

# disk USER

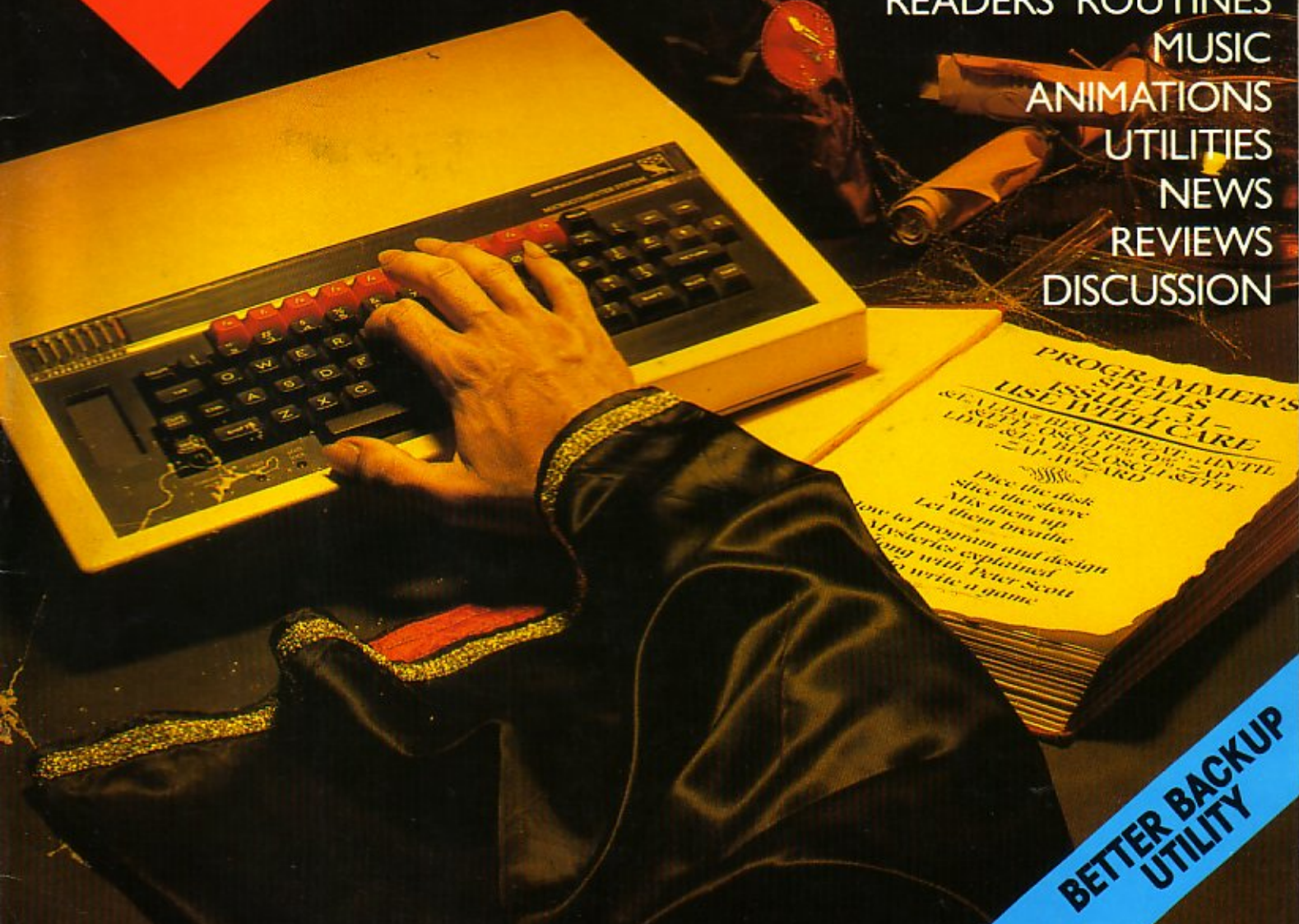
**1ST CHOICE  
FOR  
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**BBC MICRO  
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MODEL B+  
MASTER 128**

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FILING  
SYSTEMS**

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NEWS  
REVIEWS  
DISCUSSION**



**PROGRAMMER'S  
SPELLS  
ISSUE 1-31 -  
USE WITH CARE**  
SEARCHED REVEALED UNTIL  
SEARCHED REVEALED UNTIL  
LDV SEARCHED REVEALED UNTIL  
ZAP WIZARD

*Dice the disk  
Slice the slugs  
Mix them up  
Let them breathe  
How to program and design  
Mysteries explained  
Tough with Peter Scott  
to write a game*

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# disk USER

is

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In the 1987 Magazine Publishing Awards organised by The Publisher, Disk User for the BBC Micro won a second place certificate. The experienced panel of judges praised the "sheer value of the cover-mounted disk that formed part of the new publication's concept".

## SUBSCRIBING MADE EASY JUST TURN TO PAGE 25 . . .

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# disk USER

**Disk User**  
**Number Twelve**  
**October 1988**

Editor: Andrew Brown  
Software Consultant: Matthew Fifield  
Group Editor: Mark Webb  
Advertisement Manager: Marcus Collingbourne  
Advertisement Copy Control: Andrew Selwood



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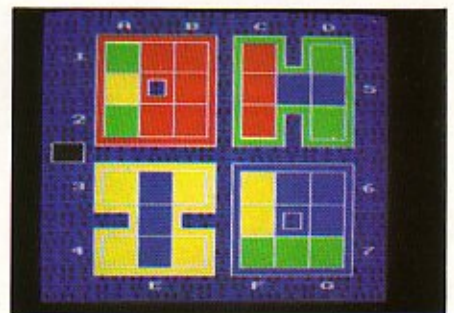
If you need to attract attention then the scrolling text and numerous special effects of Message Machine are unbeatable. Ideal for exhibitions, information stands etc

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Animations for you to copy and keep. Build a collection from this entertaining A to Z of animations by computer artist Abbas



Disk User is supplied on a 40 track disk format and can be run without conversion on a 40 track drive.

If you have 40/80 switchable drives then make sure the drive is switched to the 40 option. For 80 track only drive owners, a conversion program is provided – see Disk Instructions. All files, except the Better Backup and Document Dumper can be copied to and used on ADFS systems

**100% Electron Compatible:**  
**Spironet Better Backup Ohio Function key lister Clock**



# DISK INSTRUCTIONS

To get the best from your copy of *Disk User*, please carefully read the instructions below. We have made *Disk User* able to run on a very wide range of systems.

## All Users

Please make a **Backup copy** and keep the original in a safe place with a Write-Protect tab on. You should use this copy as your working copy, as many of the programs need to write to the disk, and doing this will diminish the usefulness of the original, and may not be possible anyway due to the 31 file limit imposed by many DFSs.

## New Users

If you are a new user **Don't Panic!**, first find out whether you have 40 or 80 track drive(s) attached to your computer (ask someone knowledgeable if you don't know). Then go to your User guide or Welcome Manual and read the chapter on filing systems. In particular find out how to use the \*COPY command. Next re-read the section above **All Users**, and then go to the appropriate section dealing with your particular filing system and follow the instructions listed there.

## Advanced Users

You do not need help to run *Disk User*, but do refer to the instructions for the filing system you are using, and **Don't forget to make a Backup copy.**

## 40 Track Drive Systems

*Disk User* is supplied on a 40 track disk so will work on any 40 track

BBC Micro system (at least, any that we know of!) straight away. Remember to make a working copy before use.

## 40/80 Switchable Drives

If you have this sort of drive, you can use *Disk User* straight away with the drive switched to the 40 track setting; don't forget to make a copy for normal use. However, you may wish to copy the disk on to 80 track format, in which case, with a single drive, you should follow the instructions for 80 track systems.

With two switchable drives, or one switchable drive set to 40 track and an 80 track drive (or even a 40 track drive and an 80 track drive), you can easily copy *Disk User* on to 80 tracks; put *Disk User* into drive 0 (40 tracks) and a blank formatted 80 track disk into drive 1 (80 tracks) and type:

```
*COPY 0 1*.*<RETURN>
```

Here <RETURN> means hitting the return key. You can set the boot option to drive one by typing:

```
*DRIVE 1<RETURN> *OPT 4  
3<RETURN>
```

## 80 Track Drives

Because *Disk User* is supplied as a 40 track disk, 80 track disk drives have to double-step through the disk. Probably the most convenient thing to do is to copy *Disk User* on to

80 track format. This can be done in two ways.

If your filing system allows double-stepping, we recommend using the system's own command. As a general rule, built-in 40-to-80 track converters should be used where available; the documentation for your filing system or utility ROM will give full instructions, and we give suggestions for some better-known systems further on.

Not all filing systems have facilities for double-stepping; Acorn's DFS is one such system. To overcome this, a program called CHANGE is supplied on the *Disk User* disk in a section which can be accessed by 80 track drives.

## Using CHANGE

Insert *Disk User* into an 80-track drive (or 40/80 switched to 80-track) and type:

```
*CHANGE <RETURN>
```

The program will prompt you to insert a pre-formatted blank 80 track disk when it is ready to write to it (you will have to swap back and forward between the two disks several times if you are using only one drive). Once this is completed, you can use the newly created 80-track version of *Disk User* and keep the original as the back-up.

Our suggestions on how to use *Disk User* on some popular DFSs now follow.

*Disk User* is published monthly on the third Friday of the month preceding cover date.

Advertising enquiries to: *Disk User*, Number One Golden Square, London W1R 3AB. ☎ 01 437 0626.

Editorial enquiries to *Disk User*, 6C Belgic Square, Off Padholme Road, Peterborough PE1 1XF ☎ 0733 53355. Contributions should include full source code and instructions file on disk. Payments are extremely competitive. Distributed by SM Distribution Ltd., 6 Leigham Court Road, Streatham

London SW16 2PG. ☎ 01 677 8111. Telex 261643. Fax 01 677 0136

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## Master 128

This Acorn DFS has a software double stepping mode for a 80 track drive. Set it with the command

**\*DRIVE 0 40 <RETURN>** and then hit <BREAK>

Disk User will then work without any need for conversion. However this may not allow writing to the disk in 40 track mode; in any case, you should make a working copy, so copy to a 80 track disk.

## DFS on Master Compact

The DFS is supplied as an image on some versions of the Master Compact Welcome disk (or is available from Acorn on disk) and this may be used in conjunction with a 5<1/4> inch 40 track disk drive to run Disk User. Please note that we **cannot** at present supply *Disk User* on a 3<1/2> inch disk (if there is sufficient demand, we may be able to in the future).

## Opus DDOS/Challenger 3

If you are using the Opus DDOS disk filing system or Challenger 1.0/DDOS then issue the command

**\*4080 AUTO <RETURN>**

or

**\*ENABLE 40/80 <RETURN>**

and Disk User will work without any need for conversion.

## Challenger 3

If you have the later ROM version Challenger 1.1 then issue the command

**\*OPT 8,1 <RETURN>**

to achieve the same result. Disk User will work effectively from the RAM disk. Use

**\*COPY 0 4 \*.\* \*CONFIG 4=0 0=4**

**\*OPT 4 3**

to run from RAM disk

## Solidisk DFS

With the Solidisk DFS 2.1 and 2.0 you can set a software double stepping mode for a 80 track drive with the command

**\*ENABLE 80 <RETURN>**

Disk User will then work without any need for conversion.

## Watford DFS

The Watford DFSs also have a software double stepping mode for an 80 track drive. Consult your manual for the appropriate FX call or command. Disk User will then work without any need for conversion.

## Disk failure

If for any reason your copy of Disk User will not work on your system

then please carefully re-read the instructions given above.

If you still experience problems then:

1. If you are a subscriber, return it to: **INFONET LTD, 5 River Park Estate, Berkhamsted, Herts HP4 1HL.**

2. If you bought it from a news-agents, return it to **Disk User Replacements (BBC), Diskopy Labs, 20 Osyth Close, Brack Mills, Northampton NN4 0DY. ☎ 0604 760261.**

Please use appropriate packaging, cardboard stiffener at least, when returning a disk. Do not send back your copy of the magazine. Only the disk please.

## Editorial/Technical Enquiries

You can make telephone enquiries about *Disk User* on Wednesday and

Thursday afternoons on 0733 53355 (please ask for *Disk User* Editorial). Enquiries in writing to the following address: **Disk User, 6C Belgic Square, Off Padholme Road, Peterborough PE1 1XF.**

## ADFS Users

All files on this disk except BETTER BACKUP and DOCUMENT DUMPER work with the ADFS. If any problems should arise, examine the program listings and remove DFS only operating system commands (e.g. \*DRIVE 0) and replace them with the ADFS equivalent.

**Note:- Disk User 12 fills a 40 track disk. Any software that may need extra disk space to save information must be copied onto a blank disk. ie SPIRONET and RACS.**

## Disk User 12 OCTOBER '88

Electron Compatible Files:-  
SpiroNet. Better Backup. Ohio.  
Function key lister. Clock.

All change - 40 track to 80 track convertor.

Files:-  
CHANGE - Machine code file.

Caution:- This program may corrupt your disk if misused. To use type  
\*RUN CHANGE <RETURN>

New Disk Menu - With new advertising billboard.

Author: Matthew Fifield Files:-  
DUMENU - BASIC program comp -  
Machine code file COMSCR1 - Compacted screen file

\*IDEA\*

All you readers with artistic talent can send in your masterpieces and if we have room on the disk we may include your artwork with the disk menu.

\*END IDEA\*

Theme Music - Groovy tune to get you in the mood.

Author: Ian Waugh Files:-  
LOADER - BASIC program Theme -  
Data file

SpiroNet - Mesmerising patterns with infinite variations.

Author: Ben Newsam Files:-  
SPIROLD - BASIC program EXPAND -  
BASIC program X.SPIRO - Compressed data file

RACS - Full feature communications package.

Author: Paul Guest & John Kelly

Files:-  
RACSLD - BASIC file RACS -  
Machine code file CREATE - BASIC file

Better Backup - The backup command taken to new levels of usefulness.

Author: Dov Rosner Files:-  
Better - Machine code file  
New animation - Improved menu

with the latest animation.

Author: Abbas/J.C. Kenney Files:-

ALFABET - BASIC program I.MENU

- Data file M.ALPHA - Data file

Ohio - A great puzzle for you

logically minded readers.

Author: Des Catlin Files:-

OHIO - BASIC program

Function Keys - On screen function

key strip.

Author: Neil Craven Files:-

DLI - BASIC program

Document Dumper - Sequenced

printout of files generated on Text-

shape.

Author: Peter Scott Files:-

DOCDUMP - BASIC program

Extended Editing - SHIFT the cursors

that little bit faster.

Author: Tim Campen Files:-

EDITING - BASIC and Assembler

Clock - No more excuses about

losing track of the time with this

utility.

Author: Mostyn Hellard Files:-

CLOCK - BASIC program

Message Machine - Enlarged

messages scrolled across the screen.

Author: H. Burrows Files:-

Message - BASIC file Example -

Example message file

\*IDEA\*

Send in your own messages to us

and as long as they are decent we

will try and find room on the disk to

use them.

\*END IDEA\*

Textshape to ASCII - Convert text-

shape files to pure ASCII files quickly

and simply.

Author: Edward Moran Files:-

CONVERT - BASIC file

Bulletin Board Numbers - All the

numbers you will ever need to log on

to the best boards.

Author: A.S. Quail Files:-

I.BB-NUMS - Tracer data file



# DISK NEWS

## Design Council Awards

ESM were among the winners at The Design Council presentation ceremony for the most innovative solution to the "problems" of computer packaging.

The design that did it? That handy ScreenPrint ROM.

**Contact: ESM Limited, 32 Bridge Street, Cambridge, CB2 1UJ. ☎ (0223) 65445.**

## Desktop Diary

**14-18 September** - Personal Computer Show. This year held at Earls Court. Come and visit Acorn Computers and Disk User.

**25th September** - A&B/Watford Electronics Open Day. Meet the stars of A&B Editorial and see some of the best hardware and software around for the Beeb, the Arc and the Z88. **DON'T MISS IT!!!**

**30th September-9th October** - BBC Radio Show. Earls Court celebration of 21 years of Radios 1,2,3 and 4.

**October 15th Big Ben club show** Last year, Disk User debuted in Holland at the Big Ben Show and sold out. The hospitality was so good we plan to see everyone there again this year.

**Contact: Harry A Linsen, Gommerskerspel 24, 2151 RA Nieuw Vennep, Netherlands. ☎ (31)2526 72385. You can EMAIL them on 27:NPS583 or Telex them on Netherlands 20000 and MMC NPS583 on the first line.**

**October 11-13** - Computer Graphics 88. Professional show at Wembley Conference Centre.

**13-15 October** - Desktop Publishing Show. All types of micro. Business Design Centre, London.

**11-13 November** - Electron and BBC Micro Show. New Horticultural Halls time again. Come and visit us on the Disk User stand.

**17 November 1988** - Into the Future with ESG. Organised by RESOURCE, aims to explore how the Government's Education Support Grant is taking effect. Speakers from NCET, DES, TVEI and LEAs. Also discussed will be the impact of 16 and 32 bit

computing. **Contact Anne Swainston or Kevin Smith, RESOURCE, Exeter Road, off Coventry Grove, Doncaster DN2 4PY. ☎ 0302 63800/63784.**

## Graphics tablet

Cherry Electrical Products have announced the availability of a graphics tablet with both parallel and serial ports. For £550 the packages includes the digitising tablet, a 4-key, cross hair cursor puck, a stylus, power supply, interface cabling, a set of user-defineable menu strips and marker pen and full documentation.

The tablet has an A3 working area of 384mm by 260mm (29mm without menu strip). It is claimed to achieve a resolution of 0.1mm with an accuracy of better than plus or minus 0.5mm.

**Contact: Cherry Electrical Products Ltd., Coldharbour Lane, Harpenden, Herts, AL5 4UN. ☎ 05827 63100.**

## Printshop

Star Micronics UK Ltd has presented their first LC-10 printer manufactured in their new Welsh factory to the Prince's Trust, the charitable organisation whose president is HRH The Prince Of Wales.

The Establishment of a manufacturing facility, near Tredegar in south Wales was announced last November by Peter Walker - the Secretary of State for Wales.

## Daisywheel Strikes Back!

*Matmos Ltd* and *Computer Appreciation* have struck up a deal with Triumph Adler for a daisy wheel printer at the impressive price of £119.50.

**Contact: Computer Appreciation at 30-31 Northgate, Canterbury, Kent, CT1 1BL. ☎ (0227) 470 512.**

## Mannesman Tally 24 Pin

Europe's largest printer maker,

Mannesman Tally is pitching a direct challenge at NEC with the launch of a high performance 24 pin dot matrix printer priced at £695

The MT 222 is a 136 column unit and there is talk of adding on a colour option later on this month for an extra £100. Additional bits and pieces are a twin bin feeder.

**Contact: Mannesman Tally, Molly Millars Lane, Wokingham, Berkshire, RG11 2QT. ☎ (0734) 788711.**

**CITIZEN**  
COMPUTER PRINTERS

**PICTURES FROM NUMBERS**

**WWF**

A WORLD WILDLIFE FUND  
MATHEMATICS PROJECT SPONSORED BY  
CITIZEN COMPUTER PRINTERS

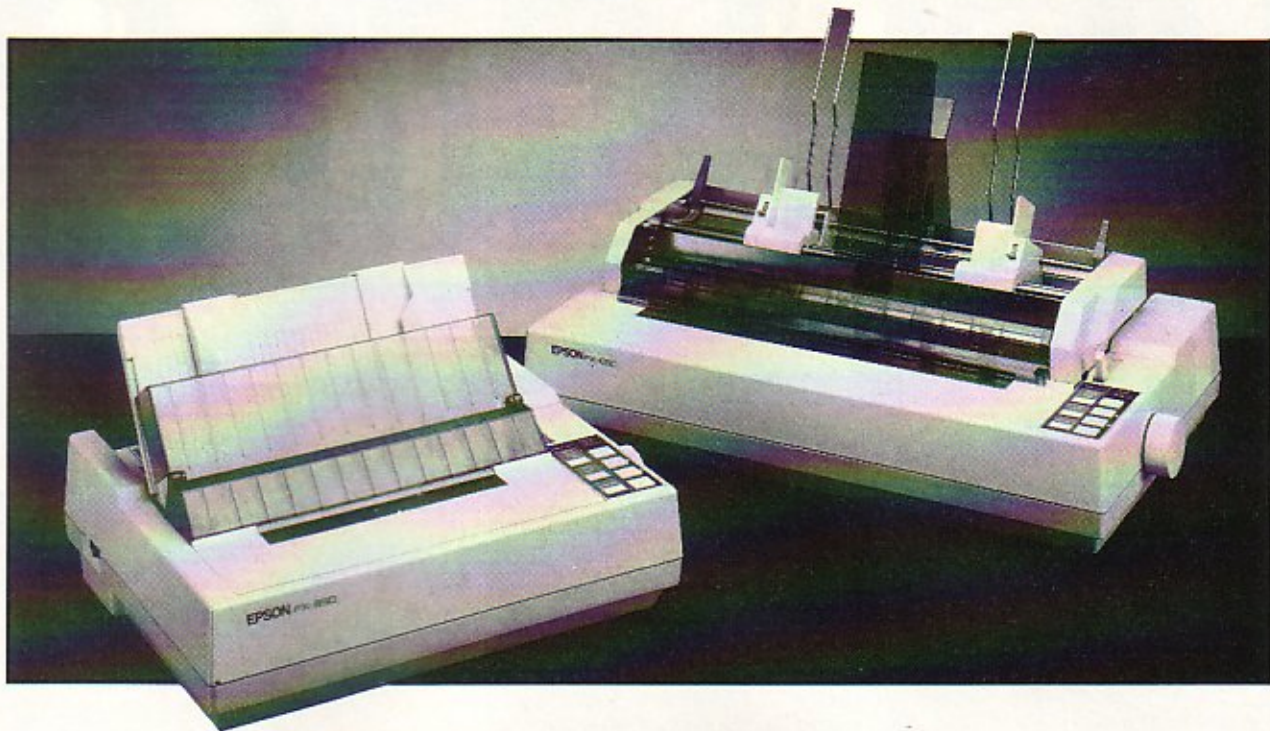
Over 1,200 projects were undertaken.

## Zoo Print

The climax of the World Wide Wide Fund/Citizen schools project competition was held at Londons Regents Park Zoo recently.

The competition involved schools





from all over the country putting together conservation projects using a micro and a printer. Hundreds of schools submitted entries which were judged by a celebrity panel of judges including Rula Lenska, George Layton and Ruth Lawrence.

Both primary and secondary school category winners received £2000 computer vouchers whilst the runners up received Citizen 120D printers.

### A&B Computing/Watford Electronics Open Day!

A&B Computing magazine and Watford Electronics are getting together for an open day on Sunday the 25th of September. The editorial staff of A&B Computing will be there showing demonstrations of Watford, Acorn and other quality hardware applications.

### Lancelot

Mandarin Software and Level 9 have combined again to bring us a new adventure for the Master Series. It's called Lancelot and it follows the definitive book on King Arthur, Sir Thomas Malory's "Le Morte D'Arthur" published by William Caxton in 1485.

Pete Austin of Level 9 says that the £14.95 Lancelot will be their "best game to date". The pack will include a background story and parchment map of Arthurian England.

### Internal Modem for Master 128

Master 128 owners can now have an internal modem fitted. Available from St Albans based *Beebug* the modem is ideal for logging on to *Prestel*, and *Telecom Gold* communications, as well as for other on-line databases and bulletin boards. Costing only £119 (inc VAT), the modem can be fitted in a matter of minutes without the need for soldering.

The modem features V21/V23 baud rates (1200/75, 75,1200 and 300,300). The baud rate is selected under software control, which is Beebug's own ROM software. The Master's own internal speaker is utilised for checking on the progress of a call, as it allows dialling tones, ringing tones, and speech to be monitored.

The new modem looks to be a good idea for keeping cables and clutter off your desk. Find out whether it lives up to its promise. Full review in Disk User soon. Information from:

**John Wallace, Beebug Ltd, Dolphin Place, Holywell Hill, St Albans, Herts. AL1 1EX.**  
☎ 0727 40300

### Two new ones from Epson

Epson who are part of the *Seiko-Epson* corporation, and as such sell more 9-pin dot-matrix printers in the UK than anyone else have introduced new versions of two of their work-horse machines.

The *FX850*, and the wide carriage *FX1050* are not as their name might imply a kind of operating system

call, but the latest incarnations of that old favourite, the *FX80*, and its big brother, the *FX100*. Long regarded as the standard dot-matrix printer the *FX* series was starting to look a bit long in the tooth. However with a few added features from Epson, the series looks set to forge on into the 1990's.

What Epson have done is take the sophisticated paper handling facilities from the 24pin *LQ* series and add them to the *FX* range. This gives the printers the ability to handle both cut-sheet (A4) paper, and fanfold (perforated, up to 4 part) type. Continuous paper is held *parked* in the built in push tractor at the rear of the printer. In this way single sheets may be printed. The change to continuous paper is made by simply pulling a lever forward and touching a button on the *SelectType* panel. Reverse the procedure, and single sheets may once again be printed.

In addition to the paper handling facilities, the printers are claimed to be 10% faster in both draft and NLQ modes, giving **264cps**, and **54cps** respectively. They are also claimed to be quieter at a noise level of 55dBA, and easier to use with all operations carried out from the front panel. There are two NLQ fonts, *Roman and Sans Serif*, <R1> and an 8k buffer as standard.

Prices for the two printers are £459, and £599 (Ex Vat) respectively.  
**Epson (UK) Ltd, 388 High Road, Wembley, Middlesex. HA9 6UH.**  
☎ 01 902 8892



# DISCUSSION

## Wadgebury on the Electron

I was glancing through the previous editions of Disk User and I noticed the brilliant game *System Wadgebury*, but when I looked at the first page of the magazine I saw to my disappointment that it was not *Electron* compatible. I was just about to throw my *Electron* at the wall because I could not use the game, when I decided to have a go at playing it anyway. Imagine my surprise when it worked!!! I thought that it might be the *Slogger RAM* board I had installed, so I switched it onto turbo, and it still worked. Next I switched back to original 32k mode, typed \*EXEC IBOOT, and to my astonishment it still worked.

so I would like to tell all *Electron* owners who have bought the May 1988 edition of Disk User that *System Wadgebury* **does** work regardless of the first page in the magazine. It is a bit slower on the 32k *Electron*, but still playable. Brett Colley, Essex. *We would advise all readers not to throw their Electron at the wall as it leaves a messy stain, which can only be removed by wiping with a damp Spectrum.*



## Well Connected

Among the many excellent programs on the Disk User disks, I feel that *Tracer* is worthy of special mention. I have recently completed the mammoth task of compiling a data file of all the STD telephone codes. This means in excess of **4,600 records**, using *Tracer*. Apart from giving me some much needed typing practice, and a satisfying sense of achievement, I now have extremely fast access to dial codes and in addition the facility of being able to identify exchanges when only the code is known.

Congratulations on the standards you are continuing to keep up. Incidentally, this letter was composed using "Textshape" from the August issue. D Gough, Wolverhampton.

*With information like that on hand you should go into competition with BT, it wouldn't be difficult to beat their service. Seriously though, what you have done is of great value, because what most people fail to realise, is that the*



*value of a database is in the information stored in it. And to get information in requires time and expense. The other aspect is the distribution of that information, which is where we at Disk User come in. If any readers are interested in Mr Gough's work we shall pass on their addresses, but we would ideally like to publish this and other databases for Tracer.*



## Easypoke problems

As a subscriber, and avid reader of your magazine, may I first compliment you on the high standard that you have set yourself, and are keeping to.

I would however like to draw your attention to the *Easy poke* program, which to my horror, I found did not work on my Master 128 computer. Paul J Turner, Middlesex

I have been buying Disk User since day one, and I must say that the quality of each one surpasses the last.

Having recently purchased the June Issue, I have one or two complaints. the first is that *Easy poke* will not work on my Master. Even if I unplug ROMS that might offend it will still not work.

My second complaint is that *Edisk* has a few serious bugs. The first is that it will not read sectors in the correct order, and secondly when inputting ASCII text, if I press a function key to return to the menu this also gets accepted as text, before returning to the menu. Please could you supply the fixes to these bugs in the appropriate issue of Disk User. Trevor Green, London

*To deal with Mr Green's second*

*point first; the Edisk editor is specifically an 8271 disk editor, so it is not surprising that it does not work on a Master computer which has the later 1770 interface. The 1770 chip is a completely different animal to the 8271, and the only way in which the two can be made to act in a similar way is through software emulation. Look on the bright side though, your system supports double density, and ADFS, and is faster, more modern, and more reliable.*

*In both letters Easy poke is mentioned as being incompatible with the Master, this is unfortunately true. It is not due to a bug, but is because the program was designed to work with a standard BBC B. However we have had so many people with Master computers pointing this out that we have decided to go back to the author, and see if he can come up with a Master compatible version.*



## Don't forget the Electron

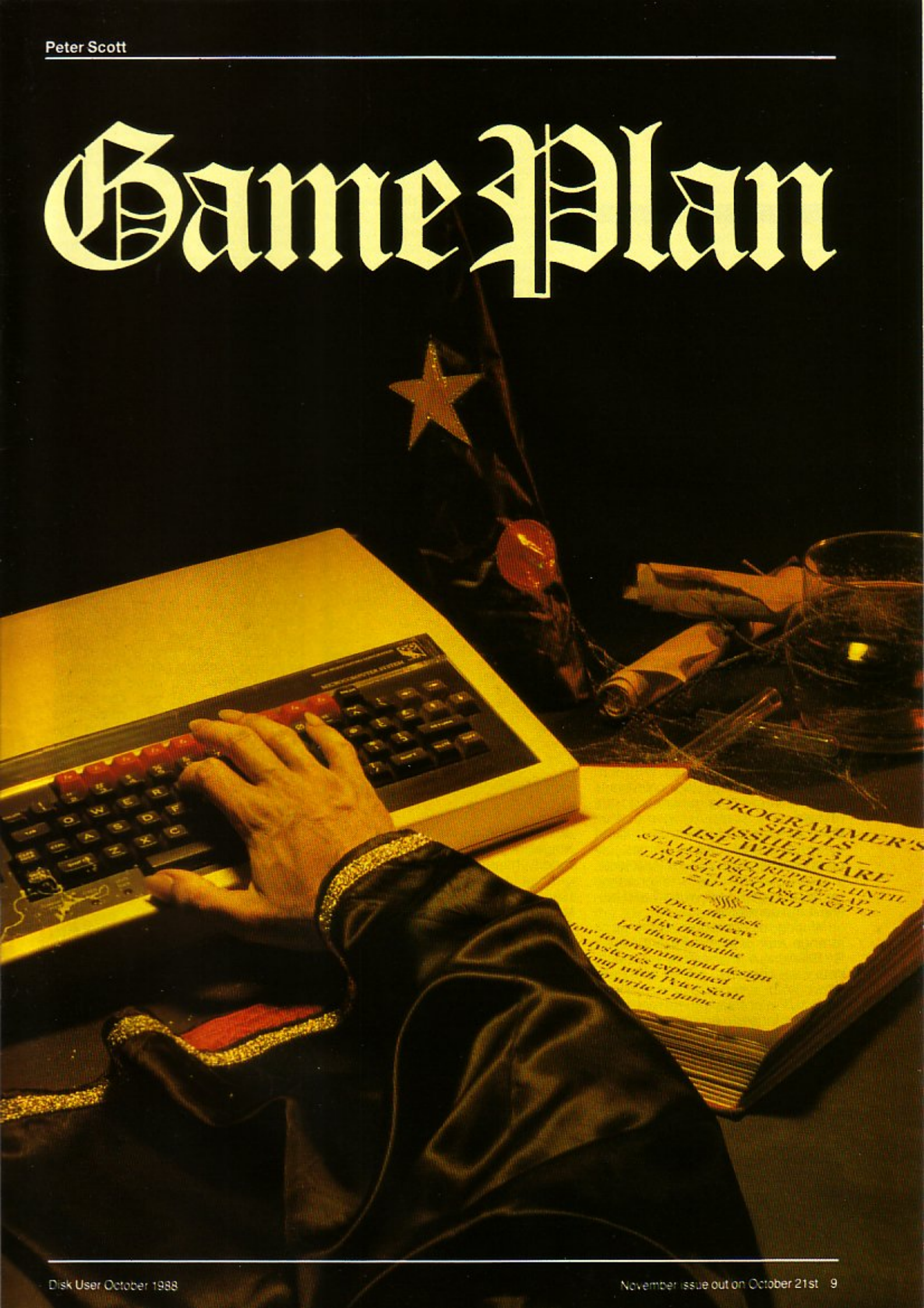
I am an Acorn *Electron* user - no, don't laugh - I bought my machine at a car boot sale, and have been delighted with it ever since. I am pleased to discover that it will run nearly all BBC software and I have learnt quite a bit about the machine by adapting BBC programs for the Elk.

I have an Advanced Plus Three 3.5 inch disk drive, and again this is a superb unit. I have only recently discovered the joys of disk user magazine - It is of course exactly what I need. I am writing to you therefore to urge you, please to produce the magazine on 3.5 inch format with *Electron* users in mind. John Bloxham, Warwicks

*Thank you for reminding us about all those Electron owners out there. If it was up to us of course we would produce the magazine on stone tablets if necessary, but the accountants up to now say No. But take heart, we have just released Disk User's One to Six compiled onto a 3.5 inch disk for the Master Compact. Most of the programs however should run straight away with no modification. The disk is product number DB96 price fifteen pounds, and a bargain, complete with laserset manual.*



# Game Plan



**PROGRAMMER'S  
SPELLS**  
ISSUE 1-31-  
**USE WITH CARE**

SEAL DV= BLD REPEAL= UNTIL  
LDA= &A OSCILL P% 0% AP  
=AP= WIZARD

~~~~~  
Dice the disk  
Slice the sleeves  
Mix them up  
Let them breathe  
How to program and design  
Mysteries explained  
Along with Peter Scott  
How to write a game



# GAMEPLAN

## Apprentice wizards start here, as our Arch-mage explains the arcane art of games writing

Writing a computer game could be said to be one of the most creative acts possible. Like a film, a game has moving pictures and sound. Unlike a film, a game has interaction: the ability of the player to change the events happening. I've been dabbling in computers for six years now, and have owned more than I can remember. I've been writing games on the BBC now for nearly four years, and have had commercial success in the past two of those, starting with *Last of the Free* and *Thunderstruck*, continuing through to *Ransack*.

In this series of articles, I hope to guide you through the processes involved in creating, writing and the release of a computer game. You don't need to be technically brilliant to write a best selling game: just competent enough to turn your ideas into a playable and entertaining game, and go about writing and selling it the correct way.

Writing a computer game is a strange mix of creativity and logic. By following a methodical approach, you can create a game with less effort than a more haphazard approach. I'm not saying my method is perfect, indeed it places certain constraints on your game, but I can tell you that it works!

For the rest of the series, I'll assume you can program competently, with a working knowledge of *BBC BASIC* and some experience of *6502 assembly language*. You needn't be a wizard at machine code to write a fast action game, but you need to at least be able to write subroutines you can call from BASIC for most, if not all games. If you aren't confident with BASIC or assembly language, I would advise you

to get in front of you the *User Guide*, a heap of magazines (back issues of any Acorn magazines, as all have run series on learning BASIC and machine code) and the *Advanced User Guide*, and sit in front of your computer. Work through the manuals, type programs in from the magazines and you'll eventually learn the processes of programming. Assembly language is a stumbling block for many people. I'd advise trying to get hold of the *Electron User Guide*, as it has a much better introduction to 6502 assembly language than it's BBC equivalent. Again, read and type in as many example programs from books and magazines that you can, after working through the manuals. Shamelessly copy other people's routines until you can write your own. They learnt the same way, I can assure you! Typing in other people's games from magazines such as 'A & B Computing', looking



at the programs on the disk of this magazine, and trying to add or modify things are all good ways of getting a working knowledge of BASIC, then moving up to assembly language. You may (or may not) be surprised to know that my game *Hunkidory*, which I wrote in 1984 but wasn't released until last year, is mainly BASIC with a small machine code subroutine to animate and move the sprites around. One of the most successful games of all time was *Football Manager* which is entirely in BASIC. Of all 8 bit machines, the BBC is probably on its own as having a BASIC capable of handling commercial quality games. After a while, you can build up a library of machine code subroutines that you can simply plump straight into your game without too much thought. These routines can always be tailored to the specific game later on, as more specific routines tend to be faster and take up much less memory than general ones.

## Experience, inspiration and creativity

So, where do you start the process of writing a computer game? First, play lots of them! Read as much of the computer press as possible, even titles dedicated to machines other than the Acorn range. Look at demonstrations of games in shops, either running or on the promotional videos that most high street stores have playing. Take a trip to the arcades to see and play the latest blockbusters. Try and play games on other machines, through friends or in shops. Look at the charts and see what is selling and take special note of these. Through all of this, have in the back of your mind that you want to produce something out of all this. You'll soon learn what is good and what is bad, what features are **in** and **out**, what sort of graphics look good and what are bad. Note the nice touches that make a good game a great game, the effects that enhance or detract from the idea and the reactions of other people to them. You should now have a fair idea of the sorts of games available, and the ones you liked. Think of improvements in the games you've seen that you would have put in (if you could!). Work out the rules behind the game: the usually simple limits and methods behind the glossy exterior. Now you must come up with a game that you can write. Know your limits and the limits of the BBC. *Outrun* is very good in the arcades, but it can hardly be reproduced on a BBC easily, whereas the recent arcade hit *Bubble Bobble* could convert across without too much effort. Above all, stick to something simple and that you would want to buy. If you can't come up with a totally original idea, adapt, change and improve others. Don't blatantly copy everything from one game, as you'll end up with a game no-one would publish, as law suits would follow. Merge many ideas into one, hopefully better, idea. A word about legality: most people will have noticed the similarity between my friend Gary Partis' *Psycastris* and Andrew Braybrook's *Uridium*, and Hewson did kick up a fuss about the similar nature of the games, and threaten court action. Then it emerged that Mr. Braybrook had been inspired by an arcade game, and "Uridium" was more similar to that than "Psycastris" was to "Uridium". Software houses will take something unoriginal as long as it isn't a blatant rip-off, and as long as it is good!

## Put your idea down on paper!

Illustrate your game idea with as



many sketches of as many different situations as possible. A game like *Omega Orb* needed page after page of sketches before I started it, to get some idea of what the general style of the game is. Also every puzzle had to be planned, along with fitting into the map as it was designed. A time consuming task, but one which has to be performed. Obviously, a shoot'em up needs less planning than an arcade adventure, but the more you predict and design before hand, the less you have to do when coding the game. Also, if your simple idea has got out of hand with too many features, you can scrap it during planning, before starting the programming, saving a lot of wasted effort. If your idea involves licenses, **beware**. Publishers will usually only be interested in a license if it is across all formats, from Spectrum to PC. BBC games don't feature too heavily here, so it's better to avoid using them if at all possible. They've usually already bought all the licenses they want anyhow. Don't write a sequel to an already released game unless you have contacted the software house involved and have their agreement for your ideas. You writing *Repton Goes To The Toilet* would hardly be much use to anyone if Superior had already commissioned *Repton Spends A Penny*. You'd be well advised to stick to mainstream games: shoot'em ups, beat'em ups, arcade adventures, platform games and so on. Wargames, adventure games and simulations tend not to sell anywhere near the same number as these mainstream forms. In general, it is a good idea to contact a software company when you are starting to write a game: send them a playable demonstration along with your notes and sketches. A decent company should offer advice, maybe modifications that would improve the game even if they don't want it. Also, they might just need a programmer to work on something else, and your demo turning up on their desk might inspire them to ask you to program some specific game. Stick to the well known names, as this is the only way to make sure you aren't ripped off. **Superior, ASL and Tynesoft** are the big three in the full price BBC/Electron market, with **Top Ten** and **Alternative** being the major Acorn budget labels. Others, such as **Godax, Mandarin and Bug Byte** are also strong contenders. These major labels also tend to sell a lot more than any of the lesser known ones.

So you have an idea, and pages full of sketches and notes to go with it. Now, what do you do? The best way to describe the next stage is moulding the idea to the computer.

The example of 'Outrun' again illustrates this point. The arcade machine has 2000K of memory, 64+ colours, hydraulics, eight channel sound and a host of 16/32 bit processors. On an 8 colour, 10K, 4 channel sound BBC it won't be too wonderful. Also, your programming limits come into play here. If you're not too sure of the BBC then writing a game more complex than *Elite* is out. Again, the message is stick to something simple. A game such as *Arkanoid* can easily be written in almost total BASIC, and is probably as much fun to play as most games. Don't go too far in sticking to your limits. Remember to think about what is behind the seemingly complex effects of computer games. *Elite* appeared to store a vast number of planets and names in a tiny memory. This is done by seeding the random number generator to a predefined value, and producing everything from that. As the numbers always come out in a



fixed pattern, the game will always be the same. *Sphere of Destiny* stores 64 huge levels in this way. *Omega Orb* appears to have a complex routine for the bouncing of the main character. It simply looks at a table I worked out beforehand to see how much to add or subtract to the vertical position of the sprite, and which frame to print. The table was worked out from what looked nice, through trial and error, rather than by sines or cosines. The technical limits of the BBC come into play here. Remember, you'll have a **maximum** of 25K to play with in mode 5 with a reduced screen. You can always opt for a multiloop system, but this is best avoided. Disk based games also are to be discouraged, as disks usually sell less than a fifth of the total that tape games sell. Pixel by pixel scrolling is extraordinarily difficult (only *Firetrack* and *Kevinoids* does it!), and smooth scrolling is usually only possible with many restrictions. Speed wise the

BBC is good, but flicker can set in if too much is moved around too rapidly. There are ways around most problems, but by identifying them before you start to write the game, you can save yourself a lot of technical problems.

So you have a great idea, pages and pages of sketches and notes, and are ready and eager to get at your computer and code it. My advice to you now is: **DON'T** - Let me emphasise that different people program games in different ways, but for a beginner especially, it could be fatal to sit at the computer and just start designing graphics or writing code. Planning is the key here, so get out the old note pad again!

I always start the actual business of writing a game with a complete memory dump of the machine. On a computer such as the BBC, where memory is so tight, this is absolutely vital.

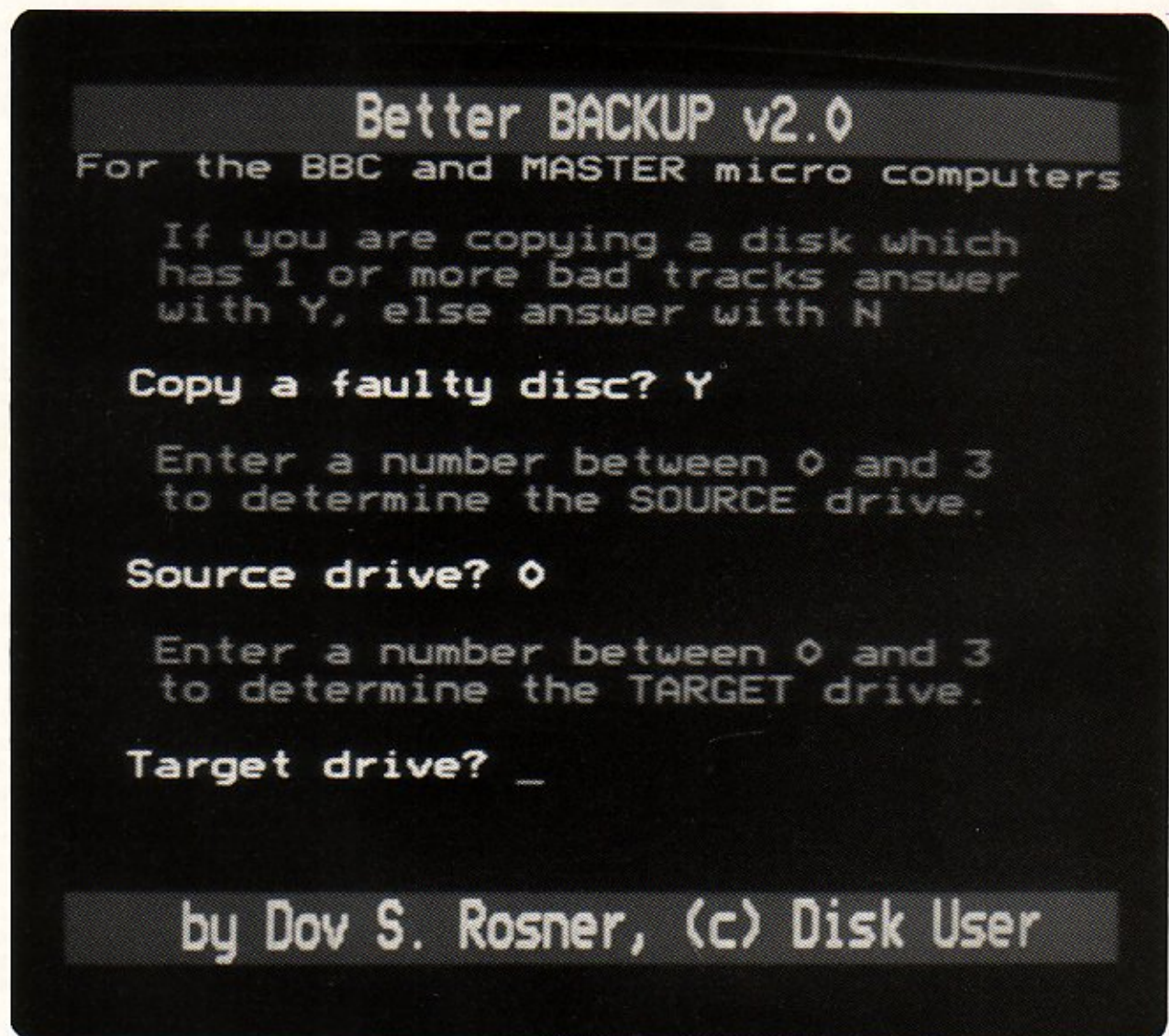
Decide on what mode you are going to use. Again this is crucial. Also, this is the first opportunity that you should consider Electron compatibility. For any commercial game, this is crucial in selling it. The Electron is around half of the Acorn market in sales terms, and an Electron version is considered almost compulsory for any mainstream game. There are a few exceptions, such as *Revs, Cholo and Sentinel*, but unless your game is a state-of-the-art masterpiece, you really **must** produce an Electron version. The Electron is around 20-30% slower than the BBC in modes 4,5 and 6 (no mode 7 of course), but 50-60% slower in modes 1 and 2, meaning that you can almost rule out those modes, unless you're prepared to code a completely separate Electron version. This also rules out fancy redefined modes, with new screen widths (via VDU23;1) unless you're prepared to rewrite extensively for the Elk. Screen depths are yet another matter. The Electron has no 6522 VIA chip allowing reduction of the depth of the screen (via VUD23; 6,<no.of lines> ) but can be fooled into reducing the screen. You can use a colour interrupt to reduce the screen size by blanking out the top 13 or bottom 19 lines (other depths cause huge speed reductions). I'll cover this in more detail later on. I've always ended up using mode 5 for my games, as this provides enough memory for a good game and good graphics, as well as the Electron advantages. Mode 4 can also be used to good effect (ie *Knight Lore, Elite* ). These are the two modes I'd recommend. If necessary, modify your idea around these modes.

Next time: actually coding your game!



# BETTER BACKUP

Enhance the backup facilities available to your computer with this powerful DFS extension



*BetterBackup* is a utility which enhances the facilities of the \*BACKUP command in your DFS.

The enhancements to \*BACKUP are:

(1) **Menu driven** – hence very easy to use. Comprehensive help messages are displayed to make *BetterBackup* as easy to use as possible.

(2) **Bad disks** – ie disks that have one or more bad tracks, can be copied. This is useful when you have a disk that has been damaged in some way and you wish to copy the good tracks to a newly formatted disk. As only the good tracks are copied the result will be a disk free of bugs!

(3) **Opposite sides** – *BetterBackup*

can copy a disk from one drive on a disk to the opposite drive on a second disk, using a single drive.

To make the point clear, if you have one disk drive, \*BACKUP 02 on the Acorn DFS will only copy from one side of a disk to the opposite side of the same disk. *BetterBackup* makes it possible to use two separate disks, by allowing the necessary



disk changing pauses.

(4) **Dual sided** – You can copy a dual sided disk in one go.

(5) **Information** – The user can see on screen how far the copying process has advanced. The display shows the tracks on the disk. When a track is copied its sequential number transforms into the word 'ok'.

(6) **Automatic sensitivity** of the format (ie number of tracks and density) of both the source and target drive is built in.

## Using BetterBackup

The program is run with \*BETTER or \*/BETTER. Any previous BASIC program, or text in memory will be lost, as happens with the \*BACKUP command, so make sure you save anything valuable before you enter *BetterBackup*.

There are two types of messages that *BetterBackup* displays. *Action* messages are those that require an action to be carried by you, like answering a question or changing a disk. There are also *informative* messages, like "Loading data" that tell you what's going on. At any stage, you can exit the program by pressing BREAK.

*BetterBackup* is not designed to copy protected disks. Therefore, do not try to replicate any of these.

The program asks you various questions each time you select it. Each question follows a brief description of its purpose, in case you forget what each question means. The questions asked are as follows.

(1) **'Copy bad disk?'**: It's possible to copy disks with faulty tracks (sector 1 on track 0 must be intact or the program aborts), which can be caused by dust, accidentally touching the disk surface or simply using an unreliable disk. This eliminates the need to \*COPY all of the uncorrupted files to another disk. You should use a *target* disk which is well formatted, and at the end of the backup the *target* disk will contain all of the files that were on the good tracks, but will have no bad tracks.

(2) **"Source disk?"** and

(3) **"Target disk?"**: While these questions are being displayed, you may issue any \* commands, the most useful being \*CAT to view the contents of the disks you are going to copy or to assure yourself that the target (destination) disk has no valuable data on it.

(4) **"Copy a dual sided disk?"**: Will copy a dual sided disk in one go. This is one of the "case" questions, ie is optional and appears only sometimes, depending on your previous replies. In this case it occurs if you've selected drive numbers which are in the range 0-1, ie considered to

be the first side of the disks. By dual sided, I mean that sides 0 and 2 will be copied if you've selected drive 0 at first, and sides 1 and 3 if drive 1 was selected at first.

(5) **"Copy on the same disk?"**: The program can either prompt you to change disks after loading/saving data, or assume that both drives are in the disk drive(s) at the same time. The DFS command \*BACKUP assumes that if you select drives 0 and 2 (or 1 and 3) you wish to copy on the same disk. *BetterBackup* does not. It will ask you the above question when there is a doubt. In some cases, when it is not reasonable to ask, the question will not appear, such as when copying from drive 0 to drive 0 which *must* occur between different drives.

Next you are prompted to enter the source drive. The program reads the disk format and prints in the middle of the screen in white the track numbers from 0-79 for a 80 track disk, and 0-39 for a 40 track disk. At the bottom of the screen there's a list of figures: **src** and **dst** refer to the source and destination (target) disks respectively. The next two figures determine the format. **tk** is the number of tracks on the disks, either 40 or 80, and **dns** is the density, **(D)**ouble or **(S)**ingle. If you don't have the Solidisk DDFS then this figure will always point to single density. The last one, **swp** indicates, when set to **Y** that the program will pause to allow disk changes.

If you chose to copy a bad disk then the program will verify the *source* disk, marking good tracks with cyan and any bad track with magenta.

At this stage *BetterBackup* checks if the formats of the *source* and *target* drives are compatible. If **swp** is **Y** you'll be prompted to enter the *target* drive first. If they're not compatible, an error message will appear and the programs will abort, otherwise the copy will start.

The first letter of a track being read will be changed to an **o** and the second letter will be changed to a **k** when being written. Together they make **ok** to indicate that the track has been successfully transferred!

At the end of the copying process, the question **"Copy another disk"** will appear and answering **Y** will start all over again.

## Testing

*BetterBackup* has been tested on various filing systems, and yet I suggest that you run the tests listed below. They may take a while to complete but they ensure peace of mind!

In order to run the tests you should prepare two formatted disk sides in one of the formats in which you intend to use the program. If you have a double sided disk drive, format both sides of a single disk in the same format as this will speed the test dramatically.

In this case drive 0 will be referred to as the *source* and drive 2 as the *target*. Otherwise, if you have two single sided disk drives, prepare two disks as *source* and *target* drives, to be used in drives 0 and 1 respectively.

The last case is if you have a single sided disk drive. You'll have to swap disks during the tests. Format two disks as described, and put a label on each disk (*source* and *target*) to prevent accidental mixture of the disks.

When you've finished type:

### CHAIN "B.Test"

insert the *target* disk and select the appropriate drive with option (C). Then select option (A) to initialise the source disk. This may take a lot of time, so be patient. When it finishes, write down on paper the test count number. This will be different for each format.

Now it's time to enter \*BETTER, and answer the questions according to the explanations given above to copy the SOURCE drive to the TARGET drive, according to the system you are using.

When the copy is finished, answer with N to the question "Another copy?" to return to BASIC.

Load the test program again by typing:

### CHAIN "B.Test"

Now choose option (C) again to change the drive to the drive number of the *target* disk, then select option (B) to check it. It will ask for the test count number. Enter the one you've recorded before. If the copy process was OK then you'll get an appropriate message. If it wasn't, either you made a mistake during the test or your DFS is not fully Acorn compatible. You can now repeat the test for all the formats you may ever use.

## Compatibility

Please note that this utility will work with Acorn DFS and compatible systems in single density mode, but not in double density modes, such as the Watford DDFS and Acorn ADFS.

However the Solidisk DDFS is fully compatible with the program (including its double density mode). *BetterBackup* is not compatible with Econet but will work if Econet is disabled at copying time:



# INTRODUCTION TO COMMS

At first the world of computer communications can be daunting. There's jargon to understand, hardware and software to buy and cope with, and then there are the computers you can dial. What are they? Where are they?

No wonder then why many people who buy a modem soon put it in the attic with the rest of the rubbish. This is a sad fact, mainly due to the sudden rise in the phone bill, or because the whole thing was too complex.

Those of you who are considering entering the world of comms need not worry. There are a few basic things that need to be understood. Once armed with a little knowledge you can venture forth and enjoy what must be one of the most fascinating aspects of computing.

## Who's out there?

Before detailing what you need to hook your Beeb to the phone system it's worth pointing out what you can do once you've passed that stage.

First, you can use your modem and comms software to call-up and communicate with a friend. Instead of talking to them over the phone you use the keyboard instead. That's pretty pointless on its own so you can use your comms software to send and receive data and programs. Providing the cost of the call is not too expensive, and the file you wish to transfer is not too large, sending it via phone sure beats using the Royal Mail!

## Boarding now

Bulletin boards are another fave amongst comms fans. Basically, a bulletin board (BB) can be likened to an electronic notice board. Run by enthusiasts, most operate on a 24 hour basis. You can leave private messages for other users, or post a notice for all to read. There'll be special areas containing news, views and information on specific subjects such as hacking, comms or whatever.

Beeb users are fortunate in that there are a number of BBs operated that are in colour. Providing you have suitable comms software the board will appear in colour (in Mode 7).

Another feature to be found on

the majority of BBs is a download area where you can receive public domain programs. By all means download, but remember, these download areas rely on users contributing their own programs as well.

## Commercial vehicles

Commercial services exist which cater for business and leisure. On the business front there are services such as Telecom Gold which is run by British Telecom. As with a BB,





## The very modern way of microcomputing, with comms expert Dave Janda



you can send and receive electronic mail (email) to and from other users on the system. However, the email facilities provided on systems such as Gold are very sophisticated. Further, you can send/receive telex and fax on many services.

Another feature to be found on systems such as Gold is a "gateway" through to another computer. It could be a system that allows you to check up on registered companies, or one that enables you to plan your flight abroad.

On the leisure side of things besides the BB(s) which, on the whole, are free to use there is a service called Micronet which is operated on the Prestel database (also run by British Telecom).

Micronet offers its subscribers a daily magazine geared towards a specific type of micro user. On a Monday there is a magazine for BBC owners which contains letters, features and reviews all based around the Beeb and Archie.

Other facilities offered include games and various chatlines which are used by the subscribers to leave public messages to one another.

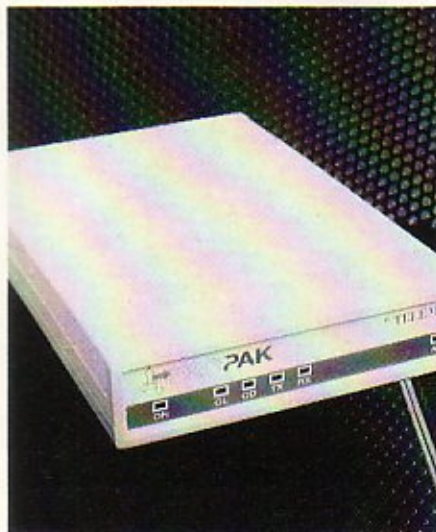
### The Hardware

The first item you'll need for comms is a phone! Using your existing phone may be fine at first, but it ties up the line, and if you get the comms bug others in your family may not be too happy at you using the phone all the time. It's worth considering getting your own line for comms purposes. This has an added advantage in that you'll know exactly how much your new found hobby is costing you *call-wise!*

The modem is the essential piece of equipment. Its function is simple; a modem takes the digital signals produced by the Beeb and converts them into the audio tones that it sends down the line. It also does the reverse in order for you to receive information.

Modems, like other pieces of computer equipment, come in various guises. For someone entering comms for the first time I would recommend a simple modem that can operate at 1200/75 baud. The baud rate determines how fast your modem can

"talk" to another. There are many modems that offer fancy features, but I would advise you to stay clear of these at first - keep things simple!



### The Software

Although not immediately apparent, the choice of communications software can be just as important as your choice of modem. Your comms software will be the interface between you and what you have just dialed. At first you'll have enough problems coping with the service you've just dialed without having to worry about how to operate the comms software.

Beeb users are spoilt for choice when it comes to comms software. Again, different comms packages have different features. However, I would recommend that you look for a package that offers the following:

- A facility to spool incoming data to disk
- Viewdata and scrolling terminal emulations
- XMODEM error corrected file transfer protocol

### The Cost!

Here's the big one! After using your modem for a quarter don't be surprised if your phone bill has doubled, or even trebled. The reason for this is because you've been dialing up with excitement without keeping track of how long you have been on-

line. Once you get more familiar with the modem and the comms software as well as the services you use on a regular basis you'll soon find ways of keeping your time on-line down to a minimum.

There is also the subscription to commercial services such as Telecom Gold/MicroLink and Prestel/Micronet. Not only are there subscription charges to think about, but time charges as well.

As far as hardware costs are concerned you can pick up a cheap 1200/75 baud modem for as little as £50. If you subscribe to a service like Micronet for a whole year, and pay your sub in advance they'll even give you one free of charge which can't be bad!

Software packages can be purchased for around £20. Look out for listings in magazines as there are a number of public domain packages which are excellent.

### And Finally

Enjoy yourself! Comms is fascinating. There are so many things you can do once you're on-line you'll wonder how on earth you lived without it!

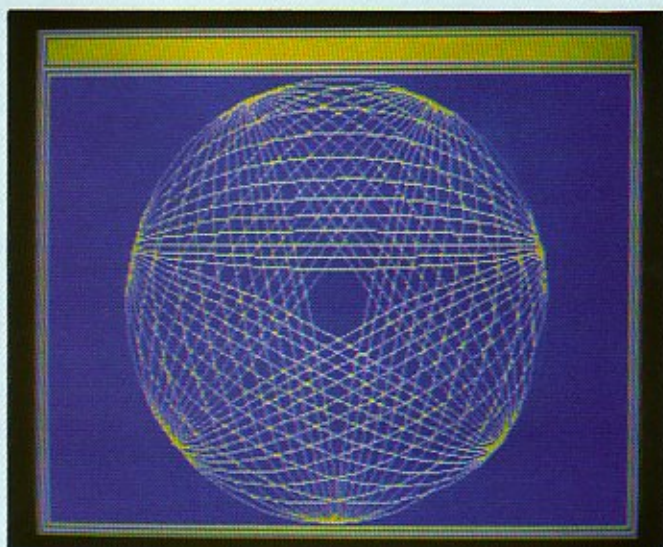
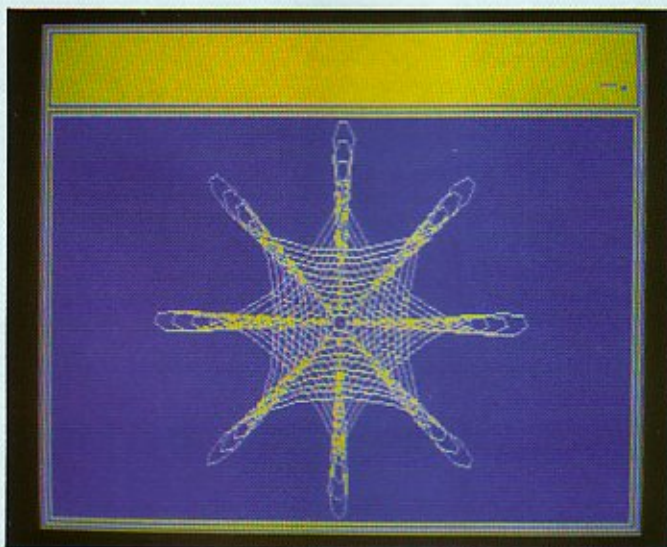
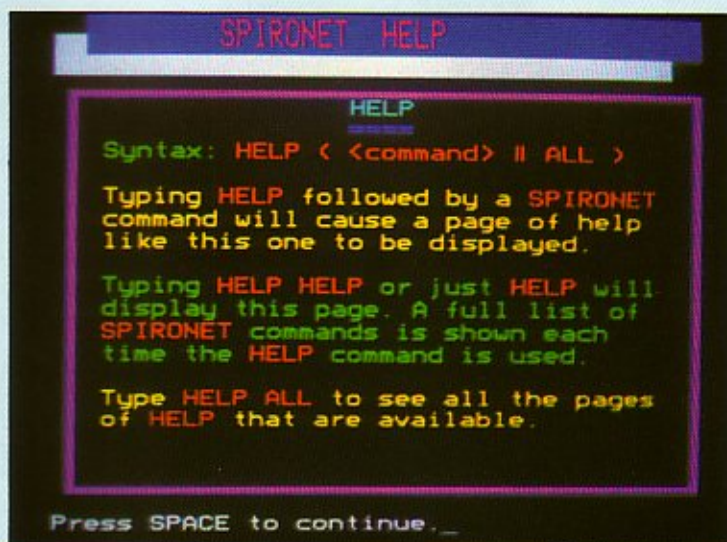






# SPIRONET

**Spironet, a pattern drawing tool with English language interface and extensive on-line help**



*Spironet* is a drawing package which allows you to create patterns on the screen which at first sight are similar to the ones produced by *Spirograph* toys. In fact, much more complex designs are possible with *Spironet*, as you have complete control over the size and number of *points* on the design.

*Spironet* was originally written as an exercise to find out how to give a user interface to a couple of procedures which draw *involute* curves. The way in which the curves are drawn involves quite a bit of mathe-

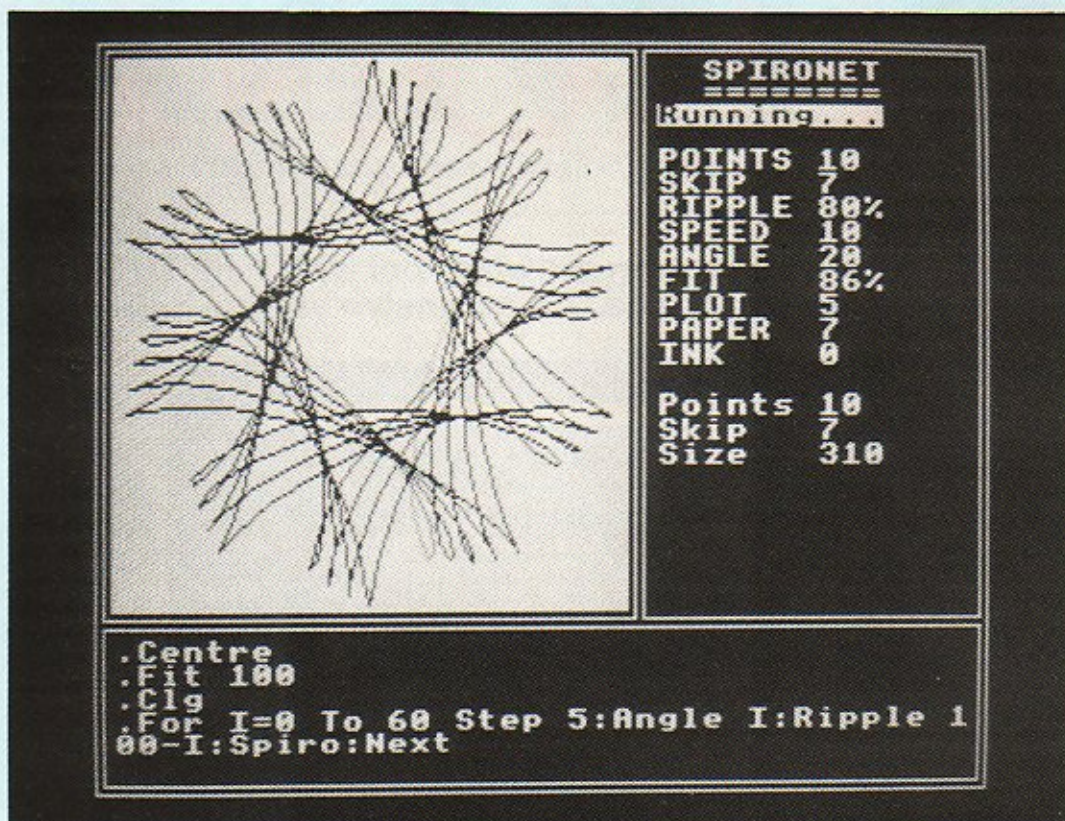
matics, and the parameters to the drawing procedures took too long to work out, so as to predict exactly what the effect was going to be. An early try at this attempted to simulate exactly the *Spirograph* toy, using commands like **RING**, **WHEEL**, and **HOLE**, but this was felt to be inadequate, as it was still difficult to predict the size and shape of the design, and unnecessarily restricted the range of possible patterns. Eventually the present command set was settled upon, after much thought and experimentation. It is still felt

that there could be improvements.

## Spironet Commands

**GRAPHICS** <number>  
**TEXT**  
**INFO** <ON " OFF>  
**PAPER** <number>  
**INK** <number>  
**POINTS** <number>  
**SKIP** <number>  
**RIPPLE** <number>  
**SPEED** <number>  
**ANGLE** <number>  
**CENTRE**  
**POSITION** <xpos>,<ypos>





**FIT** <number>  
**PLOT** <number>  
**SPIRO**  
**HELP** (<command> "ALL")  
**DEMO**  
**RUN** <filename>  
**QUIT**  
**GRAPHICS** (<number>)  
**TEXT**  
**INFO** <ON " OFF">

Spironet can be operated in two screen modes, text and graphics, though of course, you cannot draw designs in text mode. You may change mode by typing either **TEXT** or **GRAPHICS**. The screen is cleared, and the new mode is entered. If a number is added after the **GRAPHICS** command, from 1 to 28 inclusive, those number of lines are reserved as a text entry area on the graphics screen, leaving you with less space in which to draw your patterns. If the text area is 6 lines or less, it will stretch across the bottom of the screen, but if it is 7 lines or more, it fits in immediately below the graphics area, leaving the information area on the right.

The information area on the graphics screen shows the state of various variables in the system, as altered by you. The display of information may be turned off by typing **INFO OFF**, which makes the program respond faster to commands. If **GRAPHICS** is typed when already in graphics mode, and with **INFO OFF** in effect, the information area will disappear altogether, and the

graphics area will stretch right across the screen, giving more space for designs. The default is **INFO ON** whenever **GRAPHICS** mode is entered from **TEXT** mode. **INFO ON** may be typed in **TEXT** mode, after which a list of information is displayed after every command.

### Changing Colour

**PAPER** <number>  
**INK** <number>

The colours on the graphics screen may be altered using the **PAPER** and **INK** commands. The number after each command refers to the BBC micro's physical colours: 1 is red, 2 is green, 3 is yellow, etc.. Numbers higher than 15 will *wrap around* to zero again, so entering **PAPER 17** is the same as **PAPER 1**. The words *paper* and *ink* refer to the graphics area itself. **Note** that text, in the text and information areas, is in the *paper colour*, and the text background is in the *ink colour*.

### Setting Some Parameters

**POINTS** <number>

This command specifies the number of points on the pattern to be drawn. For instance, to draw a shape like a pentangle, **POINTS 5** would be entered initially (probably followed by **SKIP 2**). The number of points that are in fact drawn will also depend on the value of the **SKIP** command to some extent.

**SKIP** <number>

Patterns are drawn in a clockwise direction, though this will not always be apparent, depending on what values have been entered. The **SKIP** command specifies which of the points on the design are to be missed out as it passes round. Thus, for instance, **SKIP 3** will cause the line to visit every third point on the pattern as it passes round in a clockwise direction. Depending on the numbers given in the **POINTS** and **SKIP** commands, either more or less points will be drawn. For instance, if **POINTS 24** is given, **SKIP 12** will only draw 2 actual points, as the line will return to its starting point having drawn only 2 points. It can be seen that **POINTS 24** and **SKIP 12** will produce exactly the same shape as **POINTS 2** and **SKIP 1**. Only the size will be different, and even that can be adjusted. The actual number of points plotted and the effective **SKIP** value for different values of both **POINT** and **SKIP** can be worked out as follows:-

**Points plotted** =  $\text{lcm/skip}$   
**Apparent**

**SKIP rate** =  $\text{lcm / points}$

where **lcm** is the Lowest Common Multiple (LCM) of the **POINTS** value and the **SKIP** value. For example, the LCM of 24 and 22 (**POINTS 24**, **SKIP 22**) is 264, so the number of points visited is  $264 / 22 = 12$ , and the effective "skip" value for this number of points is  $264 / 24 = 11$ .

Once both **POINTS** and **SKIP** commands have been entered to



your satisfaction, the actual number of points to be plotted is shown in lower case letters at the bottom of the information area, while the values you entered are shown at the top. This may seem confusing at first, but a little experimentation will soon show what is going on.

#### **RIPPLE <number>**

In the original *Spirograph* toy, you put a pen through holes in a gear wheel which then rotates round the inside of a toothed ring. If you imagine there to be a hole in the centre of the gear wheel, it is plain that the only result would be to draw a circle. This is what happens if you give a **RIPPLE 0** command. Now imagine that you could attach your pen to the very outside of the gear. In this case, the pen would go in loops right up to the edge of the wheel, leaving a sharp point. This is what happens if you type **RIPPLE 100**. The number after the command is a *percentage* of this distance, the diameter of the imaginary gear wheel. The diameter of the gear is of course already fixed by the **SKIP** command. You may enter numbers less than zero or greater than 100 after the **RIPPLE** command, some of which can produce very interesting results, but the **FIT** command will not work as you expect it to, so you may find it difficult to make your drawing the right size. You should not enter the % sign when you type a **RIPPLE** command, even though it is shown in the information area. Experimentation with the **RIPPLE** command produces some of the best looking designs.

#### **SPEED <number>**

The computer cannot draw curved lines by itself. It simulates a curve by drawing lots of short straight lines. The shorter the little pieces, the smoother the curve will be, up to the limits imposed by the resolution of the screen display. The more lines that have to be drawn, the more calculation has to be done for each line, and so drawing will be slower. The number after the **SPEED** command refers to the number of straight lines drawn in one complete turn of a circle. It can be seen that a lower number will make drawing occur much faster, but not in such smooth curves. The number can be a real number rather than an integer, though very small variations in the number may not make any difference, depending on other Spironet values. Interesting effects can be obtained with very low numbers, as large parts of the design may be missed out. Be prepared for some surprises!

#### **ANGLE <number>**

Drawing of a pattern normally starts

at the top of the design. This may be altered using the **ANGLE** command. The number should be in degrees clockwise from the top, and may be a real number or variable.

#### **CENTRE**

Typing **CENTRE** causes the next pattern to be drawn in the centre of the current graphics area.

#### **POSITION <xpos>,<ypos>**

The X and Y coordinates of the centre of the design may be altered using the **POSITION** command. In fact, the *variables X% and Y%* may be altered directly if wished. The **CENTRE** command will alter the position back to the centre again. With a text area of 6 lines and **INFO ON**, the default coordinates of the centre of the design are **X%=393, Y%=629**

#### **FIT <number>**

The **FIT** command controls the size of the drawing. The size may not be altered directly, but only by giving a percentage of the distance from the centre of the design to the nearest edge of the graphics area. Thus, **FIT 100** will make the design touch the nearest edge, while **FIT 50** will reach half way, and so on. **FIT 0** will cause the next pattern to be just a tiny dot instead of a pattern. It should be noted that if a design uses the **POSITION** command, then the **FIT** command will produce different patterns with different sizes of graphics screen, as the **POSITION** command uses *absolute coordinates*, while the **FIT** command specifies a *relative* distance.

#### **PLOT <number>**

The **PLOT** command specifies the type of line to be drawn. For normal lines, **PLOT 5** should be used (which is the default), but other values may be used. **PLOT 21** gives dotted lines **PLOT 69** plots a single point for every line, more points with a higher **SPEED** number **PLOT 85** is for solid triangle filling, and some interesting effects can be obtained with lowish **SPEED** numbers. To obtain more information about this command refer to your User Guide.

### **Miscellaneous Commands**

#### **SPIRO**

Typing **SPIRO** causes drawing to start. Drawing will finish when the line gets back to its starting point. Pressing **<RETURN>** without typing any command line also causes a **SPIRO** command to be carried out. If you type **SPIRO** immediately on running the program, before altering any other values, you will see a demonstration design being plotted.

#### **HELP (<command> "ALL")**

On-line help is available for all the Spironet commands, and it is also

possible to add your own **HELP** screens. Help is obtained by typing **HELP** followed by the name of the command or subject on which help is required. You may get help on all of the Spironet commands at once by typing **HELP ALL**. Typing **HELP** on its own is the same as typing **HELP HELP**. You may include **HELP** on any subject you like, by saving **MODE 7** frames on the current disk in a form which can be **\*LOADed** directly to the screen. The load address must be included in the catalogue information on the disc, as **SPIRONET** uses the default address to load the frames. The screens should be in disc directory **Q.** If, for instance, you had saved a **MODE 7** frame called **Q.FRED** using the command line:-

```
*SAVE Q.FRED 7C00 +400
7C00 7C00
```

then typing **HELP FRED** from within Spironet would display the frame, followed by the list of commands. The new frame will not be shown if the **HELP ALL** command is used. If a screen file in the **Q.** directory is not available, a message is displayed to that effect.

Because the **HELP** facility loads frames directly to the screen, **HELP** will not work correctly in **SHADOW** mode. If you have shadow memory in your computer, you should type **\*SHADOW 1** before running the program.

#### **DEMO**

Type **DEMO** to see a short demonstration plot. The **DEMO** command switches **INFO OFF** and alters many variables, so if you want to return (more or less) to the state in which the program started, you will have to type:-

```
INFO ON:GRAPHICS 6:PAPER
7:INK 1:CENTRE
```

#### **RUN <filename>**

Files of commands may be built up by various means and run using the **RUN** command. Suitable files may be created using the Operating System command **\*BUILD** while in text mode, but you will probably find it easier to use a word processor which can make ASCII files of variable line length. The disc has three example files for you to try, called **EX001**, **EX002**, and **EX003**.

#### **QUIT**

Typing **QUIT** leaves the program and returns to **BASIC**. You are not asked to confirm the command, so take care that you really mean it!

### **Programming Notes**

1. It is occasionally possible for some of Spironet's internal variables to become corrupted, especially when an error occurs. For instance, when using an *Operating System*



command and an error occurs, the X% and Y% variables which define where the design is to be drawn, will then contain information for the Operating System call OSCLI. This is unfortunate, but to avoid it would have meant using variable names other than X% and Y% for the graphics coordinates. If this happens, it can be remedied simply by typing CENTRE, or even by resetting the variables directly.

2. The list of BASIC keywords in the HELP screen includes the word **KEY**. This is a replacement for **INKEY**, which the program does not accept, including, as it does, the letters **INK**, which is a Spironet command.

3. The BASIC keyword **OSCLI** is included in the list, but will not work with **BASIC 1**. It is unlikely that you will need to use the OSCLI keyword, as *star* commands are accepted from the keyboard directly.

4. Spironet commands may be strung together on a single command line if individual commands are separated by colons. However, problems will occur if too long a series of commands is used.

5. **FOR...NEXT** and **REPEAT...UNTIL** loops may be used, either directly in a command line, or in a RUN file, provided that the loop is completed in one single line of Spironet commands.

6. Variables may be created and used in Spironet. It is recommended that you use single letter *real* variables for numbers, as these are guaranteed not to be used within the program itself. No distinction is made between upper and lower case. String variables may have any name *except* A\$, which is used internally in the program.

### Example programs

Try the following short SPIRONET programs, which you may either type in directly or include in an ASCII file for use by the RUN command:-

```
Points 7
Skip 10
Ripple 100
Speed 20
Angle 0
Centre
Fit 50
Plot 5
Clg
For R=100 To 30 Step -7:Ripple
R:Spiro:Next
```

```
Points 5
Skip 4
Ripple 80
Speed 15
Centre
Fit 100
Clg
```

```
For A=0 To 147 Step 7:Angle
A:Ripple 75-A/3:Spiro:Next
```

```
Points 35
Skip 8
Ripple 25
Speed 8
Angle 0
Centre
Fit 100
Plot 5
Clg
Spiro
Points 21
Skip 16
Ripple 57
Speed 15
Centre
Fit 80
Ripple 49:Spiro Ripple 53:Spiro
Ripple 57:Spiro
```

```
Points 21
Skip 16
Ripple 85
Speed 15
Angle 0
Centre
Fit 100
Plot 5
Clg
For R=85 To 45 Step -10:Ripple
R:Spiro:Next
```

```
Points 7
Skip 5
Ripple 85
Speed 15
Angle 0
Centre
Fit 100
Plot 5
R = 85
S = 3.4285143
Clg
For A=0 To 26 Step S:Angle
A:Ripple R:Spiro:Angle
-A:Spiro:R=R-4:Next
```

```
Points 4
Skip 1
Ripple 60
Speed 15
Angle 0
Centre
Fit 100
Plot 5
Clg
For R=20 To 60 Step 10:Ripple
R:Spiro:Next Skip 3 Ripple 60
For A=-8 To 8 Step 4:Angle
A:Spiro:Next Angle 45
For R=30 To 39 Step 3:Ripple
R:Spiro:Next
```

```
Points 32
Skip 21
Ripple 82
Speed 15
Angle 0
Centre
Fit 100
Plot 5
```

```
Clg
For R=82 To 61 Step -7:Ripple
R:Spiro:Next
```

```
Points 4
Skip 1
Ripple 75
Speed 15
Angle 0
Centre
Fit 100
Plot 5
Clg
For R=35 To 75 Step 10:For A=0 To
60 Step 30:Ripple R:Angle
A:Spiro:Next:Next
```

```
Points 6
Skip 5
Ripple 50
Speed 15
Angle 0
Centre
Fit 60
For R=42 To 50 Step 2:Ripple
R:Spiro:Ripple -R:Spiro:Next
```

```
Points 32
Skip 11
Ripple 75
Speed 1.5
Angle 0
Centre
Fit 100
Plot 5
Clg
Spiro
Speed 1
Spiro
Angle 90
Spiro
```

```
Points 20
Skip 1
Ripple 2000
Angle 0
Centre
Fit 100
Plot 5
Clg
For S=0.1 To 10 Step 0.05:Clg:
Speed S:Spiro:Cls:Print"PRESS
SPACE":Repeat Until Key
-99:Cls:Next
```

```
Points 32
Skip 11
Ripple 75
Speed 1
Centre
Plot 21
M = X%
N = Y%
Clg
For I=-200 To 200 Step 400:For
J=-200 To 200 Step 400:
Position M+I,N+J:Fit 100:For
A=0 To 135 Step 45:Angle
A:Spiro:Next:Next:Next
Centre
For A=0 To 135 Step 45:Angle
A:Spiro:Next
```



# ADVANCED PROGRAMMING – DLI

There are occasions when it can be useful to display the soft key functions on screen rather than on a piece of card under the 'ruler'. The definitions can then be changed easily from within a program without having to hunt for the next key overlay.

The disadvantage is that the screen can quickly become cluttered with information, especially when the <SHIFT> and <CTRL> functions need to be described too!

The BASIC program DLI is a simple legend manager, in that it will look after the display of definitions, ten at a time, according to whether <SHIFT>, <CTRL> or neither is pressed. To include routines of your own simply append the appropriate BASIC procedures to the program and include a test for their execution in the IF statement list.

A demonstration procedure is included in the program and returns the current machine type.

## DISK LOGO HERE

The program DLI on disk sets up a *Display List Interrupt* which redefines the video definitions towards the bottom of the screen. This enables it to set up two blue lines at the base of a Mode 3 screen on which it presents the function key information. The top of the screen remains black. It is by using a DLI that three colours can be forced from a Mode designed only for two.

## Program details

**Lines 270 – 310:** Set function keys to return ASCII codes and disable keyboard auto-repeat.

Returns:

KEY: 128 – 143

SHIFT + KEY: 144 – 159

CTRL + KEY: 160 – 175

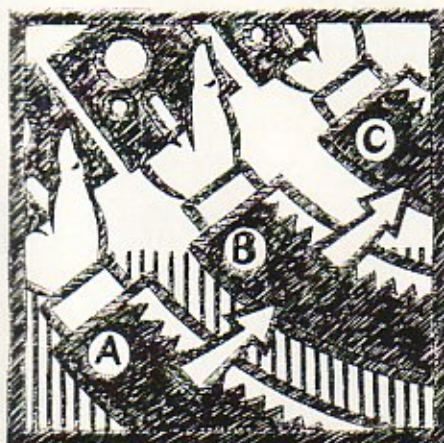
**Lines 330 – 350:** Assemble DLI code, set top background colour to black and bottom to blue.

## DLI – easy editing and display of function key definitions

**Lines 390 – 510:** Describe an infinite loop (ESCAPE halts program) in which the keyboard is tested by the INKEY statement. If the key pressed is recognised then execute appropriate procedure or command. According to whether SHIFT, CTRL or neither is pressed update the function key legend.

## An explanation of DLI

The interrupt routine in charge of colour redefinition is entered at *dli* which saves the contents of the primary interrupt vector (in spare vector 1) and inserts its DLI service address. During any vector alteration it is a good idea to disable interrupts to avoid the operating system jumping to a half updated vector.



The program requires one of the hardware timers and timer two on the system VIA has been chosen to leave the user VIA free. The normal function of timer two is to run the speech system. Since the speech system is not fitted as standard, timer two usually lies idle.

Timer two has to be informed that it is a timer! The operation of timer two is governed by bit five of the auxiliary control register (&FE4B) which should be zero. This is achieved by ANDing the contents with &DF. The timer has one low-order latch and two counters. It counts down from a preset value at one megahertz and creates an interrupt when it reaches zero. The low-order latch (&FE48) is set to a value of &C0 once during initialisation.

The preliminaries are now out of the way and the routine quits. The timer will not begin countdown until the high-counter (&FE49) is loaded. This is done when the vertical sync is detected. This action also clears the timer two interrupt flag, which is necessary to avoid a continual interrupt condition!

At every interrupt the operating system directs the interrupt request through the primary interrupt vector at &0204, which now contains the DLI address. Therefore at every interrupt the program has the opportunity to interrogate the operating system with a view to altering the screen definitions if necessary.

If the vertical sync is detected, the program resets timer two by writing the high-order counter with a value of &42 (countdown is re-initiated), and sets the top of screen background colour. It then passes control to the operating system to further service this interrupt.

If timer two has reached zero, the program sets the function key colour, rescues the original A register prior to interrupt (from &FC) and returns directly, as DLI is the sole claimer of this interrupt.



# DLI

## Background

The routine that defines the background colour needs a little explanation. The routine *colo* programs the palette directly as any other method would prove too slow. It accomplishes this by successive writing of location &FE21 with the physical and logical colour data contained in two nibbles (4 bits) of the same byte.

For example, to change the background to blue: A on entry = #&03, that is two nibbles of &0 and &3 (the colour nibble must be EORed with 7 before passing to the palette). Colour &0 (background) becomes logical colour &3 (blue: 4 EOR 7). This is repeated eight times to define colours 0-7. Even though Mode 3 has only two colours the palette needs to be programmed with eight colours for one actual colour. Therefore to change the background in Mode 3, colours 0-7 must all be defined.

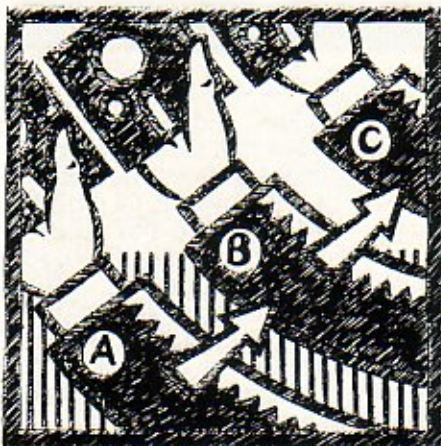
The DLI operates transparently to the user. All text and graphics processing commands work normally although the DLI affects colours in its terrain. Slight boundary flickering may be caused by other interrupts, occurring fractionally before timer two timeout, being serviced at the moment DLI timeout occurs. This means the DLI can't change the

colours precisely when it should as it becomes queued, although the effect can be minimised by disabling unnecessary interrupts.

Obviously the DLI works in all non-teletext Modes but is suitable for Modes 3 and 6 as these Modes are programmed to have two blank lines between each text line. The reason why these blank lines are important can be seen by running the routine in a non-text Mode!

The timing figures &C0 and &42 form a 16 bit value which, when loaded into the timer, define the time in microseconds from the machine vertical sync signal to the beam position on screen when colour information needs to be changed in the middle of a frame. Changing this value will alter the point at which the palette is reprogrammed. Therefore by choosing different values it is possible to alter the number of text lines affected by the DLI routine. Due to individual machine differences it might be necessary to fine tune the timing figures to produce the best display.

Finally, the routine must reside in the I/O machine as it requires the system VIA, needs to intercept the primary interrupt vector and to be able to talk to the palette.



## A&B COMPUTING FOR ACORN COMPUTERS

In November A&B COMPUTING brings you a FREE flexidisc with a step by step guide to producing music with your BBC Micro  
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Communications - Gnome at Home and a hard investigation of soft porn - online!

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Archive and partload disk utilities listed

## A&B COMPUTING NOVEMBER ISSUE WITH FREE FLEXIDISC ON COMPUTER MUSIC WITH THE BBC MICRO





# BULLETIN BOARDS

## Comprehensive list of Bulletin Board numbers across the UK

Our *Tracer* database continues to be very popular with our readers for its speed of use and easy data entry. This month's Datafile, in keeping with this month's comms theme has over 460 bulletin boards listed for you, a veritable directory to be kept and added to.

To use the datafile, copy the file *1.BB-nums* to your *Tracer* program disk, and boot up in the normal way. If you haven't got *Tracer*, then it is available on Disk User No.8, which can be ordered from the services pages in this magazine.

The file is divided into three fields, **Board name, Tele, and Bit-Per-Second (Baud Rate)**. Readers new to the comms scene should refer to the beginners guide in this issue for more information on the terms used in the datafile, but briefly; most modems as sold in this country should support *V21 (300-300)*, or *V23 (1200-75 Viewdata)* formats.

If you look through the numbers,

| Looking through BB-NUMS              |             |                |
|--------------------------------------|-------------|----------------|
| 467 Records in File: 115 Spaces Left |             |                |
| BULLETIN BOARD                       | TELEPHONE   | BIT-PER-SEC.   |
| DRAGON'S LAIR                        | 01786241543 | V21, V23       |
| DRAGON BOARD                         | 01786241543 | V21            |
| EMISSY                               | 01786241543 | V23            |
| FOX'S DEN                            | 01786241543 | V23            |
| FORUM-80 LONDON                      | 0190022544  | V21            |
| GOODS :MUG:                          | 0190491119  | V21, V23       |
| GNOBE AT HOME                        | 018880894   | V23, V23V/DAT  |
| HEALTH-DATA                          | 019864360   | V23, V23V/DAT  |
| HENDON PU BBS                        | 012001044   | V23            |
| HOCKEY 88                            | 019864360   | V23, V23V/DAT  |
| INFOTEL ROS                          | 015814496   | V23            |
| ICC                                  | 012548788   | V21, V23       |
| ITCU EX & MART                       | 019642242   | V23, V23V/DAT  |
| KYBERNETS CCF                        | 016742294   | V22, 23, 22BIS |
| LIBERTEL                             | 017442294   | V23, V23V/DAT  |
| LASS                                 | 016742294   | V21            |

Use Cursor Keys to Scroll Up or Down  
Escape for Menu

you will soon see that many bulletin boards are dedicated to a specific brand of machine, eg *Amstrad Arcade* is obviously not going to be an *Acorn* computer lovers den. Other numbers however, such as the perennial *Gnome at Home* are general interest, and more socially orientated. Some of the bulletin boards are free, particularly the

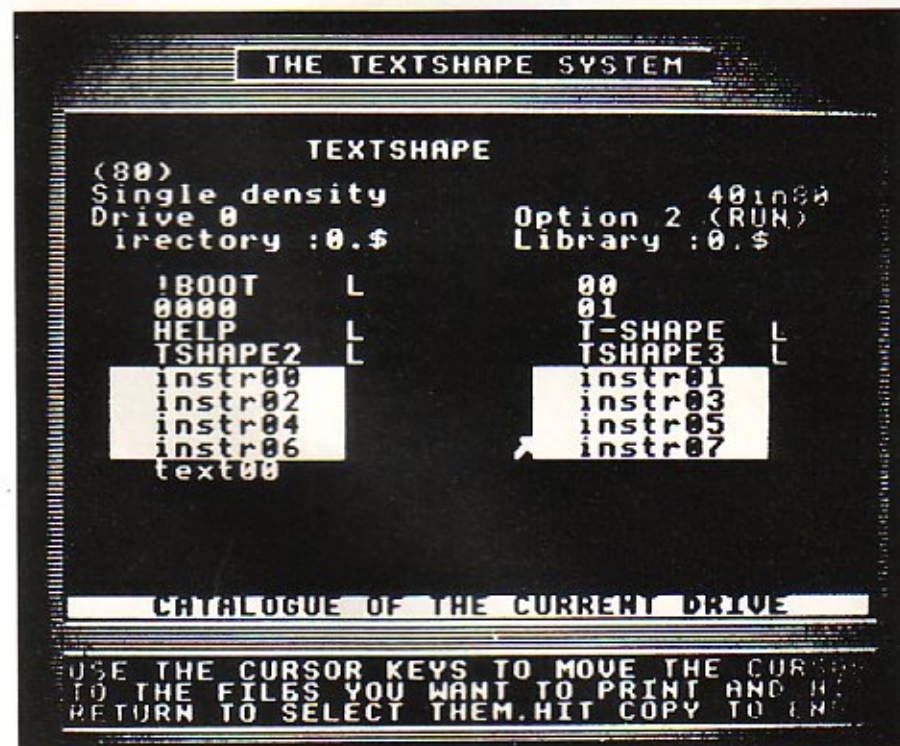
commercial ones, ie the ones trying to sell you something, but most do have some sort of charge. This is only fair as *Sysops* (the guys who run the systems) have their work cut out anyway. On the other hand most boards do allow a free trial run, or give a demo so you can try before you buy. Some boards, those with *Fido* in their name for example, offer a gateway to world wide electronic mail, and communications.

For those Disk User readers who are now going to take part in the larger world of communications I would add this plea: Do not do anything out there which would disgrace either your own name, or that of Disk User. There are many people out there listening to what you say, and watching what you do. Not all of them are friendly, and some like our own government would like to restrict your freedom, and ours too. So, as they say in *Hill Street Blues* "Let's be careful out there!".

Peter Scott

# DOCDUMP

Textshape multifile document printing simplified, with headers and footers.



You should copy *Docdump* to your *Textshape* disk to make best use of this printing utility. From *Textshape* press *CTRL/BREAK* and enter *CHAIN "DOCDUMP"*. After a short delay, the screen will come up with a catalogue of the disc. Select the files you want to print, using the cursor keys, and pressing *<RETURN>* after each selection. When you have finished making your selection press the *<COPY>* key and follow the on-screen instructions.

*Docdump* like *textshape* is error trapped and will not allow you to make a mistake. For example if you select a file that is not a *Textshape document file*, then it will inform you and ask you to press a key to re-run the program.

You can enter header or footer strings (1 sentence maximum). You can also print a page number, either at the top or the bottom. If you don't want to print a header, but want a footer, or vice-versa, enter the required string as a space, then press *<RETURN>*.



# RACS

# COMMUNICATOR

An easy to use program to get you started communicating with other micros and telecommunications services everywhere

To run RaCS type:

## \*RACS

The files "DATFILE" and "LOOKUP" must both be present. They can be created by chaining the program "CREATE".

RaCS is a user friendly communications package. It provides most standard communication facilities, and all control functions are accessible via a menu system. At present no download, or buffer facilities are available.

## Keys used

**up arrow** – moves bar up.

**down arrow** – moves bar down.

**RETURN** – selects an option.

Other prompts are given when necessary.

## Functions on initialise modem menu

### Auto-Line-Feed (ALF)

If every character appears on one line, and is continually overwritten, turn "ALF" on.

If wide spaces appear between lines turn "ALF" off.

### Local-Echo (LE)

If every character appears twice turn "LE" off.

If no characters appear turn "LE" on.

### Printer

To obtain a hard copy of any data received or transmitted, set "printer" on.

Set "printer" to off to disable this function.

### Filter Masking

Switch on when using non graphical bulletin boards.

Switch off to receive graphics.

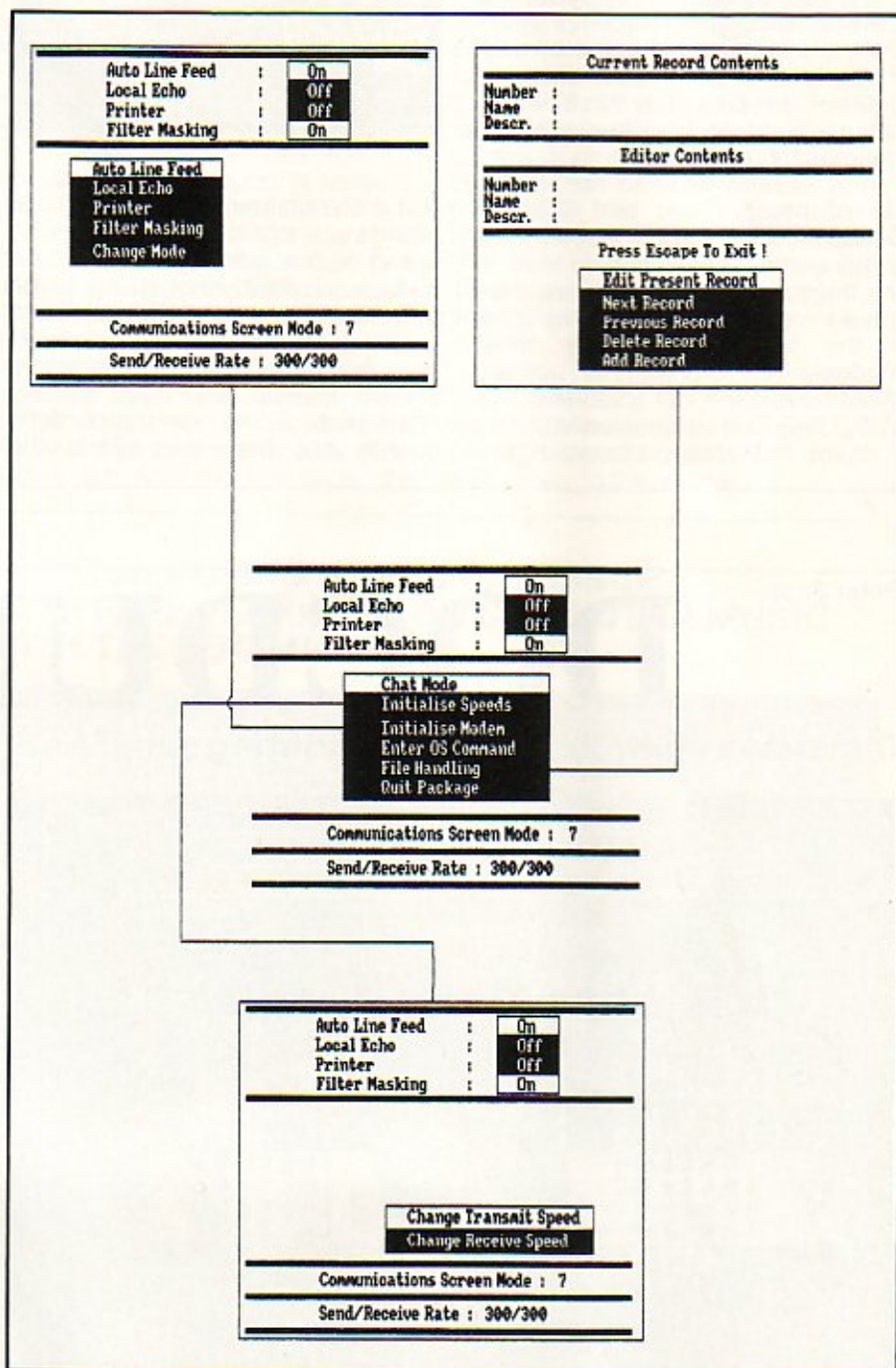
### Change Mode

If the display lines are broken awkwardly, try changing mode.

### File Handling Menu

Allows a description of bulletin boards to be entered, cycled through and reviewed. The current description appears at the top of the screen in chat mode.

NOTE: You will have to copy RACS and CREATE to a blank formatted disk so that space is available for the DATFILE and LOOKUP files.

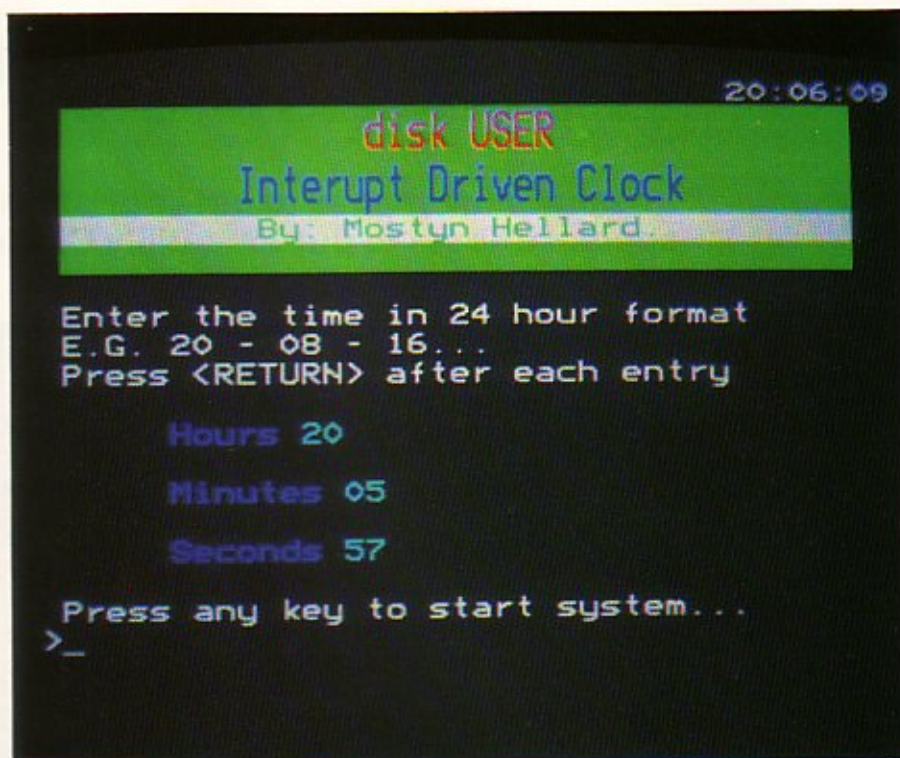




# CLOCKING ON

**Make full use of your BBC's inbuilt timer to drive this multi-mode event driven clock.**

Selecting the Interrupt driven clock from the menu will chain the BASIC/Assembler program called CLOCK. Using it is simplicity itself, as all you have to do is enter the time in 24 hour format, press a key and away it goes. The display will remain on the screen throughout mode changes, and while programs are run, although it will not survive a <BREAK>. Readers should be able to integrate the clock into their own programs without too much difficulty, thus adding a badly needed feature, and making the BBC at least equal to the original IBM PC.



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Berkhamsted, Herts. HP4 1HL.**



# MESSAGE MACHINE

**Banner messages to get your attention with special effects to put Piccadilly Circus to shame**



The Disk User *Message Machine* is designed to allow messages of various lengths to be scrolled across the screen in large characters, similar to the displays sometimes found in shop windows. The length of the message can be anything from one to approximately 12,000 characters.

Command characters can be used within the message to produce special effects such as scrolling the screen up and down or causing the display to disintegrate.

The commands containing an 'n' should have it replaced by a number from 1 to 5 which corresponds to the position where the action is to take place. For example, to print GREET and turn it into GREAT you would enter the following: GREET£4A.

This moves GREET into the display and then scrolls the letter A down into position 4, pushing the E out.

The pause command will stop the message for a short while. Several of these can be grouped for a longer pause.

To move the display left one position simply add a space to the

This is the full list of commands available:

- [ = Pause
- ^ = Vanish upwards
- ~ = Vanish downwards
- ] = Vanish off to the right
- { = Disintegrate
- } = Move one character right
- /n = Move character 'n' upwards
- n = Move character 'n' downwards
- £n = Next character moves down into position 'n'
- \_\_n = Next character moves up into position 'n'
- @ = Clear screen

end. Five spaces will cause the message to disappear completely.

## Send your message

When the program is run you will be asked to enter a message. Here you can either type your message straight in, or enter \* followed by the name of an example file, eg \*EXAMPLE. This will cause file EXAMPLE to be loaded into memory and displayed as a message. The file should be a text file and not more than 12,000 characters long!

Files can be created on a word-processor, or by simply using the \*BUILD command.



A sample file, EXAMPLE, is given as a demonstration of the features.



# ANCHOR

it NEVER lets go



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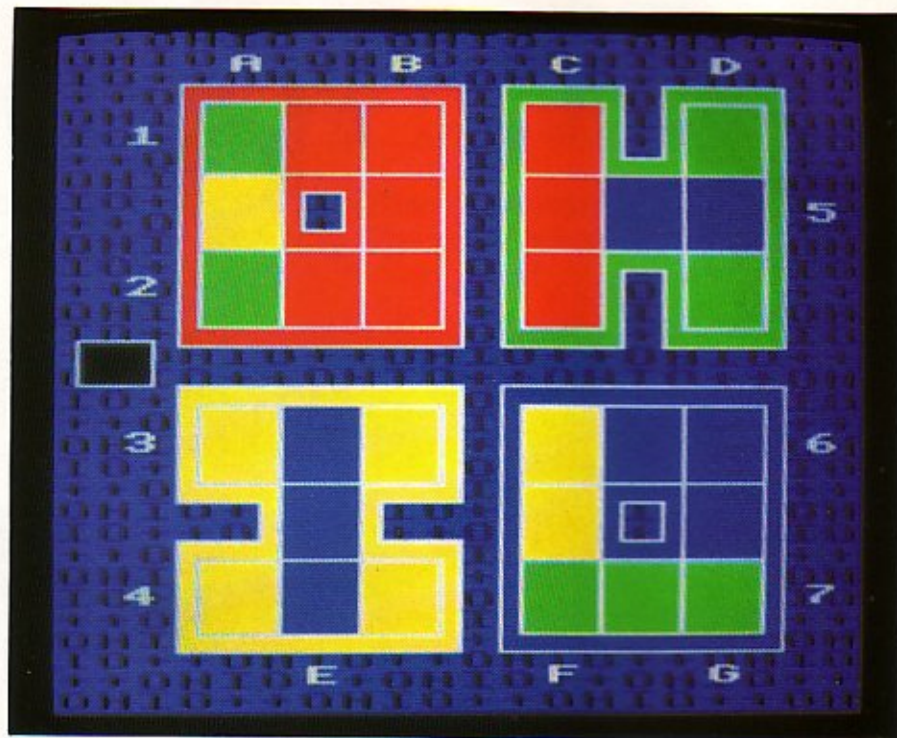
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# OH OHIO!

## A brain baffling logic teaser from our resident puzzlemaster.

Here's something to while away the rainy days of what's left of another dank summer. Yes the first in a series of Logic Problems from Des Catlin, the Erno Rubik of computer programmers opens with *Ohio*, in which all you have to do is re-arrange the coloured blocks into their original order. What! I hear you cry, no laser beams to fire, magic swords to swish about, or crystals to collect. Yes it does sound easy doesn't it, but maybe, just maybe, you might have some trouble with it, I certainly did! Anyway the first thing to do is try out the beginners mode, in which you find out which moves do what. After that you can venture forth into the game proper to see if you can crack the problem. Be warned though; it might cause you to miss Neighbours, and we wouldn't want that would we?



Abbas

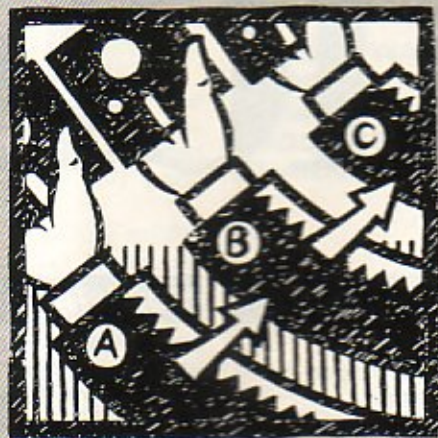
# COLLECTOR'S ITEMS

Every computer user will have felt like this animated letter, just select M from our animation menu to find out exactly how



Letters A-L available in Back issues. For instructions on how to use the menu see Issue seven.





## The New Improved Disk User Menu

Once again the user interface or menu for Disk User has been changed to make the software easier to get at. You may already have noticed that there is now a great looking colour screen designed by Superior Software's artist advertising their new game Pipeline. Screens such as this will be a regular feature in Disk User.

As a side point if you have any graphic masterpieces of similar or better quality send them in to us and we may be able to set up an on-screen gallery. This is a feature no other BBC and Electron magazine can offer.

This will also mean that you can take the screens published and use them in your own software as long as you observe the copyright laws of course!

### Inside the menu

Load in the program called 'DUMENU' from this month's disk and list it. The new menu works in a similar way to the previous one. The BASIC DATA statements have the same layout. Starting at line 1000 where there is a single DATA item.

This number is the total number of options in the menu list. The next DATA statement then comes on line 1001 note that the line numbers increase in steps of one. On each line we have four data items separated by commas. The first is a number either 0 or 1. If the number is 0 the program detailed on that program line will be CHAINED. If the number is 1 then the program will be \*RUNed. The next item on the line is the menu option title. Next comes the filename of the program you want executed from the menu. The last item is another number. If the program is to be CHAINED then this number will set PAGE. If the program is to be \*RUNed then it does nothing and should be set to 0. The most common PAGE setting is &1900. Occasionally others are required to enlarge memory for big programs. Some example PAGE settings are &1400 and &1100.

To use the menu on your own disks simply copy the 'DUMENU', 'comp' and 'COMSCR1' files to the disk you want to use it on. Alter the data on lines 1000 onwards to reflect the menu options and files for your disk etc. Do not renumber the program as it relies on the data statements starting at line 1000 and increasing in steps of 1.



# INSTRUCTIONS MENU



# SERVICES

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All programs are Model B,B+ and Master compatible unless stated (e) denotes 100% Electron compatible

### Disk User Two:

Ants!  
Expert investigator  
Word Wars  
Automatic Disk Catalogue Utilities  
Mode 7 machine code  
Software Manager  
Guide to essential games on disk  
Operating with OSWORD  
Which RAM disk?

### Disk User Five:

How your disk drive works  
Program transfer  
Arkenoid/Thrust cheats  
Ravenskull screen maps  
Magic Wall puzzle  
Save Your Bacon  
Disk User theme tune  
Disk routine library  
Overlay techniques  
Spock's logical disk menu  
Toolkit character editor

### Disk User Six:

Clip Art  
Codename  
Droid Maps  
Zoom Lens (e)  
Collectors Items  
Psychebrot Mandelbrots (e)  
Hot Key! - Anytime Anywhere  
Pixel Perfect  
Blobber (e)  
Martian Nim (e)  
Schizoscreenia  
Graphics from BASIC (e)  
Full advertising demo on disk of Brian Clough's Football Fortunes from CDS (e)

### Disk User Seven:

System Wadgebury arcade adventure  
How to Write a Hit Game - the

routines you need (e)  
Procedure Library Manager, with range of procedures (e)  
Superfont printer driver (e)  
Collectors Items  
Background Print Utility (e)  
Specialist disk formatting (e)  
\*CLOSE command (e)  
Pulsating colour (e)  
Multimode (e)  
Greyscreen (e)

### Disk User Eight:

Ecosoft - Life  
Easypoke ultimate cheat program.  
Monster list of extra lives and extended play time  
Collectors Items  
Disk Editor(e)  
Tracer Database(e)  
Hyper Driver Demo, NLQ font(e)  
AutoBASIC (e)

### Disk User Nine:

A.C.E. - sprite editor  
Orcrest - Arcade adventure (e)  
Starting Out - Assembler  
Artificial Intelligence Investigated (e)  
Collectors Items  
Memory Lister (e)  
Multitasking demo (e)  
Flash Fonts - screen fonts  
Kings and Queens tracerfile (e)

### Disk User Ten:

Textshape  
Orlonds Meanies  
Dynamic Doodles (e)  
Starting Out Assembler, Hexfind 2 (e)  
Collectors Items  
Repton Map Printer Patch (e)  
Fastlife  
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Slick Screen Clear (e)  
Laser Letters (e)  
Animation Auto Sequencer  
Dewey library system Tracerfile

### Disk User Eleven:

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3D Graph (e)  
Collectors Items  
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Extended Editing (e)  
Star Scroller Windows made easy (e)  
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## SOFTWARE BACK ISSUES

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Cholo Player's Guide  
Auto Save  
Quick Break  
Tazman  
Feeling the Squeeze  
Count with Teddy  
Quick Copy  
Collectors Items

### Disk User Four:

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Introduction to ADFS  
Blockade  
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# SECTOR ZERO

## Using multiple fonts in Superfont, plus a BASIC I discussion, and Orcrest poke

### Multiple fonts

The quality of software in Disk User has certainly improved since becoming a monthly magazine. May 1988 was a particularly good issue with *System Wadbury* and the *Superfont* program.

Having accumulated various fonts on disk, I had been using the latter program when it struck me that it would be useful to be able to switch between these fonts whilst printing a document. After looking at the listing of the *Printer* program I made the following small changes to allow such font changes to take place

```
210 ffile%=OPENIN font$
250 D%=BGET#ffile%
290 CLOSE#ffile%
1625 IF com$="GF"
font$=FNreadstr(0):PROCgetchr:
ENDPROC
```

Thereafter you can select a new font from within a document using the embedded command **@GF** (get font). At the position you wish to change fonts, simply type in **@GFfontnm**, where *fontnm* is the name of the font you wish to use (eg **@GFitalic** This is printed in an *Italic font* and **@GFbold** this is printed with a

**bold font**). Note that there is no space between the **@GF** and the font's filename, but the filename should be followed by either a **<SPACE>** or a **<RETURN>**.

The pitch of the lettering is unaffected by a change of font, so if you were printing condensed before the new font was loaded, it will continue to do so afterwards until the usual **@CE** command is given.  
Steven Green, Blackpool

*Superfont seems to have really caught on with our readers, and with this simple upgrade you can now print text with as many fonts as takes your fancy. Watch this space for more developments.*

### Random access from BASIC I

In Disk User (June 1988) there was a short explanation of the differences between BASIC I and BASIC II with regard to the **OPENIN** and **OPENUP** keywords. Unfortunately it was not completely correct. It is not true that **OPENIN** in BASIC I produces the same effect as **OPENUP** in BASIC II as you cannot open files for random

access in BASIC I. The full picture is as follows:-

| BASIC 1 |         |                 |
|---------|---------|-----------------|
| Code    | Keyword | Effect          |
| &8E     | None    | Error           |
| &AD     | OPENIN  | Open for input  |
| BASIC 2 |         |                 |
|         | Keyword | Effect          |
|         | OPENIN  | Open for input  |
|         | OPENUP  | Open for update |

The solution is never to use either **OPENIN**, or **OPENUP** directly but to use the Operating System call



**OSFIND** instead. This allows BASIC I users to have full use of random access files. For the sake of completeness, I have included a function for **OPENOUT** as well. Files may be closed in the usual way.

```

10000 DEF FNopenup ($block)
10010 =FNosfind (&C0,$block)
10020 :
10030 DEF FNopenin ($block)
10040 =FNosfind (&40,$block)
10050 :
10060 DEF FNopenout ($block)
10070 =FNosfind (&80,$block)
10080 :
10090 DEF FNosfind (A%,$block)
10100 REM "block" must be DIMensioned
      first, eg, "DIM block 50"
10110 LOCAL X%,Y%
10120 X% = block MOD 256
10130 Y% = block DIV 256
10140 =(USR &FFCE) AND &FF
10150 :

```

Ben Newsam, Sheffield

### Keyword differences between BASIC I and II

The article One-on-one contained a list of differences between BASIC I and II. This list, albeit useful, is far from complete, so here are a few more BASIC II keywords that might cause problems on BASIC I:

**COUNT** is set to zero when

screen mode is changed. If this command is being used, put this line: **COUNT=0 after every mode change.**

**INSTR** causes an error if the searched string is shorter than the search string. It is advisable to check the length of a string before every **INSTR**. For example, instead of **INSTR**, use:

```

DEFFNinstr(d$,s$):IF
LENs$>LENd$
THEN=0 ELSE=INSTR(d$,s$)

```

**EVAL** can be used to evaluate pseudo-variables (such as **HIMEM**, **TOP** and **TIME**). Don't use this feature, as it will not work on BASIC I.

The following line in an assembly program will produce an error:

```

LDA #ASC(":")
Replace it with:
LDA #58

```

**ABS** can be used with an unary minus operator, so replace:

```

PRINT -ABS(1)
with:
PRINT -1*ABS(1)

```

**OPTs** 4 to 7 are not available in BASIC I. The fix is to use **OPTs** 0-3 instead, and specify **D%=O%-P%** (where **O%**, and **P%** have been declared somewhere in the program if these **OPTs** are to be used). Add this value to each absolute address reference, eg: **.label:...code...:JMP**

### label+D%

There are more differences, but they are less significant.

Dov S Rosner, Netania, Israel

*The two letters above illustrate not only solutions to problems with the different dialects of BBC BASIC, but also the type of approach needed to be a professional programmer. Both have seen, not only the problem, but also worked out elegant solutions which are applicable to a number of situations. Potential contributors to Disk User should take note, because this sort of approach is much more likely to result in a submission being accepted, as we can run the program straight away, without having to rewrite it for BASIC I users.*

### Fun and Games

Change line 210 in the main **Orcrest** program to read:

```
210 energy=&D+99
```

After you have lost one life, all the nasties and the crystals have vanished, and you can explore the maze at will. As a bonus crystals re-appear when you go over them, and your score starts at 141,560 after the first crystal.

H.F Climo, Somerset

*This is for all those out there suffering in Orcrest-land. By the way the competition is over now.*

**Disk User is now monthly. You can order one from any newsagent. Watch out for Disk User on the third Friday of every month. The publication dates for 1988 are:**

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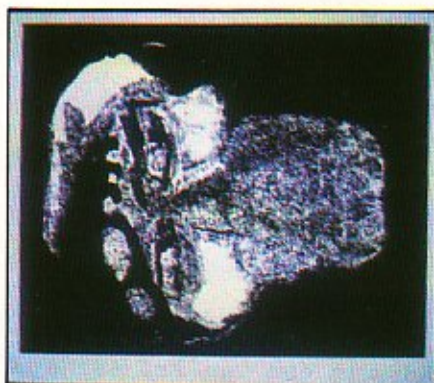
November issue - OUT OCTOBER 21 1988

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What the hell is it? - All will be revealed next month!

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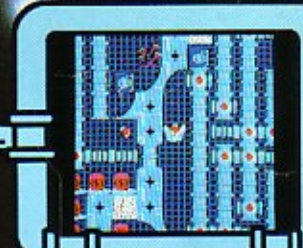




# pipeline



Beware of the fast-moving flame



Trapped near a pipeline complex



The Character Designer



The Level Designer

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The screen pictures show the BBC Micro version of the game.



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