

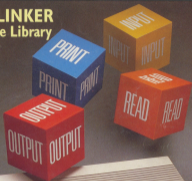
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ARGUS
PRESS
GROUP

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DATA STATEMENTS

Smooth Operator

If you've ever experienced a computer crash caused by a surge in the power supply then an investment in a power filter such as Warwick Products' Supra 7 could prove worthwhile.

Rated at 7 amps - more than enough for most computer systems - the Supra 7 serves two useful purposes. First it smooths out any voltage spikes caused by light switches or by electric motors in heating systems, refrigerators or deep freezers. Secondly the unit filters out radio frequency interference (RFI) which can emanate from many sources.

Including VAT, the price is £14.95 plus 50p postage and packing.

Supplier:

Warwick Products, 50 Marsh Wall, West India Dock, London E14 9JL. Tel: 07-539 2535.



The Supra 7 Power Filter

Little Brother

A new low-cost printer launched by Brother recently promises a print speed of 160 cps. The compact Brother 1299 has a dual interface and three resident fonts: Prestige, Gothic and Quadro.

Priced at £265, the 1299 has Epson and IBM compatibility for both sheet and tractor feed paper.

Supplier:

Brother Computer Peripherals Division, James+Brother, Shepley Street, Guide Bridge, Andover, Hampshire GU14 3AB. Tel: 047-329 6531.

Non-9-to-5 Cascade

Billed as the 'ultimate simulation of true warfare', Cascade have released the first part of the 15 magazine duct based on the music by Paul Hardcastle.

Part 1 - Boot Camp is the training ground for the new 15-year-old recruit stars in the game. Boot Camp contains detailed graphic images and arcade action as the recruit progresses through basic training on a playing area (war zone) which is included in the package as a full-colour map.

On completion of basic training you'll have to wait until the second part, 10 part 2 - Veterans, is released later this year.

Boot Camp is available on £34 cassette for £9.95 or £14.95 on disk.

Supplier:

Cascade Games, 1-3 Mayson Court, Haregate, North Yorkshire YO1 1BB. Tel: (042) 525121. Answerphone (042) 504653.



John Lewis and Nigel Squires make arrangements about basic training on the TurboBlade Mouse.

Re-Inkarnation

Tired, old printer ribbons can be given a new lease of life with MGA Microsystems' MacLinker unit.

Whether the ribbon is made of felt, silk, cotton or nylon, the MacLinker unit will evenly re-ink it via a unique capillary mesh. The manufacturer claims that the use of this unit can extend the life of a ribbon by as much as 40 times for only a few pence each time it is recharged.

Actual prices for any cartridge or unit system can be supplied on application to MGA but typical costs range from £90 to £98 inclusive of VAT and postage.

MGA also market Supra Corporation's 64K buffer for Centronics printers. Known as the MicroStuffer, this unit has the added benefit of being able to reprint the buffer contents at the touch of a button.

The MicroStuffer comes complete with a Centronics paper socket and output lead for £59.99 plus VAT.

Supplier:

MGA Microsystems, Four Tree, Appleton, Kent TN26 2AR. Tel: 0332 83371.

Star Turn

The NL-10 is dead, long live the LC-10! At the recent Which Computer? Show, Star Microsics announced the launch of a new low-cost printer with a higher specification but at a lower cost than the NL-10 that it replaces.

The new multifont LC-10 offers printing speeds of 120 characters per second in draft mode and an NMQ speed of 50 cps, six resident fonts and seven print pitches selectable from a comprehensive front panel.

Another desirable feature which has been included on the new machine is a push feed tractor mechanism which means that paper wastage is kept to a minimum especially when using short forms, tear off sheets such as address labels.

An automatic paper parking capability removes the need to remove and replace tractor feed paper before and after loading in single sheets for those important one-off missions.

The retail price of the LC-10 is £219 including VAT.

Supplier:

Star Microsics UK, Cross House, 40 Unbridge Road, Ealing, London W5 2RS. Tel: 07-448 3888.

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

Budget Booster

Following the recent tie up between Mastertronic and Activision, the limited deal for Activision's back catalogue has been increased to include all the present and future products on the Activision label. The first batch, released in January included *Exolon*, *Ball Blazer* and the smash hit of several years ago, *Ghosts'n Goblins*.

Red Crossman of Activision commented, "In a business where the life may be short lived, the ability to recycle through budget labels is beneficial to all concerned. We are pleased to forge this association with Mastertronic and look forward to an on-going, successful relationship."

In a reciprocal burst of mutual back slapping, a spokesperson at Mastertronic responded, "We are

delighted with this deal with Red, the Activision range reinforces our policy of only releasing the very best quality products on the Blockbuster label."

The Activision/Ricochet titles will be released at £1.99 and £2.99 for all 8-bit machines and 29.99 for 16-bit versions. The deal is important for the image of Mastertronic which is suffering a little under the new Gallup poll sampling system. Despite extremely powerful sheets of "handbags" from Mastertronic, Code Masters are still claiming to have ousted them from the top slot in budget software sales.

Mastertronic:

Mastertronic 2, 18 Paul Street, London EC2. Tel: 01-377 0886.

Activision 23 Finsbury, Hampstead, London N6 3 2PH. Tel: 01-431 1101.

Alternative Entertainment



In the right seat? Roger Bailey grapples

Alternative, reputedly the latest growing software house, has cast a wider net to travel in the rights to products from Paradise, AudioLogic, Incentive and Bubble Bus.

In less than a year Alternative has cleared 36 titles and/or one heavily period during the last PCW Show, it held the top slot in the CIB, Amstrad, Spectrum and consequently, the overall charts.

Roger Bailey, Alternative's Managing Director, boasts, "I don't think the public could ask for better value. I can see no reason why products such as *Trap Door* or *Papaya* at £1.99 should not dominate the charts for months to come."

Also on the Alternative menu are Moon Cresta from Incentive and AudioLogic's *Pyramida*.

Touchline:

Alternative Software: Units 3-6 Ballymore Estate, Penzance, West Yorkshire WF9 5LN. Tel: 0673 287377.

A Change of Place

September sees a change of venue for the PCW Show from Olympia to the large main hall of Earl's Court.

"The Show has outgrown Olympia both in terms of floor space and the increased number of visitors that it now attracts," and PCW Show manager Mike Blackman. He then explained, "It is a move that we have wanted to make for some time and the increased demand for space in 1988 means that the move has to be made now."

The move enables Monfield, the Show's organizers, to divide the exhibition into three sections instead of the usual two. The Business and Leisure areas will still continue but the third area can now be developed to

appeal to serious home computer and small business users.

Each section will have its own separate entrance which should relieve the businessmen who had to queue for extended periods during last year's Show. The extra space inside each hall will also allow the companies to indulge in more ambitious displays than previously permitted at Olympia.

This year's Show is scheduled for 14-18 September and the new venue is also more easily accessible to what promises to be yet another record-breaking crowd of computer users.

Touchline:

MIF: Ltd 8-16 Halkin Street, London W1N 5LP. Tel: 01-638 1265.

Hewson's Telecomsoft

Following an injunction and subsequent court case in which Telecomsoft and Hewson contested publishing rights for Morphix and Magstrom, it was decided for the moment that Telecomsoft could go ahead and release the titles on their Finbird label.

For those who may not have heard the story, the two games, programmed by Graffgold, were originally planned for release by Hewson and the machinery was already in motion for the promotion of the programs at last

September's PCW Show. On the eve of the show, Andrew Hewson was horrified to learn that Steve Turner, Graffgold's boss and author of Magstrom, had signed a programming contract with Telecomsoft for all future Graffgold products and separate contracts for Magstrom and Andrew Braybrook's Morphix.

In a single New Hewson was not only severed from what he imagined would be his two Christmas hits but also from his greatest asset, Andrew Braybrook - author of *Paradroid* and

Uridium.

Prior to the announcement, it was whispered that Turner and Braybrook were searching for a new publisher and it was also rumoured that they had already been flirting with Electronic Arts.

Although Telecomsoft have been given the go-ahead to publish, the Hewson versus Telecomsoft dispute will not reach a conclusion for several months and Andrew Hewson will not cease the fight until the bitter end.

DATA STATEMENTS

Mini Office Moneyplanner

It's not often that a software package gets a heavy plug on television, the last software package that received heavy promotion on the beloved goldfish bowl was Rainbow's Starfighter on GEM Fresh. For a business package to receive a mention in an even rarer occurrence has this in the accolade which Mini Office II has received.

Channel 4's consumer finance show, Moneyplanner, selected the Mini Office II suite of programs as the

best of four home computer finance packages.

The challenge came from SuperCalc 3, Money Manager and PlanIt - a second product from Database, the manufacturers of Mini Office II. Each program was judged on three main criteria: value for money, ease of use and ability to tackle the job in hand successfully. On all counts Mini Office II scored maximum points and, according to Moneyplanner's

producer, Belinda Giles, "would be most suitable for our viewers attempting to produce accounts on their home computer." Mini Office II is available for the C64 and in an expanded form for the C128 for £14.95.

Timeline

Database Software Europe Moneyplanner Park, Addington, Haslemere, Surrey GU26 5AF. Tel: 0625 876988.

Stran Pall

If anyone can find a Commodore 64 program disk that can't be loaded from the latest version of the Excelsior Plus disk drive, Excelsior Micro's managing director, Richard Austin, will supply a free Amiga 500. In his own words he expresses his confidence in the Excelsior's compatibility by saying, "I've have to give away more than two I will say no but".

The competition has been arranged through Excelsior's PR representatives, Solution Public Relations. Excelsior Micro is keen to ensure that the Excelsior is compatible with all Commodore 64 software designed to load from the 5241C disk drive. This would further enhance the growing reputation of the streamlined Excelsior which retails at £159.95, that's £40 cheaper than the Commodore drive.

Relating to the competition, Richard Austin commented, "We have tried to make the Excelsior as efficient as possible but we cannot test every computer game because there are too many of them. Who better than the public to attempt this task for us?"

"Despite the scale of this competition, I doubt whether we'll have to give away many Amigas."

All entrants have to do is to get a postcard and write down the name of any Commodore 64 game obtained from a computer shop which is compatible with the 5241C but not with the latest Excelsior Plus. The first entry received for each different program will win an Amiga. Postcards should be sent to Excelsior Micro, c/o Solution Public Relations, Carlton House, 10-12 Marlborough Place, Brighton BN1 1UB. The closing date is 1st March, 1988.



Excelsior Micro's Richard Austin prepares to enjoy a major disk

Timeline

For the competition
Solution PR, Carlton House, 10-12 Marlborough Place, Brighton BN1 1UB.

Product enquiries

Excelsior Micro, 67 Bridge Street, Exeter, Devonshire EX1 1AF. Tel: 0392 765506.

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- **SIMPLE TO USE!** Just press the button and make a complete backup - tape to disk, tape to tape, disk to tape, disk to disk. THE PROCESS IS AUTOMATIC - JUST GIVE THE BACKUP A NAME.
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- **SPRITE KILLER.** Make yourself invulnerable. Disable sprite collisions - works with any program.
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- **SPRITE MONITOR.** Capture Sprite movement screen by screen. See action and view all the sprites, watch the sprite animation, save or delete any sprite. Load sprites from one game into another to make customised programs.
- **POKE/CHEAT MODE.** Pause the action and enter these values for extra lives etc. then restart the program to make a loading. Ideal for certain games.
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- **MONITOR.** Full feature floating type MACHINE CODE MONITOR. All standard features plus many more - assembly, disassembly, hex dump, interrupt, memory compare, DR, test, number conversion, bank switching, macros, load save etc. Does no memory. Full printer support.
- **DISK MONITOR.** A special monitor for use on the RAM inside your disk drive. All the usual commands - a useful banking tool.
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- **TOTAL COMMANDS.** A whole range of useful new commands including: AUTO LOAD, NUMBERING, DELETE, MERGE, APPEND, CLR, LISTEN, etc., PRINT/PAUSE - but any program (including directory) directly from disk to printer or screen without occupying memory.
- **REDEFINED FUNCTION KEYS.** Single stroke commands for operation of many common commands including: LOAD, SAVE, DR, Load from directory - as used to type in filenames.
- **TAPE TURBO.** Designed to make turbo load/save for your own programs. No screen flashing during loading.

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Contains routines for transferring many of the standard multi-load games from tape to disk. Over 10 titles. Latest additions are: **LAFF KIDZ**, **BOAL MONSTER** (enhanced level option), **EMPHO T' OYST** (any any level), **DISCOVERY**, **LAZARUS/ANDY** and **WORLD CLASS BEAR** (any level, MAZE, SHOOTER, POKE), **IMPULSION**, **TRIPAN**, plus all the other excellent programs: **SHARKS**, **GRAND**, **WORLD RANGL**, **BARONS**, **LEB 1** and **1**, **CHRYSLER**, **SPRINTCYCLE** etc. Works in conjunction with ACTION REPLAY.

Disk includes **GRAPHIC EMBLEM** for displaying pictures saved via ACTION REPLAY. For Warp 25, Superload - see Action Replay manual (at speed up) that 'tapes' or 'transfers' programs to the disk they have been missing.

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MK III TO MK IV? Don't need a 64 and we will send you the new MK IV chip to plug into your cartridge. (Returns in more cases)
MK III TO MK IV 'PROFESSIONAL'? Good previous cartridge plus £29.99 and we will send you a new Professional MK IV.
MK I Action Replay owners can get I Chipset cartridge apart with the MK IV Professional. Need sub-cartridge plus hardware.

PERFORMANCE PROMISE

Action Replay will backup any program that any other cartridge can backup and more. Unlike any conventional backup utility it's full featured. Unlike any cartridge (or computer) others use when they often and use have many of the Action Replay MK IV features are either not there or have to be loaded from floppy disks. What you buy from DAEI is your best backup choice as it can save time amount it takes. It doesn't do a full backup.

Programming

If you've got a brilliant idea for a game, but you're not too sure how to go about it, this article will provide the tips and advice that will put you on the right road

By Tony Hetherington

Have you ever looked at a game or read a review and thought that you could write a chart topping game? If so, then why not give it a go. The worst thing that could happen is that you're left with a game that's simply enjoyed by your friends or you could become the first software millionaire!

Before we start it is important to remember that not everyone has your outlook on games and the market, so if you hit a brick wall, back off and try elsewhere. This can be a frustrating business but don't add to your problems by engaging in arguments fuelled by heated egos.

So you want to write a game? The first thing you have to do is find answers to the following important questions.

• **What type of game is it going to be?**

Is it going to be an adventure, an arcade game, a sports simulation or a war or strategy game? It is an important choice since arcade games sell considerably more than others.

• **Is it original?**

If it isn't then forget it, as no one is going to consider the 15th version of

Guardlet, Space Invaders or Marble Madness. You can only con some of the people some of the time and you're unlikely to get away with a rip-off of a game. After all how would you feel if someone stole your ideas?

• **Which computer will it run on?**

The C64 will has the biggest market and so a game for this machine should sell well. However, you should also think whether the game can be converted to other home micros; does it need the extra capacity offered by disk or can it be updated to become one of the growing band of Amiga games. Whatever machine you choose you should try and push it to its limits.

• **Is this game your best idea?**

It's surprising how often a programmer gets stuck in a project and checks other ideas until they're flummoxed what they're working on. Sometimes the best idea never sees the light of day.

• **Is the computer necessary?**

An odd question but an important one when you consider the number of

games of the book, film and board game that are appearing on the shelves. If the computer version is actually harder to play than it's unlikely to be accepted.

• **Will the game have lasting appeal?**

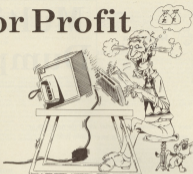
It takes almost six months for a game to reach the shops so don't make it too topical as it will be out of date by the time it's released. For example, at the time of writing this the news is full of storms, floods and stock market crashes but by the time you read this ...

Once you've pondered these pertinent points you should have a working idea. If you haven't, then don't despair as software houses are always on the look out for programmers for conversion work or to team up with a games-designer who can't program. The best way to approach them is to show them what you can do either through demo programs or your version of a coast-to-coast game.

Writing the Game

When you write the game use a well-known development toolkit or

for Profit



assembler as well as commercial sprite editors and graphic packages as this will make life easier.

Include as much animation and graphic detail in your game as you can possibly cram in as this will not only grab the eye of the software manager but also the buyers and reviewers. For example, the most memorable part of *Odin's Heartland* is the way the skeletons crumble when they're slain.

Leave room for a sound track or sound effect if you can't do them yourself, but ensure they can be turned off as many players hate their games going late into the night.

Include features such as high score tables, load and save game options and joystick and user definable keyboard options to make your game as playable as possible. If you've got room, include a demo routine or short on-screen instructions so players can load and go.

Write your program using clear structured routines and keep them well documented. It may sound like hard work but it will actually make things a lot easier particularly when you debugging or make changes. Software houses nearly always want changes.

When you've finished coding, test and debug it and ensure that you

actually like playing it. If you don't then nobody else will. When you think you have the best version save it several times, try it on your friends and then submit it to a software house.

Submitting Games

It is important to ensure that you include all the relevant information including details of the machine requirements, a short description of the game describing why it's different and hints or saved game positions so that the software evaluator can see as much as possible, as quickly as possible.

This is all part of making it easy for the software house to say, yes!

If you haven't finished the game then send at least a demo routine or some sample graphics as it's very difficult to get an idea across to a busy man only on paper.

Send the game to the software house that's right for your type of game. For example you'll probably be wasting your time sending an adventure to Elite or a shoot-em-up to Level 9.

Finally, don't give up. It is unlikely that your first effort will be accepted on the first attempt so take

constructive criticism and learn from your mistakes.

How much can you earn?

The papers were once full of the thousands that young programmers were making and I'm afraid these accounts are largely exaggerated. However, if a game is accepted and sells well on more than one format it could bring in a tidy sum. Therefore you should be careful about what deal you accept. Some software houses offer a fixed sum while others have a royalty payment paid for each game sold. You're probably better off with a royalty deal since it also shows confidence in your own game. Either way ask for an advance and a contract and check the small print.

There is no real need to involve lawyers and secrecy clauses to protect your work since I find that sending a copy of the program to yourself by recorded delivery is proof enough.

If you think this is all too much then why not start the ball rolling and send off a program to *Year Commodore*. If it's accepted you'll receive a cheque for your program and you'll be well on your way to programming for profit!



What a
Dump!

Multi Dump

*Teach your Commodore to print across the full width of
the paper on your Epson or Canon printer*

By David Wilkinson

With this handy utility, high resolution and character screens can be dumped at full or half paper width by simply pressing a function key. A user friendly BASIC program is provided to simplify the setting up of the machine language program. Screen location addresses can be given in decimal or hex and you can also dump screens which use special character sets. Any printer which uses the Epson set of control codes can be used when connected to the user port on the C64.

The Epson FX80, the Epson LX80, the Canon P30-1000A or the Kaga Tazari printers will all work correctly with Multi Dump. You will need a cable with a plug for the C64 user port on one end and a Centronics printer plug on the other end. These can be bought made up for about £13, or you can make up your own as described in the October 1987 issue of *Four Commodore*.

Typing in Multi Dump

The machine code program which does the work is given in program 1 as a self-selecting BASIC program. Type

this in and save it before you run it. Once you have it safe, type RUN. The choices are that you will have made a typing error, and if so the program will tell you which line the error is on. Correct the error and RUN it again. When there are no more errors you should save the program again.

You can now test Multi Dump by typing \$\$\$\$2602 and then pressing function key 0. Provided your printer is switched on and connected correctly you should get a half page width dump of your screen on the printer. If you have additional blank lines on your printout don't worry, this can be corrected by using program 2, which is the BASIC set-up program for Multi Dump.

Using the Set-Up Program

Press RUN/RESTORE to switch off Multi Dump and type NEW 0 to have you remembered to save your corrected program's. Now type in program 2 and save it. Notice the gaps in the line numbers, these gaps are for lines which will be added later. A dump of the first page of the set-up

program is shown in figure 1. As you can see, the set-up program asks questions which must be answered with Y for yes, or N for no. Answering Y for each question will restore the default values to the Multi Dump machine code. If you answer N to any of the first three questions, you will then be asked for the location addresses of the screen or character set you want to use.

These can be given as decimal values, or, if provided by the dollar sign, as hexadecimal values, e.g. the program will accept either 37344 or \$9000 as equally correct lines at input.

You can decide where on the page you want to position the small screen dump. Typing in zero puts the picture on the left half of the page, while 40 puts the picture on the right half.

If your printout has narrow black bands across the page, answer N to the narrow line find question. This will increase the line feed from 13/216 inches to 24/216 inches and should correct the problem. If your printout has white bands between each printed

Continued on page 18

1571/1541 Drive Alignment Package.

1571/1541 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and size adjustment. Allows you to test each full and half track as you realign the drive. Complete instruction manual on aligning both 1571 and 1541 drives. Even includes instruction on how to load the alignment program when running disk unit (DAD)

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The 128 Helper is the first electronic reference manual for the 128. Let's say you are in the middle of writing a program in Basic when you realize that you need more information on a specific command, just touch the help key, almost instantly a menu appears with all Basic commands, select the command in question and a screen of detailed information appears, at the press of a key you return to your Basic program. The most exciting feature of the 128 Helper is the program is user definable. The program will guide you to create your own custom screen list. This program will only cost you £24.95.

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line, this is because the printer is set to produce an automatic line feed for each carriage return. To eliminate this, enter N to the line feed question.

The machine code for Multi Dump is tucked away at the top of the spare memory block - from 5246 (BC1A6) to 5247 (BC1FF). This means that it can stay there without interference from BASIC programs and is safe even from many machine language programs which are stored at 4932 (BC00).

Once you have installed Multi Dump, you can load your own BASIC or Machine language program, use it to draw a picture, or create a screen from CHM characters and then press the appropriate function key to get a hard copy. (This will work only if your program does not overwrite Multi Dump, or change the interrupt vector.)

Figure 1

```

          MULTIDUMP
PRINTS HIRTS & CHAR SCREENS
ON CANON & EPSON PRINTERS
USING PARALLEL I/O IN USER PORT
COPYRIGHT D.O.WILKINSON OCT 1987

HIRTS SCREEN ADDR=0122(02000) OK? Y/N M
GIVE NEW ADDRESS - 54400

CHAR SCREEN ADDR=1824(0B400) OK? Y/N Y
STANDARD CHAR. SET OK? Y/N Y

SPACES BEFORE START OF SMALL
PICTURE = 28 OK? Y/N M
GIVE NO. OF SPACES (0-40) @

MARGIN LINE FEED OK? Y/N Y
LINE FEED REQUIRED? Y/N
  
```

Figure 2

Simplifying Multi Dump

You can load and run programs 1 and 2 each time you want to use Multi Dump, but it is much more convenient to store the machine code as a program and load this automatically every time you run the set-up program.

To do this you need to modify the set-up program by loading it and adding the following lines:

```

30 A=A+C1FA:GOTO130
180 IFA:GOTO130
110 IFPEEK(52464)=17AND
PEEK(5247)=0:GOTO130
and for tape users:
120 LOAD "MULTIDUMP.C"
or for disk users:
120 LOAD "MULTIDUMP.C",1
  
```

Save the modified set-up program under a new name and then load and run program 1. The machine code for this program is now in memory and can be saved by typing in the following commands directly:

```

POKE45166:POKE44205
POKE45167:POKE48208
then for tape users:
SAVE "MULTIDUMP.C"
or for disk users:
SAVE "MULTIDUMP.C",1
  
```

Your machine code program will then be saved from memory. This procedure alters the memory pointers and to restore them to the usual values you must switch the computer off and then on again. For tape users it is important that the machine code program is stored immediately

following the modified set-up program.

Printing your Character Screen

Press key 0 or 7 and Multi Dump will give you an exact copy of your screen as you see it. This means that you can use all the graphic characters, or the lower case character set and they will all be faithfully reproduced. The default character screen is the normal text screen which starts at 1024 (30400) but the BASIC set-up program allows you to change this to any memory block you want. If you wish, you can also use Multi Dump with special character sets.

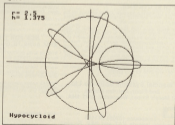
Printing your High Resolution Screen

Pressing key 0 or 2 will result in the high-res screen being dumped to the printer. The high-res screen is stored at a different memory location to the normal text screen. Multi Dump uses as a default the memory block at 4192 (23000) which is used by many drawing programs.

However, the BASIC set-up program allows you to alter this to any block you wish. The drawing shown in Figure 2 was drawn using Basic Lightning, which stores its high-res screen under the name at 57344 (3C000).

You can retrieve the high-res screen data from any memory block, but if you store your screen in the block starting at 4932 (BC000) it will overwrite Multi Dump!

See listing on page 102



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- Villain ● DDE ● Monitor ● Drive monitor ● Sprite editing ● Centronics interface ● Back format ● Low Res screen change ● F10 ● Scrolling up and down
- Save and continue settings ● Co-ordinated keystrokes ● Printer/Transfer
- Hex to decimal conversion ● Alias, symbols and variables may all have hexadecimal values ● Trace, Dump, Order, Mem.

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Label Linker

Learn the secret of labelling for BASIC programs which allows easy appending of separate modules

By David Kelsey

Although BASIC 7.0 provides many excellent commands to allow structured programming, it leaves a little to be desired on the statements which provide line numbers. It is always a nuisance to have to guess the line number that you want.

Suppose you want to jump to a subroutine, which you haven't coded yet; you must guess the line number that you think you might start coding at. Almost always, this is not the case.

It would be so much easier to type "GOSUB "CLEAR SCREEN"", then later define the "CLEAR SCREEN" label to denote that the following code is where this GOSUB is pointing to.

Another useful feature would be if this subroutine wasn't actually in the main program, but was the name of another subroutine which was stored on disk or tape.

This would provide the user with the ability to call subroutines which had been previously written and tested without having to retype them in.

This would then allow libraries to be built, and if you update one of the library modules, all programs using it will be modified without having to alter all programs. All you have to do is relink them.

All this provides more facilities to do structured programming and to encourage better programming techniques.



Defining Labels

As already described, we use labels instead of line numbers for statements such as GOSUB, GOTO, TRAP,

RESTORE etc. This is done by just replacing the line number with text. The text must be enclosed by inverted commas, e.g. GOSUB "TEST PRINT"

We also need a way to define which line numbers refer to labels, and this is done by using the REM statement. The following example shows how to define a label:

```
REM F"CLEAR SCREEN"
```

The text within the inverted commas is the label, and the F signals the program that this text is a label.

There are restrictions put on labels, and the first of these is a label cannot be greater than 16 characters. Also you must define a label as you cannot just GOSUB "".

Linking

You can just have one program which uses labels referencing lines in other places within the same program, but the Label-Linker allows much more than that.

It provides the facility to join several separately saved programs and create one large BASIC program. Not only that, but you can reference a label from one program which has been defined in a totally separate program. This means however that you cannot use the same label name in two different program modules that you

want to join, as the Label-Linker will not know which one you are referring to. This process of joining is called LINKING.

The separate programs that are to be linked together need not necessarily be complete programs, but could just be small subroutines or even just blocks of DATA statements. These programs are called MODULES.

The Label-Linker will require the names of the modules that you wish to link, and the order that you give them, will define the order of the final BASIC program.

There is one extra facility that the Label-Linker provides. If you have defined a subroutine, and saved it, instead of having to give the subroutine a label at the beginning of the routine, you can just reference this routine by using the name you have saved it under as the label name. For example, if the routine was saved under the name "CLEAR SCREEN", then all you have to do to call this routine would be to

```
GOSUB "CLEAR SCREEN"
```

No "REM #'s line is needed in the routine.

"CLEAR SCREEN" is treated as a label, and so must be unique. An error would result if you have a line "REM # 'CLEAR SCREEN'" in any of the program modules as well as a program name.

While coding a program using labels, it is still possible to remember the program, but obviously any statements with a label will remain unchanged.

Below is a listing of this type of use. It has three separate modules which are described under their own headers.

"MAIN"

```
10 DIM A(20,15)
20 RESTORE "SCREEN
   DATA
30 FOR LI= 0 TO 20
40 FOR L2=0 to 15
50 READ A(LI,L2)
60 PRINT L2
70 NEXT L1
80 GOSUB "CLEAR SCREEN"
90 GOSUB "PRINTER INIT"
100 GOSUB "CALCULATE"
110
120 REM "CALCULATE"
130
140
150 RETURN
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600
3700
3800
3900
4000
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8300
8400
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8800
8900
9000
9100
9200
9300
9400
9500
9600
9700
9800
9900
10000
```

"SCREEN DATA"

```
10 DATA 192,193,135,etc
20 DATA etc
30 DATA etc
```

"PRINTER CONTROL"

```
30 ...
30 ...
30 ...
40 GOSUB "CALCULATE"
50 ...
60 ...
100 REM "PRINTER INIT"
110 OPEN#4,7
120 PRINT #4
130 RETURN
140 REM "PAGE ADVANCE"
150 SET=CHR$(47)
160 GOSUB "PRINT SET"
170 RETURN
```

"PRINT SET"

```
10 PRINT #4 SETS
20 PRINT #4
30 RETURN
```

Note that you can link program modules or just data modules. There is a danger with data statements. If you include a module which reads its own data statements, and you have another module which reads data statements, then there is the possibility that the modules could start reading from the wrong position or the wrong set of data statements. To deal with this situation, the RESTORE statement can be used to inform BASIC where to start reading from. The RESTORE statement also works with labels as shown in the above example.

Using the Label Linker

Type in the program "DATA-LOADER", and save it under that name. Then type in the program "ROOT-LOADER" and save it. Type RUN "ROOT-LOADER". The loader will generate the required program, and save it to disk under the name "LABEL LINKER". To then execute the label linker type... 'LOAD "LABEL LINKER", BIRANK1: SYSTEM'

The Label Linker requires certain information. This will be prompted to you.

The questions are:

"Start address (HDD)?"

This allows control of where the final BASIC program will be stored in memory. The practical use of this is to

allow code programs to be stored in the lower half of memory, with the BASIC program above it. Then your BASIC program can call those machine code routines. It also lets the user use memory not usually reserved for BASIC (e.g. the section at \$1900).

The default is the usual start of BASIC text '1001'. Once you have saved the program, and reset the computer, if you use the BLOAD command, then the program will be re-loaded at wherever the BASIC starts is, not at the address you may have linked it to. This won't affect the actual BASIC program, but it won't be in the part of memory you want it. To get over this, you can either redirect the start of BASIC using the LOADER program as usual, and load using BLOAD as usual, or you can use the BLOAD command, which will place it in the area in memory that you specified when running the Label-Linker. However, because BASIC hasn't been told where this program starts, it will either not recognise that it is there, or you will just get rubbish displayed when you try and LIST it:

```
"Display link map on scr or pr
10/20"
```

At the end of the linking, a link map is produced (this is explained later). This tells the system whether you want to output the map to the printer or screen.

If nothing is entered or an unrecognisable character is entered then the output is defaulted to the screen. From here, all that is required are the modules to be linked. The first prompt is:

```
"ENTER MAIN MODULE NAME :"
```

This asks for the main program controls and the use of the external subroutines.

The prompts are as follows:

```
"ENTER MODULE NAME :"
```

These are the names of the programs containing the subroutines. Just pressing enter on any of these prompts will start the Label-Linker processing, producing the final 'object' program.

Both the entries for "MAIN MODULE" and "MODULE" names are the same. If you just enter the filename, then it will try to load from disk, device 8. However the medium where the modules come from can be varied. A prefix can be given in the form of "p/filename", where 'p' is the device where the module comes from, and 'filename' is the name of the module to be included.

The following table gives the possible options for devices:

P	Device Number
a	disk device 8
b	disk device 9
c	disk device 10
d	disk device 11
t	tape device 1

It is possible to add devices onto this, and define your own prefixes, for example a virtual (RAM DISK) disk at device address 12 could be given a prefix of 'V'. This is described in the expansion section.

Note that whatever order you give the program names, they will have the same order in the final compiled program.

When the Label-Linker replaces labels with line numbers, it doesn't necessarily replace it with the line number that the label is defined on. It replaces it with the first non-REM line number after the label, for example:

```
120 GOSUB "TEST PORT" : —
This line is replaced by:
GOSUB 1899
1899 REM "TEST PORT"
1920 REM THIS SECTION OF THE
1960 REM PROGRAM TESTS TO
SEE
1970 REM IF A PORT SIGNAL HAS
1980 REM BEEN CHANGED.
1990 PP=PEEK(DIGC"DIRM")
```

Link Map

This just gives some general information about what has been done. In the above coded program, the following link map would be produced:

Label Name	Type	Line No.
main	start	----
screen data	start	----
printer control	start	----
print off	start	----
calculation	start	----
printer test	start	----
page advance	start	----

The '...' just refers to the fact that a line number will be displayed. It doesn't matter for this example what they are.

The line numbers say what line number this label is replacing, not where the label definition can be found. Remember that when linking, the Label-Linker locates the first 'non-REM' line after the label definition.

Messages

The Label-Linker has a lot of error checking, and will display any relevant error messages. These are as follows:

device 'x' not present - this means that a device which has been assigned the prefix 'x' (x being just an example) is not communicating with the computer.

file 'example' on device 'x' does not exist - the file name example could not be loaded as the file couldn't be found. Or no disk is in device 'x'.

'x' has illegal device number - a prefix has been defined with a device number which isn't in input medium, e.g. you might have selected the device number for the screen. It isn't possible to load from the screen.

no memory left to load 'example' - all memory has been used up; cannot load this module, or any other module after it. You can either reduce the size of the program, or the BASIC start address.

unknown error on loading 'example' - the file 'example' could not be loaded due to some kind of error, not listed above.

line no. '1111' in module 'example' contains unswitched reference - the module 'example' could not be reassembled because the line '1111' has a statement which refers to a line number which doesn't exist in the module.

over 48816 lines in complete program, unable to continue - while joining the modules together, the number of lines so far exceeds the maximum possible in BASIC. Lines would have to be concatenated to reduce the number of lines in a module. (I would be very surprised if someone made this error.)

unable to update following line, too long - the line listed below cannot be updated because when the labels are replaced by line numbers, the line is too long to cope with. Another way this error could occur is if you have entered a line using the shorthand method, which allows longer lines to be entered. If this error does occur, then the offending line will have to be split into two separate lines. Also note that the line has been reassembled.

unable to update lines due to lack of memory - while trying to replace labels with line numbers, all of memory is

used up. This is not easy to solve, an unknown error has occurred during reassembling or trying to replace a line another error, not mentioned above has occurred (should never be displayed).

no label defined in line below - the line displayed has a statement which can have a label, but there are no characters within the inverted commas, e.g. GOTO "" will cause this error.

label too large (-16) in line below - a label has been defined or used which is greater than 16 characters.

label 'example' already defined - the label example has been defined at least twice. You are only allowed unique labels within the whole of the program. You cannot use the same label in different modules.

no line number, label or statement - a statement requiring a line number label or more statements, hasn't got any, e.g. 10 IF A=1 THEN

Label 'example' not defined - the label 'example' has not got a definition in any of the modules, i.e. there is no line with the statement REM \$ "EXAMPLE"

Labeling Statements

The following statements can have labels instead of line numbers:

```
GOTO
GOSUB
ON GOTO
ON GOSUB
RESTORE
RESUME
```

Commands such as RUN, LIST etc CANNOT have labels, even if they are used within a BASIC program.

These commands can be expanded on. If new commands are added to the BASIC, then if these new commands use TOKEN numbering, then they can be added to the Label-Linker.

See the section on 'ABILITY TO UPGRADE' for further information.

Final Notes

During the time the Label-Linker is running, NEVER press RUN/STOP and RESTORE. If you have typed something wrong, or you just want the Linker to stop, then you will have to use the RESET button.

Another thing that you may find useful, is to set up the boot sector for the Label-Linker. To load, all you

would then have to type in 'BANK 1:R00F'.

It is possible to have the Label-Linker permanently loaded, but you would have to redefine the start of BASIC variables to at least the address 45980.

The Label-Linker does its own renumbering, so when the program has been linked, you will find the line numbers in steps of 1, starting at 1. If this is not satisfactory, you can just RENUMBER the program.

Ability to Upgrade and Patches

As mentioned earlier, it is possible to upgrade this program to allow for extra devices or modules for modules, and it is also possible for it to cope with extra commands which may also use line numbers. All the statements within BASIC 7.0 which use line numbers have been included, but if BASIC is expanded, then this program can cope with this. However, the new BASIC statements must be taken care of for this program to recognise it, and as one token label are not possible in BASIC 7.0, then two token labels must be used. As the tokens 86 and 87 have to be used to their full extent, expansion has been based around the use of these. For example, if you add a new BASIC statement 'CALL', and when interpreted by the BASIC which has been modified, it is considered to the token '86 844', then these values could be added to the Label-Linker such that if a label was placed after 'CALL' instead of a line number, then the Label-Linker will recognise it as a label, and replace it with the appropriate line numbers.

A utility program has been provided to do this for you.

The Utility Program

The utility program has been supplied in separate modules for you to use the Label-Linker on.

Each program should be saved under the names given in the comment block at the start of each module. The four modules are:

```
UTILMAIN
UPDATE DEVICE
UPDATE COMMAND
TEXTENTLMOD
```

(This is a simple text input and display module which could be modified and incorporated into your own program if you wish.)

Run the Label-Linker as explained above. Press enter for the first prompt, and select screen or printer for the link-map. When prompted for the main module name type 'UTILMAIN' and press return. For other prompts, type in the following order:
UPDATE DEVICE (return)
UPDATE COMMAND (return)
TEXTENTLMOD (return)
(return)

It should now say linking in progress.

If all goes well, the message 'pass 1' and 'pass 2' will be displayed, and then after a little while, the link map will be printed.

Save the programs under the name 'LABEL-UTILITY'. Enter and save the program 'BOOT.UTIL'. To run the utility, type RUN "BOOT.UTIL".

A menu is displayed giving the options available.

The first option will let you change the device profiles with their corresponding numbers.

The adding ones are displayed and the program prompts for a prefix. Once entered, you give the device number you want to correspond to that prefix.

If you enter a prefix which already exists, then the device number will be changed to the new one just entered. If you entered a new prefix, and there is room in the table, then it is added to the table, with its corresponding device number.

To exit this change, just press enter when prompted for prefix.

The next two options are used to update the Label-Linker to recognise new commands which have been wedged into the operating system. The new commands are stored in BASIC programs and in the form of special values. As BASIC 7.0 used all the single byte values possible for their commands, it had to use double bytes to define commands. The commands can be expanded on, using the same technique, but if a new command uses few numbers, then you may want the Label-Linker to know about these new commands.

The current table contents are displayed, and the program prompts for a command. The two commands are 'I' for insert, or 'D' for delete.

When either option is given, the program then prompts for a token. If possible, the program then tries to either insert or delete the token from the table. If it can't then a message is

displayed saying what went wrong. To exit this screen, just press enter on the command line.

Option 4 erases the utility, and updates the Label-Linker. It compares the current version to 'OLDLINKER' deleting any previous copy, and puts the new version onto disk under the name 'LABEL-LINKER'.

Cassette Based Users

This program has been designed with disk users in mind, but should be possible to update the loader, and the BASIC programs for use with a cassette recorder. The main changes being the BLOAD, and the BSAVE commands. The BLOAD could be replaced with 'LOAD' '*,1' and specifying the particular bank to be loaded.

BSAVE is a little more difficult. Either the monitor has to be used, or there may be ways of calling the save routine and specify the required parameters with BASIC, a programmers reference guide would be helpful.

Extra Program

Included also in this package, is a simple compactator program. It will remove all REMs and spaces from a program. For example it could be used to remove all the labels and the 'object' program by removing all REM statements if desired.

The loader is similar to the one used by the Label-Linker, and will require a 'boot loader' program. Type in the loader, then save it under the name 'COMPACT.DATA'. Load in the program 'boot loader', and change the 'BLOAD' command to 'BLOAD COMPACT.DATA'.

Once this is done, save the loader under the name 'BOOT.LOADER'. To execute the program, just type 'RUN "BOOT.LOADER"'. The loader will place the compacted in memory, then save a copy to disk under the name 'COMPACTOR'.

Using the Compactator

To load, type BLOAD 'COMPACTOR.BI'

To remove just spaces, type 'BANK 0:SY528672.1F'

To remove just REMs, type 'BANK 0:SY528673.1F'

To remove both REMs and spaces, type 'BANK:SY528674.1F'

See things on page 182

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Games Reviews

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Star Wars

It's amazing how many of the Christmas games were based on arcade originals. Having drained as much as possible from Trivial Pursuit, Denmark are now getting back into action games with Star Wars.

The game replays the closing scenes of the first Star Wars film as Luke Skywalker teams in on the Death Star to save the coup-de-grace to the Empire's evil plans.

The game opens in deep space as Luke battles the Tie-Fighters of Darth Vader's fleet. There's nothing particularly innovative about this phase and the whole section strongly resembles an update on the old Star Trek action screens.

Eventually the hunched attackers make a run for cover and you can enter the second stage of the battle as you pick your way through the laser defence towers on the Death Star's surface. As you steer your X-Fighter through the forest of towers you have to blast the laser mounts on the top of each of them to proceed, in a poor man's Starfighter scenario.

The final attack phase is the grand let run over and under the obstacles ranged along the trench which leads to the Death Star's exhaust port. Depositing a high explosive

charge into the exhaust port at the end of the trench will finish the Empire war machine and complete the game.

The game isn't spectacularly innovative but its strength lies in the difficulty levels. There are three of these - for some unfathomable reason numbered 1, 2 and 3 - the lowest level is fairly easy and avoids the lower challenge but the highest level is sure to get the adrenalin rushing about.

For me, Denmark often fall short of the mark but if you want sweaty action you might like to give this a try.

A.C.E.

Features:

Title: Star Wars. **Developer:** Denmark, 27 Maryfield Road, London SW19 5TA. **Tel:** 01-847 3622. **Machines:** C64. **Price:** £2.95 (UK) £12.95 (USA).

Originality: 3/10. **Playability:** 7/10. **Graphics:** 5/10. **Value:** 6/10.

Gary Liniker's Superstar Soccer

Football games seem to divide into two groups - you either play on the field where the International Soccer is King or watch from the sidelines in games like Football Manager. Gary Liniker's Superstar Soccer is set to change that as you not only select your team but also decide tactics and play either as the centre forward or the goalkeeper.

To play the full game you will have to buy a disk drive or be content with the severely cut down cassette version in which you only play the games themselves and miss out on some of the cup, promotion and relegation battles and the chance to improve your squad by training, diving into the transfer market or recruiting new players!

The cassette version does have all four league tables and starts you at the foot of the fourth but all you can do is play single games against human or computer opponents. These football matches are six aside games which can be speeded up to 15 times normal time. You can control either the





goalkeeper and hopefully make spectacular saves or lead the goal rush as the centre forward. The other four players are computer wingers and defenders whose actions depend on the tactics you select whenever the game stops because of a goal, half-time or a throw in, corner or goal kick. These tactics determine how much of the defence will push up to support the forwards and whether the computer players will pass to you, the centre or shoot at goal themselves.

To take a shot you simply hold and release the fire button when the gauge at the top of the screen shows the direction you want to shoot in. To pass you must tap the button and push the joystick in one of eight directions that determines whether you pass the ball to a speeded player, the nearest player or to an area of the field. The fireworks really start flying when the ball is in the air as a press of the fire button will make your player leap to head the ball or even execute a perfect overhead sidestep kick to send the ball flying past the keeper into the back of the net!

If you have the disk version then each game becomes more meaningful as a step score promotion or towards cup glory. You can select any team to play in either an English or American league and play 7 or 15 games each season even though there are 16 teams in each division.

To improve your chances you will need to strengthen your squad of ten players by trading them for more skilled players or spending some of your initial 250 trading points to send the entire team to a training camp or recruit a youngster and spend trading points to build up his skills. At the end of each season you'll receive more trading points depending on your achievements during the past year.

The object of the game is to win as many games, championships and cups as possible in nine seasons to achieve the highest possible rating. The complete disk version contains both football playing and menu games in a game for the first time that allows only team and league access times. However, even with these considerable delays this is better than the cassette version that has been cut into oblivion and is like playing football with one leg tied behind your back! The marks below are for the disk version. Cassette owners should half the marks as they only get half the game! T.H.

Teacher:

Title: Gary Jarrold's Superior Soccer. **Supplier:** Games Graphics, 10 Cannon Street, Stamford, N.ants. Tel: 021-226 5177. **Manufacturer:** C&A. **Price:** £6.99 (C&A) £14.99 (Retail). **Originality:** 7/10. **Playability:** 8/10. **Graphics:** 5/10. **Value:** 8/10.

Out Run

Well, US Gold, you sold us that this was the 1987 blockbuster, the Christmas number one program and other such hype. In the main you sold the truth but there are probably many disappointed purchasers bored after a day's hard driving.

Out Run is certainly an impressive piece of programming but stripping away the original arcade game's high quality graphics and animation content leaves a fairly average road racing game.

The conversion includes all five of the original routes but, once you've mastered the art of oversteering, most of the game is played with the accelerator held on the floor and all you have to do is admire the scenery.



For real Out Run junkies there's a freebie audio tape from the original which resembles the musical wallpaper currently adorning the sound of fast music being rashed up at the local hypermarket. Perhaps there's a hint of a Prologus slip in its inclusion with this package.

If you haven't seen Sega's Out Run - the arcade machine - it involves a cool dude in a hot red roadster with his seat cover by his side. After selecting a five section route he has to get through the traffic to complete each stage within a time limit to win the race and gain the admiration of the crowd.

This is accurately reproduced in the US Gold conversion but it lacks the spark of challenge and addictiveness to make it a worthy contender for the Number One slot. The programming has obviously been tackled with care to include as much detail from the original as is possible on the C&A. Unfortunately, the compromises necessary to make it fit into the memory has not been compensated for and this leaves a feeling of nice program, shame about the game!

With Out Run we were pleased about things but it's amazing how some primitive producer things that game. Out Run adds to our list to buy this as a memory of the great arcade game of 1986 but, like most memories, it's a poor substitute for the real experience. A.C.C.

Teacher:

Title: Out Run. **Supplier:** US Gold Ltd, Unit 2/3 Heddon Way, Melton, Nottingham NG 14E. Tel: 021-338 1084. **Manufacturer:** C&A. **Price:** £8.99 (C&A) £14.99 (Retail). **Originality:** 4/10. **Playability:** 3/10. **Graphics:** 5/10. **Value:** 4/10.



PETER SHILTON'S HANDBALL MARADONA

Narred after the "Hand of God" incident during the England Argentina 1986 World Cup match, Peter Shilton's Handball Maradona gives you a new perspective of the football field. You've scored winning goals for your club and country, even managed your favourite team to league and cup glory and now here's your chance to save the day by saving the number-one shirt.

You begin the game as either "A" goalkeeper and have to build your way up to class "P" like Peter Shilton's.

Once you have selected the team you're playing for you are presented with a menu that allows you to practice a few times, play a game or try for a skill upgrading.

If you play a game you see your goal, which is handily defended by two useless defenders and between one and three opposing forwards. These players will pass or dribble the ball before they shoot at goal so you have to be ready for anything. You even have to save corners, free kicks and penalties. Pushing the joystick left and right will move your keeper across the goal with other directions sending him diving to all parts of your goal.

It will take some time for you to anticipate the forward's move, but when you do you'll save some of the right shots at goal and your side will win. The result doesn't seem important and is mainly there for interest and to give you practice. Your most important task is to improve your skill rating.

Skill upgrading is harder than it seems as you have four shots to save but you fail as soon as you let one in. Success and you'll get a four digit code which you can enter when you load in the game another day, so you don't have to replay your hard fought levels.

Although there isn't much to the game (that's all talk!) it is a surprisingly addictive.

T.H.

Function:

Title: Peter Shilton's Handball Maradona; *Supplier:* Big Five; *Developer:* Big Five Software; *Victory House, Leicester, Tel: 0533 626633;* *Marketing:* C&A Pulse Ltd. 89

Originality: 7/10; *Playability:* 7/10; *Graphics:* 6/10; *Value:* 7/10

X-15 ALPHA MISSION

I've always had a weakness for vector graphics games, ever since I saw Star Wars in the arcade, and to I was delighted to see X-15 Alpha Mission on release. Although the graphics are nothing special, the game is mono-the-lone addictive.

You play the part of a fighter pilot, who possesses great war tactics. NASA have started to receive strange messages that were bouncing off the Moon to Earth, which turned out to be various demands for huge sums of money. The threats were from terrorists, who were demanding space stations, and would blow up major American cities and microwave President Reagan unless they were given the money.

Blowing up cities is okay, but microwaving President Reagan? You're soon to discover the space station straight away.

At the start of the game you have to launch the ship into the sky which is quite easy and can soon be mastered. There are three levels of play that involve flying, the first being before cloud level, where you must shoot down helicopters and destroy nuclear missiles.

The second level takes you up into the clouds, where I became awestruck, but soon got over it. You just shoot and dodge again, but this time it's against jet aircraft and kamikaze gliders.

Finally we have space, where no one can beat you anymore - however, Spacebirds are now your enemy and will attempt to blow you apart. They look rather like tie-fighters from Star Wars, but this again, this is distributed by Lucas Films. Anyway, once you've blown up the tie-fighters you must then avoid asteroid belts and deal with the spacestation, where you have to enter a special code in order to access it. The code number is given at the beginning of each game, and changes each time you play.



When you have docked at the space station, a small capsule is released from your spaceship and must be guided gently down onto the surface of the space station while avoiding the small errors.

Once this is done and you have landed you can then begin your assault on the space station.

Eight robots emerge from your space-ship and you take control of each one in turn. There are eight different movements (functions) for the robots, but as they are not listed in the instructions, you will have to learn them off by

heart. These skills can be used to jump other robots and burn away rubble from the planet's surface or even self-destruct, but it is wiser to do this only when you are near a weapons system, which are poles that stick out of the planet. You must destroy eight of these in order to blow up the space station, and as you can guess, you can't afford to lose any robots.

Then, as you can see, there is a heck of a lot to do in this game, although going by its graphics, it is still pretty average looking, and the sound is nearly unrecognisable, but it's still a very playable game - take it from me. **K.B.**

Touchline:

Title: *A-13 Alpha Mission*, **Supplier:** Activision, 25 Pond Street, Walsingham, London NE21 2PN. **Tel:** 01-461 1381.
Machine: C64. **Price:** £9.99.
Graphics: 4/10. **Playability:** 4/10. **Originality:** 6/10.
Value: 3/10.

ALICE IN WONDERLAND

Beware the Jabberwock my son, the jaws that bite the claws that catch. Beware the Budget bird and then the dubious Bug Byte catch!



I did think of starting this review with *Fascine* in large capital letters as APS subsidiary Bug Byte appear to be trying it on and possibly contravening trading standards. Is this a tip-off or is it a tip-off?

It's golden oldie time at Bug Byte and they've dredged this one up from the bins when the voice synthesis would be described as revolutionary and the graphics as stunning. Today a merely looks sad.

'Carouser and carouser', exclaims Alice at the beginning of the game and on finishing the first very, very dreary level the carousels was revealed. This is not the Antagonistic multi-load carousel, it's back! *hoooo!* (The first part of the disk version! As Alice reaches the end of her perambulation along a dragon infested mountain road the screen invites player one to switch on his disk drive to load part 2.

Despite my efforts I could not find any scenes to match those depicted on the cassette insert, a possible case of

misleading packaging, methods.

The staidly gameplay involves Alice on the mountain road being assailed by three, ill-advised and ill-defined dragons who vanish into some dimension after they touch her. Every now and again the dragons change colour to herald the arrival of the Jabberwock. After the next colour change Jabberwock arrives looking like a fearsome creature and far less dangerous. Now is the devoted time of Alice's six lives unless Alice gets the Jabberwock first. *Woe!*

Even less frequently, wandering down based across the screen, if Alice fails to jump over a door she's whisked back to the start of her walk. *Gasp!*

Come off it APS. Try and pull the wool over someone else's eyes. *Mother* in Videoland is a video star; avoid it at all costs but let the Mad Hunter and his friends have the last say.

'This piece of madness was more than Alice could bear she got up in great disgust, and walked off; the Electronic fell asleep instantly and neither of the others took the least notice...' **E.D.**

Touchline:

Name: *Alice in Videoland*, **Supplier:** Big Boy's, Factory House, Leatherside Place, London WC2N 7AE. **Tel:** 01-419 0888. **Machine:** C64. **Price:** £2.99.
Originality: 6/10. **Playability:** 3/10. **Graphics:** 3/10. **Value:** 0/10.

EDDIE KIDD'S JUMP CHALLENGE

My best advice is not to buy it. This game refuses to be down and dirty - sorry, it refuses to be down, it died a long time ago.

The major principle of this game is to ride a motorbike up a ramp and jump over a row of cars. I always understood the principle of acceleration to be one of steadily increasing momentum. Obviously I was misled by my physics teacher as according to this game, acceleration is one of steadily



increasing noise. As Eddie 'speeds up' the background pieces by at the same constant rate and goes on and on and on...

An age later you meet the ramp, take off, and fight to control the altitude of the bike to make a safe landing. If you fall, Eddie leaps off the screen and you're back at the start of your run up.

If Eddie Kidd is a modern day Koolhaas, then Bioshock seems to have gone off ideas with this escapade (surely it's not a reference). Marlowe must be laughing at the way to the bank after off-loading this pile of tripe onto Mastertronic.

E.D.

Touchline:

Name: Eddie Kidd's Jump Challenge. **Supplier:** Bioshock, 2-19 Paul Street, London EC2A 4PP. **Tel:** 01-377 6880
Machine: C&A. **Price:** £2.99.
Originality: 1/10. **Playability:** 0/10. **Graphics:** 1/10. **Value:** 1/10.

**ARCADE CLASSICS**

They say that nostalgia isn't what it used to be. Was it really that long ago that we gazed with amazement at delights such as Space Invaders and Asteroids?

For any of you who have forgotten what computer games used to look like, Freebird have assembled four different classic titles in one game.

Space Invaders is the daddy of all shoot-em-ups. Left, right and fire are the basic controls, as you dodge from under the bunnies to wipe out row after row of aliens as they pursue their ever-violent path down the screen towards you.

Big Bros have little fleas upon their backs to bite 'em. Little Buns have little fleas and so do Infinites - the brave people of Asteroids. You are trapped in a giant storm of these huge space boulders, and as you shoot at the rocks they break up into medium sized rocks which in turn become small rocks. Contact with any of them, not surprisingly, is fatal.

The other two games are, somewhat disappointingly, two player games. Surely there was enough one player games around or, failing that, computer opponents available. Snakes is an attempt to make your opponent

clash into you or move back on himself, before he does blow up to you, and Space War is a variation on the same theme except that you must also avoid the sun's gravitational pull.

Four games for two quid seems to be great value for money but the games are extremely crude by today's standards, even if they are fair copies of the originals. Unless you are desperate for one of these titles to complete your collection, stay well away.

G.R.H.

Touchline:

Title: Arcade Classics. **Supplier:** Freebird Games, First Floor, 64-67 Newington Street, London WC1N 1PS. **Tel:** 01-770 8775. **Machine:** C&A. **Price:** £1.99.
Originality: 1/10. **Graphics:** 2/10. **Playability:** 0/10. **Value:** 3/10.

COIN-OP CLASSICS

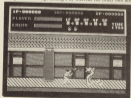
In this age of compilation, US Gold have bundled three of their coin-op-own versions together for the price of one game.

Kung-Fu Master is, as you might suspect, a martial arts beat-em-up. As usual, there is a prince who has got himself captured, and it is up to you to organise a rescue. Various badmen block your way together with fire-breathing dragons, killer bees, psychopathic chameleons and exploding vases. If you make your way to the end of a level, a final confrontation with a guardian is all that stops your progress. This is a reasonable game of its type, despite some blocky graphics.

Breathers sees you trying to penetrate 400 miles behind enemy lines in order to rescue one of your country's top secret agents. You are armed only with a jeep but it does have the advantage that it can fly and jump short distances. There are five different terrains for you to cross should you accept the mission.

Creval Carton is, despite the tags accompanying it, no more than a glorified Pacman derivative. Bottley here must collect gems while avoiding the various nasties. There are tunnels and lifts which can aid or hinder you.

Although compilations appear to be good value for money, you have to watch what you are getting. Here, only one game is average (Kung Fu) whereas the other two are



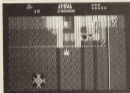
downright awful. If you were keen on the arcade originals, then you might consider buying this box of horrors. I suggest you give it a wide berth.

G.R.H.

Titleline:

Title: *Castle of the Swamp*. **Supplier:** US Gold Ltd, One 2/3 Highfield Way, Redford, Birmingham B6 7AA. Tel: 011-236 3388. **Machine:** C64. **Price:** £9.99.

Originality: 1/10. **Playability:** 4/10. **Graphics:** 4/10. **Value:** 3/10.

**THE LAST MISSION**

Zooooooooooooo, yeeee, ah, hehe, sorry about that I've just been playing *The Last Mission*, the latest conversion from US Gold.

The story has it that you are an outcast, driven from your home galaxy - why I don't know. Anyway it goes on to say that you must return to your home, blow up the aliens that are trying to take over your homeworld. If you do this you will no longer have to live in exile, you would be a hero. So how can you refuse - you jump into your super-star fighter and zoom off to your home planet.

On arrival you discover that you have zoomed into a really poor arcade conversion. Your home looks like it's made out of legs bricks and the space ships are bland and small, but the music that your on-board computer is playing is quite good.

Scattered around the planets are various sites which when shot release a powerful weapon of some kind - simply fly over these to pick them up, then it will be fitted to your ship.

I cannot recommend this at £9.99, it just isn't up to scratch. It could be different if it was a budget game, but as it stands I would leave well alone.

S.B.

Titleline:

Title: *The Last Mission*. **Supplier:** US Gold One 2/3 Highfield Way, Redford, Birmingham B6 7AA. Tel: 011-236 3388. **Machine:** C64. **Price:** £9.99/C64/£14.99/£24.99.

Originality: 5/10. **Playability:** 4/10. **Graphics:** 5/10. **Value:** 1/10.

SWAMP FEVER

David Bellamy may get into some scrapes but never as bad as this. Professor O'Malley has taken on the mission to recover as many rare Azura flowers as possible from the isolated swamps of Florida.

The radiation has mutated the swampland creatures into man-eating monsters with a penchant for professors. Armed only with a flamethrower the professor has to fight his way through 55 swampy screens picking flowers as he goes.

Every now and again the swamp fever infected creatures swarm around the professor and he has to fire onto a neighbouring swamp to free himself of the threat.

The scenario seems quite respectable but the game itself is awful. What programming there is has been profusely executed, but each swampy maze falls into one of two types each variation round those limited themes differing only in graphics design. The two basic maps of the maze do not seem to vary at all.

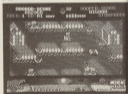
Players have basically ended up with a two screen game with very limited action. Even at budget price this is an extremely disappointing product.

E.B.

Titleline:

Name: *Swamp Fever*. **Supplier:** Playtex, Tel: 01256 31960. **Machine:** C64. **Price:** £1.99.

Originality: 1/10. **Playability:** 1/10. **Graphics:** 2/10. **Value:** 2/10.

**PIR SQUARED**

Well, I expected another run-of-the-mill arcade game that was nothing to write home about, but I was pleasantly surprised with this recent release from Argus Press. The first thing that struck me about the game was the colourful and well-drawn loading screen, but I still remained sceptical. As the game loaded, rather a nice tune played, and grows outman I started the game. I found it to be a highly playable addictive arcade game that was also quite interesting.

You play Professor Brain Storm who is just about to appear on TV to give a lecture on geometric solids. So the you are feeling pretty confident when suddenly your stu-

begins to wander. What lousy timing - the credits are beginning to roll and the retro music playing and your standing there daydreaming. "Oh no, it's happening again." It must be true - as new poor old Prof. can hardly remember his own name, let alone a formula. However hard he tries to think he can't get back to normal. All hope is not yet lost however as there's now a chance for Prof. to reconstruct his memory, and hopefully recover the formula.

That's where you come in - move around the cops and wheels of the Prof's brain, recovering the lost formulas and solving various other mental riddles such as calculators which increase your speed. As well as mental aids, there are also objects which hinder you (stays thoughted like ice cream and naked women (you filthy E.D.).

So there you have it, a pretty enjoyable game from Argus Press Software, but I feel the asking price is a little too expensive at just under a quid. If you are a die-hard buyer, it's not have a look at it if you can.

K.B.

Twofish:

Title: FM Squared. **Supplier:** Argus Press Software, Hivory House, Leicester Place, London, WC2M 6AR. **Feb 81-200 0000.** **Price:** £8.99 (Cass) £12.99 (Disk). **Machine:** C64. **Graphics:** 6/10. **Originality:** 8/10. **Playability:** 7/10. **Value:** 6/10.

Once at sea, you have to prime your cannon ready for any potential action. This involves selecting which of the fifteen guns are to be loaded and following a set pattern of moving the powder, tamping it down, putting in the ball, etc. If all goes well, the cannon indicates change colour. Get the sequence wrong and you have to start all over again.

When in combat, you will need to find the right elevation for your guns with a few test shots before moving along the row of cannon trying to sink the enemy. Of course, he is trying to do the same to you and any hit by him will result in your crew falling by their guns. If you succeed in defeating the enemy, you get the chance to plunder for information or gold, but not both.

Despite the large colourful graphics, the game is slow to play and a little difficult to control despite being joystick/mouse driven. If you are looking for a strategy game, then Pirates from Microprose is infinitely better. If it is action that you want, again, there are better games on the market. Pirates of the Barbary Coast seems to fall between two stools.

G.B.H.

Twofish:

Title: Pirates of the Barbary Coast. **Supplier:** Cascade Games Ltd, 1-5 Mayson Crescent, Marrygate, North Yorkshire YO1 1JG. **Feb 81-200 0000.** **Price:** £12.99 (Cass) £12.99 (Disk). **Machine:** C64 - disk only. **Price:** £14.99. **Originality:** 7/10. **Playability:** 4/10. **Graphics:** 6/10. **Value:** 5/10.

GAME OVER

What an original title, Game Over - it's clever, yet so simple. I bet loads of software houses are kicking themselves saying "why didn't we think of a title like that?"

But what is the game like? Well, I can assure you, you will not be disappointed. You play Arkes who lives far away in a distant galaxy and is a faithful servant to the Benevolent but totally evil Granda. Arkes is a ruthless cyborg-type being, who used to follow Granda's every command, but as her power grew so did her greed, and now Arkes can take no more.

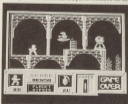
He joined the rebel forces in a plot to overthrow her and

**PIRATES OF THE BARBARY COAST**

Your daughter has been kidnapped and is being held to ransom by the evil Pirate Bloodthirst. You have thirty days to come up with 50,000 gold pieces or else.

You have two main courses of action available to you. You can try and raise the money by buying and selling goods along the North African coast and you can try and find the secret lair of Bloodthirst and destroy him.

The game is a combination of strategy and action. Starting off in a friendly port, you have to hire and fire crew, keep them fed and juggle the supplies within your hold, haggling with merchants for the best prices. If your ship is damaged, you can take the opportunity to get it repaired for payment of the appropriate amount of gold. Choose your destination and set sail.



to destroy her palace for good.

When the attack was agreed, Arkos decided it would be best if he went alone, after all, he knows the route to the palace and could fight better than any mortal. The other rebels agreed and Arkos set forward to rid the planet of the evil Genelia. Kill everything that gets in your way, and anything that doesn't!

The game comes in two parts; the first being the planet Hypsis. This is the easy part as you only need to reach the 11th screen to confront and kill the mighty Otko, who was once your friend and is now your worst enemy, and must be shot many times before he dies. Progress will not be granted until he is dead.

To aid you on your quest you will find red barrels, which must be shot three times to unleash their contents. Some contain various weapons and power hearts, but there is a chance that a mine lies inside so you have to watch your step as the mines are very deadly. They can only be passed by wearing a field of force (also found in the barrels) or jumped, but this may be impossible in some situations.

The backdrops and alien are very nicely drawn and this makes the game a lot more playable, however you may soon find yourself cursing this game as it can sometimes prove very hard, and especially frustrating. That said, it is still a nicely presented game that plays reasonably well with some nice sound and spot effects thrown in. However, it could have been improved with in-game music and better control of the main character, but you can't have everything can you?

K.R.

Touchline:

Title: *Game Over*. **Supplier:** *Jagga*, 4 Central Street, Manchester, M1 5AQ. Tel: 081-637 8611. **Price:** £8.99. **Originality:** 4/10. **Playability:** 7/10. **Graphics:** 8/10. **Value:** 6/10.



REBEL

This new game from Virgin has a really good story line; try and imagine this. You are forced to work for a plantation owner, where the shifts are long and hard, and no-one knows what the word cry means and when you reach just over thirty

you are terminated - not very nice, huh?

The new plantation supervisor has decided to try and improve production, which he does by creating a workforce of zombies. Sleep is controlled by him, and you sleep in a special chamber which makes you sleep and wake up in the morning. There are countless pills to be taken but these do nothing much, just slow your brain down - they are known as the Tanga-pills and they slowly take away your resistance. Our hero has managed to stop taking these pills and now realises the danger.

This is where you step in; you have to guide a tank containing our hero, around the giant base switching the solar panels so they will direct the power beam into a selected wall on each level. When you are satisfied with this, fire the laser beam and hope you got it right. If you do you'll go onto the next level, if not you'll lose a life.

As you advance through the levels, the backdrops change but that's about it, you will get the same alien, same tank, and so-for-a while you may find yourself getting bored. This is a shame as the game has some wonderful graphics, but stumbles on the gameplay side. If this had been a five or less it would have been good, but at just under a tenner it's not really very good value.

K.R.

Touchline:

Title: *Rebel*. **Supplier:** *Virgin 3-4 Verano Road, Pinnerville Road, London W11 2JY. Telephone:* 01-727 8670. **Originality:** 4/10. **Playability:** 6/10. **Graphics:** 7/10. **Value:** 4/10.

NICK FALDO

Have your chance to hack your way through the rough and bunkers of the Royal St. Georges course in Sandwich.

As a low drive golf game, you must select your club (and suffer the sarcastic comments of your caddy should your choice differ from his own not so humble opinion), a direction and strength of the shot. Your player lines up the shot automatically and wacks the ball according to your predetermined instructions.

The upper portion of the screen gives a top-down view of the hole and if like me, your shots are nowhere near the fairway, you can call up a map of the surrounding area to show where you are in relation to the green.

All is well until you actually land on the green and your ball is lying a couple of feet from the hole. Distinguishing between the hole and ball becomes next to impossible and I have actually putted six from a short distance.

This would have been a reasonable if somewhat complete simulation but for the putting fiasco. If you want a really good golf game, then save your money and buy World Class Leaderboard instead.

G.R.H.

Touchline:

Title: *Nick Faldo Plays The Open*. **Supplier:** *King-Byte, 8 Green Lane, Leighton Buzzard, Bedfordshire LU7 9JH. Tel: 01-425 0868. Machine:* C64. **Price:** £1.99. **Originality:** 1/10. **Playability:** 1/10. **Graphics:** 4/10. **Value:** 2/10.

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Amiga News

Find out what's been happening in the Amiga world



A 20Mbyte SupraDrive hard disk unit

Hard News

A new series of Amiga compatible hard disk systems have been launched in the USA by the Supra Corporation. The high performance systems incorporate a hard disk drive in one of four capacities, SCSI expansion port and provide RAM expansion capabilities.

The four drives have 20, 30-60 and 250 Mbyte capacities and retail in the States at \$995, \$1195, \$1995 and \$2995 respectively.

The SupraDrives plug directly into the Amiga 580 expansion socket and feature Supra's own high speed data transfer interface. Burst data transfer speeds of 258Kbytes per second can be achieved to complement the fast seeking hard drives.

RAM boards of 1 or 25Mbyte capacity can be plugged into the hard disk units and the separate power supply of the units is used to power the expansion boards to avoid overloading the Amiga.

New Lasers

Two new laser printers are ready for launch from Brother and Star Micronics.

The Brother HL-8 has a printout speed of eight pages per minute. Access to five resident fonts may be supplemented through two front cartridge slots making it suitable for desktop publishing applications.

The speed of the Brother machine is matched by Star's LaserPrinter 8. These are right fonts resident in the machine, cartridge expansion capability and user definable characters can be specified at the cost of a small part of the internal 1Mbyte memory. Laser Printer 8 can operate in both landscape and portrait formats and up to 64 different fonts can be included on a single tape.

Despite all of these facilities the price has been kept to a relatively low £2,185 including a year's on-site parts and labour warranty.

Timeline

Beaure Computer Peripherals Division: *Amiga-Booster, Mystery Street, Guildbridge, Dublin 15, Manchester M14 3JD, Tel: 061-230 6255.*

Star Micronics EE: *Craven House, 46 Uxbridge Road, Feltham, London M7 2PS, Tel: 07-849 5680.*

CRL's Amiga Range

CRL have announced their plans to release three new games for the Amiga: Blackshadow, Tau Ceti and Academy.

In Blackshadow you command a spacecraft which flies over a vast, heavily armed asteroid. After ransacking the gamut of defence systems, tracking out as many of the weapons as possible, the final target on each level has to be destroyed.

Tau Ceti and Academy have already been seen on the CRL but the Amiga versions promise extra excitement and realism.

Tau Ceti takes place on a derelict planet and your mission is to close down the malfunctioning systems which have defied all attempts to previous adventures. In realistic 3D vector graphics, you must search the data in your skimmer (and) collect the rods which are needed to shut down the massive fusion reactor which fuels the planet.

Academy is the follow up to Tau Ceti which allows you to design your own skimmer. After graduating from the Academy, you are able to tackle one of 20 missions (most success will rely on the design of your skimmer).

All three CRL games have a retail price of £39.95.

Timeline

CRL: *CRL House, 9 King's Yard, Carpenter's Road, London E13 2ED, Tel: 07-552 2656.*

Continued on page 37

MPC SOFTWARE

ADVENTURES

Limited	£21
Pony Tale Adventure	£40
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Wright On	£17
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Other Nations	Price
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The Peas	£18

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Brain Cloud Football Fantasy	£22
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Victory Fruit	£3
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Register 1988	£140
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Software File 2	£80
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Superbase Professional	Price

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Pro Arts	£100
Word Perfect	£28
Word Art	Price
Wordy (Word Perfect)	£20
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Microscopic Palace	£80
Microscopic Street	£10
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Terraplanet	£18
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The Boxing	£18
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BOOKS

Amiga DOS Manual	£20
Hardware Reference Manual	£20
Monitor Reference Manual	£20
ROM Name Directory	£20
ROM Name Libraries & Des	£20
The Kickstart Guide	£12
The Amiga System Archive	£8
The Amiga Handbook	£18
Amiga Programmers Guide	£18
Inside Amiga Graphics	£18
Inside Amiga with C	£18
Prog. Guide to the Amiga	£28

(phone for other titles)

HARDWARE

AMIGA A2000	PHONE
AMIGA A400	£499
AMIGA 1081 COLOUR MONITOR	PHONE
CUMMINA 3.5" DISK DRIVE	£130
STARBOARD OMB 2MB	PHONE
MFGBOARD II	PHONE
GERLOCK 1080 (PAL)	£430
GERLOCK 585 (PAL)	£370
DIGI VIEW 2.0	£170
SOUNDSCAPE MIDI INTERFACE	£50
EASYL GRAPHICS TABLET	£350
EASYL 500 GRAPHICS TABLET	£300
PC BRIDGE BOARD	£300

STARBOARD II

We think The Starboard is by far the best memory upgrade for the A1088 allowing much more than a simple memory upgrade.

The Upper bank £120
 SCSI Hard Drive Controller (Can be set to Used with Multi Function Module)
 The Multi Function Module £80
 The optional second gives you the ability to add a 68088 or multi co processor. Based on multi function up to 40 lines, 80000 baud in a delivery backed book and a RAM module to store the data in RAM from being wiped out in the event of a crash.

A2000 Adapter £40
 A1088 Version £30

PRINTERS

CITIZEN 130SD	£200
CITIZEN LSP10	£220
CITIZEN LSP100	£360
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Ann Platt and Ann Baker receive their prize from John Spinks, MD of WordPro International

Wonderful WordStar

Celebrations were called for when MicroPro passed the three million sales figure for their WordStar package. The crucial landmark was due to be released in late 1987, so a special promotion was embarked upon with the promise of a fantastic £1000 bonus holiday for the lucky purchaser of the three millionth copy of the wordprocessor.

The actual purchaser of the momentous package could not be accurately assessed to anyone buying their copy of WordStar during September and October became eligible for the Celebration Draw made at London's Harlington Club on November 2nd.

The lucky recipient of the first prize was Ron Baker of Romford. Ron works for British Telecom International as an implementation and design engineer and it was in this capacity that he registered the sale was on BT's behalf. The prize is a holiday for two which he will share with his wife, Joan.

The second prize, a compact disk player, was won by Alan Green from the Department of Physics at Queen Elizabeth's Hospital, Edgbaston. An Olympus Trip camera formed the third prize awarded to John Waters, Senior Lecturer in charge of Computing at North Hertfordshire College.

The three million sales figure is less

than a decade by MicroPro's starting when seen on a daily sales basis. To reach this volume of sales, almost 1000 WordStar units will have been shipped out every day! Perhaps we'll see the first millionth sales in May or June 1990.

WordStar:
MicroPro International, Maryland Avenue, 2877 High Street, Waltham Hills, London SW19 3AR. Tel: 01-879 1322.

Invisible Arts Package

The Amiga reached up another TV screen before the end of 1987 when Channel 4's Evening Hour series presented Gorrilla Tape Productions' programme Invisible TV featuring effects generated on an Amiga running Electronic Art's DeluxePaint II.

ITV, a fictitious TV station, was used as a vehicle to expose the 'propaganda' which vails half in the guise of popular entertainment. The message was spread by using examples of a typical day's broadcasting in which different types of programmes were all given the hip-hop scratch treatment.

Special effects were created by computer graphic artist Gary Whitley who has used the Amiga in several previous productions as a suitable alternative to graphics production equipment costing many

times that of the computer. DeluxePaint II provided a suitable environment for the production of the extraordinary effects which Whitley revealed.

WordStar:
Electronic Arts/Amiga Business Centre, 11-19 Station Road, London, Berkshire SL2 3YX. Tel: 0753 49442.

ProWrite Update

A new version of ProWrite (V2.0) is available which has many added features. Of special interest is the self selection default specifications. All start up parameters such as font, justification, spacing and colours can be predetermined and several preference files can be stored and loaded whenever required.

Graphics and text dumps have been greatly improved giving speeds which may reach ten times that of previous versions. In text mode the program will run as fast as the printer will allow. High resolution printers can be fed with a smoothed output which permits true letter quality prints from any of the Amiga fonts.

Printouts can be set to any width through ProWrite 2.0 using the sideways printing capability for extra wide paper.

Hard pictures, such as those created with DigiPaint, can be loaded into ProWrite and restored.

Paragraph formatting options have been incorporated to allow one and a half spacing, fixed line height and the inclusion of a blank separating line between each paragraph. The finished paragraphs can be saved into ascending or descending order to assist in creating a table or for editing the custom user dictionary which complements the fixed 95,000 word spelling checker.

Character, word, sentence, paragraph, picture and page counts can be easily accessed for full document information windows.

These are just the main improvements, many more alterations and fixed bugs have been incorporated to increase the power of this finely improved product from New Horizons Software.

WordStar:

New Horizons Software, P.O. Box 48360, Austin, Texas, 78763. Tel: 010-312 329 6658.

Amiga Gossip

The recent news about virus disks has set the Amiga world jittering with fear, one software producer told me that nearly 40% of his disks were "infected" with a virus that occasionally popped up with the message "YOUR MACHINE HAS BEEN INFECTED".

In America - where the virus is believed to have first started - there are no less than three major disk infections - all of which recognise the other viruses and react accordingly. For instance, one disk virus forces another (found as DEC USA - Palo Alto) to pop up with the message "A Virus... Yummy! Dinner Time".

This ain't funny anymore

I was recently talking to Darryl Mayo, a British software programmer hoping to start breaking into the Amiga Software scene with "Antas" (or should that be Antifrat?), he was grieving about the the fact that one of these viruses got in the way of his custom disk protection system, his fear is that unless you switch the Amiga off between every disk swap, the chances are quite high that a similarly protected disk will get fiddled around with, thus rendering it useless.

Amiga Wars

In a meeting, George Lucas was reportedly asked if he had considered supporting the Amiga for some of the new mega-games doing the rounds, apparently he came up with the answer: "Rounded down to the nearest million, there are no Amigas in the world".

CM4 Emulation - again

I have just found out that a third CM4 emulator is nearly finished, it will be shown around the major hardware companies soon. Called "Card128" this item is aimed fairly and squarely at Amiga 500 owners who have no memory expansion whatsoever - it plugs under the machine (where an additional memory card is normally fitted).

sporting a Z80 and a 6512 CPU, this machine emulates a CM4 and a CM28 with "as near as dammit" software compatibility. There is a port for the 1512 disk drive, the drive controller software is reportedly inside the Amiga.

Naturally this is pure gossip, but rumour has it that Card128 works like MS-DOS on the Amiga 3000, i.e. it has a window on the workbench that can act as a task under emulation! If this is the case, then transferring files from one machine to another should be a cinch.

Take your Pick

There were a few sad faces at COMDEX recently as rumours were flying around that the NENIX operating system had been developed as an alternative operating system to AmigaDOS in case the Amiga's own one proved to be bug ridden! Mind you, I also heard that TRIPPO developed in the UK by the same team that did Sinclair's QL1 was on the cards as well!

The last I heard of the NENIX rumour was when I heard a CBM man at the bar saying - "well if we have developed it, then it wouldn't work

anyway, but if we haven't, then we can't as hell will soon".

Latest news is that the A2004 colour monitor is on show in America (planned to coincide with COMDEX), this little beauty has 1000 x 800 resolution. All of the pictures were just sharp and there's no interlace resolution. CBM1 was pretty eager about the price, and as for the cost - YUK! I have seen better crafted monitors at the Atari stand - sorry guys, but it's an ugly S.O.B.

CBM DigiLine?

A new video digitiser called "DIGIT Line" was quietly being shown by a dealer (with a CBM badge!). I gather the plan is to get the Amiga audience "primed" by using products from Minotaur and Newtek, as soon as everybody is familiar with getting hardware and software, CBM will jump in with a licensed NTTY "Line" card and clean up on the professional market. Only a pre-production model was on show, but it looks promising as it runs at 30 frames a second with 7 bits for each RGB colour, as opposed to the 3 or 4 you get with "ALIVE".

Before you start thinking of replacing your 68000 inside the Amiga with a 68018, I got a call last week from a guy in Utah thinking about the best name for the Psysigma game ball work with it fitted - I haven't been able to get any response from Psysigma on this one yet, but then it's your fault for changing the Amiga's CPU isn't it?

This is a great little rumour. Do you know that the developers of the Amiga 80light took and mail to have PC slots in the A2000 - yet the American reviewers stated it for the omission - we'll live magic!

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Computers will tell you how to get onto a special bulletin board from which you can download the terminal software. This gets you onto Compuert for a look around. At this stage you can register your first subscription online.

How Much?

The subscription costs £14.99. Most regular users then pay for an 'off peak' rate on top which works out at about £18 per quarter. Otherwise London area users can get onto Compuert at 99p per hour. Outside London, with access via the ISDN network, it costs £4 per hour.

Compuert already has a lively Amiga section formed by C64 upgraders with advice, criticism and debate, among other things, on shareware and public domain software. Nor are other computers excluded. Atari ST and PC users will soon join and swell the ranks. There is even a lively Amiga versus Archimedes battle being waged at I write.

Window Magic

The terminal software, written by *Atelier Software* - of 'Kickstart Guide' fame - is brilliant and fascinating to use. It operates in the full multitasking environment, with separate on-screen windows and pull down menus. This means that the Workbench, indeed any software, is available for use while Compuert is online. The prospect is in sight of downloading large files - as programs naturally expand to fill the available memory - in the background while you carry on doing something else!

Within the terminal this feature is used to maintain a directory display in

one window while accessing pages of text or running demos in another, the picture window. A third window, the editor, can be opened. The editor can be used offline, the contents remaining intact in the editor while you go online to Compuert. While online, the contents of the picture window can be instantly copied into the editor. Any editing done can be accepted for use or rejected, in which case the editor window is restored to its original appearance.

But can an Amiga screen cope with a C64 display? Or are you confined to a special Amiga port of Compuert? As you might expect, the terminal software takes care of it, simulating the 64 character set for text based material. It is also possible to save 64 software to disk if you so wish. Compuert is a simple way of porting the data between machines. You might wish to convert a bit BASIC program into Amiga Microsoft BASIC for instance or, less likely, vice versa. Amiga high resolution graphics will also be possible, the data being downloaded for display by the computer.

The items already on the menu when I viewed the development version of the software were LOGIN, SETUP, DROP and QUIT and MAIL, CAT, EXECUTE, EXTEND, VOTE (a vital bit of people power on Compuert), ACCOUNT, and LEAVE. Instead of scrolling through and highlighting commands, the Amiga user clicks with the mouse pointer on gauges. The directory entries can be clicked on to move to a lower level of the directory tree or to activate a demo or set of text pages.

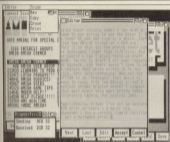
All the features familiar from the C64 are available to the Amiga user, including electronic mail.

New Features

I mentioned the problem of the sheer size of Amiga programs. Compuert

Amiga owners now have the opportunity to tap into the wealth of demos, utilities, debates and user feedback which is CompuNet.

By A. Owen



currently operates at the standard 1200/75 on the Infotrac network, 1200 is acceptable from CompuNet to the user, but say you want to send something to CompuNet 75 then a mistake. CompuNet itself will undoubtedly support 1200/1200 one day when the majority of users have the appropriate modem, but in the meantime a separate 1200/1200 line will be made available for the London area. Amiga subscribers will also be able to send their disks to CompuNet for them to upload onto the system. CompuNet will be offering a modem deal to potential subscribers which will offer, at the least, an upgrade path to 1200/1200.

The terminal is currently 80 columns but a 40 column version will probably be developed for those using an Amiga 500 in conjunction with a television. Of course the advantage of being on CompuNet is that you can update your terminal software from the database when new features are added, software support business users pay 1200s for.

Conclusions

CompuNet itself is a very promising resource for the Amiga user. It is likely that the demo and software base will quickly benefit from upgrades, codes and imports of American material. There are already many demos available on disc. If the C64 material is anything to go by - there are well over 1,000 demos, previews, games, music, utilities and art - Amiga owners will have plenty to keep them busy. The editorial policy is to let authors put their own material onto CompuNet, to monitor its success with other users and, as editor Jane Firbank puts it, to "immortalise the good stuff". Until something even better comes along.

The terminal software is of a very high standard with all the usual features such as resizable windows, requestors - for a number to dial for instance - and pull-downs. I was most impressed with the operation of the multi-tasking. Artists have fulfilled an ambitious design.

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Help at Hand

Pop-up Utilities to make life easier.

By Anne Owen

Complicated as it is, the Amiga was bound to spawn utilities to harness the "power" without the pain. I set out to test a few of the latest.

Zing! Keys

This is not just an add-on for owners of Zing!, a menu/control panel for AmigaDOS, by Meridian Software. Zing! Keys certainly works very well with Zing! but the provision of macro keys for any application, from DOS to Deluxe Paint 2, is potentially very useful for any Amiga user.

Macros are of course available within some software packages, e.g. WordPerfect. Most however contain no such facility. A macro is a series of key presses or commands held together in a form which can be called up by a single key press. For instance, while using the Scribbled wordprocessor, you can press a previously defined macro key to insert a series of 'del' commands to format your document. Zing! Keys has a number of very useful built-in macros but any number can be defined by the user and assigned to Hot Keys. The Hot Keys is the key combination which calls up the macro function.

An amazing feature of Zing! Keys is that you can record events as well as strings of text or key presses. There are a number of already defined insertion macros which size and move windows with single key presses. Mouse movements and clicks can also be programmed into macros.

Macros can be edited, saved, loaded and merged. The definitions can be tested, delays inserted and variables introduced, e.g. prompting for a filename from the user, a string which is then entered into a command line.

Further use of this ability to "record" is made with the HISTORY command. CLI commands are

recorded and can be retrieved into a gadget window for editing and reuse. A more unusual use is the SECURITY-LOCK command which locks the keyboard until a password is entered - handy if you have to leave your desk and don't want anyone to tamper with your work.

There's more to Zing! Keys than first meets the eye. For anyone who likes to write their own batch files to configure their system there the programming element will be an enjoyable challenge. Zing! Keys can be used to customize an application for the novice user so that he just has to "press buttons", or to setup an "individual" environment. Separate hot key and macro definitions can be saved on any disk, ready for installation.

Meridian's manual is excellent and doesn't hesitate to repeat itself if necessary. There are some nice tutorial style sections.

GrabIt!

This is a simple but useful utility. If dumping screens to your printer is important then GrabIt! does a good clean job without crashing other software. Brilliantly presented on screens with good clear messages and help windows, GrabIt! is polished software but is limited to the anonymous print screen function and 'Anytime' a colour palette utility. The utilities are installed by clicking on the Workbench icons and, once in place, are available by pressing a simple key combination.

GrabIt! accesses the Preferences settings and sends the current screen to the printer. Anytime provides familiar slider controls which effect the colour combinations shown on screen. Knowing how much people like to individualise their colour schemes, I

think this will prove a popular feature.

Glimse

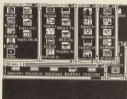
Glimse is a different animal. The single disk contains a vast array of programs and utilities, some more useful than others.

The first thing you do with Glimse is open up all the windows to see what you've got, clicking on icons indiscriminately to see what's underneath. Some fun things pop up, like the daction clock - one to replace the boring Workbench clock - but there are also more rather static and uninteresting windows.

Not impressed? Well, quickly get into the excellent manual and you'll begin to realise that here you have a very workmanlike, even sophisticated, set of productivity tools. The key to the success of this variety of utilities/applications is the way they mesh with the Workbench, their way of working is instantly familiar. The sophistication of Monogad (text), calendar (dates/times) and Rollodex (card index) is inbuilt to each application and shared by each. That is, text on screen can be cut out of one and pasted into another, a very handy integration of data which saves a lot of time. Printing from all three is dealt with by the Black Book tool, which sets up output of schedules, cards and labels.

The calendar was revised you of appointments and the Rollodex can dial a number from a telephone field, via a Hayes compatible modem. A bar, column or pie graph can be generated from a script written in Monogad and pasted in Glimse Graph. The resulting picture can be saved as GIF for incorporation into another graphics program. Colours can be chosen and pie segments replotted.

If you are a scientist, there's a



calculations which will work with exponential notation, give you TAN, SIN, COS, square, square root and modulus besides. If calculating area or compound interest is part of your job, there's a financial calculator - great for keeping track of that volatile share portfolio! And if you're a programmer, your calculator will work in binary, octal, decimal and hex; it will shift and rotate on 4, 8, 16, and 32 bit words and performs logical operations. Copy this one straight to your utility disk. I opened it up while working on a program in another window.

Glance also contains an array of utilities. FastPack lets you save Preference configurations which can be activated by clicking their icon. A library of configurations is very useful if, like me, you keep swapping printers. Keyman sets up post tags so that you can use a joystick like a mouse. Quickmouse adds an acceleration function to the mouse control software. Animate is an improvement over the Workbench speech demo. It translates English into phonemes too - handy if you're programming with TRANSLATE. Running from CLI, Animate becomes a useful command to take announcements from batchfiles.

Icon Maker turns making an icon into the simple matter of loading an IFF file (created, say, in DPaint), sizing it and matching the Workbench colours. Next you choose the icon type, device, disk, drawer, etc. and its highlight (when you click on an icon it can be highlighted in three ways, complement, backfill or a new image entirely). Other status information is easily specified and the icon saved for use.

The Glance Terminal will get you safely online to a text based bulletin board or service such as Telecom Gold. For file transfer there is Xmodem, Simple Xmodem but with the original file length) and Amiga binary. There are six terminal emulators and full control over baud rates, parity and so on.

The Glance Hotkey allow the user to define up to eight hot keys (key press combinations, eg. CTRL-ALT-Z) and to assign a keyboard pass (including HELP, TAB and RETURN) to the key. This definition is known as a macro.

You may find Glance Pop-up very useful if you are new to the computer. It 'pops up' a card on the screen. Two cards describing Amiga DOS and Microsoft BASIC are available but you can prepare your own cards with MemoPad. There's a string search facility too.

Two, perhaps limited interest, utilities are compress and uncompress. Compress can be genuinely useful for file transfer - as long as the destination has decompress available. Also, in an office environment, encrypt may be a useful alternative to anyone wanting to peek at your files!

Finally there's a game of Lick - well-known and to be treated as a hookie on Glance.

All I can say is 'how did they get it all on one disk?' Some of the utilities are available in different form in the public domain but you can judge their value for your own purposes. After a month's use, I'd now rate the Glance productivity tools as essential items for the office, or home office, unless you have already invested in full versions of wordprocessor, database and spreadsheet.

Helpmates

It is interesting to note how little overlap there is between the many utilities available for the Amiga. Those reviewed in this article are second string productivity tools. Glance is highly recommended for those who don't like to learn Workbench. GrabIt too, is easy to use and does a (limited) job in an uncomplicated manner. Meridian's Zing! and Metacom's Shell, reviewed in former Year Amiga, are more fundamental tools. Shell exceeds AmigaDOS and is my preference. Zing! puts an alternative and very powerful find and save AmigaDOS as well as providing screen saves and dumps. There is now an improved manual and Zing! keys dovetail nicely with the earlier product.

TweeDink

Name: Zing! **Price:** £25.00
Machine: Amiga **Supplier:** Meridian
Software: Tel: (716) 496 2144
USA:
Originality: 6/10 **Usability:** 6/10
Documentation: 6/10 **Value:** 6/10

Name: GrabIt! **Price:** £21.99
Machine: Amiga **Supplier:** Data Electronics, Unit 6/7 Devalby Road
Foreign Industrial Estate, South-on-Ford, Tel: 0782 778115.
Originality: 6/10 **Usability:** 6/10
Documentation: 6/10 **Value:** 7/10

Name: Glance **Price:** £49.95 **Machine:** Amiga **Supplier:** Robert Ltd. Tel: 0-267 4477.
Originality: 6/10 **Usability:** 6/10
Documentation: 6/10 **Value:** 6/10



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Amiga Games

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Test Drive

Have you ever wanted to drive a Porsche 911 Turbo, or a Ferrari Testarossa, or perhaps just have a quick spin in a little black Lotus Esprit Turbo? I know I have wanted to drive one very fast down a motorway, safe in the knowledge that I could outrun any police car in the vicinity, or at least be warned in advance by a small radar device (now popular in the States).

So imagine what it's like - in your hand is a disk asking you to test drive one of the five most expensive and prestigious cars there and! Quite a challenge eh?

Test Drive is Accolade's latest offering since Hardball, and like Hardball, these guys really know how to design a racing game: digitised speech, snappy music - hey, if the loading sequence is anything to go by, then the game looks set to be a stunner.

And what a manner it is! You make a quick selection from the list of five cars (Porsche 911 Turbo, Ferrari Testarossa, Lamborghini Countach, Lotus Turbo Esprit and the Chevy Corvette), each machine has its vital statistics on display, you select the one you most like (!) and away you go.

The basic idea of the game is to drive fast - very fast. Of course the police try to stop you, after all racing along at 200mph in a 55mph zone is not their idea of sanity. Initially the game is very simple, just don't go too heavy on the revs counter, just take your machine (mine's the Porsche!) up to 800 revs and stop the clutch, as the back tyres squeal, drop her into second, and so on, until you start to feel yourself full control of the car and then you slow down.

At higher levels of the game, there are other cars driving in both directions, there are more police, a really sneaky bumpy bend, pits in the road and some rough dips and potholes forcing you to slow down a bit - but don't go too slow or you won't deserve to test drive any of these beautiful cars.



and the big letters GAME OVER will greet you.

The simulation, for what I know of these marvellous cars, is quite accurate, the Testarossa clearly outperforms the Porsche 911, but the Porsche can be driven harder, the Testarossa has less road handling capability than, say, the Lotus Esprit, but the Esprit, like the Countach, is a little delicate when it comes to pushing the machine into overdrive.

A great game to load up when you don't feel like writing the universe, and a really great game if you happen to like fast cars. If you can, try this game out and see if you like it as people's taste in cars and car racing games are electric at best.

C.G.

TestDrive

Name: Test Drive. **Supplier:** Accolade/Electronic Arts, Langley Business Centre, 1149 Sutter Road, Langley, Bx, Slough, Berks SL9 7YN. **Fax:** 0753 49442. **Machine:** Amiga 512K. **Price:** £29.95. **Originator:** 1/80. **Playability:** 3/80. **Graphics:** 6/10. **Value:** 5/10.

Terrance



THIS IS POSSIBLY THE MOST INFURIATING GAME I HAVE EVER COME ACROSS IN MY LIFE. I have asked the Editor to leave this statement in capitals because I have played this game so fully all weekend with very little sleep, hardly any food, I have a pain in my neck and my eyes are slightly bloodshot - and I've enjoyed every minute of it.

Terrance is an amazing game, starting off as a poorly animating graphic adventure, this game quickly moves on to become one of the best games I have played on the Amiga.

You play one of five national characters, who has been entrusted with the job of finding industrial scientist Albert Einstein (and with glasses like his - you can see why) who predicted that the world will end by being smashed to smithereens by a huge meteorite.

The world laughed at Albert. He went off in a ball proclaiming that the world wasn't fit to be saved.

When the meteor was seen just 24 hours away from hitting the Earth, we realised what a truly brilliant people we had been - and therefore created one of our top agents, Peter Krausche, Wilbur Fortissimo Smythe, Wu Peng, Big John Ginn or Henry Beaunage - to find the Prof.

The adventure is tricky (to say the least) there are lots of things to pick up (mainly by your single hand) and puzzles to solve. There are obstacles on the landscape caused by the Prof, such as rock slides, Peter's death, and drops of acid rain - one touch from any of these and you lose a life.

The adventure is massive, with something new on just about every screen. The top bridge, for instance had me thinking for ages until I came up with a suitable lateral way of crossing it.

When you do meet the Prof, the game doesn't end there, you still have to convince him the world needs saving and surrender many of the things you have found on the way. He is a bit of a cranky old fellow, saying things like "Make us available!" between his calculations.

Terrance is likely to be a long lasting game because parts of the adventure are different when you play different characters. It will keep you interested, not only because of the detailed and colourful graphics, or because of the great music (sometimes never becoming repetitive - now that's a first) but because the character interacts with you in a totally new way in any other game. Try and jump off the edge of a cliff without the right item and he will shake his head, try again, and he will sling his shoulders and jump.

This is a great game, infuriating and thought-provoking with the right balance of shock and realism - I haven't seen a game like this on the Amiga yet, go out and buy it, Terrance is addictive and fun.

C.G.

Terrance:

Name: Terrance; Supplier: Quantum/APS, Victoria House, Levenson Place, London WC2M 7AR, Tel: 01-478 1888; Publisher: Amiga; Price: £18.95; Originality: 5/10; Graphics: 9/10; Playability: 10/10; Value: 10/10.

Grid Start



A lot of different racing games this one. Amiga have decided to stick to the more chunky approach - big spikes, bright colours, wobbly backgrounds and loud, but simple sound effects. You drive a six gear formula one racing car around six different racing tracks: Brands Hatch, Silverstone, Belgium, Mexico, Austria and Germany, each having their own distinctive backgrounds and track characteristics.

Grid Start is a pig of a game to get playing seriously though, you won't reach amateur status let alone professional for a few weeks of almost constant play. The secret of Grid Start, like real motor racing, is a question of learning the track all by heart, of knowing your racing car inside out, of knowing where and when to apply the brake, change gear, even position yourself on the road for turning.

The game seems to be heavily modelled on Alan's Pole Position, or the later QX-1 (without the night race sequences). Dotted around the tracks are the ubiquitous advertising signs to drink called "Enjoy" Amiga's logo and Rush - the rock group; and the balls of stone, which, upon contact, make your car blow up.

Racing against other cars is very difficult, at first - it seems as if there are too many cars on the track, and if you're unlucky enough to crash into a car for whatever, the chances of regaining your first place are very slim indeed. Most of the cars speed past you, and you are destined to 24th position - but that's life in the fast lane I suppose.

For all its chunkiness and basic (sometimes sparse) backgrounds, this is an excellent game. Amiga have sensibly priced it - clearly making it one of the best value-for-money budget releases I have yet seen on the Amiga. C.G.

Terrance:

Name: Grid Start; Supplier: Best Software Ltd, 17111st Hill, Darwood, Kent DA1 2JL, Tel: 017 92533; Publisher: Amiga; Price: £9.95; Originality: 5/10; Playability: 6/10; Graphics: 6/10; Value: 5/10.

Eagles Nest

The Eagles Nest is a strategically positioned garrison fortress, believed to be a central command for an imminent enemy counter-offensive, which apparently poses a major threat to the continuation of "our" advance, and must therefore be eliminated before the final offensive can begin.

So the blitz goes on. This is basically a third red screen to kill, kill and kill some more.

You play a character who can withstand 50 shots, and you can only carry 99 bullets on you, but the Eagles Nest has plenty of ammo dotted around the four floors with which to fill your automatic rifle and happily kill a few more Communist Gooks - or whatever.

Not having seen the C64 or the CPC variants of this game released earlier, I must admit I wasn't overly impressed by the programming or the graphics on this one. It is a sort of World War II version of "Gunsler", the basic premise being to explore as many rooms as possible, shoot anyone who gets in the way and eat food or take medicine as and when necessary.



The sound effects, although realistic, seem somewhat muted, even turning the Amiga's monitor volume control up. It doesn't help matters - a shame as there could be plenty of scope for improvements (footsteps, screams, other bullets flying at you and the odd cry as an enemy bites the dust).

To make things easier, there is a supplied map of the ground floor; this is very useful should you want to start learning how to play the game.

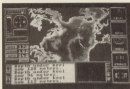
You have to be pretty quick to play this game properly. If you don't watch your ammo, you could end up being covered by a load of soldiers without any bullets with which to mow them down, or to shoot against a wooden door.

Eagles Nest is most certainly a playable game, a little crass at times, and the puzzles aren't really as demanding as with other games, but until Gunsler is released for the Amiga, it will do. **C.G.**

Tweaker:

Name: *Eagles Nest*, Supplier: *Parsons/Interceptor/Mercury/Mercury House*, Culture: *First and Extra*, Alder: *Melrose, Brix*, Tel: *0328 3711*, Machine: *Amiga 512K*, Price: *£19.99*, Origin: *UK*, Playability: *8/10*, Graphics: *8/10*, Value: *8/10*.

The Hunt for Red October



The Red October is a new submarine design so quiet, with a revolutionary new drive system that makes it almost undetectable to the submarine's age old enemy - sonar.

You play one of the most senior Russian Submarine commanders, ordered to test the latest in Soviet death-defying hard ware. But (surprise, no prizes), you decide to defect. Your officers are willing to risk their lives to join you while the united crew members expect nothing.

After killing the KGB assigned political officer on board your ship the one man who could blow you cover, you set off, under very strictly laid orders to reach the West Sea along at Berkjanen Ridge, you have to slip out undetected by moving very slowly among the rock formations...

This starts the latest in simulations and "strategic" games programmed by Oxford Digital Enterprises and with the Amiga, this really has had a full game, using full colour graphics, a lot of which is digitised, some sparse, but effective sound effects, and mouse control throughout.

Red October isn't a particularly action packed game. Being a more subtle version of "Cat and Mouse", you have to avoid detection by all sides until you reach a safe port of call (it's either that, or you crash off some country's coastlines).

If you are detected by the Americans, they will help you throughout. Russia will, of course, want to blow you out of the water for defecting with their submarine! The English are there too, but their actions are not as clearly defined as the US or USSR ships, although they tend to be a lot faster at manoeuvring.

The game is controlled completely by the mouse, pointing to each respective icon for each member of the crew. The main control panel basically informs you of the ship's direction, the depth and speed of the ship. You can use the compass to change course.

The senior officer represents the "eyes and ears" of the submarine, while underwater. This has its disadvantages, such as requiring a visual sighting before taking any action (sonar traces are highly subjective and using sonar can also leave vulnerable blind spots which can be exploited by hostile attack submarines).

There are plenty of other options - all of which have something to do with the naming of Red October, your job is to plan ahead as far as you can, take deliberate action (at first) but strategically plan offensive tactics should you find yourself in a tight spot.

Red October is a good game for thinkers. There is plenty of visual information, and the supplied maps and notes are essential reading. Another nice touch is the newspaper

headline at each end of the game, you will get one should you successfully check Red October in the West, but not all countries are willing to accept a state of the art submarine (with a nuclear capability) and they will do their best to lend you off.

Lots of features, lots of options and lots of colourful graphics, all you need is lots of time. **C.G.**

Twinkle:

Name: *The Man for Red October*. Supplier: *Apex Press Software*, Victory House, Leisure Park, Luton, MK24 7YB. Tel: 01-438 1000. Machine: *Amiga*. Price: £49.95. Originality: 8/10. Graphics: 8/10. Playability: 7/10. Value: 7/10.

Western Games

Now, this is a novelty! If you want to learn how the wild west was really won, then this game is for you. No shooting, no boxing here, just good wholesome family entertainment such as spitting, shooting beer glasses (using the village idiom as target breakers) eating as much food as you can (but you have to keep it all down) and a run-around.

The games on this double disk package are bright, vibrant and very, very silly. Instead of going for realism the programmers of this little gem have decided to make it look like a cartoon or a comic strip and their attention to detail has made what is one of the most graphically inviting games around for any machine on the market.

This is, I think the first wholly German program I have seen for the Amiga, released by a software house called Magic Bytes: it is an original game, a bit like the "Olympics" games currently available for the Amiga, but on a more down to earth level.

You will need a joystick to play this one, and it will get some pretty heavy handling, as it is one of those games that requires fast pushing and pulling on the stick in order to control your character on the screen.

The first game you play is the hairy spitting competition (like I said, good clean wholesome stuff). You chew as much hay as you can without overflowing, you select the force at which you want to chew, select the angle of the spit and simply gob away!

Likewise, the beer shooting competition is similar, you first draw your gun, and roughly aim the cross over your



target (ranging from glasses, bottles, legs and so on...) you select the right moment to fire and then shoot.

All of the competitions are very difficult to play to begin with, but after a while, you pick up on the rhythm of the game, and after that, it is plain sailing!

A very nice series of games to look at - and great fun to play, especially with a second player as your opponent. Definitely one to bring out at a party! **C.G.**

Twinkle:

Name: *Western Games*. Supplier: *Arctura's 5 Diamond Road*, Pacey, London SW17 2DR. Tel: 01-783 4265. Machine: *Amiga*. Price: £39.95. Originality: 7/10. Graphics: 8/10. Playability: 7/10. Value: 7/10.

Q Ball



Engish Software have recently converted and upgraded the Atari ST version of this game for the Amiga. It is a sort of MD Zorro gravity game of snooker with mouse control and full colour graphics.

The problem is that while Q Ball is very easy to learn, the game is nigh-impossible to play and control properly.

I have tried this game out with many different friends (most of whom already have STs of Amiga) and none of them could control the ball properly - even after a month's full playing. So in the end we satisfied ourselves with randomly aiming the ball and hitting the cue as hard as we can (more logical attempts proving fruitless).

The graphics looks nice, the sound effects are very nice and the music is good (when it lasts) but other than that, Q Ball is best left to lesser machines such as the Atari ST - it is not worth playing because there isn't a game here. **C.G.**

Twinkle:

Name: *Q Ball*. Supplier: *English Software*, North Parade, Portsmouth Gardens, Manchester M66 1BB. Tel: 061-433 1333. Machine: *Amiga*. Price: £79.95. Originality: 8/10. Graphics: 8/10. Playability: 1/10. Value: 2/10.

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Superbase Professional

Superbase fulfills its promise with the addition of a forms designer and programming language

By Anne Owen



Superbase is instantly recognizable by the VCR style controls (an idea now "borrowed" by other database programs) has been evolving ever since Precision in Sunnyvale, into Superbase Professional.

The new software tidies up some of its old and features new elements such as a text and forms editor. The most important addition however is that of a programming language for Superbase. The designers have not come up with some exotic database language for us to learn but have wisely made the familiar structures and keywords of Base available for Superbase programming.

It's worth reminding ourselves of one of the unique features of

Superbase, all of which are now programmable. A database file can have an external file linked to it which can contain text, screen pictures or music data. The pictures can form a database or can be dumped to a printer; the music can be played back as a tempo programmed from Superbase. The equivalent program keywords are SHOW and SCR-DUMP.

Superbase supports the Amiga's speech facilities and the program language provides the keywords SAY USING followed by the parameters for pitch, inflection etc.

Superbase files can cross-reference with other files. For instance a holiday record file might have fields common

to a firm's personnel file with holiday entitlements in it. In this case updating on the personnel file also affects the variables in the holiday file itself. Some relevant program keywords are CREATE and INDEX.

Superbase strives to allow English language style expressions where possible, e.g. the relative concepts of time TODAY and NOW and LIKE string matching functions, all available via the programming language.

Superbase Basic

When the program option is selected, an edit window opens, just like Amiga Microsoft Basic. A program menu is available with Run, New, Edit, Open,

Close, Save, Print and Remove options. You can move into the database window at any time, or open a command line window for directly typing in program commands.

The program editor has many of the features of the text editor including delete word, delete to end of line, clear line, split line, join line, insert mode on/off and undo, making program writing a pleasant task.

Familiar to Basic users, keywords are ABS, ASC, ATN, CHR\$, COS, DATA, DIM, INT, LEN, MQR, CLS, INSTR, LEFT, LIST, LOG, MID\$, MOD, NEW, READ, REM, RESTORE, RIGHTS, RND, RUN (from memory or disk), SGN, SIN, SQR, STR\$, TAN and VAL.

As with many keywords, LOAD and SAVE can be used with parameters to give them wider use

DOS command from disk for execution before returning control to the program. DISKSPACE is also useful when files are filling up fast. EOF detects the end of a Superbase file.

Superbase deals comprehensively with time. Indeed there seems to be a strange preponderance of time based keywords: DATE\$, DAY, DAYS, HRS, MINS, INTERASE, TIMES, THOUSDCS, TIMEVAL, TODAY, NOW, YEAR, MONTH, MONTHS, SECS. All are available to define the date and time format used to express or assign the required moment, down to milliseconds!

String handling is a vital part of database work, carried out in Superbase by the following keyword commands: PCASE\$, LCASE\$, LTRIM\$, UCASE\$, TRIM\$, and

and so on in the position of a programmer/consultant creating an easy to use system which inexperienced operators could use efficiently.

Forms

For the format the Forms editor is the first port of call. Forms have the advantage that they present information on screen or on paper in a manner designed by the Superbase user. Specified information from a combination of files can be displayed clearly and attractively.

Forms are designed page by page, a printer page, not a screen full, and each form consists of three pages. Pages can be saved and reloaded, and their positions within the form swapped about in memory.



than normal in Basic. They can deal with a tabulated program, with text, with a query file, an update file or function key definitions and can add one file to another.

CHAIN loads a new program but retains variable information. CLEAR and ERASE clear variables while SET interprets variable settings and commands from a disk file. EREND, ERSE, ON ERROF and RESUME help with error tracing and FREE gives a memory free figure.

The main control statements are FOR TO NEXT, IF THEN ELSE and WHILE WEND. There are no line numbers but you can GOTO or GOSUB to a label and (of course) RETURN to the main flow of the program. ON GOTO and ON GOSUB are also available.

DOS like commands COPY, DELETE, DIRECTORY, ERNAME and SETBUFFERS are available from within a program. CALL calls up any

SPACE. Number precision can be set with FUS.

The current position is read by COL and ROW and is assigned by LOCATE and HOME. NEWLINE moves to the next line, REPLICATE reproduces a character a specified number of times and SET PAGING controls the page scrolling while WAIT does just that. Bold, underline, and italic text can be easily turned on and off.

PRINT selects the printer as the output device. PAGE and PROW detect the printhead position and EJECT can be used to ensure sensible page breaks for printed output.

Take Two Users

I got myself initially in the position of a user setting up forms for presentation on screen and paper, including mail merging and reports

The sort of thing you might do is to print a two page form to an ordinary dot matrix printer a page at a time and then march them up for an A3 photocopier. If you can shoot feed your printer then an A4 form design can be printed once, photocopied onto lines and the resulting form put through the printer to have individual details filled in.

Calculated fields, which change dynamically, can be added to the form. They are attached only to the form, not to the file. The report functions SUM, SD, MEAN, MAX, MIN and VAR are available.

Any of the files supplying information to the forms can be made the master file and new selection criteria applied to the records.

The forms can appear in 4, 8 or 16 colours and the design itself is carried out with the aid of the following 'objects': areas (filled and patterned fill), boxes, lines, images (loaded from

other point programs), text and fields (supplied by the data files). The 'object' is placed on the form in the desired position and can be moved, copied, edited or deleted. An invisible grid can be turned on to help alignment of objects and a 'redraw' preview of the complete form can be displayed. Field objects can have justification adjusted, can be set as 'read only' and can be automatically given a header and/or the field name before the data.

Printing of the form can be as text or graphics modes. Each object can have a value assigned to it which indicates whether it is to appear on a printed or not. Some design features (especially colours) may look excellent on screen but confusing on paper.

Function Keys and Automatic Reports

For performing repetitive but limited actions on the data the user needn't go as far as writing a program. Function keys can be used very effectively. Commands can be assigned to the function keys and executed with a single key press. For instance loading a letter into the text editor and extracting a couple of names and address fields for merging and printing. KEY displays all the current definitions, which can be loaded and used as required. Programming function keys with often used strings also helps with data entry. The text editor has a complete set of menus of its own and is capable of BAK documents. A format ruler can be placed at any point in the text. There is help on key presses and the mailmerge simply involves inserting field names in the text between the & character (Wordstar style).

Another boon to this user is the automatic generation of reports without the need for programming. The reports are designed on screen with the forms editor. On saving, the editor automatically creates a report file and an associated Superbase program file which will reproduce the report on screen or printer, including title page and totals page if required.

Programming

Because the command language matches closely the menu options in Superbase, any regular user can turn to hand to programming and quickly get a feel for the screens which will

result from a program. The professional programmer can go a step further to automate data processing or design an interface suitable for a particular type of application.

It is possible to create files from scratch within a program via CREATE, ADD, MAKE and INDEX. There are also the corresponding QUIT, REMOVE FILE and REMOVE INDEX. Files can be saved with PROTECT and, for further security, a password added with PASSWORD.

Record creation involves the use of BLANK, ENTER and STORE keywords. Field values can come from the user with EDIT (whole records) or ASK (specific input) or values assigned directly from DATA in the program or INPUT from disk files. POINTER can be used to control the pointer in an AMBE file when extracting data.

REQUEST is a vital command which brings up one of the variety of existing Superbase dialog boxes. You can manipulate menus with MENU ON and CLEAR (cancel). Presentation as record, table or form can be set and records selected with SELECT - CURRENT, DUPLICATE, FIRST, KEY (with string parameters), LAST, NEXT, PREVIOUS and REMOVE. A path can be set to a validation file (which checks data entry) and suitable error message issued. Data entry can also be forced if necessary.

WHERE sets a filter on the fields selected by SELECT for report output or for other query applications, such as sorting, merging files or simply retrieving data. Sorting is carried out by SELECTing the fields upon which to sort and ORDERING them, either ASCENDING or DESCENDING.

Forms, reports and mail merging can all be handled from within a program. Both functions key definitions and programs can be loaded automatically by creating a program file called START, which Superbase will load and execute on startup, allowing a 'turnkey' system to be easily implemented.

Conclusions

A journalist colleague recently remarked that the potential of the Amiga hadn't been realised. True, but Superbase is one of a new generation of software now realising it. The creative (graphics, page design, fonts, speech and music) is combined with

the practical power of a relational database. The one limitation you are probably already aware of is your printer. The appearance of fonts on screen is often much better than on a graphics dump. The Amiga does not have special font libraries to accurately reproduce these, even on a laser printer.

The designers of Superbase haven't made any assumptions about what the business user will want from the database. After all, these days the business computer is more than likely used in the engineering of science departments as much as in administration. A scientist will appreciate the precision of numbers and the accurate dates, even including changes to the calendar in 1752.

Superbase, like all good software, creates its own working environment. The new features of Superbase professional allow the powerful features to be extended or for the environment to be restricted for a particular category of use or user.

The first Amiga interface shines through but I must mention, as I have with all the disk based software, that the performance of the Amiga floppy disk drives inevitably slows down the movement between some operations. Users who have Superbase up and running daily would benefit, indeed profit, from a hard disk (they start from 1994 from Precision).

When Superbase was demonstrated to me on a 512K A1000, the program very quickly ran into memory problems. These were instantly cured by the fitting of a Precision megaboard 2 (see Progressive Peripherals). I suggest, if you are working with 512K, that you discuss this with Precision before purchase.

The documentation is of a high standard, one manual for Superbase, another for the new Superbase professional features. Although there are general purpose manuals, Amiga users can easily avoid the material about Superbase on Atari and MSDOS, though it is obvious that many Amiga features such as speech and external music files are missing from the inferior versions!

Upgrade prices will be available and registered users will be mailed by Precision.

Enquiries

Precision Software, 8 Park Terrace, Winchester Park, Surrey, KT1 8AE. Tel 01-338 7768.

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1) If possible all material sent to the magazine should be typed or printed out on a computer printer.

2) All text should be double spaced (i.e. there should be a blank line between each line of text). You should also leave a margin of about 10 characters around the text.

3) On the very first page you should put the following:

Name of the article
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Any extras required - disk, printer etc.
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4) The top of every page should have the following information on it:
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The page number

For example, suppose you had submitted an article on C64 interrupts. You should put something like the following at the head of the page:

Interrupts/J.Smith/1

5) Please make sure that you do not make any additional marks on your text especially underlining.

6) Try and write in clear concise English, it does not have to be a work of literature but it must be comprehensible.

7) On the bottom of each page you should put the word MORE if there are more pages to the article or ENDS if it is the last page.

8) If possible, enclose a listing of all programs.

9) Under no circumstances use a staple to hold the pages together. Use a paperclip instead.

10) Programs should be included on either disk or tape. Make sure that you SAVE two copies of every program so that we have a better chance of loading them if problems occur.

11) Programs under 10 lines can be included in the text. If your program is longer than this you must enclose a disk or cassette.

12) If your article needs any artwork then supply clear examples of what is needed. We don't expect you to be an artist but we do need to see what is required.

13) Photographs, if necessary, must be either black and white prints or colour slides. We can take shots ourselves so don't worry about this too much.

14) Submissions of any length are welcome. If you have a fixed line routine that you think may be of use to someone else we welcome it just as much as a full blown six part series.

15) Payment varies quite a lot and depends on quite a number of factors, such as complexity of program, presentation of program, number of magazine pages it takes up etc. Payment is generally between £10.00 and £250.00.

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17) If we do find your submission suitable for inclusion in the magazine we will write to you giving the terms of publication, the rate of payment and an agreement form. Prompt return of this form will allow us to use your program as soon as possible.

18) If you want the program returning to you, should we find it unsuitable for publication, then you should enclose a stamped self addressed envelope.

19) The last and most important point to make is 'get writing', we are waiting for your articles.

I.Q.

*Strain your brain with the recent
intellectual releases*



Knightmare

Welcome watchers of *Blision*, to the castle of confusion... If you recognise these opening words then you're already one of the dedicated followers of ITV's cult roleplaying TV game *Knightmare*, in which teams of children guide a knight, blinded by a full faced helmet, around a computer generated graphic dungeon. The graphics in the TV program were created by two Superova computers which are slightly more powerful than your average C64 so this is obviously going to be a real down version from Activision.

You play the knight who must find his way out of the *Knightmare* by solving his problems and overcoming the monsters and go to the second wilderness station. To help you in your quest you can seek advice from two Oracles. However, one is good and the other is evil so you should listen to both sets of advice but follow none to find the successful middle path. You will also hear from Treguard,

the Dungeonmaster whenever you waste time or attempt pointless actions or anything else that annoys him.

Your quest is told in 3D graphics which is displayed on the turning pages of a book alongside a burning candle which represents your lifeforce. As monsters hit you, and poisons and traps take their toll, the level of the candle will plummet to end your game.

You control the Knight's movements with a joystick and his actions with adventure style commands selected from menus or by pressing the first letter of the command, object, poison or spell. This may seem an efficient method - however it can cause you problems as it takes a long time to throw a rock while a ghost and a demon charge at your heels.

Unfortunately, the game also suffers from a few annoying bugs such as if you throw a rock in one room and then enter the other, the same rock comes flying across to meet you! To add to this the graphics are crude and the

action is far from the combination of traditional adventuring and arcade action promised on the packaging.

There is no way a C64 can mimic the affairs of two Superheroes and five actors but surely it can come close to that. Perhaps the approach used in *Dragon's Lair* and *Escape from Singe's Castle* would have been better. Disappointing I'm afraid. **T.H.**

Scrabble

Title: *Scrabble*. **Supplier:** *Activision, 21 Pond Street, Hemel Hempstead, Herts. HX3 9JL, Tel: 01-491 1333.*
Machine: C64. **Price:** £9.99 (C64) £14.99 (DOS).
Originality: 6/10. **Playability:** 4/10. **Graphics:** 3/10. **Value:** 5/10.

Scraples

This is a computer version of the best-selling board game which is best described as a sort of thinking man's Trivial Pursuit.

The game poses a series of moral dilemmas to each player in turn. It is up to you whether you decide to answer truthfully as if all your way out of things but you are always likely to be challenged in which case you will have to justify your answer. The other players will then vote as to whether they believe you or the challenger.

A typical question would be, "If you saw your boss coming out of a cinema that showed exclusively blue movies, would you tell your colleagues at work?" Personally, I would only bother if I recognised him appearing in one of the blue movies!



Between three and ten players, either human or computer, can take part in a game. Setting up the game is somewhat tedious as you must select from sixty-four different traits for each computer player and define personality traits for the humans. This involves defining on a bar chart how you see yourself for each of twelve different characteristics. These range from personal integrity via greed to family relationships. The computer then adjusts your inputs slightly and presents you with a new graph at the

end of the game according to how you answered the questions.

The game itself depends on getting rid of your dilemma cards before anyone else does. You have an answer card (yes, no or defend) which is kept secret from the other players and the trick is to ask questions which will force players to give the same answer as you have on your card.

The problem with the game is that to get the best out of it, you need to be watching the other players and judging their reactions. Against computer opponents, this is obviously impossible. Again, with human opponents, making them look away as you examine your answer card destroys the atmosphere of the game. The conviction of the game is excellent, no-one complains here. I just think that this is the wrong sort of game to be concerned in the first place. Whereas it works well with a group of you sitting round a table, it fails miserably when you all move to the small screen. **G.B.B.**

Scrabble

Title: *A Question of Scrabble*. **Supplier:** *Lotusware Games/Virgin, 2-4 Foxton Road, Parade Road, London W1J 2JZ, Tel: 01-277 8878.* **Machine:** C64. **Price:** £12.99 (C64) £14.99 (DOS).
Originality: 6/10. **Graphics:** 6/10. **Playability:** 5/10. **Value:** 3/10.

Not a Penny More, Not a Penny Less



I was rarely only a matter of time before Jeffrey Archer found his way somewhere into the computer world. After all, his list of appearances in recent years has been considerable - television, books, the stage, political rallies and the High Court. Domark have afforded the link up and produced a game based on Archer's first book, *Not a Penny More, Not a Penny Less*.

The book, like most first novels tends to be semi-antibiographical. Four totally unconnected people are persuaded to sink their life savings into shares in an oil company. There is the promise of enormous profits but the deal turns out to be one large con trick and the partners lose one million dollars between them (early 1970s prices).

You play one of the four, Stephen Bradley, and it is up to you to contact the other three and persuade them that you ought to try and get back all the money that you were riddled out of. Hence the title of the game.

That is the gist of the story and a very good one it is fair to say whether you like Jeffrey Archer or not, he does tell an excellent tale even if his literary powers do not feature among the world's greatest.

The game itself is a different matter and I am afraid that it takes the art of advancing back into the dark ages. The list of problems and bugs is phenomenal and I can do no more than mention some of the ones that occur at the start of the game.

The parser is pathetic. Even by the standards of games written five years ago, it is dire. There is no inventory command so that if you pick something up, there is no way you can find out what you are holding, at a later stage of the game. Directions have to be typed out in full, e.g. 'go north east' rather than just 'NE'. Not that you can move anywhere anyway. At least not until you have solved certain puzzles. The game is entirely linear in construction so that everything must be done in an exact order. Get it wrong and it is effectively game over although you are not told that at the time.

Although many items are described in the location descriptions, trying to examine them further is by and large a waste of time. In some cases they disappear totally. For example, you start off in your room in college (you are a university lecturer). In the room is a bookcase and a cupboard. At least three or four a policeman arrives and catches you with an incriminating dossier open. Then they disappear. If however you manage to close the dossier before the policeman arrives, after he is gone, re-examination reveals a vital phone number that you managed to miss five time around.

Still the bugs haven't finished. Phoning Scotland Yard puts you through to your stockbroker (perhaps this is an intentional dig at BT). Examining the top names in the dossier gives you a description of your rooms again. I managed to go and see this first character, a doctor, on three occasions within one game, each time following exactly the same sequence of events because no flag had been set to instruct the program only to allow things happening once.

There are graphics but they are of the low variety complete with a fill routine that takes ages to complete. The program also boasts an impressive speech routine but there is so much hiss that it sounds like a badly tuned radio station. Pronunciation isn't all that it might be either. Magdalene College is pronounced a mag-da-lin instead of mandlin.

Perceptive readers will notice that I was not too impressed with this game. In fact, I would go so far as to say that this is the worst full priced adventure I have played for several years. The package includes a copy of the book which is necessary to find out what you are supposed to be doing. My advice is to go and buy the book and ignore the game, especially at just under fifteen pounds for a cassette version.

G.R.H.

Finalists

File: Not a Penny More, Not a Penny Less. **Supplier:** Demand, 28 Markfield Road, Wincoburn, London SW19 3TA. Tel: 01-8947 3622. **Machine:** C64. **Price:** £14.99 (C) 1988 (D&D).

Eye

Another computer version of a board game and one that is almost impossible to describe if you haven't seen it before.

The playing area is a circle with four squares of eight different colours showing at any one time. The position of these squares is altered by rotating two spirals within the circle. The object of the game is to place the requisite number of your own pieces on your own colour before your opponents manage the same feat. How many points you need is determined by the number of players.

You have a number of moves determined by the highest number of pieces you have on any one colour. A move can consist of sliding one of your own pieces to an adjacent square or twisting one of the two spirals to change the pattern of the colours in line with the object of hindering one of your opponents or helping yourself. If that wasn't complicated enough, you can also control neutral colours and at the beginning of each turn, you can move any of your opponent's pieces that happen to be lying on a colour you control.

Although it all sounds very complicated, you soon get the hang of what's going on and the game becomes quite addictive. One advantage of the computer version is that there are several game variations that are not possible in the board game but again that, one of the most enjoyable parts of the board game is moving the spiral and watching the colours change. In the computer version, this effect is lost as the screen blanks out and redraws with the new pattern.

Eye is one of those board games that converts well to the computer and fans of strategy games like this who are in constant need of someone else to play against will not be disappointed. Two minor quibbles. The printed instructions are somewhat sparse and could usefully have been expanded and also there is a silly grammatical error when you are writing up the game (whose instead of who's). I know it's trivial but it does have the effect of making the finished product look unprofessional.

G.R.H.



Finalists

File: Eye. **Supplier:** Endeavour Games, From Endless Corporation, Unit 3, Royal Road, Redhill, Surrey TN3 1SL. Tel: 01-894 6506. **Machine:** C64. **Price:** £12.95. **Originality:** 5/10. **Graphics:** 5/10. **Playability:** 5/10. **Value:** 7/10.

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5/28/84

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5/28/84

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**ENHANCE
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Welcome Back

*It's good value for money all the way with
our handy compilation of re-released
budget games.*

By Tony Heberington

When you go into a shop to buy a game you're usually greeted with a bewildering array of titles, some of which are treasures, others are lemons. For full-priced games the answer is simply to read through *Two Commodore's* review pages and then go out and buy with confidence. Even budget games have the same pitfalls as £1.99 for a bad game is good money wasted. However, if you look carefully you can usually pick up a bargain as you can find games that were top of the full-priced games enjoying a cut-price comeback. Here are ten to look out for if you want to bag a bargain.

Football Manager

Football Manager has got to be one of the most successful games ever. Launched in 1982 on the Spectrum and converted later for the C64 and C16 this game captures the pressures of football management and presents them in a ridiculously addictive form. Although the game was written in Basic the small pace action didn't deter its players staying up all night to play just one more season I don't think my neighbours will ever recover from the time I won the league and cup double!

The good news is that Addictive Games is adding the finishing touches to Football Manager II, and even better news is that you can pick up a copy of the original from Prime Leisure for only £2.99.

Twinkle:

Title: Football Manager. **Supplier:** Prime Leisure Corporation, Unit 1, Royal Rd, Epsford, Nottm, LN1 3SE. **Machine:** C64. **Price:** £2.99. **Originality:** 1/10. **Playability:** 10/10. **Graphics:** 4/10. **Value:** 10/10.

Decathlon

One of the first, and in my opinion, the best of the decathlon games has been re-released as part of the Firebird £1.99 range. Both you and your joystick must endure a punishing schedule of events that includes the 100m, 150m hurdles, long jump, high jump, pole vault and the exhausting 1500 metres. The key to success is joystick wiggling so make sure you have a stick that can stand the pace before you attempt to go for gold.

Twinkle:

Title: Decathlon. **Supplier:** Firebird, 64/76 New Oxford Street, London WC1A 1PS. **Tel:** 01-779 8755. **Machine:** C64. **Price:** £1.99.

Originality: 1/10. **Playability:** 10/10. **Graphics:** 6/10. **Value:** 10/10.

Blockdunk

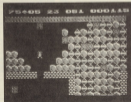
Blockdunk is one of my all time favourite arcade games and has everything that an arcade game should. It's simple to learn, horribly addictive, presents you with levelish puzzles that you must solve in a race against the clock and it drives me mad!

The star of the game is Blockford, a little character that must collect diamonds while avoiding crashing boulders and deadly snakes, fireflies and dragonflies.

Blockdunk was originally written by First Star and imported by Beyond and now is back for a well-deserved encore courtesy of Prime Leisure.

Twinkle:

Title: Blockdunk. **Supplier:** Prime Leisure Corporation, Unit 1, Royal Rd, Epsford, Nottm, LN1 3SE. **Machine:** C64. **Price:** £2.99. **Originality:** 8/10. **Playability:** 10/10. **Graphics:** 8/10. **Value:** 10/10.



Attack of the Mutant caneh

The first and best bout of Master range is 98 fast genetically altered canehs are sent to destroy the world. Armed with a short supply of high speed laser jets you must take on the massive beasts as they march relentlessly across

the scorching barbeques.

Unfortunately, genetically altered carnals are formidable beasts and are coated in many layers of armour, which you must blast away while avoiding the acid holes that the hairy hoppers spit at you. Clear the screen and you'll live to face another batch of conquering carnals.

Touchline

Title: *Attack of the Mutant Carnals*. **Supplier:** Manticore, 8-18 Paul Street, London EC2A 4PW. **Tel:** 01-377 8880. **Machine:** C64. **Price:** £1.99. **Originality:** 6/10. **Playability:** 9/10. **Graphics:** 3/10. **Value:** 10/10.



Pitfall

Another Activision game to be re-released by Herbird, Pitfall is one of the few computer games that has been converted and which now appear in the arcade. In the game you play Pitfall Harry, adventurer, treasure hunter and explorer as you make your way through the inhospitable jungle and a subterranean maze that lies below.

As you'll soon find-out, treasure hunting isn't all that easy as you'll have to leap over barrels, swing on vines over lakes, leap acrossable pits by jumping on their heads and use your nose across the jungle so you're not swallowed up by snakes that come and go. Be warned - this game may look simple but it isn't.



Touchline

Title: *Pitfall*. **Supplier:** Activision, 4470 New Orchard Street, London WC1A 1PS. **Tel:** 01-379-6751. **Machine:** C64. **Price:** £1.99. **Originality:** 6/10. **Playability:** 9/10. **Graphics:** 4/10. **Value:** 10/10.

Fight Night

The new look, Manticore owned, Americana range boasts and impressive line up including this one for fight fans.

Fight Night allows you to build your own boxer right down to the colour of his shorts and then prepare him for the ring through a tough training and sparring program before tackling the opponents that stand between you and the title. Don't let appearances deceive you as what looks like an easy opponent can have a killer blow.

Treat Dip Stick with more respect than what you think he deserves as his speciality can ruin more than your career.

Touchline

Title: *Fight Night*. **Supplier:** Americana, 8-18 Paul Street, London EC2A 4PW. **Tel:** 01-377 8888. **Machine:** C64. **Price:** £1.99. **Originality:** 6/10. **Playability:** 6/10. **Graphics:** 6/10. **Value:** 10/10.



International Karate

Players who prefer to use bare hands and feet to beat their opponents to a pulp will enjoy System 3's International Karate now re-released by Prism Leisure.

The game flies you around the world from New York to Sydney and on to London and the base of Mount Fuji as you lay into a human or computer controlled opponent with your street Kung Fu moves. Win two out of three 15-second bouts, you could be on your way to a black belt.

Touchline

Title: *International Karate*. **Supplier:** Prism Leisure Corporation, Dale L. Reed Rd, Exford, Middlesbrough, C64. **Price:** £2.99.

Originality: 4/10 **Playability:** 3/10 **Graphics:** 6/10 **Value:** 18/30



Forbidden Forest

Take a deep breath and a firm hold of your nerves and dive into this atmospheric nightmare. Armed with only a bow and arrow you enter the forbidden forest to find and defeat the Demogorgon. Through day and night you must fight for your life as a stream of giant spiders, monstrous bees, killer skeletons, massive frogs, a fire breathing dragon and the Demogorgon himself attack you and aim to bring you to a halibut and blood-thirsty end.

Forbidden Forest may look a little dated but for £1.99 it's worth a look.

Tomlin:

Title: Forbidden Forest **Supplier:** Jay Ten **Machine:** C64 **Price:** £1.99

Originality: 6/10 **Playability:** 7/10 **Graphics:** 4/10 **Value:** 9/10



Crazy Colors

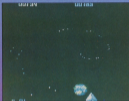
The old classic Mad Planets arrived on the C64 through Maroch's Crazy Colors and is back again as part of Mastertronic's Ricochet range. Your job is to destroy the

new planets that are being formed and then are spinning out of control. The action is fast and furious and accompanied by a Rob Hubbard soundtrack.

Tomlin:

Title: Crazy Colors **Supplier:** Mastertronic, 8-18 Paul Street, London EC2R 2AW, Tel: 01-277 6680 **Machine:** C64 **Price:** £1.99

Originality: 4/10 **Playability:** 9/10 **Graphics:** 8/10 **Value:** 18/30



Future Knight

This former Gradius Game was a challenging mixture of platform, puzzle and arcade skill as you steer a shielded spaceship packed full of evil robots and poisonous pods of your beloved master in distress. Tasty levels of vertical ladder and scrolling action await the futuristic knight in shining armour.

Tomlin:

Title: Future Knight **Supplier:** Proton Leisure Corporation, Unit 7, Round Red, Enfield, Middlesex, EN1 7SL **Machine:** C64 **Price:** £2.99

Originality: 8/10 **Playability:** 7/10 **Graphics:** 7/10 **Value:** 16/30



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Sysres

Add hundreds of new functions to BASIC while using only 33 new command words

By Allen Webb

Reviewing this package gave me a deep feeling of nostalgia in that it took me back to the good old CBM PET days. After the initial Palo Alto HELP chips, there emerged a number of enhanced tool kit packages; the most notable of these being the POWER chip and WCTREE. Certainly there were a number of similar British products but these were both efforts compared to the American packages. SYSRES demonstrates that things haven't changed and is the C64 equivalent to the excellent POWER package for the PET.

Enough of the spiel, what's SYSRES all about? Basically it is a toolkit to allow the easy manipulation of disk commands, programs and files.

First we have extensions to the disk operating system. These are commands which replace the extremely tedious way of accessing the disk.

OPEN "S,S," ... "CLOSE S

These allow you to copy files, search files, call the directory, etc by use of simple commands such as @Stand+S, OK, so that's fairly standard. One rather nice command is the list from disk (all). This allows you to display a file direct from disk without loading any programs in memory. The command handles sequential, relative and program files. If you think about it, this is a very handy facility with a wide range of uses.

The remainder of the package comprises about 30 other commands. These range from the usual RENUMBER, AUTO and DELETE commands through enhancements to RUN, LIST and CMD to the positively phenomenal CHANGE. Before describing some of these commands, it is worth making some points about the

author's approach to the design of the package.

First of all, this package can be considered to be a true operating system. A range of enhancements such as bidirectional scrolling, key repeat, redefinition of all keys and default devices are wedged into the system. Having done this, the system recognizes if you run a program and disconnects and reexecutes functions to ensure that optimum speed is achieved.

Secondly, rather than just provide the basic commands, the author has crammed in as many options as his limited imagination can dream up. RENUMBER, for example, allows you to renumber the whole program, part of it and even erase a block of code. Commands such as CHANGE are even more complex.

Thirdly, maximum use is made of the many ways of storing and handling files, allowing some extremely involved operations.

For users of BASIC, there are a full range of editing tools. These include:

DELETE
RENUMBER
FIND
CHANGE
TRACE
DUMP
WHY
APPEND
MERGE

These allow you to write code, run and debug and edit it in a simple manner. Rather than describe the details of these commands, I will mention those which were most interesting.

FIND: This allows you to look for a specified pattern of characters. The

command is extended, however, to allow you to specify which position in each line to search, specify the areas to search and to specify patterns matching with "wild cards".

CHANGE: This finds a specified pattern of characters and replaces it with another pattern of characters. The command supports all the options of FIND with a claimed 300 valid combinations. The potential of the command is quite phenomenal allowing operations which would normally be very difficult to achieve in BASIC. You can, for example, concatenate lines to longer than 80 characters, remove REMs, find uninvolved references or start a line with a number. I found this a potentially powerful command which required a lot of concentration probably with a cold wet towel wrapped around your head.

TRACE: Many trace commands give some form of a scroll of line numbers on the screen which at best is unreadable and at worse wrecks the screen format. With SYSRES, you have the choice of two optional windows at the top of the screen. The right hand window lists part of each line as it is executed and the left one gives the value of each variable every time it is redefined. The option to pause or slow execution or print the windows ease the viewing of the trace.

MERGE: This is a true merge which will interleave the program lines of disk with a program in memory.

For machine code users, there commands are even more useful allowing the preparation and editing of source codes. To allow the manipulation of source codes suitable for use with assemblers such as the

KC1, assemble, PUT and GET are provided. This allows you to take advantage of the superior SYSDISK functions while maintaining compatibility with the assembler. The PUT command strips off the line numbers and saves the program as a sequential file. Very handy. To aid debugging of machine code, a BREAK line is provided. This is accessed by the usual way via a BRK instruction or from a RUN command. If no monitor is present, details of the page where the break occurred along with the contents of the registers, etc. are given. If a monitor is present, it is entered. The package comes with a public domain monitor (XMON) with several variations at different addresses. The system also seems to work with other monitors, however. One rather bizarre feature is that the bidirectional scrolling is active, even from within the monitor. This allows you to LIST a source code or BASIC program without leaving the monitor. This offers some useful debugging features.

Those of you who use binary files

will know the irritating way that the BASIC pointers are left so that any attempt to LOAD or amend programs get an OUT OF MEMORY error. To allow for this, three commands are provided. BLOAD and BSAVE allow the storage and retrieval of binary files without this problem. BRUN loads a binary file and commences execution at the start address of the code. This command also allows you to transfer parameters, provided that your code requires this. The following syntax is therefore accepted:

BRUN "myfile",param, param

A slightly stranger method of handling files is provided by the EXEC command. This command is aimed at providing a means of loading key definitions and other more extensive functions. The BASIC program is saved as a sequential file which can then be handled by EXEC.

Most utilities provide a means of redefining keys, and SYSDISK is no exception. Generally, these are confined to function keys, but

SYSDISK, somehow predictably, goes much further. On boot-up, 26 of the alphabet keys are defined with common BASIC and SYSDISK commands which are accessed by pressing the LOGO key with the appropriate alphabet key. The KEY command can be used to additionally define most of the keys when used in conjunction with the SHIFT key. Redefinitions can be set up manually or by loading definitions via EXEC.

An important feature of this type of software is the need to give nicely formatted output. When listing source code or BASIC programs, SYSDISK uses white for line numbers and the normal red colour for the rest of the code. The normal scroll is changed so that you cannot accidentally lose the screen contents by trying to move the cursor off the bottom of the screen. Instead, when a program is longer than the screen, you can list in either direction—a much more civilized and controlled approach. LISTING long files can be paused by pressing the SPACE BAR or slowed by pressing CTRL.

EXTENDED EDITOR COMMANDS

/	[F1]	Quick load from disk
!	[F2]	Quick load from disk with auto run
APPEND	[F3]	Append from disk to end of current program
ALIAS	[F4]	Auto line number (after header)
BLDSCR	[F5]	Load machine language (binary) file
BRUN	[F6]	Load and execute machine language program
CHANGE	[F7]	Change pattern to another pattern
CLOSE	[F8]	Close one or all files
CMO	[F9]	Set output to the printer and/or "HEADERS"
DELETE	[F10]	Delete a range of lines from program
CLAMP	[F11]	Strip off extra variables in screen of file
EXEC	[F12]	Execute a file as keyboard commands
FINISH	[F13]	End occurrence of a pattern
GET	[F14]	Read a sequential file into editor
KEY	[F15]	Define a key as a special function
KEYS	[F16]	Turn key functions on
NULL	[F17]	Disable SYSDISK*
NULL+	[F18]	Disable SYSDISK* and preserve memory
LIST	[F19]	Impressed BASIC LIST command
LOAD	[F20]	Default to disk drive
MEMO	[F21]	Merge from disk into current program
MEMO+	[F22]	Merge to current machine language number
NEW	[F23]	Restart program after "STOP"
PUT	[F24]	Save program to disk as raw file
RENAME	[F25]	Renumber all or part of program
RENUM	[F26]	Renumber all or part of program
SAVE	[F27]	Save current program, ignore screen garbage
SAVE+	[F28]	Default to disk drive, ignore multiple drives
SETD	[F29]	Set printer channel, format mode, paper
SETP	[F30]	Set printer channel, format mode, paper
TRACE	[F31]	Set 1 of 3 tracing modes and speed
VERIFY	[F32]	Compare current program against diskfile
VIEW	[F33]	Print position of last view
WHTT	[F34]	List line of heads or error
~	[F35]	Send output to printer
?	[F36]	Display current version of SYSDISK*

[1] Added command

[2] Discontinued with improvements

DIRECTORY ORIENTED COMMANDS

/	Quick load disk file
!	Quick load file with auto run
APPEND	Append file to end of current program
BLDSCR	Load machine language (binary) file
BRUN	Load and execute machine language program
EXEC	Execute file as keyboard commands
GET	Read file into editor
LOAD	Same as "/"
MEMO	Merge file into current program
PUT	Send file to disk, ignore options
SAVE	Save program to disk, ignore options
VERIFY	Compare current program against file
VIEW	List file in screen
WHL	List file in printer (after formatting)
WGE	Copy file to specified drive
WSE	Search file from specified drive

EXTENDED DOS SUPPORT

[#	[type "F" keyboard]	These commands may be used interchangeably, to perform the following DOS SUPPORT functions.
[#	[type "M" keyboard]	
[#	[single keyboard]	
[#	[the "help" user]	
[#	Display disk status	
[#]	Format (HEADERS) a new diskette	
[#]	Force initialize diskette	
[#]	Yellow initialize (yellow)	
[#]	Initialize diskette	
[#]	Copy to consecutive disk file(s)*	
[#]	Remove file	
[#]	Search file(s)*	
[#]	List directory**	
[#]	Read disk drive	
[#]	List disk file**	

For those of you with printers, things are even more attractive. Many commands can be sent to a printer by prefixing them by %. The nature of output and the device are set by the SETUP command. By adding 64 to the device number, a formatted output can be obtained. This format option does a number of things:

- Line numbers are right justified.
- Multi-statement lines are split with one statement per line.
- Spaces are inserted between comments.
- FOR-NEXT loops are indented by level of nesting. For example, the following program:

```
90 FOR I=1 TO 20
100 FOR J=1 TO 20
110 FOR K=1 TO 20
120 PRINT I*J*K
130 NEXT NEXT-NEXT
```

is printed as:

```
90 FOR I=1 TO 20
100 FOR J=1 TO 20
110 FOR K=1 TO 20
120 PRINT I*J*K
130 NEXT
NEXT
NEXT
```

The obvious value of this feature is that you can write a program as compressed as you like and still get a legible hard copy to aid debugging. So far as I could establish, SYSRES does not provide a Commodore driver.

SYSRES is hidden mostly behind the ROMs and uses only a part of memory from SCFB to SCFFE. No indication is given of zero page or other memory usage so I assume that there are no specific compatibility problems. The manual claims that the program attempts to analyse other cartridges or programs present which might give extensions to BASIC and make appropriate allowances. I tried using SYSRES with the MMR80 assembler cartridge with no obvious clashes. Clearly, machine code users will need to take care as to which areas of RAM are used by their programs.

Overall Impression:

I admit that I am wary of overpraising a piece of software, but in this case, I am hard pressed to fault it. So often I have seen software which dabbled with the job it's tackling, but falls short due to carelessness or lack of attention to

detail. SYSRES is not one of them. The author has gone out of his way to provide a full complement of features and to ensure that every detail is covered for. The program shows an appreciation of the 64's operation and enters for the unusual but flexible file handling system.

The program comes on disk and not only is it appreciated, but the manual encourages the user to make a working backup. The manual comprises about a 100 pages of text held in an A3 size ring binder. The manual is well printed and reads well. Unlike many products where the manual is the last and most poorly produced item, the SYSRES manual is detailed and offers both examples for use and plenty of hints.

The price may at first appear high but for what is a *mere 30 days* of programming this is an investment for anybody who wishes to use the 64 to the full.

Finalities:

Product Name: Supplier: Financial Systems Software Ltd, 2nd Floor, Arden House, St Mary's Street, Worcester CV1 1NA. Tel: 0493 51345. Price: £24.95.

I.C.P.U.G

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6502 ASSEMBLER 64/Plus 4 tape/disk £12.95

A sophisticated two-pass symbolic assembler and text editor which supports tapes and disk filing. The assembler, the editor, and your source and object code may all be resident in memory simultaneously, facilitating rapid and interactive code development. Recently extended manual with many examples.

286 EMULATOR/CROSS-ASSEMBLER 64 only disk £12.95

A unique integrated 286 development package. The emulator supplies 230 source code into optimised 286i which runs on the 64 at approximately one sixth the speed of a 286 (1.2M). It supports all but 20 of the 808 286 operations, calls to 6502 routines, and interrupts. The cross assembler generates two 64 binary 286 object files. The disk also contains a powerful editor and several example programs.

BI-DIRECTIONAL RS232C INTERFACE WITH COMMUNICATIONS SOFTWARE 64 4+ tape/disk £20.95

The 64 SERIAL supports RS232C via the user port. This interface provides the necessary voltage conversion for direct connection to RS232C printers, modems and other devices. It is compatible with Hayesport and Biosport. The unit is supplied with 1 metre of cable (not the 6 pin cable most commonly used in a 20-way male to female) D-connectors. The software includes a terminal emulator which supports applications and auto-dial, file transfer utilities, a menu driven port initialization program, and a transport printer driver which receives the SERIAL, is reformatted to printer output via the RS232C port.

*Prices vary slightly.

Prices are fully inclusive. Domestic orders add £2.00
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The Alternative Collection

One of the up and coming budget software houses, Alternative Software look all set to topple some of the top ten companies from their perch at the top. Here's your chance to discover how good their games are

By Tony Hetherington

The budget games market is in a turmoil. Once the sole contender, mighty Mastertronic has competition from Ferret (who has just picked up some Melbourne House games such as Rock 'n' Wrestle, Protractor, Mages, Magy's Revenge and Sherlock Holmes from the Australian Melbourne House). This is even more incredible when you remember that Mastertronic bought the UK Melbourne House! If that wasn't enough the cat price Kings are facing the challenge of Code Masters who has gone from next to nothing to dominating the charts in under a year! Now there is a new player in the arena but can Yorkshire based Alternative Software breakthrough into the big time? As they say, the proof of the pudding is in the playing so we tested ten new Alternative £1.99 games.

JUDO UCHI MATA

A release of Martech's Uchi Mata gives you the fight of your life as you take on a human or increasingly difficult computer opponents at the ancient Japanese art of unarmed combat. Armed with just your wits and a good joystick you can literally get to grips with your opponent so you can then throw him with moves such as Tomoe-Nage, O Soto-Gari, De Aeshi Buzai and, of course Uchi Mata.

To succeed with these moves you have to grab your opponent with a stronger grip than he's got on you and complete a series of joystick moves that will hopefully leave him flat on the mat. At the end of the game your score is accumulated and converted into an award that ranges from white belt to black belt and beyond through the Dan. A good belt 'em up that's a more subtle variation of the kicks and chops of karate.

OLYMPIC SPECTACULAR



Eleven Olympic events face keyboard athletes in a release of Database's Micro Olympics that was first released during the Decathlon boom. The events are split into three groups, running (100, 200, 400, 800, 1500 metres), throwing (javelin, discs, hammer) and jumping (long jump, high jump and pole vault).

To play the events you will need a combination of keyboard hammering and timing as you gain speed and jump or throw at the right time and are poorly rewarded for your efforts by jerky basic graphics. The running events can be particularly grueling, both on fingers and keys, as even the 1500m is a sprint!

SOCCER BOSS



Football Games come and go but Football Manager still takes the sidelines, but Soccer Boss offers a good alternative and is £1 cheaper.

The game lets the new manager of Liverpool, Newcastle or whatever team you choose to command it only in the dark with only a few instructions but you'll soon guess the players with the highest skill levels are the ones to pick.

As the game proceeds, you'll have to grapple with the selection problems, injuries and even the gas bill as you strive for league, cup and even European glory. This game was originally released by Pendulum but they only had six teams in the league, now it's back at a fraction of the cost with full divisions. Here we go, here we go, here we go!

RUN FOR GOLD



Run for Gold is an athletics game in which skill and tactics are as important as your runner's speed and stamina. You control two runners whose quest is gold in the 400 and 800, 1500 metres. However, there are forty others who want the same medals.

You begin your quest in local meetings that will qualify you for a race at Crystal Palace, then onto the European Finals and finally the Olympics.

The races are run with you in the centre of the action and you must control your pace and position on the track so that you're well placed for the closing sprint. Makes a change from the frantic waggling of the Double Dragon games.

SCARE BEAR



You are Fred Bear trapped in a nightmare brought on by eating a cheese sandwich. Unfortunately, this is no ordinary dream as it's a nightmare and is very real. You are trapped in a car in a yard and are pursued by fluffy snakes, wooden stakes, toy trucks, turtles, toytrucks, ghosts and a whole host of other toys that have turned nasty and are out to get you.

Your only defence against this attack is a nuclear homeopet that delivers a toy trucking honey ball as you leap over your victims in your car that can accelerate, break and jump!

FOOTBALL FRENZY



Football Frenzy is a football game with a difference. There are no joystick controlled players that dribble and shoot or tactics to choose as this is an adventure. Your team,

Grimsditch Rangers have somehow managed to reach the Cup Final and as manager you've just three more days before you lead the team out onto the hallowed turf. Surely nothing can go wrong! However, everything does and it's your job to get the team to the stadium on time. Two word command sentences may not seem a lot but there's a lot of adventuring packed into this program for only £1.99.

WIZ BIZ



More budget adventuring for those who like to talk their way out of trouble. In this game of magic and mayhem you come around a fire, a particularly heavy drinking session in the Duck and Plunger. Half-way during the evening you do your usual party piece of turning one of your friends into a black and purple Salamander. When you turned Mike, your victim back to normal he was a curious shape and didn't seem to see the funny side but instead planned revenge. Now you find yourself, complete with burgover, coming around in his Castle and the only thing in view is a sea of legs!

MICRO BALL



Being a goal scorers player is supposed to be a sign of a mispent youth. Unfortunately, I chose the less profitable position of goalkeeper. As a result I have hit more targets, scored more goals and claimed more extra balls than Steve Davis has potted blacks.

Up to four players can play Micro Ball and more likely you can play four games at once as you attempt to keep the ball in play, knock down sets of targets for bonus multipliers and score the 250,000 points necessary for the first extra ball (400,000 and 750,000 bring second and third extra balls).

As the scores rack up, watch out for "foot shots" as a bad bounce can send the ball down one of the side channels before you can get to the hit button.

Micro Ball occasionally defies the laws of physics as the ball seems to stop in mid air and then carries on once the program has worked out where it's going, but for £1.99 pinball wizard's will enjoy this.

CRICKET INTERNATIONAL

There have been very few cricket games released for the C64. However fans of the willow and leather can now play 60 one limited over matches between their own teams or on a match between England and the rest of the world.

As bowler runs in he can decide where to bowl the ball and where to pitch leaving the batsman to judge the flight of the ball, decide the angle of the shot and get the bat to the ball. If you hit the ball you can attempt to run between the wickets. The fielding side can then select a fielder to run for the ball and attempt a run-out if they fit isn't already bowled you.

This isn't an easy game to play; as don't expect to score too many centuries particularly against the computer opponent.

RED ARROWS

Have you what it takes to fly in formation with the world's best display team? Now's your chance to find out as you jump into your Hawk and take to the skies with the elite of the RAF, the Red Arrows.

The game features two parts in which you learn how to fly a Hawk and then fly in formations with the rest of the team. The controls to fly the Hawk can be selected for the keyboard or joystick and include controls for the Hawk's thrust and brakes, altitude and elevators. Once you can keep the plane in the air and on course you're ready to join the rest of the squadron and perform formation manoeuvres such as the Diamond, Pyramid, Eagle and Manhattan. In all these formations you fly a plane at the back of the group as your screen is full of the other planes which can make it difficult to follow.

Available:

Alternative Software Ltd., Units 5-6 Badlegate Industrial Estate, Postlethwaite, West Yorkshire, WF8 3LN, Tel: 0977 767171.

Software for Sale

If you think that one of our programs looks very interesting, but you can't afford the time to type it in then our software service will help you out.

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Everyone has probably faced this problem. When it does happen it's a matter of spending hours searching through the program for any typing mistakes. No matter how long you look or how many people help you, you can usually guarantee that at least one bit is bug slips through somewhere.

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:

INFONET LTD, 5 River Park Estate, Birkhamstead, Herts
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Please contact this address for prices and availability.

The Disk

Programs on the disk will also be supplied as totally working versions, i.e. when possible we will not use Basic Loaders thus 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.

OCTOBER 1987

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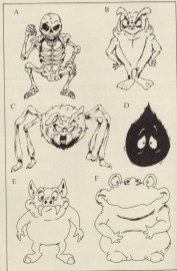
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Through the Round Window II

We conclude the instructions for WEDS and give you a demo to play with.

By Rony van Haer and Bart Duchesne



Pull down menus, windows and joystick driven pointers are no longer difficult for Basic programmers to access with WEDS. Continuing on from last month's menuwork program we give you the remainder of the programming information you need to use WEDS together with a demo program (at the rear of the magazine) which illustrates how to use some of the WEDS commands.

CHECK LIST

- Due to a small programming mistake you can't define a shadow colour. If you specify a comma after the text string, follow it directly by another comma - you have to use a value or a variable instead.
Wrong: MENU 1,.....,06,1,2
Right: MENU 1,.....,06,2,1
- The position where the window will be printed depends on all the menus which have a lower number. Sounds

confusing? Well it isn't, let's imagine the following:

You've got three menus with the following names:

'DISK', 'FILES', 'OPTIONS' as you can see the headers have a length of 4,5 and 7 characters. So the first menu starts at 8 (begin position) and the second menu starts at the 13th position and the last menu at the eleveneth position. Each menu will be separated with a space as you can see.

Since the print position is calculated by the other menus, you'll have to be careful with the x-length of the window. Let's imagine the following: you have already defined six menus and the seventh (which you want to add) starts at position 36 but the length of the window is 18, so you can see this wrong because the sum of up and it exceeds 40....

- The x-length of the window also depends on the shadow flag, if this is set to one, you have to add 1 to the x-length. So remember: $xlength + 1$

may be greater than 40.

- Watch out that the length of the names of the options may not exceed the $x-length + 2$.
- Sometimes when you define menus and you define different colours, you can observe that the inverted option line when you choose an option has two colours!
This is because WEDS will not fill up the remaining gap of characters, to solve this problem, fill each option (after the menu text of course) up with spaces. Try this:

```
10 MENU 1,18,2,1:"HEADER"-
OPT1="OPT 1" 3,11,1
20 DESE 9:MENU 1 ON:PAUSE 0
```

Run it and go to an option (first turn your pointer on) and click the button. As you will see the inverted line has two colours! To cure this, modify line 10 to:

```
10 MENU 1,18,2,1:"HEADER"-
OPT1(4 spc)="OPT1(4spc) 1" 3,11,1
```








Run it again. This time it is perfect.

MENU(s): returns menu values
 1... returns selected option
 2... returns selected menu e.g.
 10-20 take lines of the first example of menu
 30 DISK 04
 40 WDS: 2: RIM Hunt for symbols & menus
 50 IF MENU (0)=0 goto 40
 60 SOPEN BK:&WPRINT "MENU",
 MENU (0)
 70 WPRINT "OPT:"MENU (0)
 80 PAUSE ESC:CLOSE:GOTO 40
 Hunt it. Try different menus and options! When you select nothing, MENU(0) and MENU(1) will return a null.

As mentioned earlier this command gives you the first way to read data when WDS is performed.
 • Some people may ask themselves why I added the commands MENU (0) and MENU (OFF) since WDS: 2 does all the work for you. Well this is because some people don't have a joystick as a mouse.
 One final note - if you select a menu it is possible that nothing will happen. This is because the computer is too fast. To solve this problem by the POKE 19231, delay (1=very fast:250=very slow)

TYPE
 Syntax: TYPE (n)
 Mode: all
 Output: all
 This function is the data read function of WDS.
 When you perform WDS, it changes a lot of data in your computer, to read it out, use this command!
 TYPE(n) which type of character has collided with the pointer?

0... nothing
 1... a special symbol
 2... a menu?
 If TYPE(0) returns a zero, TYPE(1) will return wrong values (so you first have to check TYPE(0)).
 If TYPE (0) returns a 1, TYPE (1) will return the symbol number.
 When TYPE(0) returns a 2, TYPE(1) will work the same as the MENU(0) command. The special symbols are:

Symbol	Value	Poke Code	HEXASHE
	1	121 122	185 186
	2	123 124	187 188
	3	93	125
	4	30	94
	5	92	124
	6	91	123
	7	31	93

Symbols 1 and 2 are at both edges of an APW (can be used as CL:08) WINDOW for symbol 1 and MOVE WINDOW for symbol 2). Symbol 3 is used in most cases as OR symbol, symbol codes 4-7 are arrow codes which can be used as markers or

something different (e.g. Preference Manager in DiskTop).
 • The symbols have no special meaning to the computer but to the user, such can have its own meaning and thus you still have to write the routine to perform it.

WSWAP
 Syntax: WSWAP
 Mode: all
 Output: windows (APW).
 This command switches 2 windows, it deactivates the first one and activates the window after it. All operations are now at the now activated window.
 • You need at least 2 APWs.

otherwise you'll get an error, e.g.
 10 WOPEN 1,1,20,1,"WOPEN1,1,
 5,16,"WINDOW2"
 20 PAUSE 0:WSWAP WPRINT "Hey"
 30 WPRINT "YES, "
 When there is still another type of window on your screen you will get an error.

CHECK
 Syntax: C=CHECK (nS,asc)
 Mode: all
 Output: all
 This is a fairly primitive implementation of INSTR. CHECK scans the string (nS) for a character (asc), if it is found it will return the place in the string where the character is.
 This function was added because I didn't include a WINPUT command, you can simulate it with this command. Look in our desktop program, to find out how we did it.

WOPEN
 Syntax: WOPEN sp,xy,pl,header
 (w,sh,sh:sh)
 Mode: all
 Output: screen.
 Yes, at last windows. This instruction opens a window; an APW to be precise. When you try to open a window when there is still another window, type on screen (SW or PDM) an error is printed, this also happens if the limit of opened windows is reached (you can open up to 4 APW).
 Let's look at the params:

sp.....0-255
 xy.....0-254
 sh.....6-40
 pl.....2-25
 sh:.....0-1
 sp,xy indicates the cursor position where the window will be printed, sh and pl specify the window size and the sh indicates if a shadow is needed (1=yes:0=no). A "BAD WINDOW PARAM ERROR" can happen if:
 - the param are out of range.
 - the sum of sh+pl exceeds 40.
 - the sum of sh+xy exceeds 25.
 They may not contain any control character (such as colour codes or CR). The header string may not be greater than 255, and if you want no header simply create an empty string. The window cursor is now at (0,0). This is the upper left corner of the window, and also means that the maximum characters allowed on a line before it slips to another line is sh-1.
 Any screen/window operation is now in this window, (except INPUT, error messages and disk status reports), e.g.
 WOPEN 2,4,20,10,""
 WOPEN 5,10,30,1,"HELLO"
 w:sc indicates the colour for resp. window and shadow. Just like the shadow flag these too are optional.

**WCOPY**

Syntax: WCOPY *sp,sp*

Mode: all.

Output: screen.

This is almost the same as **MOVE** with the exception that the system copies the window to another position (thus creating another window). If there are already four windows on screen and you try to **WCOPY** you'll get an error. You can only copy **APW**.

The cursor (window) position in the window will be saved and placed on the other one (identical) window on your screen, e.g.

Add following line to the previous program:

```
48 PAUSE 0:WCOPY 1,1:PAUSE
```

```
0:WMOVE 3,3:WPRINT"YES"
```

This will demonstrate you what **WCOPY** really can do!

If a "BAD WINDOW PARAS

ERROR" occurs see above.

WMOVE

Syntax: WMOVE *sp,sp*

Mode: all.

Output: screen.

A window manipulation command alters the draw pointer to another position. If a bad para error occurs look at **WOPEN** for explanation. If no window at a wrong type is present on your screen, an error report is printed, e.g.

```
10 WOPEN 2,2:W,"MOVE":2,1,1:PAUSE 8
```

```
20 WMOVE 4,1:WPRINT"MAGIC"
```

```
30 PAUSE 8:WMOVE 8,0:WPRINT"HELLO"
```

WOPEN

Syntax: WOPEN *sp,sp,sp,sp,sp*

Mode: all.

Output: screen.

This command opens a static window (**SW**). The only difference between **APW**s and an **SW** is that they don't need a start position. It is calculated automatically for you and centred in the middle of the screen (near **HTL**). You simply have to specify the window size. When you try to open an **SW** there is still an **FDW** or a **SW** on screen, an error is printed. However, this will not happen if there still is an

APW on your screen.

The border of a **SW** is also different (like any different window type). A **SW** has the highest priority, lowest has a **APW** and a **FDW** is among them!

Well what does this mean? It means that you have to close a **FDW** by **CLOSE** before you can use commands such as **copy** or **erase**. And this is the reason why each time you try to open a **FDW** or **APW** when there is still a **SW** on your screen an error is given. The last three paras have the same function as by **APW** and **FDW**, e.g.

```
WOPEN 10,10,1:WPRINT"THIS
```

```
WAS THE LAST INSTRUCTION"
```

Coming Soon

You now have all of the programming information required to put **WEDS** to use. The demonstration program in this issue should make use of the program even easier.

In the next instalment, **WEDS** will provide you with a desktop environment, written completely in **WEDS BASIC**.

Should you produce any utilities yourself using **WEDS BASIC** please send them in.
See **Setup** on page 602

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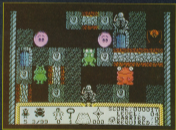
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Bone Cruncher

All good clean fun in this month's star release - but only if you can master the art of making soap!

By Tony Hetherington



Bone Cruncher is a soap opera with a difference: as the star of the show is a dragon called Bone who makes a nice little name by collecting skeletons to make soap that he then sells to the mortuary bathing in his castle's moat.

Your job as Bone is to keep your customers happy by providing a constant supply of soap. You can get limited help from your business partner Furry, whose the equivalent of a henry, but since he's not too bright you'll do your own most of the time.

The headquarters of the "Bone Bathing Company" is your dark, dank and dingy castle and the game is set in a series of increasingly difficult chambers. There are 22

chambers to be solved and if you manage to complete them all you will win a portable steered. That's how confident Superior Software are that you'll fail!

Each chamber is a maze of walled off rooms that are filled with earth which can be dug through. There are also doors that can block the way until the key is found and their used properly? Skeletons have to be collected, as do mushrooms which turn them into soap statues that lead up to the bathing mortuary and deadly monsters, spiders and ghosts that populate the caverns and can kill if you're a single touch and traps that lead to oblivion!

To complete a career you must collect the required



number of soups by taking skeletons to call rats and then delivering them to the waitresses. However, blocking your way stands a mind-boggling array of puzzles with the monsters loitering at the top of the list.

Monsters are killed whenever they are trapped and turn into incredibly convenient skeletons that can be added to your soup to make more soup. That may sound simple but juggling the joystick movements required to trap a monster is far from easy and involves strategy, tactics, a lot of trial and error and glooks!

Glooks are round purple blobs, with two winking eyes and a bad spiky haircut that spend most of the game being pushed around (by you) when they're not engaged. Glooks don't move very much but they do float towards the smell of



barling monsters, and since this is determined by the direction of the last staircase you delivered soups to, you have limited, but important, control over the game's glooks. By pushing glooks and anticipating the direction they will move as you deliver soups to staircases you can trap monster's open entrances to new parts of the cavern but can also trap yourself and Fuzzy. If you trap yourself then your only way out is to swallow one of your five lives to reenter from the last soup delivery, if Fuzzy is trapped they lose energy permanently and he loses one of his three lives. Fuzzy may not be important in the early levels but later in the game is immunity to monsters and his ability to grab them is invaluable as it either allows you to push a glook onto a collared monster to trap and kill or simply to get past alive.

Spiders are a little trickier as although Fuzzy is invulnerable to their touch he can't grab them, neither can

they be killed and to make things worse, a spider will eat any skeletons it can which could cost you the game. No skeletons, no soup I'm afraid. Luckily, if you keep your mind on gear you shouldn't run into too many troubles since spiders always cling to the left hand wall and so you can predict their moves and even get them going around in circles.

The early levels are relatively simple and if you look before you leap you should be able to collect all the skeletons you need to keep the barling monsters in soup. However, the game suddenly throws you in the deep end. There just aren't enough skeletons so you have to set about making some out of dead monsters.

However to meet the glooks to kill the monster also blocks crucial passageways trapping either you or Fuzzy and the few skeletons that are there are either buried in a solid block of glooks or a locked room so you have to run the



gauntlet of spiders to reach them. To make things worse you KNOW there must be a solution! Then, just when you're so annoyed that the C64's about to fly across the room you try out more plan, hedges are it may sound, it might just work. It doesn't, but you're hooked again.

A few hours, days or weeks later you'll finally solve it and the whole process starts again. At the end of each level the game gives you a password that you can type in as a shortcut through the levels you've already completed. However, you may find it useful to practice these completed levels occasionally as to win the personal scores you have to complete all 22 caverns in a single game!

Bone Cruncher will be compared to Superior's own Raptor series and other Boulder Dash style games. Although it is set in a series of 22 caves in which the hero digs out dirt to collect skeletons or diamonds (other game elements such as Fuzzy, the glooks and the way you must turn monsters into skeletons creates a game that is out on its own. Add fanciful but funny graphics such as the Glooks grinning when you shove them or Bone scratching himself while he's waiting for you to work out your next move), it adds tone and digital speech introduction and you have a game that you must not miss.

Developer:

Edie Bone Cruncher, Supplier: Superior Software, Ryeport House, Siltner Lane, Lyth, C67 14Y. Tel: 0332 419493. Machine: C64. Price: £11.99 - disk only.

Duplicating: 070. Playability: 0910. Graphics: 010. Value: 00/00.

Plus/4 Assembler

*Serious software for Plus/4 users is sadly lacking
serious software. We come to the rescue with a superb
assembler*

By Steve Currie

The Commodore Plus/4 enjoyed a surge of popularity due to exceptionally low pricing but unfortunately still suffers from an acute shortage of software compared with its more successful predecessor, the Commodore 64. This is certainly true in the area of utilities, although to be fair, the Plus/4 does come equipped with a pretty good, although basic machine language monitor (MLM).

The program I have written is a two-pass symbolic assembler which is disk-based, i.e. it reads its source code from a disk file and writes the assembled code to another disk file. The source file is assumed to have an MSDOS-type file extension .ASM. The resultant (assembled code) has the extension .EXE. For example, when the program runs, it asks the user for a filename. If you enter PROG1 and press return, the program will assume that the source file is called PROG1.ASM and will produce a resultant with the name PROG1.EXE.

The load address of the resultant is the address given to the assembler directive ORG (code origin). You should therefore ensure that the correct address is given here. The code address defaults to \$8000 in the absence of the ORG directive. When assembled, the resultant is loaded by either the MLM I command or by a BASIC LOAD with a secondary address of 1.

Given the disk-based nature of the assembler, fairly large source-code files

may be used. The Plus/4 allows about 60K of BASIC. Thus the same amount is available to source code programs since the normal BASIC editor is used to prepare programs.

Getting it all in

The program is presented as a BASIC loader with lots (?) of DATA statements. Each line is checked against the checksum value but I've got a good idea to make use of the Four Commodore loader program. Should a problem occur, the line where the fault was detected will be printed. Before typing in the program, you will have to move the start of BASIC upwards in memory by 4K. Type in the following direct command:
POKE \$1920:POKE 43,1:POKE 43,2:NEW

This moves BASIC up to \$1920 in memory. If you are typing in the program in stages, you must remember to type this in every time before you start.

When the program has been typed in, SAVE it first then RUN it. If all is well, the program will be built in memory and SAVED to disk.

Reset the machine then load the new program. The assembler has been designed to LOAD and RUN like a BASIC program at the normal BASIC start address (\$1800) and will return to BASIC when assembly stops. You are

asked for the filename which, as mentioned before, is assumed to have the file extension .ASM. During Pass 1 the assembler will only print something if an error occurs. If this happens then the line in which the error occurred is printed along with an error message.

During Pass 2, a full listing is output to the screen. Any error is shown AFTER the line in which it occurred and assembly stops.

Using your program could not be simpler. You simply use the Commodore BASIC editor with line numbers as you would for a BASIC program. However, there is a catch... (things would never be the same without a problem or two...!). Normally, the Commodore line editor tries to take in anything in the input line which looks like a BASIC reserved word. As certain assembly mnemonics contain character sequences which resemble BASIC commands, we have to prevent this happening. The program "EDIT" is a small BASIC loader with a machine-code program in DATA statements. When it is loaded and RUN, it causes a bypass of the tokenisation routine for program lines only. This means that direct commands such as LOAD, SAVE, REMEMBER, etc. will still work OK but NOW THEY'LL ALWAYS EDIT A BASIC PROGRAM WITH EDIT INSTALLED OTHERWISE YOU'LL GET SOME REALLY WEIRD RESULTS!!!

Assembler Directives and Formats

There are six assembler directives:

BYT	Assemble bytes to memory. This directive also allows text to be entered. Typical examples are: 10 byt \$85,'Hello CBM',856,856 20 byt 23,34,109,91a
WOR	Assembles 2-byte words to memory. Bytes are arranged in lo-byte, hi-byte order. 10 wor \$0071,12345,vector1 20 vector1 wor \$8000 This example also shows how symbols may be inserted into WOR and BYT directives.
EQZ	The eqz directive allows you to associate a symbol with a zero-page memory location. When referred to later, this symbol will assemble in zero-page addressing mode. 20 pointer eqz \$14
EQA	The eqa directive allows you to associate a symbol with an absolute memory location. When referred to later, this symbol will assemble in absolute addressing mode. 40 inspector eqa \$0104 50 _univector eqa inspector+2
RIS	The RIS directive allows an area of memory to be set aside for a table of some such thing. It simply adds the amount specified to the assembly program counter. 100 table 110 res 300 120 ;
ORG	This directive sets the code origin in memory. Because the disk system uses this to set the program load address, it is advisable to use this as the first line of any program. 10 org \$4000

You may insert comments into a source program using the semicolon. As you may have noticed above, symbols are declared using a full-stop. When referred to later, only the name need be given.

Assembly Language Formats

Immediate operands are assumed to be preceeded by the hash (#). Hexadecimal numbers may be prefixed with either the dollar or underscore (\$_). Ascii characters may

be inserted into something like LDA #'A'. This will load the ascii code value of the letter A. Decimal numbers have no prefix thus LDA #30 will assemble to load the accumulator with 30.

As mentioned above, symbols must be declared using a full-stop, for example:

```
10 org $7000
20 mem0=$1001
30 mem1=$1e00
40 ;
50 lda #c mem0
60 lda #c mem1
```

```
70 sta mem0
80 sta mem0+1
90 sta
```

In this example, you see that the symbols used may be used to load the lo-order or hi-order byte of an operand respectively. Also you may add or subtract values as in line 80. Note that in a line such as LDA #c mem0+, the "mem0+1" is evaluated BEFORE the operator takes effect.

(A Commodore 64 version will appear in a subsequent issue.) 71
See listings on page 107

There are many games today which include sprites in the border to display scores etc.

The routine presented here will allow you to do just that.

The program sets up an INQ to check when the screen raster line is at 249. When it has reached this, bit 3 of memory location 53263 is cleared so that 24 row mode is possible. This has the effect of making the bottom border disappear.

The raster will continue to the top so that the top border will also disappear.

When the raster has reached 0, bit 3 of location 53263 is set to 1. This sets up 25 row mode and the screen is displayed as normal.

POKEing various values into memory location 16383 allows you to create some weird effects.

By G.Saunders

```

10 REM *****
20 REM  SPRITES IN BORDER
30 REM *****
40 BL=4:LB=50:SA=49152
50 FOR L=0 TO BL:CX=0:FOR D=0 T
0 15:READ A:CX=CX+A:POKE SA+L*I
6+D,L:NEXT B
60 READ A:IF A=CE THENPRINT"EN
FOR IN LINE",LB+L*10:STOP
70 NEXT L:END
80 DATA 120,162,39,160,192,143,
20,3,149,21,3,162,1,162,13,220,
1598
90 DATA 142,36,308,282,142,18,3
00,173,17,308,41,247,141,17,308
,98,3096
100 DATA 96,162,1,162,25,308,17
3,18,200,201,249,176,16,173,17,
208,3879
110 DATA 9,0,141,17,308,169,369
,141,18,308,76,129,234,173,17,2
00,3085
120 DATA 41,247,141,17,308,169,
0,141,18,308,76,49,234,0,0,0,15
49
130 SYS 49152:REM START PROG.

```



The New

ETI

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The Choice of Modem

There are a number of factors to be taken into consideration when entering the world of communications. Here we look at two modems at opposite ends of the price scale

By David Jarvis

The modems we will be looking at are the Rak Enterprise 1 and the Pace Series Four 1200. Before describing each modem in turn, it's worth pointing out the hardware/software that is used with these modems, as neither one was specifically designed for use with the Commodore 64/128.

Rak recommended the Mustang 64 Communications Cartridge (Y2.1) from Y2 Computing for use with the Enterprise 1 modem. This item plugs into the cartridge port and offers readouts and scrolling terminal facilities. However, because the Enterprise 1 is equipped with a female 25-way D-type RS232 connector, it is not essential that the modem be used with the Y2 software.

Indeed, to test the 1200 baud half-duplex capability of the Enterprise 1, I interfaced the modem to the 64 via an RS232 interface which plugs into the user port of the 64/128. The software used with the interface was HomeTerm which is part of the HomePack integrated suite of software from Arcadsoft.

Basically the same applies with the Series Four. It too is equipped with a female RS232 connector, and can be used with the Y2 cartridge, or connected to the 64/128 via an RS232 interface. For the purpose of this review, the Series Four 1200 was tested with both the Y2 software, as well as HomeTerm.

Commodore Connection

This choice of connecting a modem to the 64/128 is a little confusing, and deserves further explanation. Cartridge software is very popular in this country, and because the major control lines are supported on the cartridge port, manufacturers have opted to put their communications and interfacing electronics into one package—a cartridge. The Y2 Mustang software is one example, however, the cartridge in turn must be connected to a modem.

The next stage from this is to incorporate a modem into the package as well; examples are the Commodore modem and the Multimodem from Mirac Technology.

The alternative is to connect the modem to the 64/128 via the user port. To do this the user must purchase an RS232 interface (which costs as little as £20). Terminal software will be required to 'drive' the RS232 interface, but this should not be a problem as there are dozens of terminal programs in the public domain. One example is Pace Commodore's very own Teleterm 64, which was listed in the April 1986 issue. Connecting a modem via this method has the advantage that the RS232 interface can be used to drive devices other than a modem, a printer or plotter (as example). The main disadvantage is

that there is no readout of baud rate that I know of (which operates through the user port).

Enterprise 1

Probably the best way to describe the Enterprise 1 is to say that it's a Voyager 7 with bits added on. The appearance and functionality are almost identical, and perhaps this is not so surprising as both the Enterprise 1 and the Voyager 7 were manufactured by Rak automation.

Appearance wise, the Enterprise 1 is housed in a black casing with green lettering on the front panel. A rotary switch on the right is used to select the required baud rate which can be one of 300/600, 9600/1200 half-duplex, 1200/75, 75/1200 baud and bit. A feature which is not on the Voyager 7 is the on/off line button which is used when dialing/answering manually. An interesting oddity is that pushing the button in will switch the modem offline and out online. The other way round would have been more logical in my opinion.

At the rear of the modem is the RS232 socket (datalog), phone socket, telephone lead and power cable. Of particular interest is the 25 pin RS232 connector. Looking inside the modem reveals that pins 1-6, 13, 17, 18, 22-23 and 25 are in use. Basically this means that connecting the Enterprise to your



Pace Series Four 1200S (left) and 1200S/1200 (right).

Commodity should be no problem as a variety of options are available. The phone socket is recessed and allows a telephone to be used in-line with the modem which saves you the expense of buying a splitter.

Using the Enterprise I proved to be simplicity itself, even though the manual is quite grotty. When used with software such as Mustang from VI Computing the auto-dial feature can be used. The Enterprise series uses boring old relay technology to auto-dial, which is quite loud in operation and not the most reliable method of getting a telephone to dial, but what can you expect for the price?

One aspect of the operation of Enterprise I that particularly annoyed me was the so-called auto-answer facility which, more often than not, did not work. I have had this problem with several Voyager Ts, and I can only conclude that the problem is inherent in the design of the modem.

Having said this, all other aspects of the modems operation save fine, and I would conclude that if you are looking for a cheap (but mostly reliable) modem with dual speed operation, it would be a good idea to shop around for an Enterprise I.

Series Four Range

The Series Four range of modems from Pace Micro Technology consists of three models, and I looked at the 1200S, which is in the 'middle' of the range.

What you get for the price (and the price is quite a lot) is sophistication

with simplicity. Let me explain. The Series Four is one of the new breed of intelligent modems. That is, a lot of the work that is normally done by the main RS232 interface/software is done by the modem itself. The modem has its own control program and central processing unit and is in effect a computer in its own right. Operation of the modem is done by sending it commands from the terminal software. These commands were developed by the Pace company and are widely used throughout the industry.

The 1200S model reviewed can operate at 300/600, 1200/24, 75/1200 and 1200/1200 full duplex. It features auto-dial, auto-answer, auto-baud rate detection/selection. Also included is a battery backed clock/calendar and the facility to store up to 64 phone numbers in its internal 'non-volatile' memory which is battery packed. The 1200S also features a full RS232 port

with inline phone socket as well as a Centronics printer port and 20 segment led display with line strength indicator and speed buffering.

The modem itself is quite flat but takes up a large footprint on our work surface. The front panel consists of an LCD display with two touch-sensitive buttons that are used to manually select options and the line status/line strength LEDs. At the rear of the modem is the power supply socket for the PSU which is a separate unit, the inline phone socket, the Centronics port and the only button on the whole machine: the reset switch.

Interfacing the 1200S to your Commodore is also very easy. However, because the modem is intelligent, it can be used with practically any communications software you care to name.

Simple Operation

Once connected to your main the 1200S is easy to operate. Due to the way the modem is wired up to the micro the communications software (such as Mustang) will think that the modem is online and go into terminal mode after a few seconds. The reason for this is that the commands to operate the modem are entered from your keyboard while in terminal mode. To understand this better consider the following example: using the Mustang cartridge connected to the Series Four I would like to contact Telecom Gold at 1200 baud full duplex. I would select the terminal mode and to confirm by pressing return (even though I was not online). At this stage I would be greeted with a blank screen, but by entering 'AT' followed by RETURN the Series Four help

Table 1 - ENTERPRISE I RS232 PIN OUTS

Pin No.	Function	Circuit
1	-	Data Ground
2	RA	Transmit Data
3	RB	Receive Data
4	CA	RTS
5	CB	CTS
6	CC	DSR
15	DB	Transmit Baud Clock
17	DD	Receive Baud Clock
20	CD	DTX
22	CE	Ring Detect
25	-	Data Division
25	-	Charger

Super Mouse



A mouse can be a pest to use but Shazam's Mouse Plus offers a humane form of rodent control!

By Norman Doyle

The Neos Mouse and Cheese package forms part of the bait to lure prospective buyers into acquiring the Commodore 64C package. As with any mousetrap there is a catch - since the mouse is plugged in, the keyboard responds in a most peculiar way. In the real world mice are rarely noticed and it would be good if their electronic counterparts acted in a similar way.

With the Mouse Plus, Shazam Systems offers a means of fulfilling this dream by providing a connector and associated software which allows the mouse to be attached to the user port instead of the joystick port. Connected in this way the software can then set up the necessary interrupts to allow the keyboard and mouse to be used in unison.

What's on the Disk

The disk provided with the adapter/connector contains five programs which adequately demonstrate the power of the module. The first program offers an Amiga style set of pull-down menus, two of the others demonstrate the use of the mouse and a fourth is a program which can be incorporated in the user's own software.

The final program on the disk is a Cheese modifier which unfortunately only appears to work in conjunction with the disk version of the original program. The 64C package incorporates the cassette version of this menu-driven drawing program. After transferring the cassette version to disk, I attempted to incorporate the modifier but found it to be a fruitless experiment. The Newhouse program generated would not operate at all so I would like to see a cassette modifier included in future.

To return to the Amiga-style menu program, the master menu frames are displayed across the top line of the display screen. By clicking onto one of these headings various useful utility programs can be called from the revealed pull-down menus.

Disk commands such as errors and directory display, search, restore, initialise, validate, load machine code or Basic) and save can be selected without the need to resort to the usual complex Basic commands. Clicking onto an option often results in an action window opening at the

centre of the screen so that specific program details can be entered. When the operation has been completed, the original screen is restored.

The primary options gives a screen dump, Basic program printer and reset options. Utilities allows the recovery of a 'mouse' program and the appending or merging of two programs. Bender, screen, cursor or mouse pointer colours can be changed via the special menu option and the final menu simply displays the version date of the menu program in use.

The instructions give full details on how this rudimentary selection of utilities can be expanded with your own programs. This means that if a researcher ability is considered essential in your programming needs you can patch it into the menu system and then save the whole new program to disk.

Colour Change

One of the first utilities that I would like to add to this system is an option to change the colour of the menu tabs. These are displayed in dark blue so, if this is also your favoured background colour, the menu becomes invisible until you move the pointer onto one of the options.

The two mouse programs, Mouse1 and its associated demo, graphically display the way in which the system can be used to great effect in your own software and there is a separate program, Mouse2, which has been created for your own use.

The Mouse Plus package certainly offers vastly improved and much needed control systems for the Neos Mouse and turns a novelty into a practical device which will enhance your software. Such value does not come cheaply but for £39.95 you not only get the disk and the connector but also the freedom to have your mouse permanently connected and ready for use with suitable software.

Reviewer

Product: The Mouse Plus. **Supplier:** Shazam Systems, 3 Elm Close, Kemp PWS, Woking, Surrey GU24 0AP. Tel 04507 58086. Price: £39.95. Extras: disk drive, Neos Mouse.

Listings

Get it right first time with our deluxe program system
for the C64.

You may have noticed that our listings are free of those horrible little black blots which send you searching around the keyboard for a suitable graphic symbol. You may also have noticed the funny numbers by the side of each line of the listing. First no more, it's all part of our easy entry aid.

Instead of those nasty graphics and rows of constant spaces in PRINT statements and strings we use a special coding system. The code, or mnemonic, is always contained in square brackets and you'll soon learn to decipher their meaning.

For example, [SA] would mean type in a Shifted A, or an ace of spades in layman's terms, and [BAH] would mean a row of ten of these symbols.

[S+Z] means hold down the shift key and press the plus key twice. It doesn't take a great leap of logic to realise that [C+Z] means exactly the same thing except that the Commodore key (bottom left of the keyboard) is held down instead of the shift key.

If more than two spaces appear in a statement then this will be printed as [SPC4] or, exceptionally, [SPPC4]. Translated into English this means press the spacebar four times or in the latter case hold the shift key down while you do it.

A string of special characters could appear as:
[CTRL N, DOWN2,LEFTS,BLUE,
F3,C3]

This would be achieved by holding

down the CTRL key as you press N, press the cursor key down twice, the cursor left key five times, press the key marked BLUE while holding down the CTRL key, press the F3 key and, finally hold the Commodore key down while pressing the number two key (C2 would of course make the computer print in brown).

Always remember that you should only have a row of graphics characters on your screen with no square brackets and no commas, unless something like this appears:
[SS][C+]

In this case the two characters should have a comma between them.

On rare occasions [REV T] will appear in a listing. This is a delete symbol and is created by entering the line up to this mnemonic. Then type a closing quotation mark (SHIFT & 2) and delete it. This gets the computer out of quotes mode. Hold down CTRL and press the number nine key ([NINE]), type the relevant number of reversed T's and then hold down CTRL and press zero ([ZERO]). Next type another quotation mark and delete it again. Now finish the line and press RETURN.

A list of these special cases is given in the table but remember that only one of these mnemonics will appear outside of a PRINT using the symbol for pi. This may appear when its value is needed in a calculation so this may look something like:

[C2][T][PI][P2]
Ignore the square brackets and just type in a shifted upward pointing arrow (ie. the pi symbol).

Programmer's Guide Listing 10

5 REM SYSTEM CHECKER - ERIC DOYLE

10 BL=10 : LB=70 : LBH=60000
20 FOR L=0 TO BL : DO=0:FOR S=0 TO

30
30 READ A:IF A=0:PRINT"*****"
40 IF LB<=0:LB=LBH:DO=DO+1

50 DO=DO+1:IF DO=100:DO=0
60 DO=DO+1:IF DO=100:DO=0

70 DO=DO+1:IF DO=100:DO=0
80 DO=DO+1:IF DO=100:DO=0

90 DO=DO+1:IF DO=100:DO=0
100 DO=DO+1:IF DO=100:DO=0

110 DO=DO+1:IF DO=100:DO=0
120 DO=DO+1:IF DO=100:DO=0

130 DO=DO+1:IF DO=100:DO=0
140 DO=DO+1:IF DO=100:DO=0

150 DO=DO+1:IF DO=100:DO=0
160 DO=DO+1:IF DO=100:DO=0

170 DO=DO+1:IF DO=100:DO=0
180 DO=DO+1:IF DO=100:DO=0

190 DO=DO+1:IF DO=100:DO=0
200 DO=DO+1:IF DO=100:DO=0

210 DO=DO+1:IF DO=100:DO=0
220 DO=DO+1:IF DO=100:DO=0

230 DO=DO+1:IF DO=100:DO=0
240 DO=DO+1:IF DO=100:DO=0

250 DO=DO+1:IF DO=100:DO=0
260 DO=DO+1:IF DO=100:DO=0

270 DO=DO+1:IF DO=100:DO=0
280 DO=DO+1:IF DO=100:DO=0

290 DO=DO+1:IF DO=100:DO=0
300 DO=DO+1:IF DO=100:DO=0

310 DO=DO+1:IF DO=100:DO=0
320 DO=DO+1:IF DO=100:DO=0

Listing

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 checksum simply type SYNTAX 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 white Checksum key you can go back to it with the same SYX command.

Lower Case

Many of the listings are presented in lower case. To turn your computer to lower case mode press the Commodore key and the SHIFT key at the same time.

75

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 & 4
[RVSOFF]		CTRL & 0

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]		£
[LBARROW]		←
[RFBARROW]		→
[F9]		SHIFT & →
[INST]		SHIFT & INST/DEL
[REV T]		no text
[Clear]		CRM + letter
[Store]		SHIFT + letter


```

800 PRINT"[TAB,SP2]END[SP]HEX[SP]NUMBER[SP]-[SP]TRY[SP]AGAIN"  

810 GOTO800  

820 J1=ASC(D$)  

830 IF J1<ASC(0)GOTO910  

840 PRINT"[TAB]TOD[SP]END[SP]TRY[SP]AGAIN[CR]"  

850 V4=1:GOTO840  

860 J2=INT(J1/256)  

870 J3=J1-256*J2  

880 RETURN  

890 J4=RND*4+J2,LEN(D$)-1  

900 IF LEN(D$)=4 THEN V4=2:RETURN  

910 J2=J3  

920 FORI=4TOSTEP-1  

930 J1=ASC(MID$(D$,I,1))-32  

940 IF J1<0 OR J1>>255 THENV4=2:GOTO 1000  

1000 IF J1>0 THEN J1=21-7  

1010 IF I=4 THENJ2=J1  

1020 IF I=3 THENJ2=J2+16*J1  

1030 IF I=2 THENJ2=J1  

1040 IF I=1 THENJ2=J2+16*J1  

1050 NEXT I  

1060 RETURN  

1070 A$=""  

1080 GET$=GET$:A$=""  

1090 IFI$=CHR$(13)GOTO1120  

1100 PRINT"[CR]"  

1110 A$=A$+I$  

1120 PRINT"[CR]"$FLANK;A$>4:RETURN  

1130 GOTO1100:RETURN

```

Music While You Load

LOADING IS NOT

The program as presented here is a simple BASIC loader. Type it in using our SPECIAL CHECKER, see LISTINGS.

When RUN the program will load the machine code for MUSICLOAD into memory and enter the editor.

You can then generate your own music and save it to tape or disk.

MR. INSTRUCTIONS for entering the program have been modified since the test for this item was produced. Ignore the entry instructions in the article.



PROGRAM: MUSICLOAD

```

80 G 0 CLR  

81 I 1 DIMM(100,6400)  

82 S 3 PRINT"LOADING WAIT."  

83 S LN=0:K=0:0  

84 CO 14 FORI=0TO65535STEP16

```

```

11 15 LN=LN+16:G  

85 80 FORJ=0TO16  

87 80 M(MID$(I$  

88 80 FORK=0  

89 80 I$=CHR$(MID$(I$  

90 80 I$=CHR$(MID$(I$  

91 80 NEXTJ  

92 80 GOTO1000  

12 100 DATA 100, 100, 100, 141,  

74, 3, 100, 100, 141, 73, 0  

100  

84 120 DATA 3, 100, 0, 133, 200,  

100, 100, 100, 200, 200, 3  

77  

88 130 DATA 00, 133, 000, 100,  

0, 100, 0, 107, 0, 010, 100  

76  

94 140 DATA 000, 004, 04, 000,  

000, 100, 10, 041, 00, 010,  

7407  

98 150 DATA 100, 0, 141, 0, 010  

, 141, 10, 010, 041, 10, 100  

1  

99 160 DATA 010, 100, 1, 141, 0,  

000, 100, 141, 007, 000, 041,  

1000  

88 180 DATA 000, 100, 041, 000,  

100, 141, 000, 100, 111, 04  

1, 000  

90 190 DATA 100, 041, 040, 000,  

041, 000, 100, 111, 000, 10  

7, 1000  

80 200 DATA 140, 040, 100, 041,  

040, 100, 041, 007, 100, 10  

0, 0010  

80 220 DATA 100, 140, 0, 010, 1  

00, 10, 000, 141, 00, 010, 0  

000  

80 240 DATA 100, 000, 140, 040,  

100, 100, 10, 140, 040, 100  

, 1000  

81 260 DATA 00, 00, 70, 100, 70,  

100, 70, 00, 07, 100, 000  

92 280 DATA 000, 040, 100, 100,  

040, 100, 041, 0, 000, 0, 1  

700

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```

88 300 DATA 100, 100, 000, 100,  

141, 70, 000, 040, 100, 00,  

1000  

10 320 DATA 140, 040, 100, 000,  

000, 000, 100, 000, 100, 00  

1, 0000  

83 340 DATA 0, 040, 0, 100, 100,  

, 100, 100, 100, 70, 000, 10  

11  

88 360 DATA 040, 100, 000, 100,  

001, 041, 0, 010, 00, 000,  

1007  

40 370 DATA 100, 177, 001, 041,  

1, 010, 00, 001, 100, 177,  

1000  

80 380 DATA 001, 100, 7, 010, 1  

0, 001, 100, 177, 001, 141,  

1000  

87 390 DATA 0, 010, 00, 001, 10  

0, 177, 001, 141, 10, 010, 1  

000  

40 400 DATA 00, 001, 100, 177,  

001, 141, 10, 010, 00, 001,  

1000  

83 410 DATA 100, 177, 001, 041,  

000, 000, 00, 000, 100, 100  

1000  

80 420 DATA 0, 141, 0, 010, 141  

, 10, 010, 041, 10, 010, 100  

0  

80 430 DATA 100, 100, 041, 0, 01  

0, 040, 01, 010, 100, 10, 10  

00  

84 440 DATA 000, 100, 000, 100,  

100, 100, 100, 000, 70, 000  

, 0000  

88 460 DATA 040, 040, 040, 000,  

100, 000, 10, 100, 000, 000  

, 0010  

88 480 DATA 000, 100, 000, 11,  

000, 100, 100, 000, 100, 00,  

1000  

80 490 DATA 100, 000, 100, 100,  

00, 100, 0, 040, 1, 00, 1001

```



```

0000 100,07,30,100,00,100,100,100
: 1000
0010 0000 0,3,001,13,171,0,0,100
0,100,00,30,100,10,70,00,00,100
0
0020 0000 100,0,100,100,07,100,0
0,1,000,100,0,000,000,100,0,000,
1000
0030 0000 1,0,100,0,70,100,30,1,0
00,000,000,0,0,000,000,1000
0040 0000 0,100,100,07,100,30,1,0
000,000,000,0,000,000,100,100,00
0000
0050 0000 170,0,0,100,0,100,100
07,000,0,0,000,000,000,0,000,17
07
0060 0000 000,100,100,00,00,10,0
7,000,000,000,000,000,000,000,00
0,1000,0010
0070 0000 0,100,100,0,00,100,000
0,170,100,000,0,000,0,00,100,
1000
0080 0000 000,00,000,000,170,70,
100,0,00,100,000,00,000,000,0,0
00,0000
0090 0000 000,00,000,000,00,000,
000,000,000,000,000,000,000,000,
000,100,0000
0100 0000 0,100,000,0,00,100,000
0,170,100,00,100,0,00,100,0,
1700
0110 0000 000,00,100,000,170,00,
100,0,00,000,000,070,10,00,0,01
0,0000
0120 0000 000,170,00,00,00,010,0
00,00,000,000,00,000,000,000,000
00,0000
0130 0000 000,000,10,70,10,100,
10,000,000,000,000,000,000,0,0
0,170,0000
0140 0000 07,10,0,00,10,00,00,1
00,17,100,00,00,100,10,00,000,0
000
0150 0000 10,000,00,00,00,00,00,00
00,00,00,71,70,00,00,10,0,1010
0000 0000 100,0,100,00,100,00,00
000,000,000,000,000,000,000,
170,0000
0170 0000 07,10,001,0,000,1,000,1
00,0,00,000,000,170,00,00,100,0
000
0180 0000 00,00,000,000,000,000,000
00,000,000,000,000,000,000,000,
000,0000
0190 0000 00,00,000,000,000,000,000
00,000,000,000,000,000,000,000,
000,0000
0200 0000 10,100,00,70,100,10,0
0,000,000,000,000,000,000,000,0
00,070,0000
0210 0000 07,10,001,0,000,1,000,1
00,0,00,000,000,100,0,100,00,10
00
0220 0000 100,00,000,000,000,000
00,100,100,000,000,0,70,000,000,
00,0000
0230 0000 000,000,70,011,00,000,
000,000,000,000,000,000,000,000,
000,000,0000

```

```

PROGRAM: BOOT-LOADER
10 FOR #=0000 TO 0000
20 NEXT #
30 POKE 170,10:POKE 171,0:POKE 172,70
40 NEXT #
50 POKE 100,000:POKE 101,0:POKE 102,100
70 POKE 103,100:POKE 104,110:POKE 105,100
80 POKE 106,100:POKE 107,0:POKE 108,0:POKE 109,100
90 POKE 110,100:POKE 111,0:POKE 112,100
100 POKE 113,100:POKE 114,0:POKE 115,100
110 POKE 116,0:POKE 117,0:POKE 118,100
120 POKE 119,0:POKE 120,100

```

Label Linker



```

PROGRAM: BOOT-LOADER
50 POKE 001,"00">:DECI"00">
60 POKE00
70 POKE 001,"0000">,0
80 POKE 001,"0011">:DECI"00">
90 END "BOOTLOADER"

```

```

PROGRAM: DATALOADER
10 IF PERM:DECI"00"> < 04 THEN
END "BOOT-LOADER"
20 POKE 0
30 COLOR 0,0:COLOR 1,0:COLOR 0,0
40 PRINT"0" LINKED LINK0
50*
60 PRINT"-----"
70*
80 PRINT"*****
90** 0*
100 00 00100
110 00 00100 00100000 000 00*0
120 00 0000 00
130 10 IF 00 = 0 THEN BEGIN
140 10 07 001001* 10 17 THEN 00
150 11 00101*0
160 10 0000 0000
170 10 POKE 00,07:17:10:00
180 10 PRINT"*****"*****"00
00*0
190 10 0000
200 10 0000:PRINT
210 10 IF 00=1 THEN PRINT"*****"
220 10 1000 10 *****"*****"*****
0000 0000
230 10 PRINT"*****LINKED-LINK0
00*0
240 10 0000 "*****LINKED-LINK0
250 10 00 10:0000
260 10 PRINT"*****LINKED"
270 0000
280 0000 00,000,07,00,010,00,100
00,000

```

```

000 0000 00,00,00,00,00,00,00,00,00
0000
010 0000 00,000,00,00,70,07,00,0,0
00,0000
020 0000 70,70,70,000,00,10,00,00
0000
030 0000 00,00,00,00,00,00,00,00,00
0000
040 0000 00,00,00,00,00,00,00,00,00
0000
050 0000 00,00,00,00,00,00,00,00,00
0000
060 0000 00,00,00,00,00,00,00,00,00
0000
070 0000 00,00,00,00,00,00,00,00,00
0000
080 0000 00,00,00,00,00,00,00,00,00
0000
090 0000 00,00,00,00,00,00,00,00,00
0000
100 0000 00,00,00,00,00,00,00,00,00
0000
110 0000 00,00,00,00,00,00,00,00,00
0000
120 0000 00,00,00,00,00,00,00,00,00
0000
130 0000 00,00,00,00,00,00,00,00,00
0000
140 0000 00,00,00,00,00,00,00,00,00
0000
150 0000 00,00,00,00,00,00,00,00,00
0000
160 0000 00,00,00,00,00,00,00,00,00
0000
170 0000 00,00,00,00,00,00,00,00,00
0000
180 0000 00,00,00,00,00,00,00,00,00
0000
190 0000 00,00,00,00,00,00,00,00,00
0000
200 0000 00,00,00,00,00,00,00,00,00
0000
210 0000 00,00,00,00,00,00,00,00,00
0000
220 0000 00,00,00,00,00,00,00,00,00
0000
230 0000 00,00,00,00,00,00,00,00,00
0000
240 0000 00,00,00,00,00,00,00,00,00
0000
250 0000 00,00,00,00,00,00,00,00,00
0000
260 0000 00,00,00,00,00,00,00,00,00
0000
270 0000 00,00,00,00,00,00,00,00,00
0000
280 0000 00,00,00,00,00,00,00,00,00
0000
290 0000 00,00,00,00,00,00,00,00,00
0000
300 0000 00,00,00,00,00,00,00,00,00
0000
310 0000 00,00,00,00,00,00,00,00,00
0000
320 0000 00,00,00,00,00,00,00,00,00
0000
330 0000 00,00,00,00,00,00,00,00,00
0000
340 0000 00,00,00,00,00,00,00,00,00
0000
350 0000 00,00,00,00,00,00,00,00,00
0000
360 0000 00,00,00,00,00,00,00,00,00
0000
370 0000 00,00,00,00,00,00,00,00,00
0000
380 0000 00,00,00,00,00,00,00,00,00
0000
390 0000 00,00,00,00,00,00,00,00,00
0000
400 0000 00,00,00,00,00,00,00,00,00
0000
410 0000 00,00,00,00,00,00,00,00,00
0000
420 0000 00,00,00,00,00,00,00,00,00
0000
430 0000 00,00,00,00,00,00,00,00,00
0000
440 0000 00,00,00,00,00,00,00,00,00
0000
450 0000 00,00,00,00,00,00,00,00,00
0000
460 0000 00,00,00,00,00,00,00,00,00
0000
470 0000 00,00,00,00,00,00,00,00,00
0000
480 0000 00,00,00,00,00,00,00,00,00
0000
490 0000 00,00,00,00,00,00,00,00,00
0000
500 0000 00,00,00,00,00,00,00,00,00
0000
510 0000 00,00,00,00,00,00,00,00,00
0000
520 0000 00,00,00,00,00,00,00,00,00
0000
530 0000 00,00,00,00,00,00,00,00,00
0000
540 0000 00,00,00,00,00,00,00,00,00
0000
550 0000 00,00,00,00,00,00,00,00,00
0000
560 0000 00,00,00,00,00,00,00,00,00
0000
570 0000 00,00,00,00,00,00,00,00,00
0000
580 0000 00,00,00,00,00,00,00,00,00
0000
590 0000 00,00,00,00,00,00,00,00,00
0000
600 0000 00,00,00,00,00,00,00,00,00
0000
610 0000 00,00,00,00,00,00,00,00,00
0000
620 0000 00,00,00,00,00,00,00,00,00
0000
630 0000 00,00,00,00,00,00,00,00,00
0000
640 0000 00,00,00,00,00,00,00,00,00
0000
650 0000 00,00,00,00,00,00,00,00,00
0000
660 0000 00,00,00,00,00,00,00,00,00
0000
670 0000 00,00,00,00,00,00,00,00,00
0000
680 0000 00,00,00,00,00,00,00,00,00
0000
690 0000 00,00,00,00,00,00,00,00,00
0000
700 0000 00,00,00,00,00,00,00,00,00
0000
710 0000 00,00,00,00,00,00,00,00,00
0000
720 0000 00,00,00,00,00,00,00,00,00
0000
730 0000 00,00,00,00,00,00,00,00,00
0000
740 0000 00,00,00,00,00,00,00,00,00
0000
750 0000 00,00,00,00,00,00,00,00,00
0000
760 0000 00,00,00,00,00,00,00,00,00
0000
770 0000 00,00,00,00,00,00,00,00,00
0000
780 0000 00,00,00,00,00,00,00,00,00
0000
790 0000 00,00,00,00,00,00,00,00,00
0000
800 0000 00,00,00,00,00,00,00,00,00
0000
810 0000 00,00,00,00,00,00,00,00,00
0000
820 0000 00,00,00,00,00,00,00,00,00
0000
830 0000 00,00,00,00,00,00,00,00,00
0000
840 0000 00,00,00,00,00,00,00,00,00
0000
850 0000 00,00,00,00,00,00,00,00,00
0000
860 0000 00,00,00,00,00,00,00,00,00
0000
870 0000 00,00,00,00,00,00,00,00,00
0000
880 0000 00,00,00,00,00,00,00,00,00
0000
890 0000 00,00,00,00,00,00,00,00,00
0000
900 0000 00,00,00,00,00,00,00,00,00
0000
910 0000 00,00,00,00,00,00,00,00,00
0000
920 0000 00,00,00,00,00,00,00,00,00
0000
930 0000 00,00,00,00,00,00,00,00,00
0000
940 0000 00,00,00,00,00,00,00,00,00
0000
950 0000 00,00,00,00,00,00,00,00,00
0000
960 0000 00,00,00,00,00,00,00,00,00
0000
970 0000 00,00,00,00,00,00,00,00,00
0000
980 0000 00,00,00,00,00,00,00,00,00
0000
990 0000 00,00,00,00,00,00,00,00,00
0000

```

LISTINGS

8492 0000 073,149,37,000,30,173,3
7,30, -007
8502 0000 023,37,70,70,30,174,3,70
1, -074
8504 0000 57,40,173,3,31,169,17,0
10, -000
8718 0000 051,75,100,141,37,141,3
1,31, -111
8800 0000 173,4,11,000,140,00,10
3,100, -1000
9000 0000 37,141,3,31,30,13,30,10
0, -007
909 0000 0,177,051,000,31,100,10
1,41, -1000
910 0000 100,37,100,00,140,140,3
7,300, -011
920 0000 0,30,140,37,00,000,0,13
3, -000
930 0000 40,000,30,141,37,000,0,
100, -000
940 0000 40,70,40,33,30,010,30,0
47, -000
950 0000 13,13,000,00,00,00,00,0
0, -007
950 0000 70,30,00,00,00,00,00,00
0, -000
970 0000 00,13,0,30,100,41,30,10
7, -011
9800 0000 40,173,0,31,100,40,141,
1,30, -100
9900 0000 37,173,1,31,100,40,141,
1,00, -100
000 0000 37,30,40,30,000,1,141,7
0, -000
010 0000 30,30,04,30,000,0,040,0
5, -000
020 0000 001,140,000,00,30,70,0
5,040, -1074
030 0000 30,001,30,000,047,30,70
0,00, -007
0710 0000 020,00,000,31,000,000,0
0,307, -1000
0750 0000 00,00,0,000,0,70,000,0
7, -000
0800 0000 004,17,144,3,70,040,04,
30, -000
070 0000 00,30,00,000,70,41,00,
100, -007
0900 0000 1,141,7,30,70,017,30,30
1, -000
1000 0000 000,41,30,040,30,13,13,
100, -100
1100 0000 00,00,00,00,30,50,30,00
1, -000
110 0000 00,00,00,00,00,00,10,0,
-000
120 0000 30,000,01,30,107,41,100
1,00, -000
1300 0000 141,100,37,000,40,141,0
40,07, -000
1400 0000 30,40,30,100,1,141,7,30
0, -000
1500 0000 30,50,30,001,0,040,141,
30, -070
1600 0000 00,70,00,000,170,100,0
7,141, -000
070 0000 01,30,170,040,37,141,00
1,31, -1000
0800 0000 30,70,30,000,3,70,100,0
0, -007
0900 0000 000,30,000,000,001,00,0
70,10, -1007
1000 0000 170,01,31,141,100,37,1
73,00, -007
1010 0000 30,141,100,37,70,70,07
1,00, -000
1100 0000 0,141,04,31,00,100,30,
13, -000
1200 0000 0,100,100,100,000,0,00
0,00, -000

1000 0000 141,000,0,100,20,00,00
1,30, -007
1050 0000 70,100,00,000,000,000,
00,173, -000
1070 0000 0,31,00,000,4,041,100,
37, -000
1080 0000 170,00,31,000,0,141,10
40,71, -000
1090 0000 70,07,31,70,00,00,100,
00, -000
1100 0000 00,000,1,040,107,37,10
0,00, -000
1110 0000 000,0,141,100,37,100,0,
100, -001
1120 0000 00,170,37,30,1,00,30,0
10, -000
1130 0000 00,13,13,100,000,00,70
71, -007
1140 0000 00,00,77,30,70,70,70,70,7
0, -000
1150 0000 00,00,30,00,70,00,30,0,
7, -000
1160 0000 70,70,00,00,00,00,00,0
0, -000
1170 0000 10,10,00,00,00,00,00,0
0, -011
1180 0000 04,70,30,00,00,00,77,7
0, -000
1190 0000 70,00,30,00,70,00,30,0
0, -000
1200 0000 00,00,00,00,00,0,010,0
0, -000
1210 0000 10,13,00,0,30,000,41,
100, -000
1220 0000 00,141,0,3,100,77,141,
1, -000
1230 0000 3,100,0,100,000,30,000
30, -000
1240 0000 100,7,000,00,30,107,0,
0, -000
1250 0000 000,10,047,70,0,0,100,
0, -010
1260 0000 141,0,000,70,00,77,140
17, -000
1270 0000 31,000,100,37,000,0,00
0,040, -0004
1280 0000 37,100,0,30,100,37,10,
170, -000
1290 0000 17,30,100,00,30,100,30
144, -007
1300 0000 1,00,170,100,30,100,10
1,00, -000
1310 0000 001,000,100,100,100,31
140,000, -1000
1320 0000 100,00,040,30,50,77,10
0,07, -000
1330 0000 170,0,31,040,001,000,1
73,0, -000
1340 0000 30,140,000,100,0,100,1
100, -000
1350 0000 001,30,10,30,100,0,000
0, -000
1360 0000 100,000,04,00,30,00,00
100, -070
1370 0000 10,177,000,000,100,31,
000,30, -1000
1380 0000 170,100,31,100,177,000
0,07,100, -1011
1390 0000 30,000,0,100,10,040,00
00, -000
1400 0000 00,13,30,100,0,177,000
0, -000
1410 0000 000,00,00,100,0,040,00,
30, -010
1420 0000 040,10,001,30,040,30,0
00,100, -1000
1430 0000 30,000,000,17,100,000,
70,04, -1177
1440 0000 00,000,1,141,7,30,040,
100, -000
1450 0000 31,00,100,1,100,100,10
0,00, -000

1460 0000 177,001,000,100,000,0,
100,100, -1000
1470 0000 000,1,100,000,100,0,10
3,100, -1000
1480 0000 100,100,100,10,177,000
100,100, -1010
1490 0000 000,001,100,100,000,00
0,100,100, -0074
1500 0000 100,10,100,1,040,04,0
0,000, -007
1510 0000 00,107,0,70,70,00,00,7
0, -001
1520 0000 70,71,30,100,0,30,000,
00, -007
1530 0000 100,0,100,70,100,00,30
34, -000
1540 0000 00,00,30,00,30,000,000
100, -000
1550 0000 0,100,010,100,0,30,000
0, -001
1560 0000 00,07,30,00,100,0,100,
7, -001
1570 0000 100,0,0,100,100,0,100,
0, -000
1580 0000 100,0,00,100,5,70,100,
0, -044
1590 0000 100,7,000,0,00,00,30,1
00, -000
1600 0000 41,30,100,00,147,144,1
0,0, -000
1610 0000 10,00,00,70,00,77,00,0
0, -000
1620 0000 00,0,30,100,00,30,010,
00, -000
1630 0000 04,04,30,0,100,100,141,
000, -007
1640 0000 0,100,30,041,004,3,100
0, -070
1650 0000 100,10,100,70,0,000,10
000, -000
1660 0000 100,0,100,000,30,10
3,4, -000
1670 0000 100,0,100,3,100,0,100
0, -070
1680 0000 100,0,141,000,3,70,007
0, -070
1690 0000 30,010,01,100,000,30,0
01,30, -010
1700 0000 004,100,00,000,1,00,70
00, -010
1710 0000 00,70,100,70,100,70,10
0,0, -000
1720 0000 141,00,37,173,0,30,141
13, -000
1730 0000 30,173,1,31,100,17,30,
100, -007
1740 0000 0,100,0,141,01,37,173,
13, -000
1750 0000 30,000,10,37,141,00
00, -010
1760 0000 170,00,31,000,11,37,07
1,00, -070
1770 0000 30,140,10,000,01,37,17
3,00, -007
1780 0000 00,141,10,31,173,30,10
1,01, -007
1790 0000 14,30,70,100,30,170,01
30, -000
1800 0000 10,00,37,101,00,37,040
00, -001
1810 0000 170,01,37,04,100,40,30,
001, -001
1820 0000 000,000,10,100,104,
170,00, -000
1830 0000 100,100,0,1,0,30,0,
-000
1840 0000 100,0,000,30,1000,0,
70, -017
1850 0000 100,70,100,0,141,01,13
7,100, -000
1860 0000 140,37,170,0,01,141,10
7,00, -000

LISTINGS

1879 DATA 373,131,143,336,37,13
3,137,-931
1880 DATA 37,84,128,4,141,336,37,
173,-934
1881 DATA 138,37,328,2,241,142,3
7,328,-738
1882 DATA 8,32,173,37,878,8,32,1
82,-833
1883 DATA 37,78,88,37,32,828,37,
173,-935
1884 DATA 138,37,32,173,37,373,1
82,37,-738
1885 DATA 288,32,173,37,328,838,
141,37,-939
1886 DATA 888,3,838,172,37,173,1
38,37,-937
1887 DATA 141,137,37,173,178,37,
141,138,-971
1888 DATA 37,32,243,37,828,184,4
82,38,-973
1889 DATA 173,37,828,178,374,188
178,38,-1238
1890 DATA 178,138,37,828,3,828,1
42,37,-1178
1891 DATA 88,828,3,828,4,828,2,1
73,-1234
1892 DATA 138,37,133,828,173,148
37,133,-1278
1893 DATA 884,178,18,32,178,828,3
1,128,-892
1894 DATA 828,141,178,3,32,162,2
171,-932
1895 DATA 18,32,78,328,38,142,38,
31,-818
1896 DATA 173,137,37,173,828,178
1,328,37,-9384
1897 DATA 178,871,162,828,142,18
52,171,-1228
1898 DATA 32,31,32,178,3,174,18,
31,-898
1899 DATA 88,328,2,188,1,188,128
31,-738
1900 DATA 32,128,38,881,18,178,8,
3,18,-932
1901 DATA 18,18,14,137,8,31,288,
185,-863
1902 DATA 188,32,32,128,78,821,1
8,178,-784
1903 DATA 11,84,188,2,31,187,8,3
1,-938
1904 DATA 288,828,18,817,88,188,
32,141,-1278
1905 DATA 137,37,168,888,142,138
37,168,-938
1906 DATA 8,142,82,31,142,84,34,
188,-931
1907 DATA 8,188,8,32,173,37,828,
38,-893
1908 DATA 173,37,168,8,182,82,3
7,32,-858
1909 DATA 138,38,188,24,32,828,3
8,182,-841
1910 DATA 88,888,8,173,137,37,14
1,8,-828
1911 DATA 2,188,18,142,138,37,14
1,1,-932
1912 DATA 2,188,88,38,173,37,
138,-872
1913 DATA 18,872,188,8,148,4,31,
8,32,-824
1914 DATA 148,3,31,82,173,828,3,
718,-782
1915 DATA 34,173,828,3,133,4,173
828,-1227
1916 DATA 3,133,3,188,187,133,2,
124,-738
1917 DATA 7,188,187,142,828,2,18
5,74,-881
1918 DATA 141,828,8,188,172,173,
874,2,-1878
1919 DATA 78,827,8,828,828,3,188
1,-878

1920 DATA 242,828,8,828,32,141,2
32,8,-938
1921 DATA 188,171,178,874,8,78,8,
3,17,-931
1922 DATA 88,828,18,828,18,178,3
88,-781
1923 DATA 828,7,88,188,187,141,2
82,8,-887
1924 DATA 188,84,172,828,3,188,1
78,141,-1247
1925 DATA 874,2,38,328,8,142,828
1,-874
1926 DATA 188,32,171,828,2,188,1
71,141,-1232
1927 DATA 874,88,8,82,182,4,32,182,
38,-732
1928 DATA 821,13,874,7,182,182,3
1,828,-874
1929 DATA 78,173,38,827,141,188,
31,38,-938
1930 DATA 32,82,38,188,828,133,3
188,-893
1931 DATA 827,133,4,32,828,2,32,
87,-882
1932 DATA 88,38,78,138,78,188,78
88,-738
1933 DATA 8,188,874,1,828,3,82,7
8,-932
1934 DATA 8,1,188,4,1,133,828,18
3,-738
1935 DATA 8,1,133,827,177,828,84
8,3,-974
1936 DATA 32,821,38,178,828,328,
188,187,-938
1937 DATA 178,124,88,32,82,32,82,
8,82,-974
1938 DATA 133,3,188,828,133,4,32
128,-888
1939 DATA 2,32,87,38,82,78,188,8
51,-921
1940 DATA 87,188,81,138,871,185,
872,185,-1258
1941 DATA 8,133,828,128,88,78,18
8,2,-828
1942 DATA 133,821,188,84,133,828
174,38,-1228
1943 DATA 828,178,37,173,138,37,
821,828,-1187
1944 DATA 828,3,828,148,37,82,18
8,2,-888
1945 DATA 148,8,31,173,7,32,874,
88,-888
1946 DATA 188,3,32,142,37,142,8,
32,-888
1947 DATA 828,32,173,37,141,8,31,
828,-782
1948 DATA 138,37,84,188,4,141,8,
31,-842
1949 DATA 173,188,37,188,8,242,1
8,32,-937
1950 DATA 188,8,173,188,37,84,18
5,7,-878
1951 DATA 141,138,37,173,148,37,
138,8,-778
1952 DATA 141,188,37,188,8,142,7
8,-828
1953 DATA 82,78,32,828,82,821,78
828,-878
1954 DATA 11,173,8,31,73,828,142,
8,-748
1955 DATA 31,78,148,38,173,8,31,
748,-827
1956 DATA 821,821,188,148,827,88
188,3,-1187
1957 DATA 173,7,31,828,32,142,37
128,-738
1958 DATA 188,828,32,142,37,828,
172,38,-938
1959 DATA 32,828,32,147,13,13,13,
2,-848
1960 DATA 188,8,141,8,31,173,8,3
1,-828

1961 DATA 142,133,37,173,32,31,1
71,178,-818
1962 DATA 37,173,8,32,171,3,31,1,
71,-828
1963 DATA 8,31,142,4,32,32,828,3
8,-828
1964 DATA 188,32,32,828,38,78,32
5,88,-978
1965 DATA 32,178,828,171,28,31,82,
8,3,-882
1966 DATA 78,328,88,37,82,11,173
138,-888
1967 DATA 37,874,82,32,173,148,3
7,141,-781
1968 DATA 82,31,178,3,78,188,48,
38,-828
1969 DATA 78,82,828,3,78,138,82,
821,-178
1970 DATA 32,874,871,821,31,874,
18,173,-1178
1971 DATA 81,31,142,138,37,173,2
2,32,-938
1972 DATA 141,178,37,78,188,48,3
8,187,-738
1973 DATA 32,874,4,828,3,78,828,
71,-738
1974 DATA 827,17,148,3,78,874,71
78,-938
1975 DATA 148,32,178,3,78,88,78,
188,-738
1976 DATA 17,177,821,141,3,32,82,
8,177,-827
1977 DATA 821,171,7,31,188,32,32
171,-931
1978 DATA 38,38,188,38,168,8,173
7,-818
1979 DATA 32,828,18,32,78,32,828
17,-828
1980 DATA 821,32,874,874,871,71,
878,82,-1188
1981 DATA 32,828,38,78,874,38,18
8,13,-888
1982 DATA 32,828,38,828,1,142,7,
31,-878
1983 DATA 82,32,78,32,828,828,82
1,78,-878
1984 DATA 828,32,32,173,8,32,73,
828,-938
1985 DATA 141,8,32,827,178,8,31,
828,-782
1986 DATA 7,828,188,174,3,78,818
38,-828
1987 DATA 32,821,38,78,828,82,18
2,13,-827
1988 DATA 38,78,188,78,138,78,17
3,13,-821
1989 DATA 31,821,828,828,37,821,
828,-938
1990 DATA 118,821,828,828,5,168,
828,78,-1188
1991 DATA 828,78,828,828,188,188,
11,31,-888
1992 DATA 188,22,133,828,188,88,
133,828,-1228
1993 DATA 188,828,191,178,8,188,
8,171,-938
1994 DATA 18,34,173,12,32,828,11
71,-828
1995 DATA 874,88,188,8,188,8,32,
187,-738
1996 DATA 2,32,87,41,821,188,144
828,-827
1997 DATA 878,12,31,78,124,78,18,
8,8,-872
1998 DATA 188,8,78,182,2,37,87,4
1,-828
1999 DATA 821,188,178,8,32,821,3
8,78,-888
2000 DATA 188,48,828,828,188,32,8
21,38,-1228
2001 DATA 178,173,124,188,124,88,
32,74,-888

LISTINGS

3180 2004 91,170,11,31,000,11,30 -000, -078	3518 2004 89,84,53,53,51,53,50,7 0, -000	3950 2004 92,78,73,70,69,63,50,6 0, -001
3170 2004 91,31,160,0,100,050,10 0,70, -004	3500 2004 73,70,69,63,50,73,70,3 0, -000	3960 2004 88,68,50,84,70,30,70,0 0, -000
3160 2004 930,000,000,100,30,00, 1,170, -000	3510 2004 67,70,77,00,70,60,61,0 0, -001	3970 2004 67,70,30,70,70,13,77,0 0, -000
3150 2004 91,31,000,11,31,000,13 0, -000	3520 2004 50,60,60,70,71,00,65,7 0, -000	3980 2004 71,70,60,60,60,0,70,21 0, -070
3140 2004 900,000,100,000,100,70 -100,000, -100	3530 2004 70,10,60,70,60,60,70,0 0, -000	3990 2004 90,000,10,000,0,70,170 0, -000
3130 2004 900,140,100,100,70,000 0, -000	3540 2004 50,60,70,30,67,70,70,0 0, -000	4000 2004 80,0,0,0,0,0,0,0,0
3120 2004 900,000,0,000,000,00,2 0,0, -1000	3550 2004 73,70,60,60,0,70,21,30 0, -007	4010 2004 60,0,0,0,0,0,70,0,71,3 0, -007
3110 2004 900,07,000,000,000,01, 000,0, -1007	3560 2004 000,30,000,00,30,010,0 0,107, -000	4020 2004 10,00,10,000,00,70,70 0, -000
3100 2004 901,00,00,000,10,70,10 0,00, -000	3570 2004 70,60,77,00,60,60,30,1 00, -000	4030 2004 80,30,70,70,60,60,72,7 0, -000
3090 2004 90,000,0,100,000,70,70 -01, -000	3580 2004 0,100,00,100,3,30,100, 0, -000	4040 2004 71,30,70,30,100,0,30,1 00, -000
3080 2004 100,00,00,00,00,000,00 0, -000	3590 2004 10,10,100,70,70,30,00, 010, -000	4050 2004 90,30,0,0,0,0,0,0,0,0,0 0, -000
3070 2004 90,00,70,70,01,100,00, 70, -070	3600 2004 00,00,100,70,70,00,77, 70, -000	4060 2004 70,01,70,00,010,00,13, 100, -000
3060 2004 00,10,100,70,100,70 1000, -000	3610 2004 00,00,70,00,00,00,70,1 00, -000	4070 2004 90,100,00,00,010,00, 00, -070
3050 2004 0,100,0,100,000,000,00 0,000, -1107	3620 2004 100,00,13,70,70,30,00, 00, -000	4080 2004 00,73,67,60,30,70,30,1 0, -000
3040 2004 900,100,100,100,100,10 0,70,100, -1107	3630 2004 000,70,00,00,00,00,00, 0, -000	4090 2004 0,30,010,00,30,010,00, 00, -000
3030 2004 70,100,70,100,70,170,1 0,30,30, -000	3640 2004 00,70,00,00,00,00,00, 0, -070	4100 2004 100,00,10,70,70,30,00, 00, -000
3020 2004 90,100,100,07,100,07,170, 0,0, -070	3650 2004 000,70,00,00,00,00,00, 0, -070	4110 2004 100,00,10,70,70,30,00, 00, -000
3010 2004 70,170,100,07,70,100,1 7,10, -000	3660 2004 00,70,00,00,00,00,00, 0, -070	4120 2004 00,0,70,01,00,00,010,0 0, -000
3000 2004 100,07,100,107,07,100, 000,001, -000	3670 2004 00,70,00,00,00,00,00, 0, -000	4130 2004 00,0,70,01,00,00,010,0 0, -000
2990 2004 100,07,100,100,07,100, 0,100, -000	3680 2004 70,70,60,60,60,60,60, 0, -000	4140 2004 00,00,00,100,0,30,010, 70, -070
2980 2004 00,30,30,30,30,30,30,70, 0,0, -000	3690 2004 87,67,60,60,60,60,60,0, 1, -000	4150 2004 00,010,00,30,100,00,30, 70, -000
2970 2004 170,07,100,00,30,170,0, 7,0, -000	3700 2004 60,60,60,70,70,71,30,0, 0, -070	4160 2004 70,80,30,00,00,00,00,0, 0, -070
2960 2004 1,30,170,07,100,00,100, 10, -000	3710 2004 00,70,60,77,00,00,00,7 0, -000	4170 2004 70,00,0,70,01,00,30,01 0, -000
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2940 2004 00,30,30,30,30,30,30,70, 0,0, -070	3730 2004 70,00,30,70,60,00,30,7 0, -000	4190 2004 00,30,30,100,0,30,010, 70, -070
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2890 2004 170,07,100,00,30,170,0, 7,0, -000	3780 2004 87,67,60,60,60,60,60,0, 1, -000	4240 2004 00,30,30,100,0,30,010, 70, -070
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2860 2004 00,30,30,30,30,30,30,70, 0,0, -070	3810 2004 70,70,67,70,30,00,00,0, 0, -000	4270 2004 00,10,100,00,00,00,70, 07, -070
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2800 2004 1,30,170,07,100,00,100, 10, -000	3870 2004 60,60,60,70,70,71,30,0, 0, -070	4330 2004 00,010,00,30,100,00,30, 70, -000
2790 2004 00,100,100,100,07,100, 10,100, -000	3880 2004 00,70,60,77,00,00,00,7 0, -000	4340 2004 70,80,30,00,00,00,00,0, 0, -070
2780 2004 00,30,30,30,30,30,30,70, 0,0, -070	3890 2004 70,70,67,70,30,00,00,0, 0, -000	4350 2004 00,10,100,00,00,00,70, 07, -070
2770 2004 170,07,100,00,30,170,0, 7,0, -000	3900 2004 87,67,60,60,60,60,60,0, 1, -000	4360 2004 00,30,30,100,0,30,010, 70, -070
2760 2004 1,30,170,07,100,00,100, 10, -000	3910 2004 60,60,60,70,70,71,30,0, 0, -070	4370 2004 00,010,00,30,100,00,30, 70, -000
2750 2004 00,100,100,100,07,100, 10,100, -000	3920 2004 00,70,60,77,00,00,00,7 0, -000	4380 2004 70,80,30,00,00,00,00,0, 0, -070
2740 2004 00,30,30,30,30,30,30,70, 0,0, -070	3930 2004 70,70,67,70,30,00,00,0, 0, -000	4390 2004 00,10,100,00,00,00,70, 07, -070
2730 2004 170,07,100,00,30,170,0, 7,0, -000	3940 2004 87,67,60,60,60,60,60,0, 1, -000	4400 2004 00,30,30,100,0,30,010, 70, -070
2720 2004 1,30,170,07,100,00,100, 10, -000	3950 2004 60,60,60,70,70,71,30,0, 0, -070	4410 2004 00,010,00,30,100,00,30, 70, -000
2710 2004 00,100,100,100,07,100, 10,100, -000	3960 2004 00,70,60,77,00,00,00,7 0, -000	4420 2004 70,80,30,00,00,00,00,0, 0, -070
2700 2004 00,30,30,30,30,30,30,70, 0,0, -070	3970 2004 70,70,67,70,30,00,00,0, 0, -000	4430 2004 00,10,100,00,00,00,70, 07, -070
2690 2004 170,07,100,00,30,170,0, 7,0, -000	3980 2004 87,67,60,60,60,60,60,0, 1, -000	4440 2004 00,30,30,100,0,30,010, 70, -070
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2670 2004 00,100,100,100,07,100, 10,100, -000	4000 2004 00,70,60,77,00,00,00,7 0, -000	4460 2004 70,80,30,00,00,00,00,0, 0, -070
2660 2004 00,30,30,30,30,30,30,70, 0,0, -070	4010 2004 70,70,67,70,30,00,00,0, 0, -000	4470 2004 00,10,100,00,00,00,70, 07, -070
2650 2004 170,07,100,00,30,170,0, 7,0, -000	4020 2004 87,67,60,60,60,60,60,0, 1, -000	4480 2004 00,30,30,100,0,30,010, 70, -070
2640 2004 1,30,170,07,100,00,100, 10, -000	4030 2004 60,60,60,70,70,71,30,0, 0, -070	4490 2004 00,010,00,30,100,00,30, 70, -000
2630 2004 00,100,100,100,07,100, 10,100, -000	4040 2004 00,70,60,77,00,00,00,7 0, -000	4500 2004 70,80,30,00,00,00,00,0, 0, -070
2620 2004 00,30,30,30,30,30,30,70, 0,0, -070	4050 2004 70,70,67,70,30,00,00,0, 0, -000	4510 2004 00,10,100,00,00,00,70, 07, -070
2610 2004 170,07,100,00,30,170,0, 7,0, -000	4060 2004 87,67,60,60,60,60,60,0, 1, -000	4520 2004 00,30,30,100,0,30,010, 70, -070
2600 2004 1,30,170,07,100,00,100, 10, -000	4070 2004 60,60,60,70,70,71,30,0, 0, -070	4530 2004 00,010,00,30,100,00,30, 70, -000
2590 2004 00,100,100,100,07,100, 10,100, -000	4080 2004 00,70,60,77,00,00,00,7 0, -000	4540 2004 70,80,30,00,00,00,00,0, 0, -070
2580 2004 00,30,30,30,30,30,30,70, 0,0, -070	4090 2004 70,70,67,70,30,00,00,0, 0, -000	4550 2004 00,10,100,00,00,00,70, 07, -070
2570 2004 170,07,100,00,30,170,0, 7,0, -000	4100 2004 87,67,60,60,60,60,60,0, 1, -000	4560 2004 00,30,30,100,0,30,010, 70, -070
2560 2004 1,30,170,07,100,00,100, 10, -000	4110 2004 60,60,60,70,70,71,30,0, 0, -070	4570 2004 00,010,00,30,100,00,30, 70, -000
2550 2004 00,100,100,100,07,100, 10,100, -000	4120 2004 00,70,60,77,00,00,00,7 0, -000	4580 2004 70,80,30,00,00,00,00,0, 0, -070
2540 2004 00,30,30,30,30,30,30,70, 0,0, -070	4130 2004 70,70,67,70,30,00,00,0, 0, -000	4590 2004 00,10,100,00,00,00,70, 07, -070
2530 2004 170,07,100,00,30,170,0, 7,0, -000	4140 2004 87,67,60,60,60,60,60,0, 1, -000	4600 2004 00,30,30,100,0,30,010, 70, -070
2520 2004 1,30,170,07,100,00,100, 10, -000	4150 2004 60,60,60,70,70,71,30,0, 0, -070	4610 2004 00,010,00,30,100,00,30, 70, -000
2510 2004 00,100,100,100,07,100, 10,100, -000	4160 2004 00,70,60,77,00,00,00,7 0, -000	4620 2004 70,80,30,00,00,00,00,0, 0, -070
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2460 2004 00,30,30,30,30,30,30,70, 0,0, -070	4210 2004 70,70,67,70,30,00,00,0, 0, -000	4670 2004 00,10,100,00,00,00,70, 07, -070
2450 2004 170,07,100,00,30,170,0, 7,0, -000	4220 2004 87,67,60,60,60,60,60,0, 1, -000	4680 2004 00,30,30,100,0,30,010, 70, -070
2440 2004 1,30,170,07,100,00,100, 10, -000	4230 2004 60,60,60,70,70,71,30,0, 0, -070	4690 2004 00,010,00,30,100,00,30, 70, -000
2430 2004 00,100,100,100,07,100, 10,100, -000	4240 2004 00,70,60,77,00,00,00,7 0, -000	4700 2004 70,80,30,00,00,00,00,0, 0, -070
2420 2004 00,30,30,30,30,30,30,70, 0,0, -070	4250 2004 70,70,67,70,30,00,00,0, 0, -000	4710 2004 00,10,100,00,00,00,70, 07, -070
2410 2004 170,07,100,00,30,170,0, 7,0, -000	4260 2004 87,67,60,60,60,60,60,0, 1, -000	4720 2004 00,30,30,100,0,30,010, 70, -070
2400 2004 1,30,170,07,100,00,100, 10, -000	4270 2004 60,60,60,70,70,71,30,0, 0, -070	4730 2004 00,010,00,30,100,00,30, 70, -000
2390 2004 00,100,100,100,07,100, 10,100, -000	4280 2004 00,70,60,77,00,00,00,7 0, -000	4740 2004 70,80,30,00,00,00,00,0, 0, -070
2380 2004 00,30,30,30,30,30,30,70, 0,0, -070	4290 2004 70,70,67,70,30,00,00,0, 0, -000	4750 2004 00,10,100,00,00,00,70, 07, -070
2370 2004 170,07,100,00,30,170,0, 7,0, -000	4300 2004 87,67,60,60,60,60,60,0, 1, -000	4760 2004 00,30,30,100,0,30,010, 70, -070
2360 2		

LISTINGS

9330 DATA 60,60,60,70,50,60,60,7	0-100	85,70-8000
0-100	9340 DATA 70,70,60,60,30,70,70,3	9100 DATA 50,50,60,60,60,60,70,0
0-100	0-100	0-100
9350 DATA 70,70,70,60,30,60,60,7	0-100	9200 DATA 70,60,60,60,60,60,60,0
0-100	9360 DATA 70,60,13,13,0,70,60,4	0-100
0-100	9370 DATA 30,210,60,100,13,100,7	0-100
0-100-100	0-100	9380 DATA 60,60,70,50,60,70,70,3
9390 DATA 70,60,60,71,60,30,60,3	0-100	0-100
0-100	9400 DATA 60,50,60,30,61,30,70,7	0-100
0-100	0-100	9410 DATA 50,70,70,70,60,30,60,0
9420 DATA 70,70,60,10,10,0,70,60	0-100	0-100
9430 DATA 40,50,210,60,100,13,10	0-100	9440 DATA 60,60,60,70,30,70,30,1
0-100	0-100	0-100
9450 DATA 60,60,60,70,30,70,30,1	0-100	9460 DATA 100,30,30,60,70,60,60,0
0-100	0-100	0-100
9470 DATA 60,50,200,60,30,610,60,	0-100	9480 DATA 100,30,30,60,60,60,60,0
30-100	0-100	0-100
9490 DATA 100,30,30,60,70,60,60,	0-100	9490 DATA 100,30,30,60,60,60,60,0
60-100	0-100	0-100
9510 DATA 60,60,30,60,60,70,70,7	0-100	9520 DATA 60,60,60,60,60,60,60,0
0-100	0-100	0-100
9530 DATA 60,60,60,60,70,60,60,0	0-100	9540 DATA 60,60,60,60,60,60,60,0
0-100-100	0-100	0-100
9550 DATA 70,30,30,30,30,60,60,0	0-100	9560 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9570 DATA 100,30,30,60,60,60,60,0	0-100	9580 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9590 DATA 100,30,30,60,60,60,60,0	0-100	9600 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9610 DATA 100,30,30,60,60,60,60,0	0-100	9620 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9630 DATA 100,30,30,60,60,60,60,0	0-100	9640 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9650 DATA 100,30,30,60,60,60,60,0	0-100	9660 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9670 DATA 100,30,30,60,60,60,60,0	0-100	9680 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9690 DATA 100,30,30,60,60,60,60,0	0-100	9700 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9710 DATA 100,30,30,60,60,60,60,0	0-100	9720 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9730 DATA 100,30,30,60,60,60,60,0	0-100	9740 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9750 DATA 100,30,30,60,60,60,60,0	0-100	9760 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9770 DATA 100,30,30,60,60,60,60,0	0-100	9780 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9790 DATA 100,30,30,60,60,60,60,0	0-100	9800 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9810 DATA 100,30,30,60,60,60,60,0	0-100	9820 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9830 DATA 100,30,30,60,60,60,60,0	0-100	9840 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9850 DATA 100,30,30,60,60,60,60,0	0-100	9860 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9870 DATA 100,30,30,60,60,60,60,0	0-100	9880 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9890 DATA 100,30,30,60,60,60,60,0	0-100	9900 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9910 DATA 100,30,30,60,60,60,60,0	0-100	9920 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9930 DATA 100,30,30,60,60,60,60,0	0-100	9940 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9950 DATA 100,30,30,60,60,60,60,0	0-100	9960 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9970 DATA 100,30,30,60,60,60,60,0	0-100	9980 DATA 100,30,30,60,60,60,60,0
0-100	0-100	0-100
9990 DATA 100,30,30,60,60,60,60,0	0-100	0-100

PROGRAMS: BOST 0711

10 PAGE DEC71071,DEC71072
 20 PAGE DEC71073,DEC71074
 30 PAGE DEC71075,DEC71076
 40 PAGE DEC71077,DEC71078

LISTINGS

*PERKILL=0270-1

PROGRAM: TERCNTL.FOB

```

30 MORE DEC0 "00",DEC0 "00"
30 BRACK
30 MORE DEC0 "0000",0
30 MORE DEC0 "101",0,DEC0 "00"
30 RUN "LABEL-UTILTY"
    
```

PROGRAM: TERCNTL.FOB

```

10 SET TRM IN A PANEL CONTROL U
ILITY
20 SET S"LABEL UNIT"
30 CLR"-----"
40 CLR"-----"
50 CLR"-----"
60 CLR"-----"
70 RETURN
80 SET
90 SET THIS IS A TEXT DISPLAY FO
R INPUT
100 LN AND THE CHARACTER LIMIT
110 VP AND SP AND THE POSITION
FOR TR
120 TR AND THE TEXT TO BE SHIP
ATED
130 SET INPUT IS AFTER THE TEXT
140 SET "TEXT"
150 LABEL "POSITION"
160 PRINT TR
170 IF SP=1 THEN BEGIN
180 FOR LN TO LN
190 PRINT " "
200 NEXT
210 PRINTLEFT(ROW,LN)
220 END
230 LN=0 AND NO. OF KEYS PRESS
240 END
250 GO
260 BEHIND EYE
270 IF KEY-CHECKED THEN "TEXT"
280 IF KEY-CHECKED THEN BEGIN
290 IF LN=0 THEN BEGIN
300 LN=LN+1/PRINT" ", " "
310
320 LN=LEFT(ROW,LN)
330 END
340 END
350 MORE ELSE BEGIN
360 IF LN=0 THEN BEGIN
370 PRINT" "
380 END
390 END
400 LOOP UNTIL KEY-CHECKED
410 SET S"TEXT"
420 RETURN
430 SET DISPLAY TEXT AT POSITION
DEFINE
440 SET S"DISPECT"
450 LABEL "POSITION"
460 PRINT TR
470 RETURN
480 SET
490 SET POSITION CURSOR
500 SET S"POSITION"
510 PRINT" ",LEFT(ROW,SP),LEFT
(LN,SP)
520 RETURN
    
```

PROGRAM: UTIL.FOB

```

30 IF PERKILL=0270 THEN SET
S "UTIL"
40 SET "LABEL UNIT"
50 MORE "LABEL UNIT"
60 BRACK
70 LABEL "LABEL-LINKER",00
80 END
90 PRINTROW(LN)
100 GO
110 COLOR 0,0
120 COLOR 0,0
130 COLOR 5,5
140 PRINT "I"
150 " "
160 PRINT " "
170 PRINT " "
180 COLOR 0,0
190 COLOR 5,5
200 PRINT "I"
210 " "
220 PRINT " "
230 PRINT " "
240 COLOR 0,0
250 PRINT "I"
260 " "
270 PRINT " "
280 COLOR 0,0
290 PRINT "I"
300 " "
310 PRINT " "
320 COLOR 0,0
330 PRINT "I"
340 " "
350 PRINT " "
360 PRINT " "
370 PRINT " "
380 PRINT " "
390 PRINT " "
400 PRINT " "
410 PRINT " "
420 PRINT " "
430 PRINT " "
440 PRINT " "
450 PRINT " "
460 PRINT " "
470 PRINT " "
480 PRINT " "
490 PRINT " "
500 PRINT " "
510 PRINT " "
520 PRINT " "
530 PRINT " "
540 PRINT " "
550 PRINT " "
560 PRINT " "
570 PRINT " "
580 PRINT " "
590 PRINT " "
600 PRINT " "
610 PRINT " "
620 PRINT " "
630 PRINT " "
640 PRINT " "
650 PRINT " "
660 PRINT " "
670 PRINT " "
680 PRINT " "
690 PRINT " "
700 PRINT " "
710 PRINT " "
720 PRINT " "
730 PRINT " "
740 PRINT " "
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760 PRINT " "
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790 PRINT " "
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810 PRINT " "
820 PRINT " "
830 PRINT " "
840 PRINT " "
850 PRINT " "
860 PRINT " "
870 PRINT " "
880 PRINT " "
890 PRINT " "
900 PRINT " "
910 PRINT " "
920 PRINT " "
930 PRINT " "
940 PRINT " "
950 PRINT " "
960 PRINT " "
970 PRINT " "
980 PRINT " "
990 PRINT " "
    
```

PROGRAM: UPDATE DEVICE

```

10 PRINT "I"
20 DEVICE NO. " "
30 PRINT " "
40 " "
50 LABEL "NEW"
60 PERKILL
70 CE=0
80 GO WHILE END
90 BRACK-CHECKED
100 PRINT " "
    
```

```

10 CE=0
110 T=PERKILL=0270
120 LOOP
130 SP=0-1
140 GO
150 MORE "TEXT"
160 IF PERKILL THEN BEGIN
170 CE=0
180 GO MORE CE=0 AND SP=0
190 IF BRACK-PAN THEN FOR
200 ELSE CE=0+1
210 LOOP
220 IF CE=0 THEN VP=0-1
230 TR=TR+1/IF LN=0 THEN "TEXT"
240 MORE
250 MORE "DISPECT"
260 LN=LN+1
270 MORE BRACK-PAN
280 END
290 PRINT " "
300 PRINTLEFT(ROW,LN)
310 CLR"-----"
320 END
330 MORE "TEXT"
340 VP=0,SP=0 TR=0
350 MORE "DISPECT"
360 VP=0,SP=0 TR=0
370 MORE
380 LOOP UNTIL PERKILL
390 RETURN
400 SET THE CURS
410 SET "TEXT"
420 LN=0,SP=0,VP=0-1 TR=0
430 END
440 GO
450 MORE "TEXT"
460 VP=0,SP=0 TR=0
470 IF PERKILL OR PERKILL=0270
480 MORE LN=0,SP=0,VP=0-1 TR=0
490 END
500 GO
510 MORE "TEXT"
520 LN=0,SP=0,VP=0 TR=0
530 IF SP=0 OR LN=0 THEN SP=
540 ELSE LN=0
550 LOOP UNTIL SP=0
560 SET "TEXT"
570 RETURN
    
```

PROGRAM: UPDATE COMMAND

```

10 LN=0-1
20 PRINT "I" FIRST TRM IS " "
30 PRINT " "
40 PRINT " "
    
```


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IN 1986 -
MAY ISSUE -
15th FEBRUARY 1988

B

R

E

R

H

OOPS!

Unfortunately an error appeared in the program listed 128 in the December issue.

The corrections are as follows:
Add the following to the end of lines 420 and 440.

L=L+1

Apologies for the inconvenience caused.

Program Submissions

Due to the illness of our software evaluator some people may be experiencing a delay in getting to copies regarding submissions. We are trying to clear the backlog of programs as quickly as we can but this is taking some time. This backlog also affects Ray Finders and Lifesaver.

We apologise for the delay and would ask that you would bear with us while the backlog is cleared.

The publication of Lifesaver has also been halted because of the software backlog. We will be bringing you more short programs and tips as soon as we can.

Commodore Where Are You?

At the Four Commodore office we are repeatedly asked for the address and telephone number of Commodore U.K. Many people, after referring to their computer manuals, believe them to be based in Corby.

The Commodore plant at Corby was closed down some time ago. Reproduced here you will find the correct address for Commodore U.K.

We suggest that you write this correct address in the front of your computers manual for future reference.

Commodore Business Machines, (U.K.)
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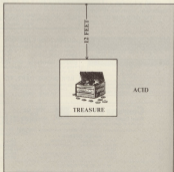
At the Four Commodore office we receive hundreds of letters from readers every month. We do try and answer each individually but sometimes this is impossible due to pressure of work. If you have written to us and not received a personal reply, we apologise for this but we cannot promise to reply to every item of mail we receive. If you feel that your question or letter really needs an answer, then inclusion of an a.s.a.c. will guarantee a reply, although this may still take time to arrive.

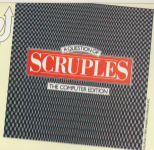
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