacked against you. You start from eight predetermined starting points and enemy configuration. The keyboard controls guided missiles, mine laying, rear view, dig in, cannon inclination, relative mine and big screen missile.

Although exciting for the first hour of play, I'm unsure of Arctic Fox's ability to last as an interesting game for longer periods. I'm returning to it when I fancy a good cathartic punch up. Others may find the complex controls and fighting scenario a more interesting challenge. It's an impressively presented game, no doubt about that.

### Touchline

**Name:** Arctic Fox. **Price:** £26.95. **Machine:** Amiga. **Supplier:** Activision. **Tel:** 01 438 3411. **Originality:** 6/10. **Graphics:** 8/10. **Playability:** 5/10. **Value:** 5/10.

## CASTLES OF APSHAI

This fantasy graphic adventure is a treat for the committed role-playing fanatic and worth a look for anyone who likes a good game and a challenge. There's a lot of exploring and mapping to be done before you can say that you have really played Castle of Apschai.

You begin the game by building your own character from scratch or accepting attributes automatically assigned for you. These include strength, agility, intelligence etc. Characters can be saved and reloaded. After completing your bargaining with the innkeeper for arrows, sword, bow,

arrows and healing potions, it's off to the Castles of Apschai, the Upper Reaches of Apschai or the Curse of Ra. There are 12 levels of mazes and nearly 600 rooms.

The play screen consists of two windows, a display of the room you are currently in and a display of your current state of health. You can explore it for traps and secret doors. Any creature in the room will make themselves known to you! You can move away diplomatically, try and talk them out of it or you can chance your arm and fight, losing strength in the process and possibly incurring a grim end at the hands of some weird creature.

Castles of Apschai makes good use of the Amiga's mouse and pull-down windows but this is not suitable for the speed sometimes needed to lead off a creature or run away. Play is usually carried out with one hand on the keyboard, the other on the mouse. You just click on the spot in the room to which your character should move. You can save your game position and retrieve it and so live to fight again and, hopefully, not repeat your mistakes.

Most rooms have some object to inspect, some more mysterious than others. Some prove to be just trash, others clothing, another sword perhaps or gold or some form of strength giving food. Objects can be picked up or discarded.

The 88 page booklet on the love of Apschai - the lost outline beneath the Sahara - contains a story, advice on how to survive and full references to locations and objects to be found in the game.

If you like to explore and map a game then Apschai is there in one value for money. You'll need plenty of 'business time' to crack it.

### Touchline

**Name:** Castles of Apschai. **Price:** £24.95. **Machine:** Amiga. **Supplier:** US Gold. **Tel:** 029 156 8888. **Originality:** 7/10. **Graphics:** 8/10. **Playability:** 7/10. **Value:** 7/10.



# X-Ray Files

*Take a peek inside your 1541 and find out more about what's going on with our X-ray program.*

*By Paul Eves*

Users of the 1541 Disk Drive know already the advantages of this form of medium over the Cassette. Although the speed of the drive is something to be improved upon, (Although this is not the 1541's fault, but the operating system of the 64). However, not everyone uses their 1541 to its full potential. Indeed, most users of the 1541 don't know how the drive can be put to work for their own advantage. The program *File X-ray* sets out to show you that with a little thought on your part, you can make programming the drive a pleasurable and advantageous thing to do.

When you load the directory up, all that you see is the name of the file and how many blocks it is, along with the program type. There are however, a few more bits and pieces of information stored in the Directory. Things like the starting address of a file. These other bits of information are known as the "File Parameters" of a program. By understanding the make up of the directory better, these parameters can be easily found and printed to the screen or printer.

## Finding Parameters

In total there are nine that we can search. They are:

1. File Closed?
2. File Protected?
3. Blocks Allocated?
4. Side sector blocks (Relative files)
5. Data blocks (Relative files)
6. Records (Relative files)
7. Start Address (Program files)
8. Free blocks on disk
9. Allocated blocks on disk

The following program demonstrates how we find this information and then prints it to the screen of the 64 or to the printer.

Firstly, I have listed the variables

used within the program, following this is the program breakdown. You should have no trouble following what's going on. The REMs may be omitted and of course you can alter the layout to suit your own personal taste.

Options of the Vic can run the program by changing lines 16 and 17 (Screen colour set up).

## Variables

- BE - Track of the file entry in the directory
- SE - Sector of the file entry in the directory
- AF - Lowest 4 bits of file type (contains the actual file type)
- EO - Low byte of the start address
- HI - High byte of the start address
- TP - File type of requested file
- NF - Not found flag if required. File on disk does not exist (set if not found)
- BB - Number of blocks of file
- FA - File address of program file (the start address)
- LE - Length of record for relative file
- DB - Track of Data Block of program file (contains start address)
- DF - Sector of 1st data block of program file
- FB - Free blocks on disk
- AB - Allocated blocks on disk
- SB - Side sectors in relative file
- RF - Records in relative file
- NS - Name of requested file
- FNS - Directory file name
- TY - File type
- XS - Shows a closed or open file
- NSR - Shows a secure file or non-secure (i.e. protected)

## Program Breakdown

### LISTS

16 - 17 Set screen and border colours, Set cursor colour, Disable the LIST function, Disable SHIFT key, Disable

RUN/STOP RESTORE, Clear screen, BE Blank the screen

19 - 25 Put title screen up.

26 Switches screen back on.

27 -31 Asks if directory is to be listed, Sets NF, scans directory and returns.

33 Requests name of required file.

35 - 40 Directory read routine. Flags an error (NF) if required file not found.

43 - 44 Reads file type entry (byte zero) and stores in TP. The lower 4 bits are stored in AF.

45 - 47 Checks file type and status string in TP.

48 - 50 Reads bit 7 of file type byte and stores in XS (File closed bit).

51 - 54 Reads bit 6 of file type byte and stores in XS (File secure bit).

55 - 57 Reads bytes 26 and 28 of file entry and stores in BK.

58 - 602 If relative file, length of record is read from byte 21 and stored in LE.

603 - 116 Calculates the starting address in program file.

117 - 126 Calculates number of free blocks on disk.

127 - 128 Calculates side sector blocks of a relative file from LE and RF.

129 - 137 The results can now be printed either to the screen or printer.

138 - 164 Asks if another file is required.

165 - 168 Sub routines for switching screen off and on.

As it stands, the program is functional and stands alone. However, you may wish to include it as a sub-routine of a larger utility package. This can be achieved without too much trouble. You may try modifying the directory read section so that the directory is printed across the screen in two columns, instead of down the screen. Or, one which I like, is to put a four line window across the top of the screen so as not to spoil the screen layout.



# Nursery Rhyme Land

*This month we bring you a column with a difference - an adventure specially written for young children with educational aims.*

*By Margaret and Allen Webb*

**I**n writing this adventure, we decided that it was "put your money where your mouth is" time.

In monthly articles to date, I have been looking critically at available software and saying how they can help or hinder your child's education. I have also said that some of the programs I have seen could have been enhanced by a little thought before and during programming. This means that before any work begins at the computer, the educational aims of the program must be clearly established. The questions to be asked are:

- 1) What do we want to teach? This could be straight forward facts such as spelling, tables, mathematics. Or we might want to teach or develop general skills such as lateral thought and reasoning. If done well, the child need not even realize that he is being taught!
- 2) How are you going to present the information? It could be an arcade game, structured text or straight facts with performance testing. The range is wide. This decision is crucial and will probably need the direct input of a teacher or educationalist.
- 3) How can the information be effectively delivered? This is the realm of the

programmer whose task is to use the full capabilities of the computer to give an attractive and stimulating program.

In summary, it is important for software houses to realize that good educational software needs the input from a number of people working in a team.

## Our program

Nursery Rhyme Land is a game aimed at introducing the young user to computers. It can be used by the early junior age child on his own but is probably best used with the help and interaction of a parent to provide help with the reading and to ask questions or give hints. The game uses well known nursery rhyme characters and the plot is related to things that happen in the rhymes. This helps test the child's knowledge and understanding of nursery rhymes.

There is no direct factual learning with this adventure, but it does test a number of skills, including reading practice, nursery rhymes, mapping and using the cardinal points of the compass, problem solving and communication skills.

My six year old loved it. He can read for himself and found it easy to make decisions as to where to go and what to do. When he had finished, he found his nursery rhyme book and recited the relevant rhymes.

I don't claim the game to be perfect, but it does contain a number of what I believe to be important features.

## Entering the Program

The typing in of the adventure is rather a labour of love and you should consider buying the compilation tape or disk. The code is in two halves:

The main object code occupying locations 32000 to 40740.

The picture block occupying locations 8892 to 17136.

We'll cover the object code this month and the picture block next month.

The main control section of the adventure is the small Basic code given in Listing 1. This loader assumes that the object code is stored with the same

"OBJECT" and the picture block is saved as "PICTURE BLOCK".

You can play the adventure without pictures by replacing line 28 in LISTING 1 with:

```
20 POKE 16384,96:G=4
```

This will enable you to play the game before you type in next month's portion.

### Commencing Play

The game uses single key inputs throughout. This eliminates unnecessary complications for the

younger child. The commands are: 1) N,E,S,W,U,D to move in any direction.

2) G to get an object. When G is pressed, a menu of the objects available for getting is listed. The required object is taken by pressing the appropriate number key. You may carry a maximum of four objects. If you are carrying four objects, the G command will not do anything.

3) L to leave an object. This time, a menu of the objects carried out displayed. Again, you select the object to leave by pressing the relevant number key.

4) Q will leave the program and offer game Save/Load options or help. The

help command will return you to the game at the same place that you left it.

### Object of the Game

The aim of the game is to locate Bo Peep's sheep which have been stolen by a nasty witch. To find them, you must obtain certain objects. Some can be found simply by exploring, others can only be obtained by helping people. All interactions are handled automatically. If, for example, you were to meet Simple Simon and you were carrying a penny, something would happen.

That's all the help you get, the rest is up to you or your children. ☺

Program LISTING 1

```

80 1 REM*****
81 2
82 3 REM- LISTING 1
83 4
84 5 REM-ADVENTURE BY:VE LAND 800
85 6 *
86 7 *****
87 8 REM-
88 9
89 10 REM-*****
90 11
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The Blazing Paddles is one of America's top selling graphics packages. Fully featured, it comes complete with the Dave L Lightpen - A lightpen featuring the latest polymer fibre optic cable and sensor for pinpoint accuracy of a coffee study not possible with conventional systems! ... For that's not all - Blazing Paddles will also work with any standard laser device including Joysticks, Touch Tablets, Paddles, Mice, Trackball and Professional Graphic Tablets.

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- A SUPER PACKAGE WITH ADVANCED FEATURES**
- Advanced Colour Mixing to create over 200 textured hues
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  - Fill  Single Dot Mode  Freehand Draw
  - Shape Library  Clear  Printer Dump
  - Mass Screens saved from Action Replay can be loaded and edited etc (Disk)

**DAVE L**

...to see your expansion card. It also includes a 40 pin ribbon cable.

**PLUS** a zoom feature for single Pixel editing while viewing, the results at full scale.  Powerful cut and paste facility, shapes can be gapped up, moved around, repeated and saved.  Full Load and Save feature for pictures, shapes and windows which are supplied.

...to see your expansion card. It also includes a 40 pin ribbon cable.

# Adventure Aid Graphics

*Allen Webb helps you smarten up the looks of your adventure programs.*

**T**our adventures are all very well but it's nice to have illustrations to smarten up the appearance of your own programs and make them look more professional.

This is the second part of the program which we began last month (Your Commodore, August 1985) and it should enable you to churn out exciting and attractive adventures. It complements the Adventure Aid program which originally appeared in our May 1985 issue.

## Using the Editor

Listing 1 gives an editor for the design and saving of pictures. Before you use it, we must insert a some cunning. In order to give you maximum RAM, sprites 32 to 39 are used. Since these are located where the BASIC program normally exists, we must raise the program in RAM. Here's how:

- 1) Reset the machine with SYS 64768.
- 2) Type in the line:

```
10 POKE 44,0: POKE 25600: RUN
```

then RUN it. Ignore any Syntax error messages.

- 3) Type in NEW and load the editor.
- 4) Input, in direct mode, POKE 44,0.
- 5) Save the program. If, after saving, you type in LIST, you should only see the line entered in step 2 above.

You can now use the editor safely. The editor has plenty of prompts to help you to use it. You may not fully appreciate PAINT mode. Any sprite comprises of dots over the background colour. Characters POKE'd on to the screen will appear behind the sprites as

The following table gives a brief summary:

### Main Menu

I	insert picture
H	enter high resolution mode
M	enter multicolour mode
F	fill picture
S	toggle X expand
Y	toggle Y expand
E	change background colour
F1	change colour used in Paper mode
F3	change colour 1
F5	change colour 2
P	enter PAPER mode
Key 8 to 7	change sprite colours
U	enter EDIT mode
D	enter DATA movement mode
Q	quit

### Edit Mode

I	insert picture
Shift clear	clear picture
Home	draw cursor
E	End to main menu
+	draw point
-	erase point
P	change pen
	move cursor to bottom right
	move cursor to left end of current line
	move cursor to right end of current line
*	mark one end of line or apex of triangle
L	draw line
B	draw block
T	triangle
/	change line type
Cursor keys	as usual

### Paper Mode

Keys 1 to 9	change patterns
F1	toggle sprits on or off
F3	change paper colour
F5	toggle screen field
E	exit to main menu



a changed background. It is therefore possible to create extra colours and patterns using this option. Any backgrounds you design are not saved with the sprite and you must make your own program create it. The paint option gives you a number of testcases with F5 offering a reverse field.

I don't really have space here to fully describe the functions of the editor but I'm sure you'll get the idea after a bit of dabbling.

### Data Move Mode

Allows you to move pictures to and from RAM and disk designs. Contents of RAM may be saved or loaded from disk storage.

### Line, Block, Triangle

I don't intend to describe the editor at length since you can sort it out by using it. I shall, however, describe how the

Line, Block and Triangle commands work:

**Line:** Place the cursor at one end of the line and press \*. Move the cursor to the other end and press L. The end of the line will stay constant until \* is pressed again allowing you to draw rays emanating from a single point.

**Block:** Exactly for line but you press R.

**Triangle:** Place the cursor at the apex and press \*. Move the cursor to the bottom left corner and press =. Move the cursor horizontally to the bottom right corner and press T.

All three commands use the current line type.

The second editor allows you to set up a sequence of drawing instructions. The editor enters your commands into a temporary buffer with arrow direction to prevent out of range values. The temporary buffer only holds one command and is provided to

allow you to test the effect of a command on the sequence. A second buffer is used to store the sequence. This can also be tested.

The command to test the temporary buffer will display the current picture and execute the command in the buffer. The sequence test command runs the full sequence. If you are happy with the command in the temporary buffer, you can then tack it on to the end of the sequence.

I've kept the editor simple with no commands to save or load sequences - I leave that to you. There is a simple command to display the sequence on the screen and it would be simple to convert it to use a printer.

This editor must also be relocated using the technique described earlier, in the first part of this series.

Try the editors and after then as you see fit, I'm sure you'll agree that the results possible are quite decent.

## PROGRAM: EDITOR

Please read 'LISTINGS'  
before entering program.

```

AF 10 REM*****
***
71 20 REM* SPRITE PICTURE EDITO
R *
OC 30 REM* A + M 1986
*
E1 40 REM*****
***
3D 50 DEF FNA(FX)-1064+PY*40+PI
+1:POKE53280,14
1A 60 SA=30720:GOSUB 2070
25 70 OX=32:OY=58:PRINTCHR$(1
41
EC 80 TY=1: XW=1: YW=1: PA=12:O
X=0:OY=0:OC=1:LI=1:REM DEFAU
LT SETTINGS
1A 90 PRINTCHR$(147):POKE53281
,0:GOSUB 1660:POKE 650,128

C1 100 SYS SA+42,2040,32:REM
SET WINDOW LOCATION
E9 110 SYS SA,OX,OY,SC(1),TY,XW
,YW:REM CLEAR & DISPLAY SPR
ITE8
98 115 SYS SA+3,SC(0),SC(1),SC(
2),SC(3),SC(4),SC(5),SC(6),S
C(7)
53 120 SYS SA+6,C1,C2,C3
BF 130 GETI$=IPI$=""THEN130

```

```

4C 140 IF I$<"0"OR I$="8"THEN 17
0
26 150 SC(VAL(I$))-SC(VAL(I$))+
1:POKE 55998+VAL(I$)*2,SC(VA
L(I$))
6A 160 SYS SA+3,SC(0),SC(1),SC(
2),SC(3),SC(4),SC(5),SC(6),S
C(7):GOTO130
90 170 IF I$="I"THEN SYS SA+21:G
OTO130
BA 180 IF I$="H" THEN TY=1:POK
E 53276,255:POKE 1808,77:P
OKE 56080,7:GOTO130
3E 190 IF I$="H" THEN TY=0:POK
E 53276,0:POKE 1808,72:POKE
56080,7:GOTO 130
A6 200 IF I$="F" THEN 1400
3D 210 IF I$="X" AND XW=0 THEN
XW=1:GOSUB1630:GOTO160
98 220 IF I$="X" AND YW=1 THEN
XW=0:GOSUB1630:GOTO160
A5 230 IF I$="Y" AND YW=0 THEN
YW=1:GOSUB1630:GOTO160
BF 240 IF I$="Y" AND YW=1 THEN
YW=0:GOSUB1630:GOTO160
3D 250 IF I$="[P1]"THENPA=PA+1:
POKE 55982,PA:GOTO130
DA 260 IF I$="[P3]"THENC1=(C1+
1)AND15:SYS SA+6,C1,C2,C3:POK
E 55990,C1:GOTO130
1E 270 IF I$="[P5]"THENC1=(C2+
1)AND15:SYS SA+6,C1,C2,C3:POK
E 55998,C2:GOTO130

```

```

01 280 IF I$="F" THEN 340
00 290 IF I$="E" THEN POKES3280,
10:GOSUB1820:GOSUB1490:GOTO
700
1B 300 IF I$="D" THEN POKES3280,
13:GOTO 920
5C 310 IF I$="Q" THEN SYS SA+15
:PRINTCHR$(147):END
40 320 IF I$="[DOWNS]" THEN OY=O
Y+1:GOTO1630:GOTO130
27 330 IF I$="[UP]" THEN OY=OY-
1:GOTO1630:GOTO130
80 340 IF I$="[RIGHT]" THEN OX=
OX+1:GOTO1630:GOTO130
6F 350 IF I$="[LEFT]" THEN OX=O
X-1:GOTO1630:GOTO130
97 360 IF I$="00000118" THEN C1=C
S SA+6,C1,C2,C3:GOTO130
48 370 GOTO130
A6 380 GOSUB1820:PRINTCHR$(19)T
AB(26) "[WHITE,RVSON,SP]APER
[SH]OGE[RVSOFF,WHITE,DOWNS]"
61 390 PRINTTAB(26) "[WHITE,RVSO
N]1[RVSOFF]: [YELLOW,RVSON]
SPACE[RVSOFF,WHITE]"
47 400 PRINTTAB(26) "[RVSON]2[RV
SOFF]: [YELLOW,C+,WHITE]"
57 410 PRINTTAB(26) "[RVSON]3[RV
SOFF]: [YELLOW,CB,WHITE]"
8A 420 PRINTTAB(26) "[RVSON]4[RV
SOFF]: [YELLOW,80000118,WHI
TE]"
E1 430 PRINTTAB(26) "[RVSON]5[RV
SOFF]: [YELLOW,C*,WHITE]"
6E 440 PRINTTAB(26) "[RVSON]6[RV
SOFF]: [YELLOW,S+,WHITE]"
7E 450 PRINTTAB(26) "[RVSON,SP]1
[RVSOFF]: [YELLOW]TOGGLE[WHI
TE]"
48 460 PRINTTAB(26) "[RVSON,SP]3
[RVSOFF]: [YELLOW]PAPER[WHIT
E]"
2A 470 PRINTTAB(26) "[RVSON,SP]5
[RVSOFF]: [YELLOW]REVERSE[WH
ITE]"
A2 480 PRINTTAB(26) "[RVSON,SE,R
VSOFF]: [YELLOW]EXIT[WHITE]"
38 490 PE=0:PY=0:CH=32
67 500 POKE FRA(PE),CH+ANS(18F-
1)*128: POKE FRA(PX)+54272,
PA
88 510 GET I$:IF I$="" THEN 380
CB 520 IF I$="1" THEN CH=32: GO
TOS10
22 530 IF I$="2" THEN CH=102:GO
TOS10
6E 540 IF I$="3" THEN CH=127:GO
TOS10
D3 550 IF I$="4" THEN CH=105: G
OTO510
A0 560 IF I$="5" THEN CH=95: GO
TOS10
ED 570 IF I$="6" THEN CH=91: GO
TOS10
36 580 IF I$="[F1]" AND PEEK(53
269)=0 THEN POKES3269,255: G
OTO510
81 590 IF I$="[F3]" AND SP=0 TH
EN SP=1:GOTO510
00 600 IF I$="[F5]" AND SP=1 TH
EN SP=0:CH=CH+(CH*128)*128:G
OTO510
08 610 IF I$="[F1]" AND PEEK(53
269)=255 THEN POKES3269,0:GO
TOS10
0C 620 IF I$="[F3]" THEN PA=PA+1
:POKES3982,PA:GOTO510
86 630 IF I$="[RIGHT]" AND PX<23
THEN PX=PX+1:GOTO500
46 640 IF I$="[LEFT]" AND PX>0
THEN PX=PX-1:GOTO500
25 650 IF I$="[DOWN]" AND PY<10
THEN PY=PY-1:GOTO500
35 660 IF I$="[UP]" AND PY>0 TH
EN PY=PY+1:GOTO500
07 670 IF I$="E" THEN 500
09 680 GOSUB 1820:GOSUB1830
61 690 POKES3280,14:GOTO130
D8 700 GET I$:IF I$="" THEN SYS S
A+12,DX,DY,2:SYS SA+12,DX,DY
,3:GOTO700
E3 710 IF I$="[HOME]" THEN DE=0
:DX=0:GOTO 700
6E 720 IF I$="[CLR]" THEN SYS S
A+9,0:DX=0:DY=0:GOTO 700
8F 730 IF I$="8" THEN DE=94:DY=
42:GOTO 700
1B 740 IF I$="[RIGHT]" AND DX<9
4 AND TY=1 THEN DX=DX+2:GOTO7
00
3C 750 IF I$="[RIGHT]" AND DX<9
6 AND TY=0 THEN DE=DX+1:GOTO7
00
5A 760 IF I$="[LEFT]" AND DX>0
AND TY=0 THEN DX=DX-1:GOTO700
CE 770 IF I$="[LEFT]" AND DX>1
AND TY=1 THEN DX=DX-2:GOTO700
FD 780 IF I$="[DOWN]" AND DY<42
THEN DY=DY+1:GOTO700
87 781 IF I$="9" AND TY=0 THEN DX
=95:GOTO700
24 782 IF I$="9" AND TY=1 THEN DE
=94:GOTO700
D0 790 IF I$="[UP]" AND DY>0 TH

```



```

ERDY-DY-1:GOTO700
91 791 IF I$="*"THEN DX=0:GOTO7
   00
C2 792 IF I$="*"THEN LX=DX: LY-
   DY:GOTO700
70 793 IF I$="L"ANDTY=0 THEN SY
   S SA+34,LX,LY,DX,DY,LI:GOTO7
   00
A2 794 IF I$="L"ANDTY=1 THEN SY
   S SA+27,LX/2,LY,DX/2,DY,CC:G
   OTO700
D0 795 IF I$="B"ANDTY=0 THEN SY
   S SA+51,LE,LY,DX,DY,LI:GOTO7
   00
74 796 IF I$="B"ANDTY=1 THEN SY
   S SA+34,LX/2,LY,DX/2,DY,CC:G
   OTO700
69 797 IF I$="T"ANDTY=0 THEN SY
   S SA+37,LX,LY,XX,YY,DX,LI:GO
   TO700
D3 798 IF I$="T"ANDTY=1 THEN SY
   S SA+60,LX/2,LY,XX/2,YY,DX/2
   ,CC:GOTO700
21 799 IF I$="-"THEN XX=DX: YY-
   DY:GOTO700
CA 800 IF I$="-"AND TY=0THEN SY
   S SA+12,DX,DY,LI:GOTO890
29 801 IF I$="-"AND TY=1THEN SY
   S SA+18,DX/2,DY,CC:GOTO890
F7 802 IF I$="-"AND TY=0THEN SY
   S SA+12,DX,DY,0:GOTO890
03 803 IF I$="-"AND TY=1THEN SY
   S SA+18,DX/2,DY,0:GOTO890
61 804 IF I$="E"THEN POKE53280,
   14:GOSUB 1820:GOSUB1830:GOTO
   130
5E 805 IF I$="I"THEN SYSSA+21:G
   OTO700
22 811 IF I$="*"THEN890
29 837 LI=LI+1: IF LI=3 THEN LI=
   4
66 853 IF LI=6 THENLI=0
90 854 CY=20:CX=19:GOSUB2020:PR
   INTLI:GOTO700
CD 860 IF I$="?"THEN700
64 870 CC=CC+1:IFCC=4 THEN CC=0

69 880 CY=12:CX=19:GOSUB2020:PR
   INTCC:GOTO700
7E 890 IF TY=0 AND DX <=4 THEN
   DX=DX+1:GOTO700
0C 900 IF TY=1 AND DX <=4 THEN
   DX=DX+2:GOTO700
AF 910 GOTO700
AC 920 CY=0:CX=21:GOSUB2030
96 930 PRINT"[RVSON,SR,RVSOFF]A
   N OR [RVSON,SS,RVSOFF]ORAGE
72 940 INPUT MO$
18 950 IF MO$="S"THEN 1220
4A 960 NL=2:GOSUB2030:CY=0:CX=2
   1:GOSUB2020
EA 970 PRINT"[RVSON,SS,RVSOFF]A
   VE, [RVSON,SL,RVSOFF]OAD OR
   [RVSON,SM,RVSOFF]IX"
AA 980 INPUT MO$
61 990 IF MO$="S"THEN1020
5A 1000 IF MO$="L"THEN1040
EE 1010 IF MO$="M"THEN1100
66 1020 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
D3 1030 PRINT"START ADDRESS"
34 1040 INPUT AD
34 1050 SYS SA+30,AD:GOTO1200
C9 1060 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
68 1070 PRINT"START ADDRESS"
DC 1080 INPUT AD
48 1090 SYS SA+33,AD:GOSUB2070
ED 1095 FOR I=0TO7: POKE 55896+
   I*2,SC11:NEXT
69 1096 POKE 55990,C1:POKE55998
   ,C2:GOTO1200
41 1100 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
63 1110 PRINT"START ADDRESS"
84 1120 INPUT AD
5F 1130 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
EF 1140 PRINT"MIKING RULE [RVSO
   M,SA,RVSOFF]ND/[RVSON,SO,RVS
   OFF]R/[RVSON,SE,RVSOFF]OR"
EE 1150 INPUT RU$
51 1160 IF RU$="A"THEN RU=0
6A 1170 IF RU$="O"THEN RU=1
73 1180 IF RU$="L"THEN RU=2
85 1190 SYS SA+38,AD,RU
28 1200 NL=2:GOSUB2030
C9 1210 POKE 53280,14:GOTO130
E9 1220 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
D8 1230 PRINT"[RVSON,SS,RVSOFF]
   AVE OR [RVSON,SL,RVSOFF]DAD"
A2 1240 INPUT OP$
E7 1250 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
FE 1260 PRINT"FILE NAME"
06 1270 INPUT FI$
94 1280 NL=2:GOSUB2030:CY=0:CX=
   21:GOSUB2020
4A 1290 PRINT"DEVICE"
3D 1300 INPUT DE
31 1310 IF OP$="L"THEN POKE 532

```

```

69,0:LOAD F18,DE,1: POKE5326
9,255:GOTO130
4C 1320 NL=2:GOSUB2030:CY=0:CX=
21:GOSUB2020
78 1330 PRINT"START ADDRESS"
F8 1340 INPUT SA
62 1350 NL=2:GOSUB2030:CY=0:CX=
21:GOSUB2020
77 1360 PRINT"END ADDRESS"
90 1370 INPUT EA
07 1380 POKE 53269,0:SYS 49191
F18,DE,2,SA,EA:POKE53269,255
:RUN
61 1390 GOTO1390
72 1400 CY=0:CX=21:GOSUB2030
8D 1410 PRINT"[SB,SV,ST,SE] [SV
,SA,SL,SU,SE] (0 TO ERASE)"
CF 1420 INPUT BY
E5 1430 SYS SA+9,BY
AA 1440 CY=0:CX=21:GOSUB2020
DA 1450 PRINT"[SPC27]"
C4 1460 PRINT"[SPC27]"
78 1470 GOTO130
4D 1480 END
26 1490 PRINTCHR$(19)"TAB(26)"[R
VSON,WHITE,SD|RAW [SH|ODE|WH
ITE,DOWN]"
34 1500 PRINTTAB(26)"[RVSON,SI,
RVSOFF]:[YELLOW,SI|NVERT|WHI
TE]"
B1 1510 PRINTTAB(26)"[RVSON,SE,
SH]-[SH,SO,SH,SE,RVSOFF]:[YE
LLOW|CLEAR|WHITE]"
8D 1520 PRINTTAB(26)"[RVSON,SH,
SO,SH,SE,RVSOFF]:[YELLOW|NOM
E|WHITE]"
CC 1530 PRINTTAB(26)"[RVSON,SE,
RVSOFF]:[YELLOW,SE|XIT|WHITE
]"
3E 1540 PRINTTAB(26)"[RVSON]+[R
VSOFF]:[YELLOW|SET DOT|WHITE
]"
87 1550 PRINTTAB(26)"[RVSON]-[R
VSOFF]:[YELLOW|CLEAR DOT|WHI
TE]"
92 1560 PRINTTAB(26)"[RVSON,SP,
RVSOFF]:[YELLOW|CHANCE INK|W
HITE]"
68 1568 PRINTTAB(26)"[RVSON]&[R
VSOFF]:[YELLOW|DOT BLC|WHITE
]"
73 1569 PRINTTAB(26)"[RVSON]<[R
VSOFF]:[YELLOW|DOT LEFT|WHIT
E]"
8F 1570 PRINTTAB(26)"[RVSON]>[R
VSOFF]:[YELLOW|DOT RIGHT|WHI
TE]"
AA 1571 PRINTTAB(26)"[RVSON]+[R
VSOFF]:[YELLOW|MKR POINT 1|W
HITE]"
E7 1572 PRINTTAB(26)"[RVSON]-[R
VSOFF]:[YELLOW|MKR POINT 2|W
HITE]"
FD 1573 PRINTTAB(26)"[RVSON,SL,
RVSOFF]:[YELLOW|DRAW LINE|WH
ITE]"
91 1574 PRINTTAB(26)"[RVSON,SS,
RVSOFF]:[YELLOW|DRAW BLOCK|W
HITE]"
8C 1575 PRINTTAB(26)"[RVSON]/[R
VSOFF]:[YELLOW|LINE TYPE|WHI
TE]"
3C 1576 PRINTTAB(26)"[RVSON,ST,
RVSOFF]:[YELLOW,ST|TRIANGLE|W
HITE]"
82 1600 PRINTTAB(26)"[WHITE|CUR
SOR KEYS"
8D 1610 PRINTTAB(26)"TO MOVE DO
T[WHITE]"
D4 1620 RETURN
45 1630 SYS SA,DE,DY,SC(1),TY,X
W,YW:GOTO160
21 1640 SYS SA+3,SC(0),SC(1),SC
(2),SC(3),SC(4),SC(5),SC(6),
SC(7)
F6 1650 RETURN
AA 1660 PRINTCHR$(19)"[CYAN,CA,
8*24,C8]"
28 1670 FOR I=1TO11
A7 1680 PRINT"[S-,SPC24,S-]"[ME
XT
88 1690 PRINT"[C2,8*24,CW]"
83 1700 FOR I=1TO7:PRINTTAB(25)
"[S-]"[NEXT
4A 1710 CY=0:CX=13:GOSUB2020
93 1720 PRINT"[WHITE,SS|PRITE |
SC|COLORS |[SP|EN 2]"
73 1730 PRINT"0 1 2 3 4 5 6 7"
40 1740 PRINT"[RVSON] [RIGHT] [
RIGHT] [RIGHT] [RIGHT] [RIGH
T] [RIGHT] [RIGHT]"
CC 1750 FOR I=0TO7:POKE 55996-
I*2,SC(1):NEXT
34 1760 PRINT"[DOWN,SP|APER:[BV
SON] [RVSOFF] |[SP|EN 1:|RVSO
N] [RVSOFF] |[SP|EN 3:|RVSON]
[RVSOFF]"
F4 1770 POKE 55982,PA:POKE 5599
0,C1:POKE 55998,C2
04 1780 PRINT"[DOWN,SC|URENT |
SP|EN:CC"
51 1781 PRINT"[UP,RIGHT15|LINE:
"LI
1F 1782 POKE 53276,255:POKE 18

```



```

08,77: POKE 56080,7
F3 1790 PRINT"[CYAN,5*25,CE,5*1
0]"
28 1800 GOSUB 1830
97 1810 RETURN
83 1820 PRINT"[HOME]";:FOR I=0TO
19:PRINTTAB(26)"[SPC13]";:NEX
T:RETURN
9F 1830 PRINTCHR$(19)TAB(26)"[W
HITE,RVSON,SH[AIN [SM]DSU[WH
ITE,DOWN]"
89 1840 PRINTTAB(26)"[WHITE,RVS
ON,SI,RVSOFF] : [YELLOW|INVER
T[WHITE]"
17 1850 PRINTTAB(26)"[RVSON,SH,
RVSOFF] : [YELLOW|HIGH RES[WH
ITE]"
C7 1860 PRINTTAB(26)"[RVSON,SH,
RVSOFF] : [YELLOW|MULTI COL[W
HITE]"
72 1870 PRINTTAB(26)"[RVSON,5F
RVSOFF] : [YELLOW|FILL[WHITE]"
1D 1880 PRINTTAB(26)"[RVSON,5X,
RVSOFF] : [YELLOW|EXPAND X[WH
ITE]"
07 1890 PRINTTAB(26)"[RVSON,5Y,
RVSOFF] : [YELLOW|EXPAND Y[WH
ITE]"
CD 1900 PRINTTAB(26)"[RVSON]DOCS
YSOFF] : [YELLOW|BACKGROUND[W
HITE]"
1F 1910 PRINTTAB(26)"[YELLOW,5F
C3]COLOUR[WHITE]"
78 1920 PRINTTAB(26)"[RVSON,5F
1[RVSOFF] : [YELLOW|PAPER[WHIT
E]"
8F 1930 PRINTTAB(26)"[RVSON,5F
3[RVSOFF] : [YELLOW|COLOUR 1[W
HITE]"
A5 1940 PRINTTAB(26)"[RVSON,5F
5[RVSOFF] : [YELLOW|COLOUR 3[W
HITE]"
C2 1950 PRINTTAB(26)"[RVSON,5F,
RVSOFF] : [YELLOW|PAPER MODE[
WHITE]"
7D 1960 PRINTTAB(26)"[RVSON,5E,
RVSOFF] : [YELLOW|EDIT MODE[W
HITE]"
80 1970 PRINTTAB(26)"[RVSON,5D,
RVSOFF] : [YELLOW|DATA MODE[W
HITE]"
E9 1980 PRINTTAB(26)"[RVSON,5Q,
RVSOFF] : [YELLOW|QUIT[WHITE]"
F4 1990 PRINTTAB(26)"[DOWN,WHIT
E]CURSOR KEYS"
9D 2000 PRINTTAB(26)"MOVE PICTU
RE"
6F 2010 RETURN
64 2020 POKE 782,CY:POKE781,CK:
POKE783,0:SYS65520:RETURN
DA 2030 CY=0:CK=31:GOSUB2020
5F 2040 FOR I=0TOH
53 2050 PRINT"[SPC34]";:NEXT
9A 2060 RETURN
8A 2070 G1=PEEK(900): C2=PEEK(9
01)
B5 2080 FOR I=0TO7: SC(1)=PEEK(
902+I)AND15:NEXT
8C 2090 RETURN

```

## PROGRAM: SEQ.EDITOR

Please read 'LISTINGS'  
before entering program.

```

8F 10 REM*****
38 20 REM* SEQUENCE EDITOR *
A6 30 REM* A + M 1986 *
93 40 REM*****
81 50 TA=49152: FA=3000: SA=30
710: SYE SA+43,2040,32
85 60 PRINTCHR$(147)"[RVSON,WHI
TE]M[RVSOFF]ARM START OR [RV
SON]C[RVSOFF]OLD START";:INP
UT 14:
84 70 IF I$="M"THENOC=PEEK(999)
:GOTO90
70 80 GOSUB 770: CC=0: POKE TA,
255: POKE 999,CC
E0 90 POKE 53280,0: POKE53281,0
: POKE646,15
EE 100 PRINTCHR$(147)TAB(6)"[YE
LLOW]GRAPHICS SEQUENCE GENER
ATOR"
2E 110 PRINTTAB(45)"[CT27]"
84 120 PRINT "[DOWN2]TAB(10)"[
WHITE]L. [CYAN]ERASE SEQUENC
E"
4F 130 PRINT TAB(10)"[WHITE]2.
[CYAN]ENTER COMMAND "
22 140 PRINT TAB(10)"[WHITE]3.
[CYAN]TEST COMMAND "
3D 150 PRINT TAB(10)"[WHITE]4.
[CYAN]ADD TO SEQUENCE"
78 160 PRINT TAB(10)"[WHITE]5.
[CYAN]TEST SEQUENCE"

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7E 165 PRINT TAB(10)"[WHITE]6.
  [CYAN]DISPLAY SEQUENCE"
C2 170 PRINT"[DOWN]3,CS) [CA,S*
  35,CS]
55 180 CS=STR$(CC): CS=RIGHT$(C
  8,LEN(CS)-1)
5B 190 IF LEN(C$)<3THEN$="O"+C
  $
11 200 ILEN(C$)<3THEN190
36 310 PRINT"[YELLOW] [CS,S-]
  [YELLOW]BYTES USED:[GREEN]"C
  $"[8FC20,CS,S-]"
2E 320 PRINT"[CS,S-] [YELLOW]
  SEQUENCE OCCUPIES:[GREEN]"FA
  "TO"FA+CC"[CS,S-]"
23 230 PRINT"[CS] [C2,S*35,CX]
2D 240 GET I$: IF I$="1"OR I$="6"
  THEN240
D2 250 ON VAL(I$) GOSUB 270,400
  ,280,320,360,1700
FD 260 GOTO 100
O2 270 FOR I=0TO255: POKE FA+I,
  255:NEXT:CC=0:POKE999,0:RETU
  RN
E2 280 PRINTCHR$(147):POKE 5326
  9,255:SYS SA+63,TA
41 290 GET I$:IF I$="*"THEN290
A9 300 SYS SA+15
B9 310 RETURN
52 320 IF CC+FN>255 THEN PRINT"
  SORRY NO MORE ROOM IN THIS S
  EQUENCE":GOTO 320
84 330 POKE 53280,11
E5 340 FOR I=0TOFN: POKE FA+CC+
  I,PEEK(TA+1):NEXT:CC=CC+FN:P
  OKE999,CC
6E 350 POKE 53280,0:RETURN
20 360 PRINTCHR$(147):SYS SA+63
  ,FA
10 370 GET I$:IF I$="*"THEN370
59 380 SYS SA+15
O9 390 RETURN
62 400 PRINTCHR$(147)"[DOWN]"T
  AB(10)"[WHITE]1. [CYAN]PICTU
  RE SETUP"
8D 410 PRINTTAB(10)"[WHITE]2. [
  CYAN]SPRITE COLOURS"
84 420 PRINTTAB(10)"[WHITE]3. [
  CYAN]COLOUR REGISTERS"
22 430 PRINTTAB(10)"[WHITE]4. [
  CYAN]FILL PICTURE"
AD 440 PRINTTAB(10)"[WHITE]5. [
  CYAN]DRAW DOT (HIRES)
D8 450 PRINTTAB(10)"[WHITE]6. [
  CYAN]DRAW DOT (MULTICOL)
80 460 PRINTTAB(10)"[WHITE]7. [
  CYAN]LINE (HIRES)
13 470 PRINTTAB(10)"[WHITE]8. [
  CYAN]LINE (MULTICOLOUR)
37 480 PRINTTAB(10)"[WHITE]9. [
  CYAN]SQUARE (HIRES)
43 490 PRINTTAB(10)"[WHITE]10.
  [CYAN]SQUARE (MULTICOLOUR)
27 500 PRINTTAB(10)"[WHITE]11.
  [CYAN]TRIANGLE (HIRES)
FA 510 PRINTTAB(10)"[WHITE]12.
  [CYAN]TRIANGLE (MULTICOLOUR)
32 520 PRINTTAB(10)"[WHITE]13.
  [CYAN]BRUSH (HIRES)
53 530 PRINTTAB(10)"[WHITE]14.
  [CYAN]BRUSH (MULTICOLOUR)
FB 540 PRINT"[HOME,DOWN]17"TAB(
  18)::INPUT I
FB 550 IF I>9 THEN 560
54 560 ON I GOSUB 600,680,740,7
  80,820,900,990,1060,1140
82 570 RETURN
FF 580 ON I-9 GOSUB 1210,1290,1
  370,1460,1560
DE 590 RETURN
DF 600 PRINTCHR$(147):INPUT "[W
  HITE]X COORDINATE":P(1): P(1
  )=0
5C 610 INPUT "Y COORDINATE":P(2
  )
34 620 INPUT "COLOUR":P(3)
34 630 INPUT "TYPE 0=HIRES, 1=M
  ULTICOLOUR":P(4)
6E 640 INPUT "X EXPAND? 0=NO, 1
  =YES":P(5)
24 650 INPUT "Y EXPAND? 0=NO, 1
  =YES":P(6)
AE 660 FOR FN=0TO6: POKE TA+FN,
  P(FN):NEXT: POKE TA+FN,255
2E 670 RETURN
47 680 PRINTCHR$(147)
98 690 FOR I=1TO8
3E 700 PRINT"INPUT COLOUR FOR S
  PRITE"1:INPUT P(1):NEXT
DC 710 P(0)=1
10 720 FOR FN=0TO6: POKE TA+FN,
  P(FN):NEXT: POKE TA+FN,255
52 730 RETURN
FC 740 PRINTCHR$(147): INPUT"CO
  LOUR REGISTER 1":P(1): P(1)=
  2
8E 750 INPUT"COLOUR REGISTER 2"
  :P(2)
EA 760 INPUT"BACKGROUND COLOUR"
  :P(3)
E8 770 FOR FN=0TO3: POKE TA+FN,
  P(FN):NEXT: POKE TA+FN,255

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```

81 780 RETURN
3D 790 PRINTCHR$(147): INPUT"BY
TE VALUE";P(1): P(0)=3
48 800 FOR PN=0T01: POKE TA+PN,
,P(PN):NEXT: POKE TA+PN,255
A3 810 RETURN
03 820 PRINTCHR$(147): INPUT"X
COORDINATE";P(1): P(0)=4
73 830 INPUT"Y COORDINATE";P(2)

11 840 INPUT"FLAG";P(3)
04 850 IF P(1)>95 THEN P(1)=95
40 860 IF P(2)>41 THEN P(2)=41
42 870 IF P(3)>2 THEN P(3)=2
48 880 FOR PN=0T03: POKE TA+PN,
,P(PN):NEXT: POKE TA+PN,255
F3 890 RETURN
82 900 PRINTCHR$(147): INPUT"X
COORDINATE";P(1): P(0)=5
43 910 INPUT"Y COORDINATE";P(2)

98 920 INPUT"PEN";P(3)
04 930 IF P(1)>95 THEN P(1)=95
70 940 IF P(2)>41 THEN P(2)=41
81 950 IF P(3)>3 THEN P(3)=2
A5 960 P(1)=P(1)AND254
40 970 FOR PN=0T03: POKE TA+PN,
,P(PN):NEXT: POKE TA+PN,255
39 980 RETURN
31 990 PRINTCHR$(147): INPUT"X1
COORDINATE";P(1): P(0)=4:IF
P(1)>95THENP(1)=95
87 1000 INPUT"Y1 COORDINATE";P(
2): IFF(2)>41THENP(2)=41
F6 1010 INPUT"X2 COORDINATE";P(
3): IF P(3)>95THENP(3)=95
36 1020 INPUT"Y2 COORDINATE";P(
4): IF P(4)>41THENP(4)=41
91 1030 INPUT"FLAG";P(5): IFF(5
)>5 THENP(5)=5
13 1040 FOR PN=0T05: POKE TA+PN
,P(PN):NEXT: POKE TA+PN,255
90 1050 RETURN
15 1060 PRINTCHR$(147): INPUT"X
1 COORDINATE";P(1): P(0)=7:IF
P(1)>95THENP(1)=95
04 1070 INPUT"Y1 COORDINATE";P(
2): IFF(2)>41THENP(2)=41
1D 1080 INPUT"X2 COORDINATE";P(
3): IF P(3)>95THENP(3)=95
97 1090 INPUT"Y2 COORDINATE";P(
4): IF P(4)>41THENP(4)=41
80 1100 INPUT"PEN";P(5): IFF(5)
>5 THENP(5)=5
0A 1110 P(1)=P(1)AND254: P(3)=P
(3)AND254
43 1120 FOR PN=0T05: POKE TA+PN
,P(PN):NEXT: POKE TA+PN,255
E0 1130 RETURN
00 1140 PRINTCHR$(147): INPUT"X
1 COORDINATE";P(1): P(0)=8:IF
P(1)>95THENP(1)=95
04 1150 INPUT"Y1 COORDINATE";P(
2): IFF(2)>41THENP(2)=41
0D 1160 INPUT"X2 COORDINATE";P(
3): IF P(3)>95THENP(3)=95
C7 1170 INPUT"Y2 COORDINATE";P(
4): IF P(4)>41THENP(4)=41
E3 1180 INPUT"FLAG";P(5): IFF(5
)>5 THENP(5)=5
81 1190 FOR PN=0T05: POKE TA+PN
,P(PN):NEXT: POKE TA+PN,255
3A 1200 RETURN
71 1210 PRINTCHR$(147): INPUT"X
1 COORDINATE";P(1): P(0)=9:IF
P(1)>95THENP(1)=95
D2 1220 INPUT"Y1 COORDINATE";P(
2): IFF(2)>41THENP(2)=41
18 1230 INPUT"X2 COORDINATE";P(
3): IF P(3)>95THENP(3)=95
35 1240 INPUT"Y2 COORDINATE";P(
4): IF P(4)>41THENP(4)=41
E2 1250 INPUT"PEN";P(5): IFF(5)
>5 THENP(5)=5
B0 1260 P(1)=P(1)AND254: P(3)=P
(3)AND254
F1 1270 FOR PN=0T05: POKE TA+PN
,P(PN):NEXT: POKE TA+PN,255
88 1280 RETURN
44 1290 PRINTCHR$(147): INPUT"X
1 COORDINATE";P(1): P(0)=10:IF
P(1)>95THENP(1)=95
8D 1300 INPUT"Y1 COORDINATE";P(
2): IFF(2)>41THENP(2)=41
0C 1310 INPUT"X2 COORDINATE";P(
3): IF P(3)>95THENP(3)=95
F4 1320 INPUT"Y2 COORDINATE";P(
4): IF P(4)>41THENP(4)=41
4D 1330 INPUT"X3 COORDINATE";P(
5): IF P(5)>95THENP(5)=95
91 1340 INPUT"FLAG";P(6): IFF(6)
>5 THENP(6)=5
E1 1350 FOR PN=0T06: POKE TA+PN
,P(PN):NEXT: POKE TA+PN,255
D8 1360 RETURN
CF 1370 PRINTCHR$(147): INPUT"X
1 COORDINATE";P(1): P(0)=11:IF
P(1)>95THENP(1)=95
7D 1380 INPUT"Y1 COORDINATE";P(
2): IFF(2)>41THENP(2)=41
3C 1390 INPUT"X2 COORDINATE";P(
3): IF P(3)>95THENP(3)=95
A4 1400 INPUT"Y2 COORDINATE";P(
4): IF P(4)>41THENP(4)=41

```

```

50 1410 INPUT"X3 COORDINATE";P(
51: IF P(51)>95THENP(51)=95
D0 1420 INPUT"Y3";P(6): IFP(6)
>3 THENP(6)=3
F3 1430 P(1)-P(1)AND254: P(3)-P
(3)AND254: P(5)-P(5)AND254
03 1440 FOR PM=0TO8: POKE TA+PM
,P(M):NEXT: POKE TA+PM,255
21 1450 RETURN
A6 1460 PRINTCHR$(147): INPUT"X
C COORDINATE";P(1): P(0)=12:
IFP(1)>95THENP(1)=95
D9 1470 INPUT"YC COORDINATE";P(
2): IFP(2)>41THENP(2)=41
C0 1480 INPUT"DENSITY";P(3):IF
P(3)>255 THENP(3)=255
18 1490 INPUT"SIZE";P(4): IFP(4
1)>2THENP(4)=2
88 1500 W1=(P(4)+1)*8
A4 1510 IF (P(1)+W1)>95 THEN P(
1)=95-W1
90 1520 IF (P(2)+W1)>41 THEN P(
2)=41-W1
98 1530 INPUT"FLAG";P(5): IF P(
51)>5 THEN P(5)=5
21 1540 FOR PM=0TO5: POKE TA+PM
,P(M):NEXT: POKE TA+PM,255
9A 1550 RETURN
44 1560 PRINTCHR$(147): INPUT"X
C COORDINATE";P(1): P(0)=13:
IFP(1)>47THENP(1)=47
EC 1570 INPUT"YC COORDINATE";P(
2): IFP(2)>41THENP(2)=41
1F 1580 INPUT"DENSITY";P(3):IF
P(3)>255 THENP(3)=255
63 1590 INPUT"SIZE";P(4): IFP(4
1)>2THENP(4)=2
91 1600 W1=(P(4)+1)*8: W1-(P(4)
+1)*8:P(1)-P(1)AND254
F9 1610 IF (P(1)+W1)>47 THEN P(
1)=47-W1
7B 1620 IF (P(2)+W1)>41 THEN P(
2)=41-W1
81 1630 INPUT"FLAG";P(5): IF P(
51)>5 THEN P(5)=5
45 1640 FOR PM=0TO5: POKE TA+PM
,P(M):NEXT: POKE TA+PM,255
F4 1650 RETURN
19 1700 PRINTCHR$(147):;:G0=""
34 1710 FOR I=0TOCC
33 1720 Z=PEEK(PA+I)
EC 1730 IF LEN(08)+LEN(STR$(Z))
+2 >=40 THEN PRINT08: 08=""
E8 1740 08=08+" -"+STR$(Z)
42 1750 NEXT: PRINT08
55 1760 GETI$: IFI$=""THEN1760
7E 1770 RETURN

```

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The *Your Commodore Software Service* makes available all of the programs from each issue on both cassette and disk at a price of £6.00 for disk and £4.00 for cassette. None of the documentation for the programs is supplied with the software since it is all available in the relevant magazine. Should you not have the magazine then back issues are available from the following address:

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Programs on the disk will also be supplied as totally working versions, i.e. where possible we will not use Basic Loaders (this making use of the programs much easier). Unfortunately at the moment we cannot duplicate C16 and Plus/4 cassettes. However programs for these machines will be available on the disk.

What programs are available?

At the top of each article you will find a strap containing the article type, C64 Program etc. So that you can see which programs are available on which format you will also find a couple of symbols after this strap. The symbols have the following meaning:



This symbol means that the program is available on cassette.



These programs are available on disk.

## Please Note

Since the programs supplied on cassette are total working versions of the program, we do not put disk only programs on tape. There is no sense in placing a program that expects to be reading from disk on to tape. ☺

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DECEMBER 1986

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JANUARY 1987

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84	21A, 21B, 21C, 21D, 21E, 21F, 21G, 21H, 21I, 21J, 21K, 21L, 21M, 21N, 21O, 21P, 21Q, 21R, 21S, 21T, 21U, 21V, 21W, 21X, 21Y, 21Z	42	22A, 22B, 22C, 22D, 22E, 22F, 22G, 22H, 22I, 22J, 22K, 22L, 22M, 22N, 22O, 22P, 22Q, 22R, 22S, 22T, 22U, 22V, 22W, 22X, 22Y, 22Z	70	30A, 30B, 30C, 30D, 30E, 30F, 30G, 30H, 30I, 30J, 30K, 30L, 30M, 30N, 30O, 30P, 30Q, 30R, 30S, 30T, 30U, 30V, 30W, 30X, 30Y, 30Z
85	22A, 22B, 22C, 22D, 22E, 22F, 22G, 22H, 22I, 22J, 22K, 22L, 22M, 22N, 22O, 22P, 22Q, 22R, 22S, 22T, 22U, 22V, 22W, 22X, 22Y, 22Z	43	23A, 23B, 23C, 23D, 23E, 23F, 23G, 23H, 23I, 23J, 23K, 23L, 23M, 23N, 23O, 23P, 23Q, 23R, 23S, 23T, 23U, 23V, 23W, 23X, 23Y, 23Z	71	31A, 31B, 31C, 31D, 31E, 31F, 31G, 31H, 31I, 31J, 31K, 31L, 31M, 31N, 31O, 31P, 31Q, 31R, 31S, 31T, 31U, 31V, 31W, 31X, 31Y, 31Z
86	23A, 23B, 23C, 23D, 23E, 23F, 23G, 23H, 23I, 23J, 23K, 23L, 23M, 23N, 23O, 23P, 23Q, 23R, 23S, 23T, 23U, 23V, 23W, 23X, 23Y, 23Z	44	24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J, 24K, 24L, 24M, 24N, 24O, 24P, 24Q, 24R, 24S, 24T, 24U, 24V, 24W, 24X, 24Y, 24Z	72	32A, 32B, 32C, 32D, 32E, 32F, 32G, 32H, 32I, 32J, 32K, 32L, 32M, 32N, 32O, 32P, 32Q, 32R, 32S, 32T, 32U, 32V, 32W, 32X, 32Y, 32Z
87	24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J, 24K, 24L, 24M, 24N, 24O, 24P, 24Q, 24R, 24S, 24T, 24U, 24V, 24W, 24X, 24Y, 24Z	45	25A, 25B, 25C, 25D, 25E, 25F, 25G, 25H, 25I, 25J, 25K, 25L, 25M, 25N, 25O, 25P, 25Q, 25R, 25S, 25T, 25U, 25V, 25W, 25X, 25Y, 25Z	73	33A, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 33I, 33J, 33K, 33L, 33M, 33N, 33O, 33P, 33Q, 33R, 33S, 33T, 33U, 33V, 33W, 33X, 33Y, 33Z
88	25A, 25B, 25C, 25D, 25E, 25F, 25G, 25H, 25I, 25J, 25K, 25L, 25M, 25N, 25O, 25P, 25Q, 25R, 25S, 25T, 25U, 25V, 25W, 25X, 25Y, 25Z	46	26A, 26B, 26C, 26D, 26E, 26F, 26G, 26H, 26I, 26J, 26K, 26L, 26M, 26N, 26O, 26P, 26Q, 26R, 26S, 26T, 26U, 26V, 26W, 26X, 26Y, 26Z	74	34A, 34B, 34C, 34D, 34E, 34F, 34G, 34H, 34I, 34J, 34K, 34L, 34M, 34N, 34O, 34P, 34Q, 34R, 34S, 34T, 34U, 34V, 34W, 34X, 34Y, 34Z
89	26A, 26B, 26C, 26D, 26E, 26F, 26G, 26H, 26I, 26J, 26K, 26L, 26M, 26N, 26O, 26P, 26Q, 26R, 26S, 26T, 26U, 26V, 26W, 26X, 26Y, 26Z	47	27A, 27B, 27C, 27D, 27E, 27F, 27G, 27H, 27I, 27J, 27K, 27L, 27M, 27N, 27O, 27P, 27Q, 27R, 27S, 27T, 27U, 27V, 27W, 27X, 27Y, 27Z	75	35A, 35B, 35C, 35D, 35E, 35F, 35G, 35H, 35I, 35J, 35K, 35L, 35M, 35N, 35O, 35P, 35Q, 35R, 35S, 35T, 35U, 35V, 35W, 35X, 35Y, 35Z
90	27A, 27B, 27C, 27D, 27E, 27F, 27G, 27H, 27I, 27J, 27K, 27L, 27M, 27N, 27O, 27P, 27Q, 27R, 27S, 27T, 27U, 27V, 27W, 27X, 27Y, 27Z	48	28A, 28B, 28C, 28D, 28E, 28F, 28G, 28H, 28I, 28J, 28K, 28L, 28M, 28N, 28O, 28P, 28Q, 28R, 28S, 28T, 28U, 28V, 28W, 28X, 28Y, 28Z	76	36A, 36B, 36C, 36D, 36E, 36F, 36G, 36H, 36I, 36J, 36K, 36L, 36M, 36N, 36O, 36P, 36Q, 36R, 36S, 36T, 36U, 36V, 36W, 36X, 36Y, 36Z
91	28A, 28B, 28C, 28D, 28E, 28F, 28G, 28H, 28I, 28J, 28K, 28L, 28M, 28N, 28O, 28P, 28Q, 28R, 28S, 28T, 28U, 28V, 28W, 28X, 28Y, 28Z	49	29A, 29B, 29C, 29D, 29E, 29F, 29G, 29H, 29I, 29J, 29K, 29L, 29M, 29N, 29O, 29P, 29Q, 29R, 29S, 29T, 29U, 29V, 29W, 29X, 29Y, 29Z	77	37A, 37B, 37C, 37D, 37E, 37F, 37G, 37H, 37I, 37J, 37K, 37L, 37M, 37N, 37O, 37P, 37Q, 37R, 37S, 37T, 37U, 37V, 37W, 37X, 37Y, 37Z
92	29A, 29B, 29C, 29D, 29E, 29F, 29G, 29H, 29I, 29J, 29K, 29L, 29M, 29N, 29O, 29P, 29Q, 29R, 29S, 29T, 29U, 29V, 29W, 29X, 29Y, 29Z	50	30A, 30B, 30C, 30D, 30E, 30F, 30G, 30H, 30I, 30J, 30K, 30L, 30M, 30N, 30O, 30P, 30Q, 30R, 30S, 30T, 30U, 30V, 30W, 30X, 30Y, 30Z	78	38A, 38B, 38C, 38D, 38E, 38F, 38G, 38H, 38I, 38J, 38K, 38L, 38M, 38N, 38O, 38P, 38Q, 38R, 38S, 38T, 38U, 38V, 38W, 38X, 38Y, 38Z
93	30A, 30B, 30C, 30D, 30E, 30F, 30G, 30H, 30I, 30J, 30K, 30L, 30M, 30N, 30O, 30P, 30Q, 30R, 30S, 30T, 30U, 30V, 30W, 30X, 30Y, 30Z	51	31A, 31B, 31C, 31D, 31E, 31F, 31G, 31H, 31I, 31J, 31K, 31L, 31M, 31N, 31O, 31P, 31Q, 31R, 31S, 31T, 31U, 31V, 31W, 31X, 31Y, 31Z	79	39A, 39B, 39C, 39D, 39E, 39F, 39G, 39H, 39I, 39J, 39K, 39L, 39M, 39N, 39O, 39P, 39Q, 39R, 39S, 39T, 39U, 39V, 39W, 39X, 39Y, 39Z
94	31A, 31B, 31C, 31D, 31E, 31F, 31G, 31H, 31I, 31J, 31K, 31L, 31M, 31N, 31O, 31P, 31Q, 31R, 31S, 31T, 31U, 31V, 31W, 31X, 31Y, 31Z	52	32A, 32B, 32C, 32D, 32E, 32F, 32G, 32H, 32I, 32J, 32K, 32L, 32M, 32N, 32O, 32P, 32Q, 32R, 32S, 32T, 32U, 32V, 32W, 32X, 32Y, 32Z	80	40A, 40B, 40C, 40D, 40E, 40F, 40G, 40H, 40I, 40J, 40K, 40L, 40M, 40N, 40O, 40P, 40Q, 40R, 40S, 40T, 40U, 40V, 40W, 40X, 40Y, 40Z
95	32A, 32B, 32C, 32D, 32E, 32F, 32G, 32H, 32I, 32J, 32K, 32L, 32M, 32N, 32O, 32P, 32Q, 32R, 32S, 32T, 32U, 32V, 32W, 32X, 32Y, 32Z	53	33A, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 33I, 33J, 33K, 33L, 33M, 33N, 33O, 33P, 33Q, 33R, 33S, 33T, 33U, 33V, 33W, 33X, 33Y, 33Z	81	41A, 41B, 41C, 41D, 41E, 41F, 41G, 41H, 41I, 41J, 41K, 41L, 41M, 41N, 41O, 41P, 41Q, 41R, 41S, 41T, 41U, 41V, 41W, 41X, 41Y, 41Z
96	33A, 33B, 33C, 33D, 33E, 33F, 33G, 33H, 33I, 33J, 33K, 33L, 33M, 33N, 33O, 33P, 33Q, 33R, 33S, 33T, 33U, 33V, 33W, 33X, 33Y, 33Z	54	34A, 34B, 34C, 34D, 34E, 34F, 34G, 34H, 34I, 34J, 34K, 34L, 34M, 34N, 34O, 34P, 34Q, 34R, 34S, 34T, 34U, 34V, 34W, 34X, 34Y, 34Z	82	42A, 42B, 42C, 42D, 42E, 42F, 42G, 42H, 42I, 42J, 42K, 42L, 42M, 42N, 42O, 42P, 42Q, 42R, 42S, 42T, 42U, 42V, 42W, 42X, 42Y, 42Z
97	34A, 34B, 34C, 34D, 34E, 34F, 34G, 34H, 34I, 34J, 34K, 34L, 34M, 34N, 34O, 34P, 34Q, 34R, 34S, 34T, 34U, 34V, 34W, 34X, 34Y, 34Z	55	35A, 35B, 35C, 35D, 35E, 35F, 35G, 35H, 35I, 35J, 35K, 35L, 35M, 35N, 35O, 35P, 35Q, 35R, 35S, 35T, 35U, 35V, 35W, 35X, 35Y, 35Z	83	43A, 43B, 43C, 43D, 43E, 43F, 43G, 43H, 43I, 43J, 43K, 43L, 43M, 43N, 43O, 43P, 43Q, 43R, 43S, 43T, 43U, 43V, 43W, 43X, 43Y, 43Z
98	35A, 35B, 35C, 35D, 35E, 35F, 35G, 35H, 35I, 35J, 35K, 35L, 35M, 35N, 35O, 35P, 35Q, 35R, 35S, 35T, 35U, 35V, 35W, 35X, 35Y, 35Z	56	36A, 36B, 36C, 36D, 36E, 36F, 36G, 36H, 36I, 36J, 36K, 36L, 36M, 36N, 36O, 36P, 36Q, 36R, 36S, 36T, 36U, 36V, 36W, 36X, 36Y, 36Z	84	44A, 44B, 44C, 44D, 44E, 44F, 44G, 44H, 44I, 44J, 44K, 44L, 44M, 44N, 44O, 44P, 44Q, 44R, 44S, 44T, 44U, 44V, 44W, 44X, 44Y, 44Z
99	36A, 36B, 36C, 36D, 36E, 36F, 36G, 36H, 36I, 36J, 36K, 36L, 36M, 36N, 36O, 36P, 36Q, 36R, 36S, 36T, 36U, 36V, 36W, 36X, 36Y, 36Z	57	37A, 37B, 37C, 37D, 37E, 37F, 37G, 37H, 37I, 37J, 37K, 37L, 37M, 37N, 37O, 37P, 37Q, 37R, 37S, 37T, 37U, 37V, 37W, 37X, 37Y, 37Z	85	45A, 45B, 45C, 45D, 45E, 45F, 45G, 45H, 45I, 45J, 45K, 45L, 45M, 45N, 45O, 45P, 45Q, 45R, 45S, 45T, 45U, 45V, 45W, 45X, 45Y, 45Z
100	37A, 37B, 37C, 37D, 37E, 37F, 37G, 37H, 37I, 37J, 37K, 37L, 37M, 37N, 37O, 37P, 37Q, 37R, 37S, 37T, 37U, 37V, 37W, 37X, 37Y, 37Z	58	38A, 38B, 38C, 38D, 38E, 38F, 38G, 38H, 38I, 38J, 38K, 38L, 38M, 38N, 38O, 38P, 38Q, 38R, 38S, 38T, 38U, 38V, 38W, 38X, 38Y, 38Z	86	46A, 46B, 46C, 46D, 46E, 46F, 46G, 46H, 46I, 46J, 46K, 46L, 46M, 46N, 46O, 46P, 46Q, 46R, 46S, 46T, 46U, 46V, 46W, 46X, 46Y, 46Z

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# It's easy to complain about advertisements. But which ones?

Every week millions of advertisements appear in print, on posters or in the cinema. Most of them comply with the rules contained in the British Code of Advertising Practice.

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This space is donated in the interests of high standards of advertising.

# Labeller 64

*Let your C64 take the hassle out of printing name and address labels. Your C64, a printer, some address labels and this program are all that you need.*

*By A.J. Lenton*

**H**ow often have you had to type the address of a friend on to an envelope? Or perhaps you have a list of people that you need to send letters to quite often. Labeller 64 will take the hassle out of this by keeping a record of the names and addresses that you use most often and printing a selection of them out at your command.

## Loading Program

To load type `LOAD "LABELLER 64", N` where `N` is for disk and `L` for tape. The error `RUN:` is ok.

The first screen gives the option of showing the printer width and height of the labels and also the volume of the warning tone.

After these prompts have been answered the main menu will be displayed:

```
Load Data..... 1)
Save Data..... 2)
Enter Data..... 3)
Search Data..... 4)
Alter Data..... 5)
Delete Data..... 6)
Print Data..... 7)
End Program..... 8)
Enter choice
```

## Load Data

To load an existing file from tape or disk press `'1'` followed by `'RETURN'`.

You will be asked:

ARE YOU USING TAPE OR DISK?  
T/D

Press `'T'` or `'D'` as required.

## Tape

If you are using tape the message:

POSITION TAPE CORRECTLY,  
THEN RETURN MOTOR WILL  
STOP AUTOMATICALLY

will be displayed. Next you will be asked to:

ENTER NAME OF FILE TO BE  
SAVED/LOADED OR 'Q' TO  
RETURN TO MENU

Enter the file name and press `'RETURN'`. The cassette will start and the file will be loaded.

## Disk

If using disk you will be asked to enter the drive number and prompted with `0`. Amend if necessary. Press `'RETURN'`.

You will then be asked:

IS DISK INSERTED Y/N

If you press `'N'` you will be returned to the main menu. If you press `'Y'` you will be asked:

DO YOU REQUIRE DISK  
FACILITIES? Y/N

If you press `'Y'` you will be passed to the Primary Disk Functions (see below for an explanation of this facility).

If you press `'N'` you will be asked to enter the name of the file to be loaded. If the file does not exist an error message will be shown and you will then be returned to the main menu. Please note: Only enter the original file name. Do not add the suffix  `".1"` as it appears in the disk directory. This is just an aid to identifying 'Labeller 64' files from anything else on the same disk.

## Chaining Files

It is possible to chain files together. As each one is loaded the next new file

will be sorted into order based on the first line of each label. If the memory becomes full the message:

Memory Full  
1) to Print Out  
2) to Save Data  
3) to Delete Data  
Enter Choice

will appear. Select the required option.

## Disk Facilities

If you choose to move to disk facility routine the following menu will appear:

```
PRIMARY DISK FUNCTIONS
VALIDATE
INITIALISE
NEW
READ DIRECTORY
QUIT
PRESS V/L/R OR Q
```

If you wish to validate a Disk press `'V'` and the message:

VALIDATING  
PLEASE WAIT

will appear.

If you wish to initialise the disk drive press `'I'` and the message:

INITIALISING DISK  
PLEASE WAIT

will appear.

If you wish to New a disk i.e. format a new one or reformat an existing one press `'N'`. You will be asked:

ENTER DISK NAME

Enter the name that you wish to call the disk. If you pressed `'N'` by mistake just press return and you will return to the menu for this section. The next prompt is:

**ENTER DISK ID NUMBER IF REQUIRED:**

If you are formatting a new disk enter any two character ID. If you are reformatting an old disk you may just press "RETURN" and the disk will be renamed and the directory cleared. If you press "Q" you will be returned to Edit mode.

If you have chosen to read the Disk Directory it is printed on the screen. To temporarily stop the printout press the "SPACE" bar. To restart the display press the "SPACE" bar again. After the whole of the directory has been printed the following message appears:

```
RENAME
SCRATCH
OTHER
QUIT
CONTINUE
ENTER:
L.S.D.Q.C
```

If you wish to rename an "L" file press "R" and you will get the prompt:

**ENTER ORIGINAL NAME**

Enter the name of the file that you wish to rename. You will then be asked to:

**ENTER NEW NAME**

Again enter your choice and you will be told that the program is:

RENAMING "old name"

If you fail to enter either an old name or a new one the program will exit this function.

If you choose to scratch a file you are asked to:

**ENTER FILE NAME**

When you have done this the chosen file will be scratched from the Disk.

If you press "Q" you will be returned to the "Primary Disk Functions" menu, if you press "Q" to quit the mode you will be returned to Edit mode and if you enter "C" to continue you pass to the part of the Disk program which asks for you to enter the file name.

**Save Data**

To save a file to tape or disk press "Z" followed by "RETURN".

The prompts are then similar as for loading. When positioning the tape press "RECORD & PLAY" before

pressing "RETURN". When saving to disk you are given the options:

DO YOU WANT TO CREATE A NEW FILE OR OVER WRITE AN OLD ONE? (Y/N/Q)

If you press "N" and a file with the same name exists you will get an error message and you will be returned to the main menu.

**Enter Text**

To enter text press "T" followed by "RETURN". The screen will show the outline of the label, the number of the current label being entered, the number of labels that the memory will accommodate (variable depending on the size of the labels), the number of lines on the label and the width of the label. To abort entry of text and return to the main menu press "F7". This may be done at any time during the entry of text.

Entry of text is as normal and editing and cursor keys work as normal with the following exceptions:

To insert text place the cursor at the position where the additional text is to be inserted. Press "INS" (SHIFT/DL) and a reverse "I" will appear, in purple, at the bottom right corner of the screen. Any further text now entered will be inserted between the text to the left of the cursor and the text starting under the cursor. To turn this mode off press "INS" again.

To move the cursor easily to each end of the line being entered press "CTRL" and "←" together. If the cursor is not at the start of the line it will be moved there. If it is at the start it will be moved to the end.

At the end of each line press "RETURN" and the cursor will move down to the start of the next line.

The "UP" and "DOWN" cursor keys will only work if there are lines either above or below the one on which the cursor is present.

To complete entry of text either press "RETURN" continuously or press "F1" (the latter can be quicker if the label has been set for a large number of lines and you only wish to enter text on the first few).

In either case the message:

Is This Correct (Y/N)?

will appear. If you wish to modify the text press "W" and the cursor will reappear.

If you press "Y" the message:

Another One (Y/N)?

will appear. If you press "Y" the screen will clear ready for the next label.

If you press "N" you will be returned to the main menu.

A tone will sound at five characters from the end of a line and also at the end of the line. Also if you try to enter too much text on to a line a warning will appear:

LINE TOO LONG

Please Alter

To set auto repeat on all keys press "FF" and to cancel press "F3".

**Search Text**

To search for a label press "4" followed by "RETURN". The screen will clear and you will be asked to enter the search details. During this entry only the cursor left and cursor right keys can be used to move the cursor through the text. However, insert and delete work in a similar manner to the main entry of text.

When you have entered the details press "RETURN". The screen will clear and the message:

SEARCHING

will appear at the top of the screen. The program will then search through all the labels in the file and will list the number and first line of all labels which include the search details. Should the list reach the bottom of the screen the listing may be stopped by holding down any key. Obviously the more details entered in the search pattern the fewer matches will be found.

When all valid entries have been found you will be asked to enter the number of the label to be viewed. Enter the number and press "RETURN". The requested label will be displayed and you will be asked if you want to view another one. If no valid entries are found the message:

ENTRY NOT FOUND

Do you wish to try again (Y/N)?

will be displayed.

**Amend Label**

To amend a label press "A" followed by "RETURN". Proceed as for SEARCH and when the required label

is displayed it may be amended as per entry of data.

**Delete a Label**

To delete a label press "E" followed by "RETURN".

Proceed as for SEARCH until the label is displayed. The message:

IS THIS THE ONE TO BE DELETED Y/N

will appear. If you answer "N" the "Enter Search Details" screen will reappear.

If you enter "Y" the label will be deleted from the file and you will have the opportunity to delete another one.

**Printout Labels**

To printout labels press "\*" followed by "RETURN".

The screen will clear and you will be given the option of either choosing the labels to be printed (useful if you only wish to print a small number from the file), choosing the labels NOT to be printed (i.e. if you wish to print most but not all the labels), or printing the whole file:

Do you wish to select

- 1) ADDRESSES TO BE PRINTED
- 2) ADDRESSES TO BE OMITTED
- 3) TOTAL PRINTOUT

Enter Selection Required

If you choose either "1" or "2" the screen will fill with the number and first line of all the labels in the file. Enter the appropriate numbers and press "RETURN" one at a time. If there are more than 20 labels in the file you can enter "C" to continue the listing. If you do not wish to see anymore press "F" to go to the printout routine. If you choose "3" you are passed straight to the printout routine.

In the printout routine you are first given the choice of printing to the screen or printer. If you select screen, a screen full of labels will be printed.

If you select printer you will first be given the opportunity to alter the device number of the printer (it is preset to 4). This is followed by the secondary address of the printer (printed to screen for lower cost mode).

Next you are asked:

Do you want Manual or Auto paper feed  
Enter "M" or "A"

The next prompt is:

Number of lines to be printed if

where "E" is the total number of lines for the label. If you wish to print less lines, alter the number and press "RETURN".

You are then asked if you are using single or double width labels. Press "S" or "D" as appropriate.

Finally you are requested to enter the width of the paper in inches and prompted with "q". Answer this if necessary (this only applies if you are using double width labels and the measurement is taken from the extreme edges of the paper including the tractor perforations).

If you wish to interrupt the printing at any time hold down the "SPACE" bar until the message:

Do You Wish To Reposition Paper or Stop Printing

appears on the screen. To stop printing press "S" and to reposition the paper press "R".

**Exit Program**

To exit the program or clear the

memory for further entries press "F" followed by "RETURN".

You will first be asked:

ARE YOU SURE Y/N?

If you press "N" you will be returned to the main menu with the existing file intact.

If you press "Y" you will be asked:

Do you want to run again Y/N?

If you press "Y" the memory will be cleared and you will be returned to the initial screen.

If you press "N" the program will erase itself.

**Getting It All In**

The object code is listed in a format that must be entered using the File Data Entry program to be found elsewhere in this issue.

**Late Amendments**

Since the copy for this article was set the author has made some alterations to the program. These are as follows:

- 1) The files are no longer sorted into order. This saves time during the operation of the program and also some memory.
- 2) It is now possible to exit a LOAD routine by holding down the SPACE bar.
- 3) If using disk it is also possible to abort a SAVE in the same manner and any file created will be scratched.
- 4) When the program is in search mode it is now possible to stop the search by pressing "s".
- 5) When printing out labels the program now asks for the number of characters to be left between adjacent labels and it is now possible to set the number of lines between labels. 

PROGRAM - LABELS BY	
Please use SET DATA ENTRY to type in this program.	
0001 00 00 00 00 00 00 00 00 00 00 00 00	0071 00 00 00 00 00 00 00 00 00 00 00 00
0002 00 00 00 00 00 00 00 00 00 00 00 00	0072 00 00 00 00 00 00 00 00 00 00 00 00
0003 00 00 00 00 00 00 00 00 00 00 00 00	0073 00 00 00 00 00 00 00 00 00 00 00 00
0004 00 00 00 00 00 00 00 00 00 00 00 00	0074 00 00 00 00 00 00 00 00 00 00 00 00
0005 00 00 00 00 00 00 00 00 00 00 00 00	0075 00 00 00 00 00 00 00 00 00 00 00 00
0006 00 00 00 00 00 00 00 00 00 00 00 00	0076 00 00 00 00 00 00 00 00 00 00 00 00
0007 00 00 00 00 00 00 00 00 00 00 00 00	0077 00 00 00 00 00 00 00 00 00 00 00 00
0008 00 00 00 00 00 00 00 00 00 00 00 00	0078 00 00 00 00 00 00 00 00 00 00 00 00
0009 00 00 00 00 00 00 00 00 00 00 00 00	0079 00 00 00 00 00 00 00 00 00 00 00 00
0010 00 00 00 00 00 00 00 00 00 00 00 00	0080 00 00 00 00 00 00 00 00 00 00 00 00
0011 00 00 00 00 00 00 00 00 00 00 00 00	0081 00 00 00 00 00 00 00 00 00 00 00 00
0012 00 00 00 00 00 00 00 00 00 00 00 00	0082 00 00 00 00 00 00 00 00 00 00 00 00
0013 00 00 00 00 00 00 00 00 00 00 00 00	0083 00 00 00 00 00 00 00 00 00 00 00 00
0014 00 00 00 00 00 00 00 00 00 00 00 00	0084 00 00 00 00 00 00 00 00 00 00 00 00
0015 00 00 00 00 00 00 00 00 00 00 00 00	0085 00 00 00 00 00 00 00 00 00 00 00 00
0016 00 00 00 00 00 00 00 00 00 00 00 00	0086 00 00 00 00 00 00 00 00 00 00 00 00
0017 00 00 00 00 00 00 00 00 00 00 00 00	0087 00 00 00 00 00 00 00 00 00 00 00 00
0018 00 00 00 00 00 00 00 00 00 00 00 00	0088 00 00 00 00 00 00 00 00 00 00 00 00
0019 00 00 00 00 00 00 00 00 00 00 00 00	0089 00 00 00 00 00 00 00 00 00 00 00 00
0020 00 00 00 00 00 00 00 00 00 00 00 00	0090 00 00 00 00 00 00 00 00 00 00 00 00
0021 00 00 00 00 00 00 00 00 00 00 00 00	0091 00 00 00 00 00 00 00 00 00 00 00 00
0022 00 00 00 00 00 00 00 00 00 00 00 00	0092 00 00 00 00 00 00 00 00 00 00 00 00
0023 00 00 00 00 00 00 00 00 00 00 00 00	0093 00 00 00 00 00 00 00 00 00 00 00 00
0024 00 00 00 00 00 00 00 00 00 00 00 00	0094 00 00 00 00 00 00 00 00 00 00 00 00
0025 00 00 00 00 00 00 00 00 00 00 00 00	0095 00 00 00 00 00 00 00 00 00 00 00 00
0026 00 00 00 00 00 00 00 00 00 00 00 00	0096 00 00 00 00 00 00 00 00 00 00 00 00
0027 00 00 00 00 00 00 00 00 00 00 00 00	0097 00 00 00 00 00 00 00 00 00 00 00 00
0028 00 00 00 00 00 00 00 00 00 00 00 00	0098 00 00 00 00 00 00 00 00 00 00 00 00
0029 00 00 00 00 00 00 00 00 00 00 00 00	0099 00 00 00 00 00 00 00 00 00 00 00 00
0030 00 00 00 00 00 00 00 00 00 00 00 00	0100 00 00 00 00 00 00 00 00 00 00 00 00
0031 00 00 00 00 00 00 00 00 00 00 00 00	0101 00 00 00 00 00 00 00 00 00 00 00 00
0032 00 00 00 00 00 00 00 00 00 00 00 00	0102 00 00 00 00 00 00 00 00 00 00 00 00
0033 00 00 00 00 00 00 00 00 00 00 00 00	0103 00 00 00 00 00 00 00 00 00 00 00 00
0034 00 00 00 00 00 00 00 00 00 00 00 00	0104 00 00 00 00 00 00 00 00 00 00 00 00
0035 00 00 00 00 00 00 00 00 00 00 00 00	0105 00 00 00 00 00 00 00 00 00 00 00 00
0036 00 00 00 00 00 00 00 00 00 00 00 00	0106 00 00 00 00 00 00 00 00 00 00 00 00
0037 00 00 00 00 00 00 00 00 00 00 00 00	0107 00 00 00 00 00 00 00 00 00 00 00 00
0038 00 00 00 00 00 00 00 00 00 00 00 00	0108 00 00 00 00 00 00 00 00 00 00 00 00
0039 00 00 00 00 00 00 00 00 00 00 00 00	0109 00 00 00 00 00 00 00 00 00 00 00 00
0040 00 00 00 00 00 00 00 00 00 00 00 00	0110 00 00 00 00 00 00 00 00 00 00 00 00
0041 00 00 00 00 00 00 00 00 00 00 00 00	0111 00 00 00 00 00 00 00 00 00 00 00 00
0042 00 00 00 00 00 00 00 00 00 00 00 00	0112 00 00 00 00 00 00 00 00 00 00 00 00
0043 00 00 00 00 00 00 00 00 00 00 00 00	0113 00 00 00 00 00 00 00 00 00 00 00 00
0044 00 00 00 00 00 00 00 00 00 00 00 00	0114 00 00 00 00 00 00 00 00 00 00 00 00
0045 00 00 00 00 00 00 00 00 00 00 00 00	0115 00 00 00 00 00 00 00 00 00 00 00 00
0046 00 00 00 00 00 00 00 00 00 00 00 00	0116 00 00 00 00 00 00 00 00 00 00 00 00
0047 00 00 00 00 00 00 00 00 00 00 00 00	0117 00 00 00 00 00 00 00 00 00 00 00 00
0048 00 00 00 00 00 00 00 00 00 00 00 00	0118 00 00 00 00 00 00 00 00 00 00 00 00
0049 00 00 00 00 00 00 00 00 00 00 00 00	0119 00 00 00 00 00 00 00 00 00 00 00 00
0050 00 00 00 00 00 00 00 00 00 00 00 00	0120 00 00 00 00 00 00 00 00 00 00 00 00
0051 00 00 00 00 00 00 00 00 00 00 00 00	0121 00 00 00 00 00 00 00 00 00 00 00 00
0052 00 00 00 00 00 00 00 00 00 00 00 00	0122 00 00 00 00 00 00 00 00 00 00 00 00
0053 00 00 00 00 00 00 00 00 00 00 00 00	0123 00 00 00 00 00 00 00 00 00 00 00 00
0054 00 00 00 00 00 00 00 00 00 00 00 00	0124 00 00 00 00 00 00 00 00 00 00 00 00
0055 00 00 00 00 00 00 00 00 00 00 00 00	0125 00 00 00 00 00 00 00 00 00 00 00 00
0056 00 00 00 00 00 00 00 00 00 00 00 00	0126 00 00 00 00 00 00 00 00 00 00 00 00
0057 00 00 00 00 00 00 00 00 00 00 00 00	0127 00 00 00 00 00 00 00 00 00 00 00 00
0058 00 00 00 00 00 00 00 00 00 00 00 00	0128 00 00 00 00 00 00 00 00 00 00 00 00
0059 00 00 00 00 00 00 00 00 00 00 00 00	0129 00 00 00 00 00 00 00 00 00 00 00 00
0060 00 00 00 00 00 00 00 00 00 00 00 00	0130 00 00 00 00 00 00 00 00 00 00 00 00
0061 00 00 00 00 00 00 00 00 00 00 00 00	0131 00 00 00 00 00 00 00 00 00 00 00 00
0062 00 00 00 00 00 00 00 00 00 00 00 00	0132 00 00 00 00 00 00 00 00 00 00 00 00
0063 00 00 00 00 00 00 00 00 00 00 00 00	0133 00 00 00 00 00 00 00 00 00 00 00 00
0064 00 00 00 00 00 00 00 00 00 00 00 00	0134 00 00 00 00 00 00 00 00 00 00 00 00
0065 00 00 00 00 00 00 00 00 00 00 00 00	0135 00 00 00 00 00 00 00 00 00 00 00 00
0066 00 00 00 00 00 00 00 00 00 00 00 00	0136 00 00 00 00 00 00 00 00 00 00 00 00
0067 00 00 00 00 00 00 00 00 00 00 00 00	0137 00 00 00 00 00 00 00 00 00 00 00 00
0068 00 00 00 00 00 00 00 00 00 00 00 00	0138 00 00 00 00 00 00 00 00 00 00 00 00
0069 00 00 00 00 00 00 00 00 00 00 00 00	0139 00 00 00 00 00 00 00 00 00 00 00 00
0070 00 00 00 00 00 00 00 00 00 00 00 00	0140 00 00 00 00 00 00 00 00 00 00 00 00













2618	82	81	70	62	54	47	40	33	26
2619	86	85	74	66	58	51	44	37	30
2620	90	89	78	70	62	55	48	41	34
2621	94	93	82	74	66	59	52	45	38
2622	98	97	86	78	70	63	56	49	42
2623	102	101	90	82	74	67	60	53	46
2624	106	105	94	86	78	71	64	57	50
2625	110	109	98	90	82	75	68	61	54
2626	114	113	102	94	86	79	72	65	58
2627	118	117	106	98	90	83	76	69	62
2628	122	121	110	102	94	87	80	73	66
2629	126	125	114	106	98	91	84	77	70
2630	130	129	118	110	102	95	88	81	74
2631	134	133	122	114	106	99	92	85	78
2632	138	137	126	118	110	103	96	89	82
2633	142	141	130	122	114	107	100	93	86
2634	146	145	134	126	118	111	104	97	90
2635	150	149	138	130	122	115	108	101	94
2636	154	153	142	134	126	119	112	105	98
2637	158	157	146	138	130	123	116	109	102
2638	162	161	150	142	134	127	120	113	106
2639	166	165	154	146	138	131	124	117	110
2640	170	169	158	150	142	135	128	121	114
2641	174	173	162	154	146	139	132	125	118
2642	178	177	166	158	150	143	136	129	122
2643	182	181	170	162	154	147	140	133	126
2644	186	185	174	166	158	151	144	137	130
2645	190	189	178	170	162	155	148	141	134
2646	194	193	182	174	166	159	152	145	138
2647	198	197	186	178	170	163	156	149	142
2648	202	201	190	182	174	167	160	153	146
2649	206	205	194	186	178	171	164	157	150
2650	210	209	198	190	182	175	168	161	154
2651	214	213	202	194	186	179	172	165	158
2652	218	217	206	198	190	183	176	169	162
2653	222	221	210	202	194	187	180	173	166
2654	226	225	214	206	198	191	184	177	170
2655	230	229	218	210	202	195	188	181	174
2656	234	233	222	214	206	199	192	185	178
2657	238	237	226	218	210	203	196	189	182
2658	242	241	230	222	214	207	200	193	186
2659	246	245	234	226	218	211	204	197	190
2660	250	249	238	230	222	215	208	201	194
2661	254	253	242	234	226	219	212	205	198
2662	258	257	246	238	230	223	216	209	202
2663	262	261	250	242	234	227	220	213	206
2664	266	265	254	246	238	231	224	217	210
2665	270	269	258	250	242	235	228	221	214
2666	274	273	262	254	246	239	232	225	218
2667	278	277	266	258	250	243	236	229	222
2668	282	281	270	262	254	247	240	233	226
2669	286	285	274	266	258	251	244	237	230
2670	290	289	278	270	262	255	248	241	234
2671	294	293	282	274	266	259	252	245	238
2672	298	297	286	278	270	263	256	249	242
2673	302	301	290	282	274	267	260	253	246
2674	306	305	294	286	278	271	264	257	250
2675	310	309	298	290	282	275	268	261	254
2676	314	313	302	294	286	279	272	265	258
2677	318	317	306	298	290	283	276	269	262
2678	322	321	310	302	294	287	280	273	266
2679	326	325	314	306	298	291	284	277	270
2680	330	329	318	310	298	295	288	281	274
2681	334	333	322	314	306	299	292	285	278
2682	338	337	326	318	310	303	296	289	282
2683	342	341	330	322	314	307	300	293	286
2684	346	345	334	326	318	311	304	297	290
2685	350	349	338	330	322	315	308	301	294
2686	354	353	342	334	326	319	312	305	298
2687	358	357	346	338	330	323	316	309	302
2688	362	361	350	342	334	327	320	313	306
2689	366	365	354	346	338	331	324	317	310
2690	370	369	358	350	342	335	328	321	314
2691	374	373	362	354	346	339	332	325	318
2692	378	377	366	358	350	343	336	329	322
2693	382	381	370	362	354	347	340	333	326
2694	386	385	374	366	358	351	344	337	330
2695	390	389	378	370	362	355	348	341	334
2696	394	393	382	374	366	359	352	345	338
2697	398	397	386	378	370	363	356	349	342
2698	402	401	390	382	374	367	360	353	346
2699	406	405	394	386	378	371	364	357	350
2700	410	409	398	390	382	375	368	361	354
2701	414	413	402	394	386	379	372	365	358
2702	418	417	406	398	390	383	376	369	362
2703	422	421	410	402	394	387	380	373	366
2704	426	425	414	406	398	391	384	377	370
2705	430	429	418	410	398	395	388	381	374
2706	434	433	422	414	406	399	392	385	378
2707	438	437	426	418	410	403	396	389	382
2708	442	441	430	422	414	407	400	393	386
2709	446	445	434	426	418	411	404	397	390
2710	450	449	438	430	422	415	408	401	394
2711	454	453	442	434	426	419	412	405	398
2712	458	457	446	438	430	423	416	409	402
2713	462	461	450	442	434	427	420	413	406
2714	466	465	454	446	438	431	424	417	410
2715	470	469	458	450	442	435	428	421	414
2716	474	473	462	454	446	439	432	425	418
2717	478	477	466	458	450	443	436	429	422
2718	482	481	470	462	454	447	440	433	426
2719	486	485	474	466	458	451	444	437	430
2720	490	489	478	470	462	455	448	441	434
2721	494	493	482	474	466	459	452	445	438
2722	498	497	486	478	470	463	456	449	442
2723	502	501	490	482	474	467	460	453	446
2724	506	505	494	486	478	471	464	457	450
2725	510	509	498	490	482	475	468	461	454
2726	514	513	502	494	486	479	472	465	458
2727	518	517	506	498	490	483	476	469	462
2728	522	521	510	502	494	487	480	473	466
2729	526	525	514	506	498	491	484	477	470
2730	530	529	518	510	498	495	488	481	474
2731	534	533	522	514	506	499	492	485	478
2732	538	537	526	518	510	503	496	489	482
2733	542	541	530	522	514	507	500	493	486
2734	546	545	534	526	518	511	504	497	490
2735	550	549	538	530	522	515	508	501	494
2736	554	553	542	534	526	519	512	505	498
2737	558	557	546	538	530	523	516	509	502
2738	562	561	550	542	534	527	520	513	506
2739	566	565	554	546	538	531	524	517	510
2740	570	569	558	550	542	535	528	521	514
2741	574	573	562	554	546	539	532	525	518
2742	578	577	566	558	550	543	536	529	522
2743	582	581	570	562	554	547	540	533	526
2744	586	585	574	566	558	551	544	537	530
2745	590	589	578	570	562	555	548	541	534
2746	594	593	582	574	566	559	552	545	538
2747	598	597	586	578	570	563	556	549	542
2748	602	601	590	582	574	567	560	553	546
2749	606	605	594	586	578	571	564	557	550
2750	610	609	598	590	582	575	568	561	554
2751	614	613	602	594	586	579	572	565	558
2752	618	617	606	598	590	583	576	569	562
2753	622	621	610	602	594	587	580	573	566
2754	626	625	614	606	598	591	584	577	570
2755	630	629	618	610	598	595	588	581	574
2756	634	633	622	614	606	599	592	585	578
2757	638	637	626	618	610	603	596	589	582
2758	642	641	630	622	614	607	600	593	586
2759	646	645	634	626	618	611	604	597	590
2760	650	649	638	630	622	615	608	601	594
2761	654	653	642	634	626	619	612	605	598
2762	658	657	64						







B A E A H

## OOPS!

A number of people seem to be having problems with the *Remember the Plus/4* article that appeared in the December 1986 issue of *Four Commodore*.

The main problem seems to be that people are not noticing that there is a change in the address in Fig 6 - The Merge Routine.

The change occurs 19 lines from the bottom of page 82. The line starting 8000 is the end of the Merge routine. The line starting 80F8 is the start of the Assembler. When entering this section of code do make sure that you change the addresses with the M command before entering the 80F8 line.

A number of symbols were also missing from the text. These were mainly > signs and \$ signs. If your knowledge of machine code isn't good enough to sort out what symbols are missing then a corrected copy of the article is available. If you require a copy of this article then send an A4 stamped addressed envelope to:

Remember the Plus/4 Photocopier  
Four Commodore  
1 Golden Square  
London  
W1R 3AR

## Caption Competition

Since Brian Clough has entered the computer games industry we thought that it would be apt to print a picture of him, and what better prize than a caption competition. Here he is receiving a bottle of Bell's whiskey from his Angle himself. Seems to have split some of his shirt already! If you



can think of a witty caption, then send it off to us by Friday 28 February 1987. The best captions will win £5. Send your entry to: Brian Clough Caption Competition, Four Commodore, 1 Golden Square, London W1R 3AR.

## Congratulations

There were 25 winners in our Melbourne House spot the difference competition featured in the November issue of *Four Commodore*. Each winner will receive a copy of the Melbourne House C16 Collection.

The winners are: Darren Haynes, Kildgerty; Allan Clark, Mrieham; Stephen Clark, Edinburgh; James

Neilson, Glasgow; Bree & Edwin Palfret, Pinnerend, Netherlands; Michael Erginson, London; Liam McDaniel, Widnes; Stuart Charnson, Darwood, Sarnsey; Jaeger de Bruijs, Netherlands; R.F. Briggs, Boleston, Jan Castledine, Frestwich; Richard Walter, Dudley; Andrew Seabrook, Kettering; Justin Harry, Stoke-on-Trent; P.J. Turner, Wakefield; F. Dinalvo, Rushden; Mark Lenton, Nottingham; Andrea Ferreira, Burrely; Roy Dyson, Worcester; F. Good, Moncton; Michael Owen, Bury; E. Widd, Aylesbury; Pia Maria Dahlstedt, Birkbrood, Denmark; Stephen Jones, Norwich; Sagnia Johnson, London.

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Four Commodore incorporating Four 64 is a monthly magazine appearing on the first Friday of each month.

Argus Specialist Publications Limited Editorial & Advertisement Office, Four Commodore, No 1 Golden Square, London W1R 3AR. Telephone 01-493 0800 Telex 901 000.

Subscription rates upon application to Your Commodore Subscription Department, Instant Mail, Times House, 170 The Strand, Strand, Hammersmith, Herts. HA9 7BU.

ISSN 0099-8277





For the COMMODORE, AMSTRAD, BBC MICRO, ELECTRON

# REPTON 3

THE ULTIMATE CHALLENGE



The Screen Editor



The Character Editor



Being moved by a robot



Big time bomb is needed



The Poisonous Fungus grows instantly



Collecting a Golden Crown

## Are you ready for the ultimate challenge?

Our original Repton game was immediately acclaimed and reprinted in a completely new concept, in game requiring dexterity to complete its intricate-style elements and close logical thinking to solve its puzzles. Besides, Repton 3 features an exciting feature from a newly constructed top-of-the-line world whilst keeping the economic process and haunting spirit. This is an astounding game reworking new features (BBC Arcade adventures) without the Micro User magazine.

Get Challenge you the release of Repton 3, large and multi-level-challenging than before. Acorn User's Technical Editor Bruce Smith writes "Repton 3 is better than anything I've played on the BBC Micro or Electron. Brilliant!"

Now, completely rewritten and improved for the Commodore, Amstrad, BBC Micro and Electron, we proudly present Repton 3. For the first time a screen-designer is included, by its simple screens that will please your friends, then see if you can solve their newly designed screens. Another innovation is the character-designer which enables you to design your own monsters, tools, eggs, spirits, diamonds... any or all of the game's character can be redesigned as you wish.

Repton 3 is much larger than its predecessors - it has 24 exciting screens, and players who are skillful enough to complete them all can enter our prize-competition described below. All the favourite Repton characters have been retained, together with several new features, a deeper, poisonous fungus which grows on a alarming rate, time-bombs and time-capsules (for puzzles in the 4th dimension), and golden crowns as well-deserved rewards for your endeavours. **Can YOU complete Repton 3?**

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