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New tutorial starts this month

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Monotype craftspeople have been creating typefaces of the highest quality since 1897. Now, these world-famous typefaces are available for the Archimedes.™

Using specially designed hinting tools, LOOKsystems have carefully converted the Monotype Classic Font library* for use on Acorn™ RISC OS computers.

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† Education Price List available on request.

more news from Colton Software

New from the Archimedes' spreadsheet experts comes Resultz, the ultimate spreadsheet for RISC OS.

It's packed with powerful features to help you work fast, whether you're working on a classroom project or managing your business.

It recalculates faster than any competitor, and uses background recalculation so that you're never waiting for the computer to catch up. It will automate your work with the *Fill* and *Autosum buttons* - just select a group of numbers and Resultz writes a formula which adds them up automatically.

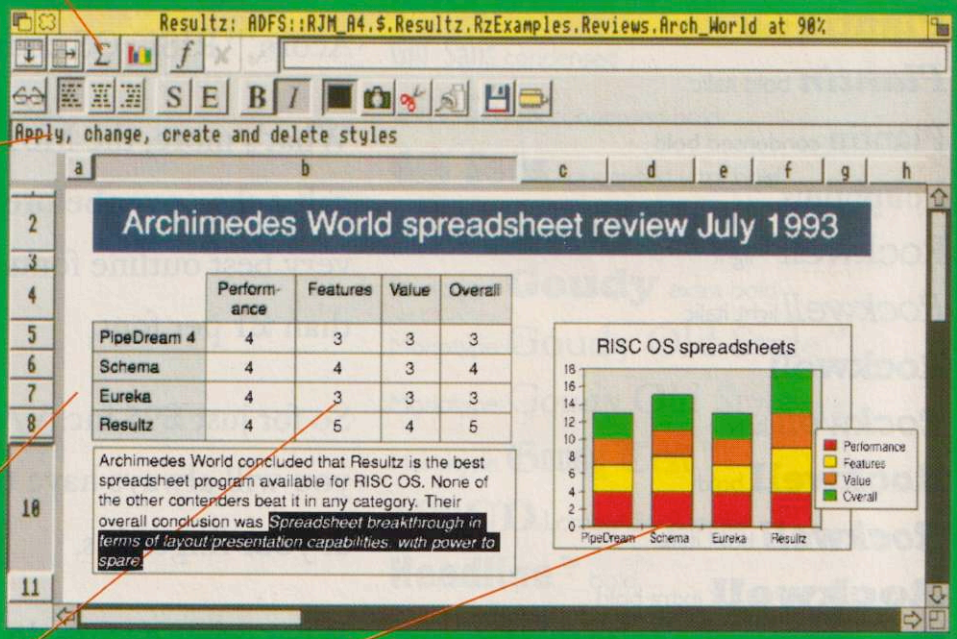
Resultz isn't just for power users. It's designed to help novice users work productively. Interactive help makes it easy to use Resultz' comprehensive set of functions. Every time you pick one of the 190 built-in functions from the selector, *tips on using it appear on screen.*

Your data will look better than ever, with colourful charts incorporating your own pictures.

Unlike other spreadsheets, Resultz shows your pages on screen, so what you see on screen is exactly what will print out on the page (we call it *spreadsheet DTP*). The style editor places fonts and formats at your fingertips. It's easy to build *tables* and *forms*, and to add *charts* or *pictures* to worksheets.

And Resultz is just £119+VAT.

Resultz and Wordz are the first members of the FireWorkz suite of programs, designed to share the same intuitive easy-to-use interface, and to make it easy to share data between word processor, database and spreadsheet. . .



resultz

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Telephone 0223 311881
Fax 0223 312010

Pocket Book power

The Acorn Pocket Book has been available for nearly a year now and new software is beginning to appear. We review the machine and the software. See Page 26.

REGULARS

Comment 17
Steve Turnbull pulls no punches as he looks at another area of the world of computers and the Acorn market.

News 19
All the latest products, events and hot news in the ever-changing world of your Acorn computer.

Public Domain 41
Teri Paul looks at what's available and what's best in the nearly-free world of public domain software.

Problem Solved 57
Our technical editor provides a helping hand with some of those mind-testing hardware problems.

NEW SERIES **Databay** 74
Games gossip and upto-the-minute news picked up by HAL, our electronic ear to the ground.

Graphics 88
Another hands-on article about creating effects with your Acorn computer – and Mike Goldberg's face.

Body Building 92
Our technical guru explores more ways to expand your computer, with a project in astronomy.

Letters 96
The pages where you can get your news, views and ideas into print and find out what other are saying.

FEATURES

MegaDisk 6
Check out what programs we've crammed on to the best cover disk available for the Acorn 32-bit range.

Imagery tutorial 10
The complete package is on the coverdisk. Now find out how to use this excellent desktop art software.

RISC OS 3.10 44
We wind up our series on what you can do with RISC OS 3 (version 3.1) and how it helps you.

Networks 49
In the final part of our series on Ethernet, we examine the software that supports your programs.

BBC Disk 54
Full details of what's on the subscription disk for the 8-bit BBC Micro this month, and how to use it.

Essential Paint 61
We take a plunge into textile design using all the tools for repeating designs in existing packages.

Essential Music 64
A further look at creating your own samples before we dive into the exciting world of sequencers.

The Crystal Maze 77
Find out about the programming team behind this superb simulation for the Acorn 32-bit machines.

REVIEWS

Learning Curve 35
The best in education software for Acorn computers:
• Early Essentials • Harmony • First Logo

Turbo A4000 47
The power merchants step in with a clever way of driving an ARM250 computer at full throttle.

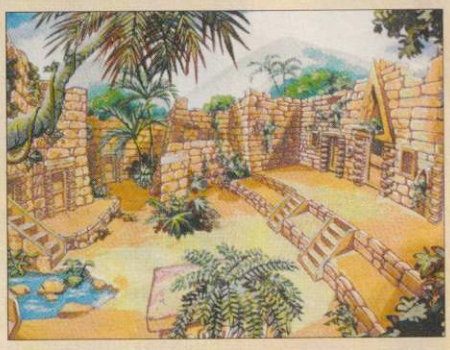
DataPower 68
Do we really need yet another database in the Acorn world? Find out if this one's got what it takes.

Cogs 71
An intriguing new way of creating 3-D objects on your computer screen. But does it really stand up?

Britain's best Acorn cover disk contains hours of fun and a host of useful utilities linked to our editorial features to make the magazine come alive on your desktop!

Full details about the packed MegaDisk – see Page 6.

EXCLUSIVE – THE CRYSTAL MAZE



This month, only in *Acorn Computing*, you can discover how The Crystal Maze was brought to the screen of your Acorn 32-bit computer.

● Next month: Exclusive to *Acorn Computing*, a preview of the game so you can find out just how close it is to the real thing.

● Don't miss it, make sure you get your copy of *Acorn Computing* next month.

September subscription disks

This month's exclusive *Acorn Computing* subscriber-only disks features an excellent selection of quality software.

The Archimedes disk contains:
- Window box – extensions for the Wimp
- Speaking clock
- All the 8-bit listings
- Plus other great PD software

The BBC Micro disk contains:
- Auto-run your basic programs
- Bell-ringing practise made easy
- Graphical word search system
- 3D Maze to confuse you
- Plus great BBC PD software

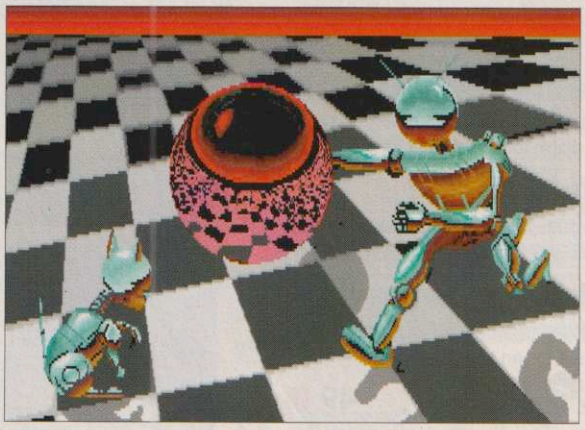
● *The editorial and many of the adverts in this magazine were prepared using Impresssion and ArtWorks by Computer Concepts.*

The MegaDisk

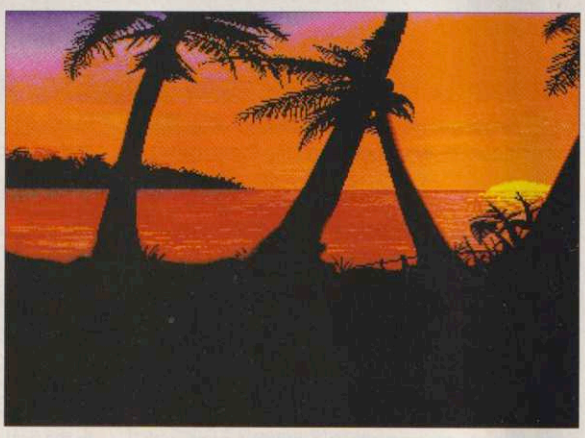
EXCLUSIVE SUBSCRIBER DISK

See pages 54 & 55

Imagery: Full-power painting



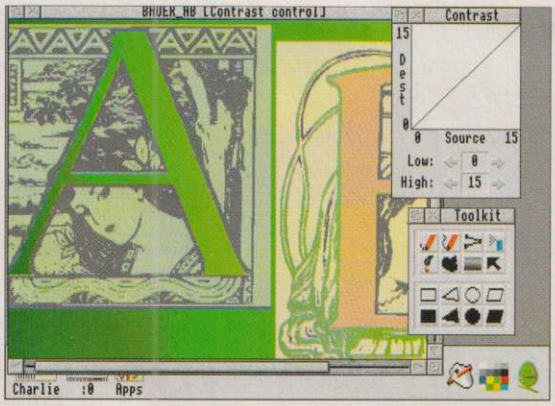
● *With Imagery you can create colourful pictures ...*



... or stunning special effects like this

THIS issue of the MegaDisk contains the full commercial version of Imagery from PaletteStudio (0923 894355) which has a retail value of nearly £90.

Imagery is contained in the !Install application on your MegaDisk. De-archive the install program to another disk then double-click in the usual way. Follow the on-screen instructions and you'll end up with an !Imagery application which you can copy to another floppy disk or on to your hard disk for day-to-day use.

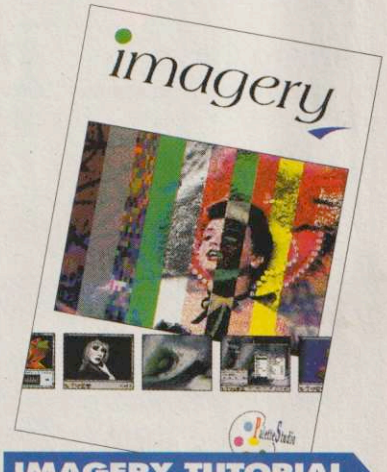


● *Imagery provides good image processing tools*

Two pictures created by Imagery are there too – jukebox and backgrnd. Full details on how to create these and other works of art can be found in the Imagery Tutorial article on page 10.

The Imagery program will give you a unique registration number. If you want the full manual note the number down with your name and address and send to the following address with £3.50: Acorn Computing Offer, PaletteStudio, 106 Smug Oak Business Centre, Lye Lane, Bricket Wood, Herts, HP2 7ST.

If you would like to register your copy of Imagery as a site licence so that you can use your copy on all RISC OS computers in your school it costs just £30. Again you should note the unique registration number and with your name and address send it with an official order to PaletteStudio. As well as the 10 manuals you'll also receive 20 disks of Imagery format clipart.



IMAGERY TUTORIAL
Turn to page 10 for the start of a new series

FAULTY DISK?

If your cover disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

PC Wise Ltd
Dowlais Top
Business Park
Dowlais
Merthyr Tydfil
Mid Glamorgan
CF48 2YY

If there seems to be a fault with one of the programs please contact us by post describing your machine set-up and exactly what happens when you run the program.

Getting started with the MegaDisk

THE programs on this disk are stored in a highly compressed format which sometimes enables as much as 1.6Mb of programs and data to be stored on a 800k floppy disk

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques.

Switch on your Acorn micro, put the disk in the drive and click the drive icon. Now double-click !ACmenu – there's a short pause while it scans the archive then it displays a window of the contents.

You can treat this new window like any other one for viewing disk contents, you can run programs and open directories by double-clicking them.

Large programs must be unpacked by dragging on to a separate disk before being run. Some may have an !Install program that will do it for you.

We recommend that you always read the !ReadMe files or access the help information via the Help button.

Amazing Maths: Arithmetic journey

THIS multi-tasking maths game is a joint venture between Cambridgeshire Software House (0480 467945) and PDK Technologies (0525 403541) who have created one level for you to travel through.

Amazing Maths has easy-to-follow menus that make it easy for a child or adult to set the question type.

You can concentrate on addition or set the program so that the computer will randomly ask questions about addition, subtraction, division and multiplication. You can also choose whether to include zero in the sums.

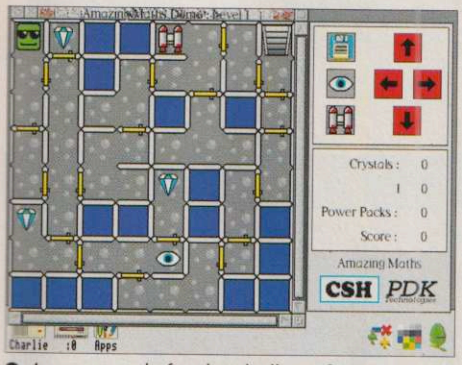
The iconbar menu gives you control over the sound – which features some atmospheric music and samples – as well as the time you have to answer a question and the option to put a number pad on screen giving you control totally by the mouse, or the keyboard.

The Demon is also optional. This denizen of the maze is invisible until you find the Eye and if you come across him he will quiz you mercilessly until you satisfy him that you can pass.

Another useful item is a jet pack as you have to collect all the crystals before you'll be allowed to leave.

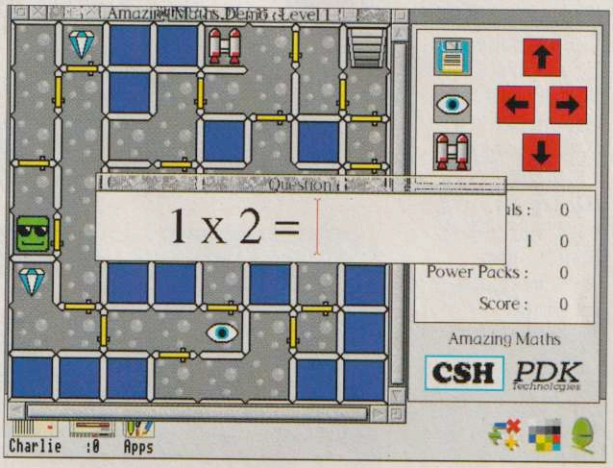
Simple, but all the maze's passages are blocked by doors that can only be opened if you answer a question correctly.

The MegaDisk version allows you to sample the lowest age range while the full package comes with saving, loading and reporting features as well as 15 mazes which become increasingly difficult. Amazing Maths also supports the Concept Keyboard.



● *Are you ready for the challenge?*

● *You set the question type*



4DMania: Graphics beyond the third dimension

4DMania plots two dimensional slices from *Julia* and *Mandlebrot* sets. Julia sets have finite resolution while Mandlebrots become infinitely more complex as the magnification increases.

Load the program and click Adjust on the icon to display the configuration window. The variables q0 to q3 determine the characteristics of the set to be displayed – c and d decide which slice is to be shown. To change a value, select the relevant icon and the caret will appear.

The options in the right of the window can be toggled on or off by clicking their tick boxes. *Count down* is used to display how many lines are left to be processed for the next image while *Fast* turns the screen off instead, accelerating calculation by around 10 per cent.

Using Select on the toggle size icon adds some further options: The icons labelled 1 to 12 provide alternative pre-defined example settings, *Orig* contains the default values. The number of iterations performed between displayed images is determined by the selected radio icon.

Clicking Menu on the program icon presents a list of four options including *Default* to restore the configurations to the preset values and *Save choices* to keep the current configurations on disk for future use.

The fractal plotting mode – which operates outside the desktop – can be engaged by clicking on the program icon. A few seconds later the base fractal will appear. You need to be in Mode 12 or above to ensure enough screen memory is available.

Using Select and Adjust you can alter the size of the zoom box, with Menu magnifying the boxed area. The horizontal and vertical ranges indicate which part of the set you are viewing at each stage. Several keys are also used to select other options:

● *An easy way to explore fractals*

Key	Function
J	Select Julia set
M	Select Mandlebrot set
Q	Quit to desktop
R	Return to the base fractal
S	Save the current fractal as a sprite
X	Scroll right
Z	Scroll left
"	Scroll up
/	Scroll down

Count shows how many lines are left to be processed if the Count down option has been engaged.

Daniel Barron

WANT ANOTHER DISK?

If you subscribe to *Acorn Computing* you receive a second disk each issue. On this month's disk:

- Talking clock
- The 8-bit listings
- Reviews index
- Loads of PD software

See page 38 for further details on how to get your subscription to *Acorn Computing* and the extra disk

AutoRun: Absolutely scramble your programs

BASIC programs on the Archimedes are often versatile and include detailed coding which others may like to *borrow*. If you want to protect your code the solution is !AutoRun.

The first thing you should do after loading the program is enter a password by entering the *Encryption=>Password* option on the menu – or *Encryption=>None* if you do not want your program scrambled.

As you type your password, asterisks appear on the screen for added security – so make sure you type correctly. Bear in mind that the routine is case sensitive, so check whether Caps Lock is engaged.

After this the application is ready to process your Basic program. Drag the file in question to the !AutoRun icon, and after a short delay you will be presented with a save box. Enter the name of the new file and drag it to a directory viewer.

There are two ways of executing the new file: Double-click its icon –if this is done with a scrambled program you will be asked for its password – or from the command line or loader program which requires you to put the password for the program after its filename:

```
*Run <name> [ <password> ]
```

The protection system is quite secure and works by *Exclusive-OR*ing the original program with the Ascii values of the password. When a scrambled program is run, the machine code restores it using a reverse method with the entered password – so don't forget it.

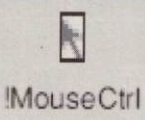
Stephen Harrison

Wanna sell some software?

ACORN COMPUTING is always in the market for good quality applications, utilities and games to put on the MegaDisk and Subscription disk. If you think your program has got what it takes just send it on disk to:

MegaDisk Submissions, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

MouseCtrl: Complete vermin control



THIS is short and simple application can be very useful if you use an art or DTP package on a regular basis. It provides quick and easy control over the speed of your mouse – removing the need for persistent use of !Configure – and gives some extra useful features.

The program can be loaded by double-clicking and takes up residence on the iconbar. Clicking Menu over the program icon brings up a list of four options: Slow, Fast, Cursor keys, Quit.

Clicking on the first reduces the mouse step to a minimum – allowing fine grained control of pointer motion. The second returns it to the configured value.

For greater convenience, there are keyboard short-cuts built-in: Control+Alt induces the slow option while Ctrl+Return restores fast status. The third option enables/disables the cursor keys as an alternative to the mouse for controlling the pointer.

Finally, !MouseCtrl can be engaged by holding down both Alt keys: A large cross-hair appears on the screen, with its horizontal and vertical lines crossing at the location of the pointer tip. Moving the mouse with the keys still depressed moves the cross-hair too. Releasing the keys removes it.

Paul Mason

Triple 3: A step beyond tic-tac-toe

TRIPLE 3 is a two-player game relying on luck and skill. The computer throws two die and depending on their combined value you make your move. The game board is divided into nine, each containing nine holes and the objective is to achieve a straight line of three boxes – in any direction – or a total of five boxes on the board.

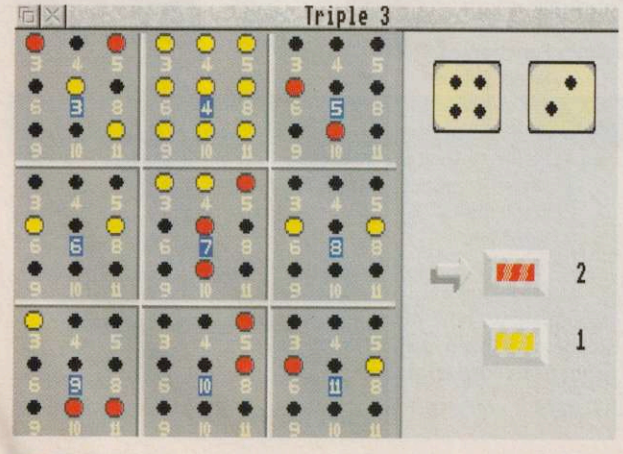
Similarly, to win a box you must make a line of three of your pegs or five in total within it. Apart from a few special throws, you can place your peg in any vacant hole marked with the number corresponding to the dice total – except a centre hole. Alternatively, you can choose any empty position in the box with the same number as the dice total, again excluding the centre hole.

When you win a box it becomes completely filled with pegs of your colour and these cannot be removed under any circumstances.

The computer automatically handles dice and if a move is not possible the dice are thrown again up to three times. If there are still no available moves your turn is forfeit.

The main menu gives you the option to reset the running totals or start a new game. This can be done at any time during or after a game. The New game option is used to start each game and its sub-menu allows you to override who makes the first move.

Anthony Houghton



There are three kinds of special move:

Double one	Remove one of your opponent's pegs then have another go
Seven	Choose any vacant centre hole, or any empty place in the centre box
Double six	Select any vacant position on the board

COMING NEXT MONTH ON A MEGADISK NEAR YOU

Prophet-lite

This powerful accounting program from Apricote (0354 78432) will allow you to handle your cashflow details with ease.

Cyborg

Alpine Software (0762 342510) have written a special arcade level of their adventure cum arcade liberate-and-destroy challenge.

PLUS MUCH MORE ..... DON'T MISS OUT, SUBSCRIBE NOW – SEE PAGE 38

COME!

enter

The Crystal Maze

with us on

october 29th

courtesy of Sherston Software

Developed in conjunction with Chatsworth Television
The Crystal Maze® for the Archimedes will be launched
at the Acorn World Show at Wembley on October 29th., 1993

Sherston Software, Swan Barton, Sherston, Malmesbury, Wilts. SN16 0LH
Tel. 0666 840433 Fax. 0666 840048

Painting by numbers

ON THIS month's MegaDisk you'll find Imagery which has a huge number of painting and special effects features. Most of these can be used in combination so you'll be able to experiment endlessly. However, you need to gain your provisional licence before getting out on the road, so follow this tutorial to get a feel for what you can do and how to go about it.

● *The jukebox picture example which you'll also find on the disk*

For this exercise we've found a nice airbrushed painting of a jukebox for inspiration. One feature of the jukebox is that it is largely symmetrical, which means that you can draw just one half of it and then mirror across to create the other half.

Set Frame is used to provide a line down the screen exactly half way across the picture. The first half has been drawn with Pixels and Sketch tools and some fills added. This is where you come in.

Load Imagery and open the directory called Tutorial where you will find the Imagery picture Jukebox which represents the scene in picture one. Double-click to load it into Imagery.

This is where the tutorial begins and you should follow each step as described. Once you're happy that you've completed a step successfully, use File=>Preserve to keep it safe before the next stage begins, just in case something goes wrong which you can't Undo.

Our picture shows the finished jukebox, or rather half of it. Now follow the steps indicated in the guide below.

This walkthrough of the creation of a picture will give you some ideas of what can be achieved using just a few of the facilities provided by Imagery. It will also show you that you don't need to be an artistic

Step-by-step guide to creating your masterpiece

■ Choose Copy area from the Manipulate menu

■ Copy the left side of the jukebox by dragging the rectangle around it. Avoid capturing the white line down the centre. Stop just short of it

■ Select the Y flip option from the Area control dialogue box and click on OK before pasting the, now mirrored, half jukebox on to the right-hand edge of the half that is already there. Hey presto – one complete jukebox.

We are now going to export the jukebox temporarily and bring it back over a new background so you'll need to have a directory open somewhere on the desktop so that you can save a new sprite file.

The first bit is fiddly and involves drawing around the jukebox. *Have you used Preserve?*

■ Go to Zoom and click on the right arrow until 8 appears and then click on OK

■ Select a bright pink from the palette. If it's not on screen, bring up the palette by pressing F1

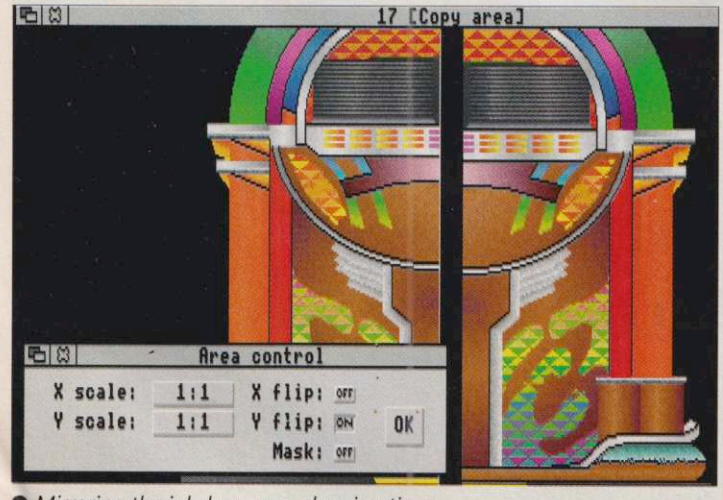
■ Select the Pixels function from the Paint menu

■ Draw around the complete outside border of the jukebox

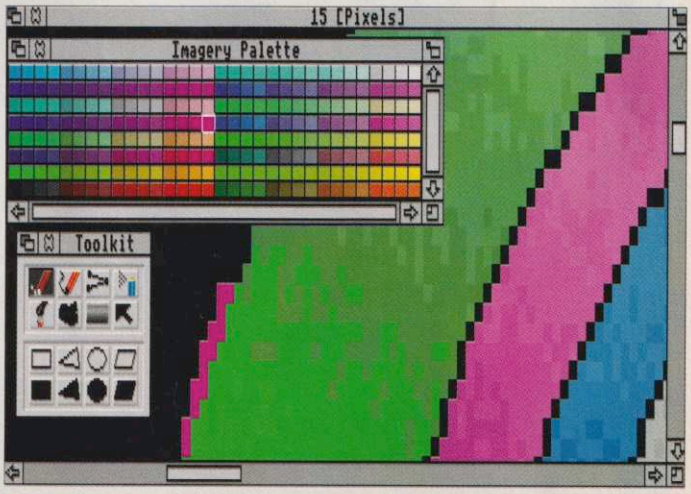
■ Flood fill (Paint=>Fill=>Floodfill) the background with the same pink colour

■ Make the pink transparent by placing the mouse pointer over the colour in the palette and clicking on the Adjust (right-hand) mouse button

■ Choose Shapes/Solid rectangle and draw a solid pink rectangle over the bottom of the jukebox, cutting it off just



● *Mirroring the jukebox saves drawing time*



● *Drawing around the jukebox before exporting*

Mark Webb takes you on a guided tour of Imagery – FREE on this month's cover disk

genius to create quite pleasing results quickly and easily.

Try using the Imagery features I've highlighted to create similar effects and before long you'll be looking around for inspiration of your own.

Other creations

The stack of records was initially drawn as alternating grey and black lines with the bottom one being a little thicker to form the turntable. The grey lines were then filled using a horizontal graduated fill which was made up of 16 varying shades of grey and white to create the effect shown.

In the background, the rocks were created by drawing their outlines using a dark grey colour and the Rubber line function. They were then filled with a plain flood fill before using the Pixels, Sketch and Airbrush functions to add the surface details.

The silver tree was drawn in the same way with a small paintbrush being used for the leaves. The Rubber line function was used to draw an outline of mountains in the background as well as the gnarled tree silhouettes. The area above this outline was then flood filled with white.

The complex fills in the jukebox are combinations of pattern and graduated fills. Flood fills have been used to define areas and colours set to transparent to allow graduated fills to fill in more than one area in a consistent fashion.

There's more detail on this kind of technique, and many others, in the full Imagery manual, which you can buy at a special *Acorn Computing* price.

● *Next month we'll give be giving you some hints and tips to save time and give your work that professional touch when you use Imagery.*

above the bottom of the circle

■ Select Export from the File menu and select the entire jukebox with the Mask option of the Area control dialogue box set ON to make sure a mask is generated from the transparent pink colour

■ Call your export file *Juke1* and save it to floppy, hard or ram disk.

Now call up the second file supplied for the tutorial, which is called *backgrnd*. Alternatively, at this stage, you could create your own background on which to place the jukebox.

Now let's produce a water effect:

■ Select a light blue colour from the palette

■ Use the Tint area function from the Special menu to give the water, and jukebox, a bluer hue. The colour now looks about right but the reflections are still perfectly flat

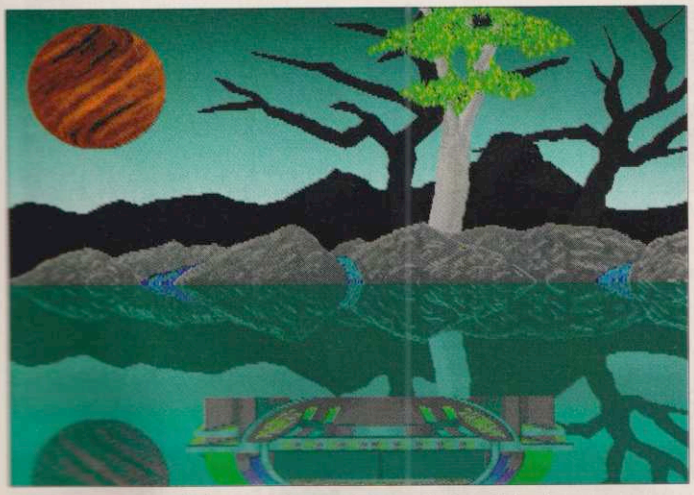
■ Use Wobble from the Manipulate menu. It can be tricky to control exactly what effect will be created but with a little experimentation and repeated use of the Show option, you'll come up with an effective ripple. Try Magnitude 6, Step 50, Function SIN and left/right arrows and go from there

■ Apply this to the entire water area.

To complete the tutorial we'll import the sprite containing the top half of the jukebox again and plot it to line up with the reflection.

■ Drag the Juke1 sprite into the Imagery picture window.

■ Place it on top of the reflection and click to set it in place.



● *The background picture after applying a tint and ripple*

● *The jukebox imported on top of the background*

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– standard		£199
– hardware dithered		£259
HiVision Digitiser Colour	HCCS	
– A3000 External		£137
– A3000 Series / A4000 Internal		£124
– A5000 / 300 / 400		£124
iMage (Sharp JX-100)	Irlam	
– for A5000		£490
– for other computers		£589
Image Scanner	Iota	£383
– Colour Upgrade Kit	Iota	£239
– Fast Parallel Card	Iota	£98
i-Scan 200	Irlam	£539
i-Scan 400	Irlam	£589
Pineapple Colour Video Digitiser	Pineapple	£195
– A3000 boxed	Pineapple	£230
ProImage (Epson GT6000)	Irlam	
– for A5000		£989
– for other computers		£1089
Scan-Light A4	CC	£277
– with Sheet Feeder	CC	£360
Scan-Light 256	CC	£190
– A3000 internal	CC	£190
Scan-Light Professional	CC	£565
– as above + SCSI interface	CC	£699
SnapShot Colour Video Digitiser	Lingenuity	£195
– A3000 version	Lingenuity	£275
Spectra	RISC	
– Archimedes / A5000		£545
– A3000 Series / A4000 Internal		£545
– A3000 External		£555
Vision Digitiser	HCCS	
– A5000 / 300 / 400 Mono		£48
– A5000 / 300 / 400 Colour		£76
– A3000 External Mono		£60
– A3000 External Colour		£89
– A3000 Series /A4000 Internal Mono		£48
– A3000 Series / A4000 Internal Colour		£76

MEMORY . . .

Fitting extra unless otherwise stated
† Fitting fairly easy ‡ Fitting needs expertise

A3000 2 Mb Upgradable †	Atomwide/IFEL	£43
A3000 4 Mb †	Atomwide/IFEL	£100
A3010 1-2 Mb		**£29**
A3020 / A4000 2-4 Mb †	IFEL	£55
A310 2 Mb Upgradable soldered ‡	IFEL	£88
– as above + MEMC1a		£113
– as above + MEMC1a + fitting		£143
A310 4 Mb soldered + MEMC1a ‡	IFEL	£152
– as above + fitting		£182
A5000 2-4 Mb Non-upgradable†	Atomwide	£85
A5000 2-4 Mb Upgradable †	Atomwide	£99
A5000 2-8 Mb including fitting	Atomwide	£500
A5000 4-8 Mb including fitting	Atomwide	£391
A540 4 Mb †	Acorn	£238

PRINTERS . . .

ArcLaser 300-6	Calligraph	£895
ArcServer 300-8	Calligraph	£985
Bubble Jet BJ-10sx	Canon	£187
Bubble Jet BJ-10sx + TurboDriver	Canon/CC	£219
Bubble Jet BJ-200	Canon	£282

For ordering details please turn to page 3

ICS

051-625 1006

Bubble Jet BJ-230	Canon	£315
Bubble Jet BJ-300	Canon	£325
Bubble Jet BJ-330	Canon	£380
Bubble Jet BJC-800 + TurboDriver	Canon/CC	£1374
DeskJet 510	Hewlett-Packard	£275
DeskJet 500C	Hewlett-Packard	£375
DeskJet 550C	Hewlett-Packard	£525
Laser Direct HiRes4	CC	£899
– 250-sheet Paper Cassette		£99
Laser Direct HiRes8	CC	£1275
Laser Direct HiRes Board	CC	£325
Refill toner cartridge for Canon EPS		£50
New toner cartridge for Canon LBP-4		£59

COMPUTERS . . .

A3010 1MB FD Family Solution	Acorn	£420
A3010 2MB FD Learning Curve with Monitor	Acorn	£675
– as above + JP150 Printer		£889
A3020 2MB FD	Acorn	£749
A3020 2MB HD60	Acorn	£899
A4 2MB FD	Acorn	£1395
A4 4MB HD60	Acorn	£1695
A4 4MB HD80	Acorn	£1699
A4 4MB HD120	Acorn	£1799
A4 Extra Battery Pack	Acorn	£50
A4 Shoulder Bag	Acorn	£35
A4000 2MB HD80	Acorn	£945
– as above + Home Office		£995
A5000 2MB HD80 Multiscan	Acorn	£1395
– as above + Learning Curve		£1455
Pocket Book	Acorn	£212

MISCELLANEOUS. . .

386 PC Expansion Card 25 MHz	Aleph One	
– 1 Mb		£374
– 4 Mb		£468
486 PC Expansion Card	Aleph One	
– 1 Mb		£463
– 4 Mb		£557
4-slot 4-layer Backplane	IFEL	£52
A300/400 Fan kit	ICS	£15
A3000 Expansion Box	Wild Vision	£135
A310 RISC OS Carrier Board ‡	IFEL	£18
A5000 Fitting Kit for second hard disc	ICS	£15
Arckey Function KeyStrip Holder	ICS	V0 £3
– pack of 4		V0 £10
ArcNET	ACS	£69
ARM3 ‡	Aleph One/IFEL	£165
ColourBurst	State	£395
ColourCard	CC	£225
– A3000 External	CC	£225
Dongle Dangle with screw fittings	ICS	£6
Fan filters (pack of 10) (not A5000)	ICS	£6
FaxPack	CC	£289
Floppy Discs, 10 × 3½" High Density		£10
G16 True Colour Card	State	£258
G8 Plus Accelerator	State	£238
HiPoint Mouse for A4	Genius	£49
Microlin fx Pocket Fax Modem	Pace	£179
Micro Mouse	Clares	£26
Monitor Stand for A3000	ICS	£21
Mono/SCSI	Atomwide	£48
Podule Case for A3000	HCCS	£16
Printer/SCSI	Atomwide	£74
Printer Port Sampler	Leading Edge	£42
Publishing Pack	CC	£475
RISC OS 3 Upgrade	Acorn	£42
– Bulk package	Acorn	£335
– A5000	Acorn	£19
Seal 'n Type spill-proof Keyboard Covers		
– Archimedes / A5000	Kador	£14
– A3000	Kador	£14
TouchWindow	Lindis	£234
Whisper Fan Quietener (for A300/A400 series only)	ICS	£15
Wizzo IDE Filing System on rom	ICS	
– Wizzo4 for A4		£29
– Wizzo5 for A5000		£29

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Padlock is our top seller for simple disc security.

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NOW ONLY £15

HOW TO ORDER

VAT: Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.

Overseas carriage: If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

Credit cards are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

Official orders are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

Site licences are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.

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LICENSED CREDIT BROKER

The price of success

DESPITE their chequered history with regard to promotion, I am confident that nowadays Acorn actually know what they're doing. More than one of the staff with whom I've had dealings have taken pains to point out that they are not of the Acorn *old school* and are experienced in the real world.

Still, talk is cheap and it's results that count, but again if the preparation for the Acorn World show is anything to go by I can assure you that the years of Acorn arrogance have finally passed, at least as far as promotion is concerned anyway.

With the Acorn World show, the company are thrusting their way into the markets of Apple and the PC compatibles, pushing to demonstrate that the RISC OS machines aren't just for education and enthusiasts, and are quite capable of handling real tasks.

It will take a better colour system than currently exists to convince real graphic designers, but that area's being handled too.

Personally, I've always had faith in the machine even if the manufacturers have worried me. I know, from practical experience, that it's far more powerful than even the quickest PC and even the vaunted System 7 on the Apple Mac doesn't hold a candle to RISC OS.

So what if Acorn achieve their aims? What if the ARM-based machines manage to push into the *real world* to the extent that the big boys actually notice? What then?

For a start, the price war would intensify. Already PCs and Macs are cheaper than Acorn machines – *we* know that an ARM-based RISC OS computer delivers more power to the user than either of the other types of machine.

But the average man in the street sees price and advertising, and if he doesn't *know* the truth how can he distinguish it from hype?

With the threat of a third power in personal computers, the existing pair would undoubtedly band together to push out the interloper.

The fight would be dirty and the big companies are perfectly capable of deliberately funding huge losses if it means that a rival is pushed out of the market by artificially low prices.

Assuming the price war could be weathered successfully, the third-party suppliers would begin to have problems and, unless handled properly, it might mean the end of all but the biggest Acorn developers.

If Acorn were to become major players in the personal computer market it would mean that major software developers would port their existing programs across to it. Imagine Adobe converting Photo-Shop and Illustrator, QuarkXPress on the Arc, CorelDRAW, Aldus Pagemaker and so on.

Where would that leave the Acorn developers? High and dry probably.

Of course, there would be a transition period where Acorn machines would be selling well – and that means thousands a week – and developers would enjoy an unprecedented boom period.

But while people buying for the home won't be bothered what software they get, except perhaps in the area of games, corporate buyers will want machines running the software they know – even if the native software is better!

If Acorn support those companies that have loyally worked with them through the hard times it won't be so bad.

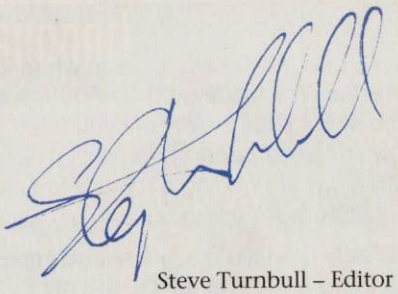
With Acorn's help these companies can move up, too, developing their software so that even corporate buyers can see that the software is worth using.

But will Acorn do that? Only time will tell.

I'm sure many people will regard this as so unreal as to be hardly worth the space, but let's face it if there's no chance of it ever occurring what's the point of carrying on?

The idea that *if you build a better mousetrap the world will beat a path to your door* is nonsense. You have to get out there and *sell*.

And that, finally, is what Acorn are doing.



Steve Turnbull – Editor

What could happen if Acorn sold as many computers as Apple? Steve Turnbull examines the situation

Acorn Computing **are supporting the Manchester 2000 Olympic bid**

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Tel: 0625 878888 (All depts.) 051-357 2961 (Subs.) Fax: 0625 879966
Published by: Europress Publications Limited, Europa House, Adlington Park, Macclesfield SK10 4NP.

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Acorn Computing welcomes new program listings and articles for publication. All material should be supplied on disc and printed. Please enclose a stamped, self-addressed envelope, otherwise the return of material cannot be guaranteed. Contributions accepted for publication will be on an all-rights basis.

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News Trade Distribution: Comag 0895 444055

Printed in the UK by BPCC Magazines (Carlisle) Ltd

ICS WIZZO (it's magic)

051-625-1006

The ideA range

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 45 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: IDEA3IN for the A3000 Series, and IDEARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

IDEA3IN upgrade kits include an I²C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. False rumours have been spread in the past (by sellers of SCSI hard discs) that internal upgrades might not be safe in an A3000. In three years we have never heard of an actual problem, but please ask Acorn's Technical Department if you wish to be reassured.

IDEARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an IDEARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

How to read our ideA product references

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

Archimedes A300/A400/A500 Series Internal Upgrades

Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane is used it must be a 4-layer type. Easily fitted by most users.

IDEARCIN 80	£225	IDEARCIN 240	£425
IDEARCIN 100	£255	IDEARCIN 330	£500
IDEARCIN 120	£275	IDEARCIN 426	£575
IDEARCIN 170	£305	IDEARCIN 540	£799

A3000 Series Fully Internal Upgrades

Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.

IDEA3IN 40	£225	IDEA3IN 120	£350
IDEA3IN 60	£275	IDEA3IN 130	£450
IDEA3IN 80	£325	IDEA3IN 209	£499
A3000 FAN KIT (not usually required*)			£19

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

Separates for hard disc upgrades

We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.

Hard discs on their own are listed as, for example, IDEA 80. An S at the end indicates a 2½" disc.

IDEARCIN (Archimedes Interface for Internal disc(s))	£60
IDEA3IN (A3000 Interface for Internal disc)	£75
ARCHIMEDES INTERNAL CRADLE KIT	£15
ARCHIMEDES A300 / A400 SERIES FAN KIT	£15
4-SLOT 4-LAYER BACKPLANE	£52
POWER CABLE FOR SECOND HARD DISC	£5
A5000 SECOND HARD DISC FITTING KIT	£15

IDEA80	£179	IDEA240	£350
IDEA100	£215	IDEA330	£470
IDEA120	£245	IDEA426	£499
IDEA170	£275	IDEA540	£750
IDEA40S	£140	IDEA120S	£299
IDEA60S	£200	IDEA130S	£399
IDEA80S	£245	IDEA209S	£449

WIZZO IDE Filing System on rom

Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.

Available now: WIZZO5 for A5000	*introductory price* £29
Available soon: WIZZO4 for A4	*introductory price* £29

Quantity discounts available • Dealer enquiries welcome

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Art working

COMPUTER Concepts' ArtWorks competition closed recently with an incredibly high standard of entries. The winning entry was Kingfisher by W. J. Briggs of Donaghadee, Co Down who used to be an airbrush artist. The two other pictures here are Poppy Group by Elaine Jones and Arties by Malcolm Banthorpe.

Make a date

YOU can now buy a dual-purpose mouse mat from Shieling (0252 519224). The Mouse Mat Calendar is priced at £7.95 and presents you with 24 months instantly on a high quality mouse mat made from tough PVC to resist stains, dents and even coffee cups.

Chip disaster fries future?

NEWS of an explosion at the Sumitomo Chemical Company in Niihama, Japan probably didn't mean much to most people. However, when you realise that they produce an epoxy resin which is the vital element of the plastic compounds used in 95 per cent of memory chips and that Sumitomo are the world's largest suppliers of this resin – all of which was made at this plant – alarm bells start to ring.

Even more when you know that this one company claimed 60 per cent of sales to compound makers. Chip makers are playing down the effects of this, but ram suppliers in this country are reporting runs on stocks and massive increases in prices from their sources.

Although it's suggested that other Japanese resin suppliers could increase production, some manufacturers are already looking to alternative resins which would require both chipmakers and assembly houses to undergo a requalifications process.

Acorn sources of 4Mb ram chips have been hard to come by for some time as have upgrades to the A3020/4000 models. Whether the resin problem will exacerbate the situation only time will tell.

High speed, low noise

GONE are the days of the clamouring daisy wheel printers and Seikosha (0753 685873) have released a new SpeedJET printer which promises to be even quieter than other inkjets on the market.

The SpeedJET 300 retails for £359 and gives 300 characters a second by using the new high-capacity 128 nozzle inkjet print head. It is capable of printing on plain paper, transparencies and envelopes and the large ink tank is able to produce 4.2 million draft-quality characters.

Acorn getting more support

IN the professional print world the competition between Apple Macs, IBM PCs and Acorn 32-bit machines is hotting up with the main graphic reproduction houses taking sides.

Tony Mortimer is the principal consultant of the giant graphic repro house Pira and in a recent edition of PrintWeek he commented: "Personally, I'm very interested in the Archimedes from Acorn. It's very fast, reasonably neat, icons are a bit cartoony but it's very graphics capable. The Mac is under threat. I haven't seen Windows when it works yet.. I don't care who makes the computers I own. I just need them to talk to each other. There's a market demand for compatibility".

Acorn's history of networking and the new developments in AUN and Ethernet could hold it in good standing here especially with recent rumours about Mac network compatibility. Watch this space.

An adventure in formatting

ANYONE who didn't read the instructions on the August MegaDisk and formatted their disk while trying to unarchive 10 out of 10 Maths (Number), send the disk and an SAE to: Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP and we'll replace it .

The install program formats two blank disks and de-archives this superb collection of Maths programs on to them. This can be done manually by formatting and naming two disks *10/10Math1* and *10/10Math2*.

Open the two folders named disk one and two and drag the contents of each on to the respective disks.

STEP UP TO EUREKA v.2 AND SAVE OVER £40

EUREKA brought the power and innovative features of the very latest in easy-to-use spreadsheet technology to all RISC OS users. And now EUREKA version 2 has even more to offer you:

In fact, there are over 100 individual improvements upon version 1, including extended documentation and a fully comprehensive index.

What's new in Eureka version 2

- Scale printing of worksheets and print-to-fit a single page
- Worksheet zoom in and out
- Display (and print) formulas
- Worksheet find and replace
- Improved worksheet linking
- Automatic loading of any supporting documents
- Fully compacting memory manager - dynamically releases memory when you close a sheet
- Palette editor - allows any possible colour to be used in a worksheet or chart
- Eureka macrosheets
- Complete macro language for creating custom worksheet functions
- User definable page breaks and set print titles - for large worksheets
- Function key strip
- Chart series editor for direct editing of data series
- Automatic line of best fit for scatter charts
- Display / hide points on scatter charts
- Charting of multiple selections
- Save a selection as a worksheet, Lotus 123 file, CSV, SID or drawfile

If you already use another RISC OS spreadsheet, here's an offer you just can't refuse !

Just tell us what it is, and where and when you bought it, and we'll supply you with a full copy of EUREKA version 2 at the unrepeatable special offer price of £82.10 (£99.99 including p&p and VAT). That's a saving of over £40 on the RRP.

But remember, this very special launch offer must end on the 17th of September, 1993, and definitely will not be repeated. Don't be disappointed, claim your own copy of EUREKA version 2 today !

ORDER FORM

I am currently using

❑ Schema ❑ Pipedream ❑ Logistix

Other _____(please specify)

I bought it from _____

Date purchased _____

Please send me ____ copy/copies of Eureka @ £82.10 (£99.99 including £3.00 p&p and VAT) per copy

❑ I enclose a cheque for ____ made payable to Longman Logotron

❑ Please debit my Access/Visa account

no_____

Expiry date_____

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Name_____

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Telephone_____

Please return your order to:

Longman Logotron Sales Department
124 Cambridge Science Park
Milton Road
Cambridge
CB4 4ZS

Tel: (0223) 425558
Fax: (0223) 425349

Eureka will run on any RISC OS machine with at least 2MB of RAM. RISC OS 3.1 recommend.

Acorn WORLD 93

AS SOFTWARE and hardware companies are now well into gear for their show releases Acorn are promising a show full of surprises. Acorn World Show product manager, Kevin Coleman, aims that for three days in October, Wembley will see a computer show unlike any other.

The theme for the show is Visions of the Future and though Acorn say that there will be no Acorn machine launched at the event they will be featuring a *Concept Area* where mere mortals can view new developments in technology and imagine how these will be implemented and enhanced in the future.

The theatre will be the scene for free but ticketed seminars including corporate network strategies of Acorn in the real world, the creation of a CD-Rom and Psion talking about truly portable personal computers.

Graphics for schools

SSERC (031-668 4421) have been producing floppy disks of subject-based clip art for some time. They have now compiled a CD-Rom of chemistry, physics, biology, technology, computing and IT libraries with prices starting at £150 for a full school licence.

The graphics have all been created on the Archimedes and are directly relevant to UK education. If you already have some of their graphics library floppy disks you qualify for a discount of £3 off each disk.

In addition a library index manager is built into the CD-Rom to help you find specific files based on reference keywords and wildcards.

European CAD

PROFESSIONAL CAD Package ProCAD from Minerva (0392 437756) has increased its reach as a Dutch specialist in CAD has translated the programs to his native tongue which has led to the release of a Dutch version of both CADet and ProCAD. Negotiations are also under way for a German version of the software too.

Are you ready to play?

THERE have been various suggestions of which companies are going to release the Archimedes version of Xenon 2, but now it's official.

Eclipse have secured the rights to convert this Bitmap Brothers' masterpiece as well as James Pond II – Robocod, from Millennium.

However, Eclipse are passing all the marketing over to new game house GamesWare (0703 456523). This is the brainchild of ex-Acorn denizen Simon Lovesey who also has a number of other top titles under negotiation as well as a selection of games accessories.

Simon was recently spotted trying out the Suzuka 8 Hours in the arcades and it is rumoured that he showed a lot of interest in Jurassic Park and Streetfighter too. As Centresoft look set to add the RISC OS format to their portfolio this could mean a tidal wave of Acorn games in the shops this Christmas.

Faster calculations

ARM's Floating Point Accelerator chip has finally arrived and Acorn have released an arithmetic co-processor based on it – the FPA10 suitable for the A5000, A540 and Unix machines.

By processing the most-used floating point instructions on chip and using a combination of software and silicon for the less-used instructions, it provides a design tuned to ARM systems while keeping its low power consumption.

The FPA fits into a socket on the A5000 motherboard and A540 processor card. Applications which use of the FPEmulator will automatically use the new chip which is good news for those involved with spreadsheets, CAD, image analysis, modelling and vector graphics.

However, owners of early model A540s and R260s may need a modification to their processor cards but this is free as is the additional software driver needed by RISC iX users.

The cost is £99 from Acorn Dealers. A booklet of processor schematics, programmer's model, instruction set and hardware/software considerations is available for £10 from Vector Services, 13 Dennington Way, Wellingborough, Northants NN8 2RL.

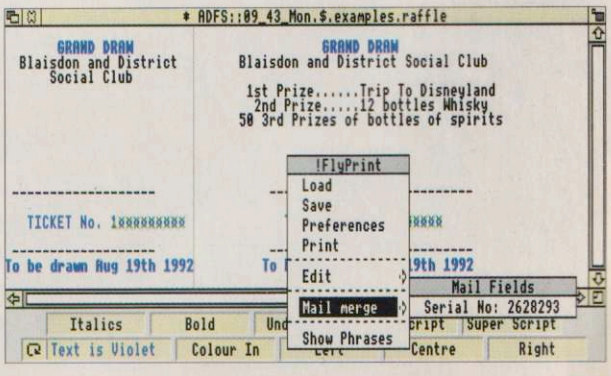
Creativity on the fly

DIXON and Dixon (091-285 3042) have been in the Acorn market for some time concentrating on specific business software for the agricultural and dairy industries with their Farmcash, Farmplanner, Fieldfile and Milkman programs.

The development of their recent Doorstep Milk Delivery has led to a program with a wider user base – Flyprint which retails for £39.97.

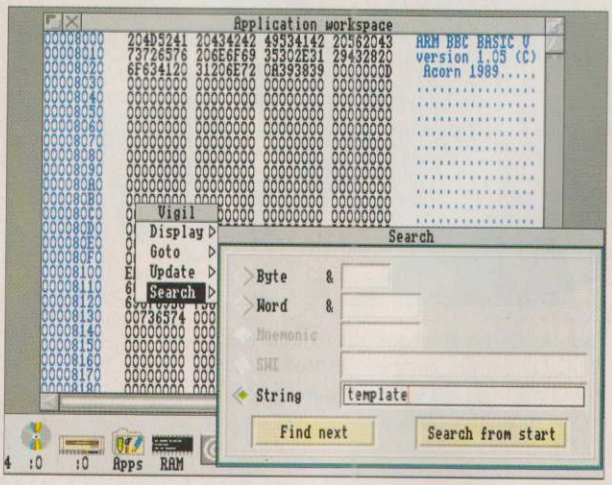
It will work on any 32-bit Acorn with access to an Epson-compatible printer and is a cost-effective method of producing attractive leaflets.

Compliment slips, numbered tickets and mailshots can also be produced with the average cost of 25p for 100 flyers. Dixon and Dixon can also supply pre-perforated paper in a variety of dimensions.



Keeping an eye on development

IF you would like to know what's going on inside a program while its running, Vigil can tell you the state of the memory, variables and a host of other facts about multi-tasking programs running on RISC OS 3.1 machines.



Vigil is the brainchild of Rheingold Enterprises (0925 210657) and costs £24.95. The debugger/monitor will work with any language, displaying the contents of the processor registers, the entire contexts of the application's workspace, designated blocks of memory or messages received from the wimp.

BASIC programmers can display a full list of variables and values, all while the program is running without affecting its operation. A simple timer is included as well to improve time-critical functions, plus an ARM code program disassembler and a facility to disassemble modules and inspect workspace and other parameters.

Rheingold have moved recently, too. Their new address is 7 Waterbridge Court, Appleton, Warrington WA4 3BJ.

Stranger alert

DIFFERENT organisations and local authorities are producing programs to inform children of the danger of talking to strangers. Appian Way (091-373 1389) have a software pack called StrangerDanger to reinforce this safety message to nursery and infant-aged children.

The main program takes children through a simple scenario of an approach by a stranger, correctly dialling 999 and helping the police to catch him. The child can only progress by using safe practices and making correct decisions and the program develops a range of Key Stage 1 cross curricular skills in English, Science and Maths.

The pack was designed by an infant teacher in association with Northumbria Police School Liaison and costs £15.

Acorn in monotype

This is Arial condensed.
This is Baskerville
This is Bembo.
This is Garamond Italic.
This is Gill Sans Light.
This is Rockwell.
This is Braggadocio.
This is Gill Sans Ultra Bold.
This is Mercurius Script Bold.
This is Neographic.
This is Palace Script

MONOTYPE have been designing and supplying quality typefaces since 1897 and LOOK Systems have obtained the exclusive licence to distribute these for the Acorn 32-bit machines. The first pack contains 100 fonts for only £95 all inclusive.

Adrian Look commented: "The PC and Mac platforms have just experienced *the TrueType revolution* – type foundries can supply their typefaces in TrueType format and thus avoid using Adobe PostScript royalties. Font prices have fallen dramatically with TrueType costing less than a tenth of its PostScript equivalent".

Dutch open day

THE largest Acorn user group ever organised outside of the UK is to be found in Holland at the Big Ben Club.

Their Annual Open Day will be held on Saturday October 2 at the De Kiekmure Community Centre, Tesselschadelaan, Harderwijk near Utrecht. Doors will open at 10am. Admission is free to club members.

For more information contact the Big Ben Club, PO Box 1189, 6801 BD Arnhem, The Netherlands.

English as she is spelled

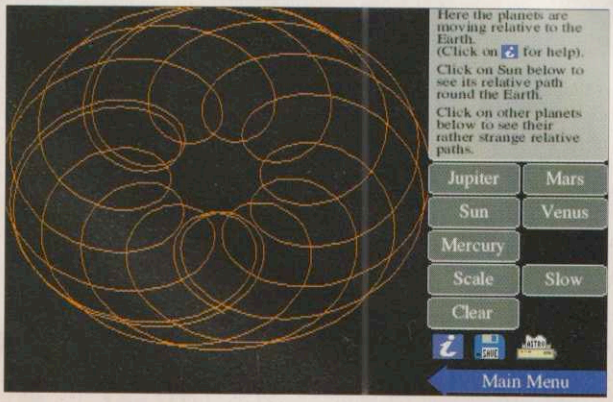
THE latest addition to Topologika's (0733 244682) language learning software is WordBank. This multitasking application lets you collect words and meanings in English, Welsh, French and German.

Words can be displayed at the side of a your wordprocessor or DTP package and copies straight into your work with a click on the mouse. Words can be added in any order but are stored alphabetically. The definition and comprehensive search facilities mean that words sharing particular spelling patterns can be displayed or printed out in full or in part.

This is a writing and spelling aid which mimics the traditional way teachers help children to collect words in spelling books.

Topologika have also produced new versions of Imagine and Astro for the 32-bit machines. Imagine now multitasks in Mode 15 or 28 and !Gallery has been improved so that you can create simple *flip-book* animations. You can upgrade for £10.

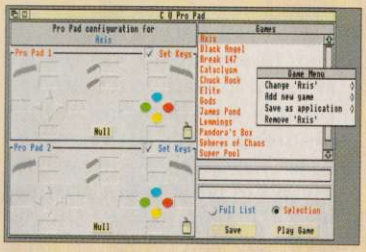
The original Astro was available for the 8-bit Acorns but this version now multitasks on the 32-bit machines and the programs come with special help screens. This discovery package costs £35 though you can upgrade from version one for £7.50 and the BBC B and Master versions are still available for £30.



● *Astro puts the Earth into a wider solar context*

ProPad joy for 32-bit machines

CU ELECTRONICS (061-476 0576) are marketing the ProPad joystick for all 32-bit machines for £45. This eight-button joystick pad comes with easy-to-use desktop software to give you two-player precision for a whole host of games.



● *Now you can easily customise ProPad for your favourite games*

"Powerfully easy"

DATA POWER

DATAPOWER is a powerful new database incorporating a frame based 'form designer' user interface, that prides itself on being easy to use. You can incorporate pictures, true multiline text, multiple choice questions, tick boxes and much more. It has built in graphing facilities with over 20 different styles of graphs, that can be displayed in 2d or 3d and they can be incorporated directly into your reports as draw files.

DATAPOWER uses built in compression, and a state of the art file structure, to ensure that your Datafiles are not only small to store, saving you disc space, but they are also very FAST to access.

DATAPOWER comes with a full set of examples, including all those shown here, and one that shows how it can be used for logging IT SAT's, that even generates the pupil reports.

RRP	**£149**
SITE LICENCE (upto 10 stations)	**£347**
SITE LICENCE (Any no of stations on one site)	**£599**

(All prices ex VAT – please add £2.50 P&P)

FOR FURTHER INFORMATION PLEASE CALL NOW FOR A BROCHURE ON: (0223) 421542

OR WRITE TO:

IOTA SOFTWARE LTD,
St. John's Innovation Centre,
Cowley Road,
Cambridge,
CB4 4WS.

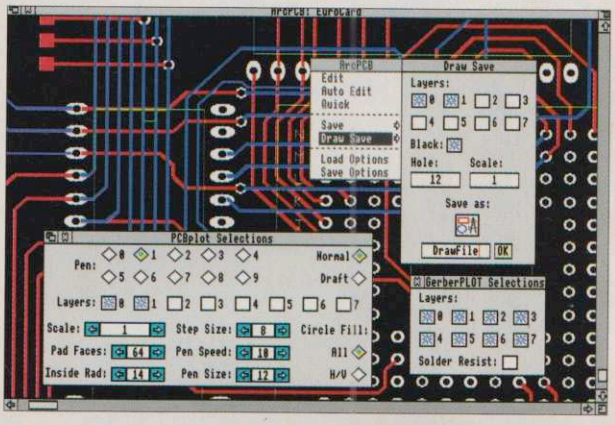
IOTA SOFTWARE

School order forms welcome

Desktop EDA for PCB

● *The latest versions of ArcPCB puts you in a multi-tasking environment*

SILICON Vision (081-422 3556) have released a range of EDA – Electronic Design Automation – tools for their ArcPCB package. These multitasking programs all work on a 1Mb machine and feature multiple layers, component pulling, circular pulling with a text and silkscreen facility among others.



ArcPCB now comes with a fully integrated DrawSave facility allowing multiple layer combinations and scaling directly using any RISC OS printer driver. The new PCBPlot application gives full plotter control allowing the output of combinational layers. All desktop modes are supported including SVGA and the new ColourCards.

Earlier versions of ArcPCB can be upgraded for £50 when you return the original disk and manual. ArcPCB is priced at £125 with the professional version at £275 and ArcPCB Schematics retailing for £375.

GerberPLOT and ExcellonDRILL have also been updated and upgrades are available to v2.1 for £30.

Float on with your ARM3 upgrade

FOR a limited period the ARM3 upgrade from Simtec Electronics (0772 812863) will include the new Floating Point Accelerator (FPA) from ARM Ltd. The price of this combined package is £199.

Due to increasing difficulty in getting the components for the current type of memory card – based on the eight-chip design – Simtec Electronics have redesigned their memory upgrades for the A3000 to maintain continuity of supply.

The new boards are said to be much more robust, higher quality and more cheaply upgradable due to latest chip design.

The basic board has 1Mb and costs £47. Upgrading later to 4Mb requires changing a single link and inserting four chips and costs just £60. A complete 4Mb upgrade costs £99.

Simtec are continuing to offer their original 1Mb board for just £42 but it is not upgradable. Full details are available from Simtec.

Carnival time

THE Lindis Computer Carnival in June was visited by 1,500 visitors and plans are under way for next year's event. Contact Lindis (0986 85476) for further details. This year the profits from the car parking were donated to the Norwich Night Centre which is a charitable facility for the homeless in Norwich.

Combined scanning and digitising

THE Computer Concepts/Wild Vision (0442 63933) teams have released a single width expansion card which combines the ScanLight 256 scanner with the Wild Vision GreyHawk video digitiser.

This combination gives you a 400 dpi 256 grey level scanner and a digitiser offering real-time greyscale video digitising from any video source. The software also includes a new version of the ultra-fast TakeOne previewer so you can have live video in a window on the desktop.

Computer Concepts tell us that at quarter screen size this can update at 50 frames a second. Plus the ScanLight software can be used in both cases to enhance images by smoothing, rotation, cropping and sharpening.

ScanLight Video saves you expansion space and money at a price of £220.

Green adventure

LONGMAN Logotron (0223 425558) have added to the software available for the BBC Look and Read Schools TV programmes with Earth Warp.

The adventure follows the exploits of an environmentally aware yet clumsy alien on both the 8-bit and 32-bit machines for £25.85 and £28.20 respectively. The BBC Micro version will be available this October with the 32-bit version following in January.

The adventure's puzzles are centered primarily on words with memory skills, elementary mathematics and logic playing a part too, as Ollie with sister Ellie try to help people take care of their environment so that it doesn't become like their now polluted home planet Gia.

Unfortunately, one of Ollie's probes has become faulty and he finds himself searching for it around the seaside town of Southbeach before it detonates. He has allies in the form of Martin, Jenny and Amina and while Ollie is a little awkward in Earth's gravity his wrist computer can help when things get tight.

Statistically speaking

ANYONE involved in producing and analysing statistics on the Acorn machines will have come across 1st and 1st Junior from Serious Statistical Software (051-327 4268).

Schools have been requesting a cut-down version for their specific needs and this has spawned 1stL and prices start at £50. This version retains many of the features of its elders and upgrade paths are available. The friendly interface and context-sensitive manual comes with the program which interfaces to various spreadsheets and databases via CSV files.

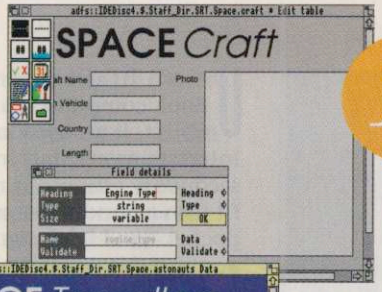
At the same time the earlier products have been updated so that all levels of 1st now have extremely simple access to improved scientific graphics facilities.

We have moved

ARMEN Software – producers of WindowEd – have changed their address to: Sanderson House, Glapthorn Road, Oundle, Peterborough PE8 4JD.

it's this easy with

Squirrel



1

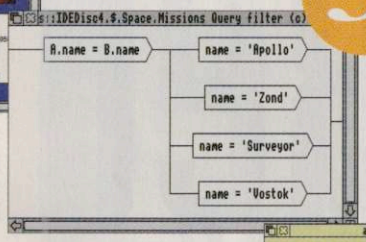
Create Mode

Build new databases with just a few mouse operations. Never before has table creation been this quick and easy. Squirrel is a no limit product! There are no limits to the number of characters in a field, fields in a record, or records in a table. Both single and multi line text fields are supported. File definitions may be changed at any time.

2

Data Mode

Store images, text and sounds within each record to create powerful multi media databases. Browse through the database in any field order.



3

Query Mode

Squirrel incorporates a radical new graphical approach to creating complex queries – a series of INCLUDE and EXCLUDE filters are linked to form a graphical flowchart. Squirrel is fully relational, allowing data from multiple databases to be joined in one query or report.

4

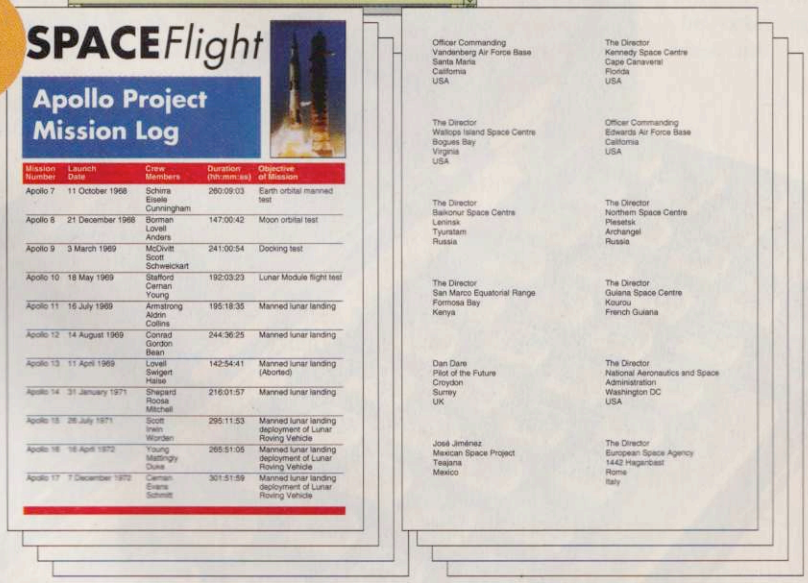
Query Data Mode

Browse through results of queries on screen Query definition may be saved, or query data may be re-indexed as a new table.

5

Reporting

Include Sprites and Drawfiles in reports to produce desk-top publishing quality output Powerful label printing allows multiple labels across the web.



What the press say...

"It has leap-frogged all the database development of the past 10 years and emerges as the pre-eminent data storage system for the Arc."

Steve Turnbull, Micro User

"The ease of table creation, data entry and browsing, searching and sorting place this innovative software in the first league."
"No other product approaches the performance of Squirrel at anything like the price and it is to be highly recommended."

John Schild, RISC User

"Probably the ARC DBMS most in touch with current trends in database development."
"You are going to need Squirrel which is easily the most powerful database available today."

Archimedes World

Squirrel Single User	£ 129.00 + VAT
Squirrel multi user/Site Licence	£ 516.00 + VAT
Squirrel 'C' Developer's Toolkit	£ 99.00 + VAT

digital services

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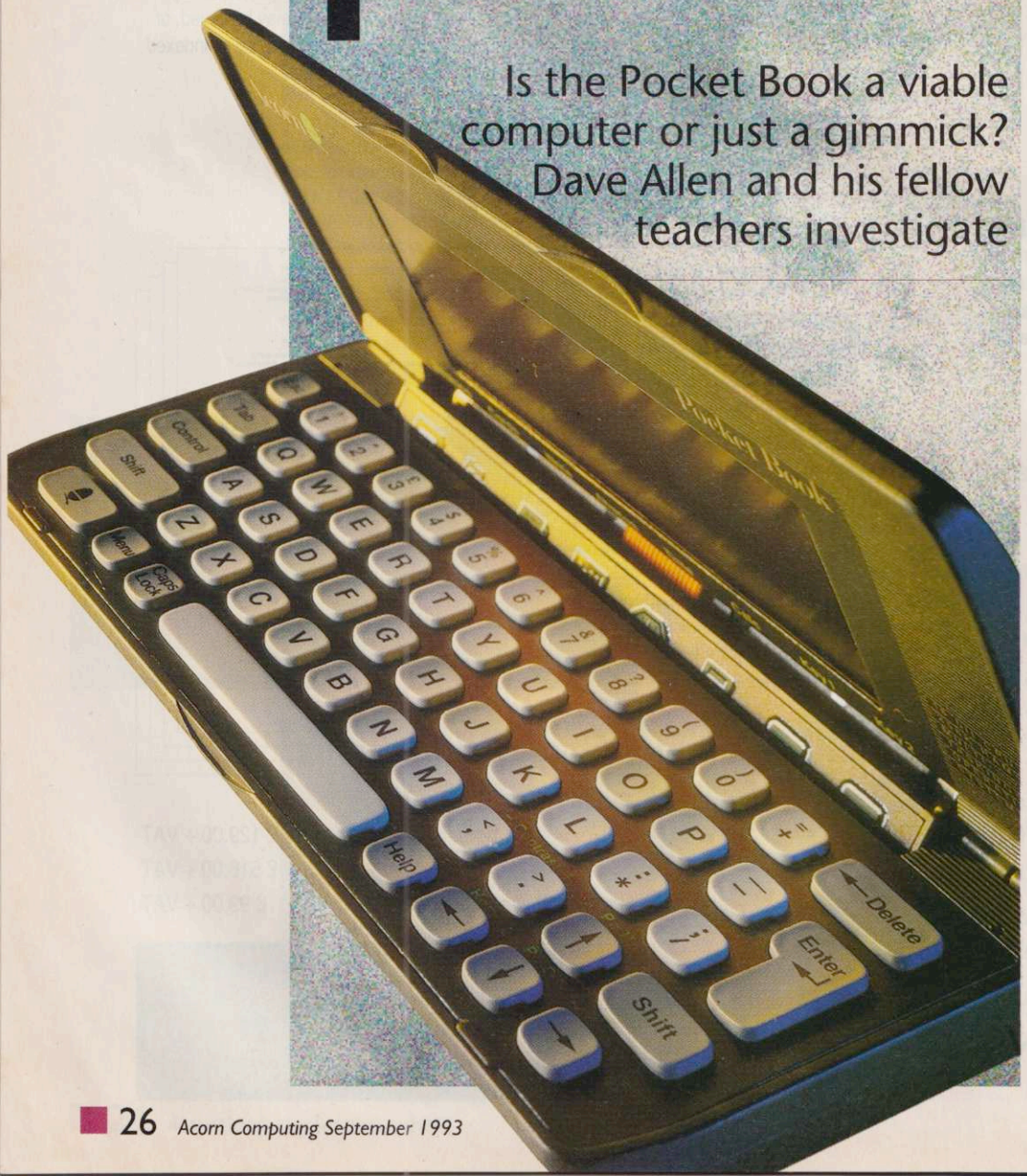
Acorn in your pocket

Is the Pocket Book a viable computer or just a gimmick? Dave Allen and his fellow teachers investigate



UNDOUBTEDLY, Acorn's Pocket Book computer is a seductive object. It aroused immediate interest among staff in our secondary school – it really does fit into a handbag or an inside pocket – and its design for accommodating batteries within its *spine* is an admirable space-saver.

I found myself explaining its presence to staff who have not really shown an interest in IT since our first CD-Rom system arrived.

But what sort of computer is it? How good is that software? Having managed to borrow a Pocket Book for a month, a group of interested staff decided to put it through its paces pending a decision to buy some – or even a class-set – of the little beasties.

Calc

In appearance and feel this machine falls somewhere between a calculator and a laptop – it is sometimes called a *palmtop*. Indeed by purchasing one or more you have a rather serious calculator.

I have been unimpressed by computer calculators. By the time they are up and running I've generally lost interest in the problem I was trying to solve. Surprisingly, a single keypress turns Calc on. First I checked that it obeys normal mathematical rules of operator precedence. It does, and very elegantly too.

With this calculator you not only get the answer, but also have the calculation displayed as a reminder. The screen displays all previous calculations and, using the cursor keys, it is a simple matter to pick up any of these and enter them into the current calculation.

This is great when performing multi-step calculations since they can actually be broken down into a series of logical processes and the results of each step incorporated into the next. As an example, I tried a calculation of this type:

$$\frac{a \times b \times c}{d \times e}$$

Probably the quickest way on a conventional calculator would be to multiply *a x b x c* then divide by *d*, then divide by *e*. However, it is my experience of pupils that the logic of this last step often defeats them –

why should they divide by *e* when the formula clearly shows *a* multiplication sign between d and *e*?

I have even had pupils in my Chemistry classes tell me that *my calculator can't do that sort of calculation*. They eventually get round it by remembering to multiply *d* and *e* first and saving the result in the memory – or writing it down. Then they multiply *a x b x c* and divide by the first result.

With Calc you begin, logically, by multiplying *a x b x c* and displaying the result, multiplying *d x e*, displaying the result, picking up the first result from the display on screen and dividing by the second result also picked up from the display screen.

This involves a fairly enormous 22 key presses, but it is logically more sound – and every step in the calculation is there to be seen and, if necessary, discussed with the pupils.

It makes them show their *working* too which is something my pupils always seem reluctant to do. As far as I could tell, the Pocket Book calculator has all but one of the functions on my own scientific calculator and quite a few more besides.

Menus provide the most frequently used trigonometric functions as well as powers and logarithmic functions, a random number generator (RND), and a number of functions dealing with lists of numbers. The calculator section of the manual is well written and easy to follow, but about half an hour's play on the machine itself will make you an expert.

I would be delighted to own one of these machines and delighted if my pupils did – the teacher in me likes it, the scientist in me likes it and best of all, the kid in me likes it. And the missing function that is on my own calculator? It is the cube root key – and I've never used it in a calculation yet.

Bob Chapman, Science

Abacus

Abacus is a full spreadsheet program and using this appealed to the Mathematics department. We liked the idea of being free from booking into the IT room to introduce groups to spreadsheet work and so did our hard-pressed timetabler.

For this assessment we attempted a typical Y8 worksheet. The first task was to enter the raw data which consisted of an array of daily sales and prices from a school tuckshop. The Pocket Book endeared itself to us immediately, recognising DATA if the input begins with a numeral, or TEXT otherwise and of course, numbers can be forced to text if needed.

With the worksheet now created the next task for the students was the creation of a new column, with a text heading. During this operation we came across the *Titles On* facility, which we thought to be of particular use on the small screen of the Pocket Book.

This is the equivalent of *held lines* and particularly helps to reduce the tendency to see the task in terms of mere number insertion and answer production. At school we use Clares' Schema as our standard spreadsheet and even that does not have this desirable facility.

We found that the *small font* facility enabled a very reasonable portion of the sheet to be displayed, and, for the use of students with good vision, would present the best visual format with which to work. If not, one key press changes to the large font format.

However, those of us with very large fingers found the small keys frustrating at times. But for use in an educational context we feel that the fingers of most students will have little difficulty coping with the keyboard.

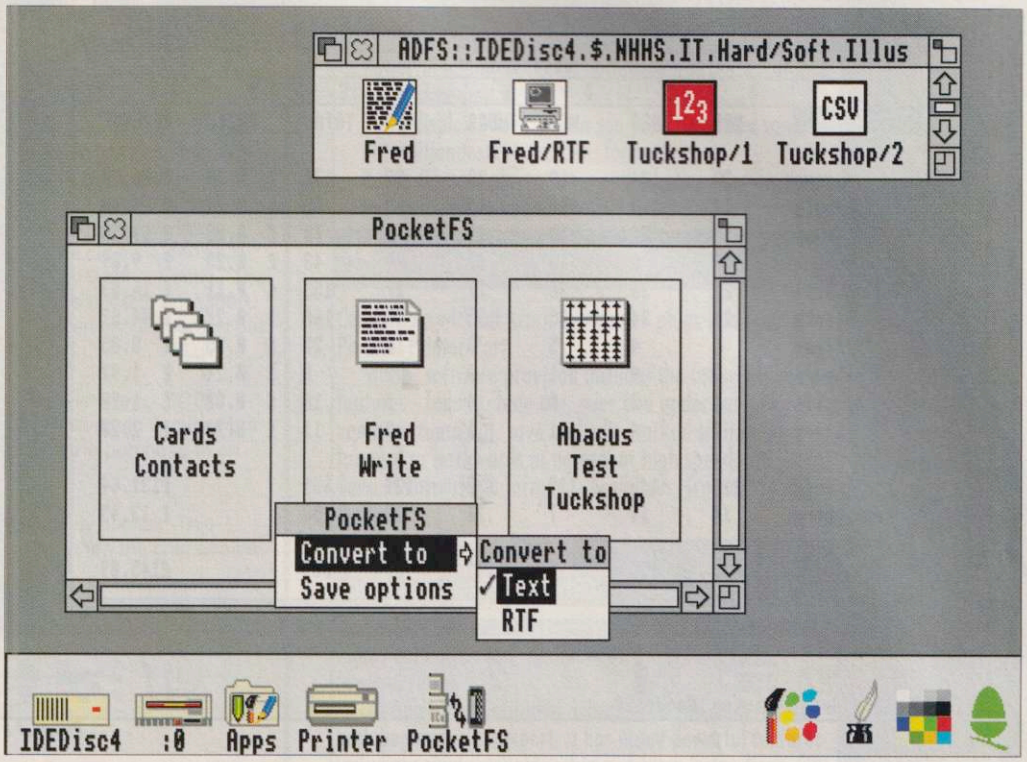
Returning to the tuckshop task, we embarked on formula entry. Again the simple and logical convention of starting each formula with = seemed so obvious that it hardly needs to be learnt. The simple statistical functions required are sensibly and obviously named, and parameters are easily entered.

Our next task was to copy the formulae into ranges of cells. This required familiarisation with the system of *copy* and *paste*. Although this is a different system to that found in other spreadsheets and a little more cumbersome, we felt it has certain distinct advantages in school.

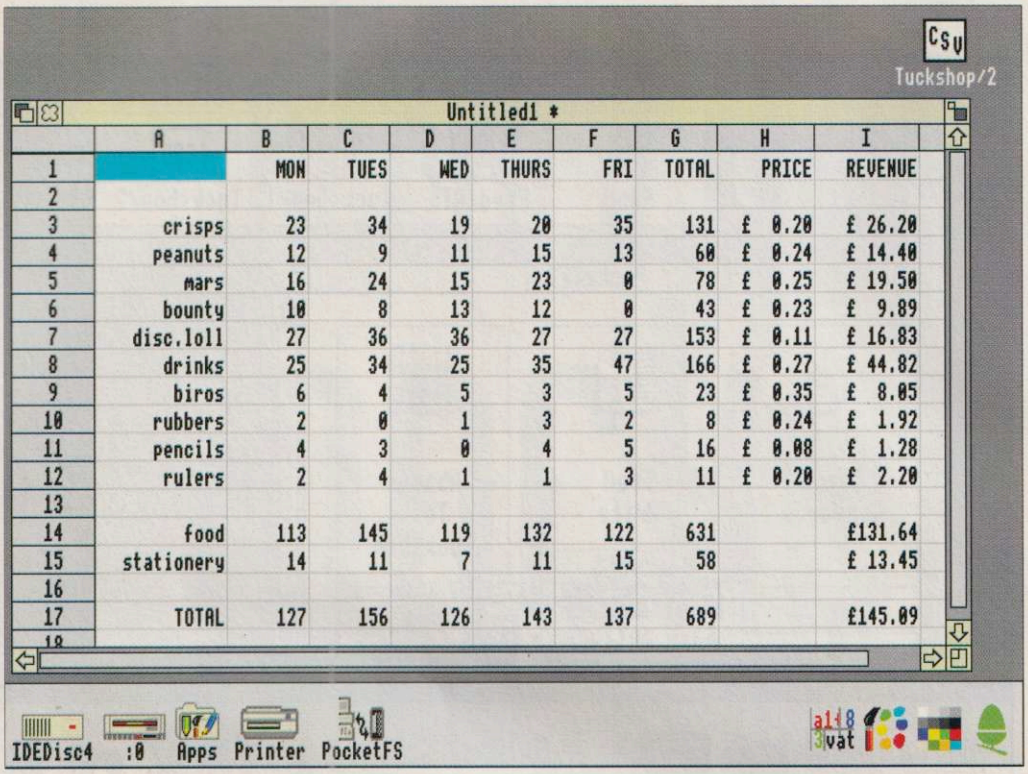
Often students will struggle with the concept of *copying* a formula into a different cell and finding that the formula has been changed to apply to the new location.

The concept of relative parameters takes some getting used to, and we feel that the notion of taking this formula away, placing it on a clipboard, and then using it in other places helps an understanding of the abstract nature of mathematical formulae.

Many students are familiar with the concept of copying and pasting ➤



● *The formats available for file conversion when transferring from the Pocket Book via A-Link*



	A	B	C	D	E	F	G	H	I
1		MON	TUES	WED	THURS	FRI	TOTAL	PRICE	REVENUE
2									
3	crisps	23	34	19	20	35	131	£ 0.20	£ 26.20
4	peanuts	12	9	11	15	13	60	£ 0.24	£ 14.40
5	mars	16	24	15	23	0	78	£ 0.25	£ 19.50
6	bounty	10	8	13	12	0	43	£ 0.23	£ 9.89
7	disc.loll	27	36	36	27	27	153	£ 0.11	£ 16.83
8	drinks	25	34	25	35	47	166	£ 0.27	£ 44.82
9	biros	6	4	5	3	5	23	£ 0.35	£ 8.05
10	rubbers	2	0	1	3	2	8	£ 0.24	£ 1.92
11	pencils	4	3	0	4	5	16	£ 0.08	£ 1.28
12	rulers	2	4	1	1	3	11	£ 0.20	£ 2.20
13									
14	food	113	145	119	132	122	631		£131.64
15	stationery	14	11	7	11	15	58		£ 13.45
16									
17	TOTAL	127	156	126	143	137	689		£145.09

● *You can transfer work simply from Abacus to spreadsheets such as Schema*

➤

from DTP applications, and will have less difficulty than might be expected.

Paste overwrites previous data, but comes with a built-in safety net of and *undo paste* option tolerating careless key depressions. In fact we liked the whole concept of undo and redo as it can be used to encourage a tentative approach to *trying things out*.

Although each function comes with its own *hot-key*, we found that the menu system was very nearly as quick and probably of more use to a student who is likely to perform one task on the Pocket Book and not return to it for a few months.

Indeed our only criticism of the Abacus Spreadsheet is memorising all the keyboard options. Acorn+E for Edit can be remembered easily, Acorn+H for Show is a little harder.

The Pocket Book could become invaluable in the implementation of National Curriculum requirements in the Mathematics classroom. A class set of machines would enable assessment and recording to take place more faithfully than is at present possible in a typical IT room.

Added to this is the excellence of the Abacus spreadsheet itself with its ease of use, reliance on some very natural conventions and even a useful selection of statistical display methods.

John Edwards and Pete Whitehouse, Maths

Cards, Time and Write

We all looked at the facilities offered by the Cards database. Its search facilities are basically like those offered on a wordprocessor and neither conditional searches nor numeric searches are possible.

Time is a clock with alarm facilities but is a fully featured application.

Write offers far more in the way of facilities than the Pocket Book's size leads you to believe. It didn't take long for us to realise the enormous depth and speed of this word processor.

It offers the ability to change fonts, styles and paragraph settings so we could *cut and paste* and do virtually anything possible on some of the *heavier* packages including checking spelling.

The Pocket Book's size invites you to use it on the move and its small keyboard suggests quick notes rather than contemplative writing. As teachers we used the machine to organise work, including using it as a storage medium to bring work into school, using the A-link facility.

For pupils its use would be primarily for note taking, memo writing and activities *in the field* while in lessons it might be used for the initial brainstorming of ideas for an essay to rearrange at a later date.

A fairly positive pressure is needed on the keyboard and, along with the proximity of the keys makes quick-typing difficult. This negates some of the usefulness but simple note-taking was not a problem and it is easy to imagine Write playing a part in the development of pupils' ideas away from the classroom in this way.

For more prolonged usage the screen becomes rather annoying, requiring the need to constantly scroll back. There is a limited use for work of any substance as the on-screen display is very small and this would pose problems for the pupils in following what they have written.

Write has more to offer as a wordprocessor than the capabilities of the Pocket Book will allow you to use with ease.

Tony Proud, Art and Dave Wood, English

Summing up

We all gave the Pocket Book a thumbs-up. Yet the machine is a special one, dedicated to certain kinds of work at particular times. Outside the classroom any subject involved in information or data collection will reap the benefit of its portability.

The practicalities of using the Pocket Book proved to be satisfactory, the batteries performed far better than the lap-top computers in school and the A-link functioned well allowing us to transfer data to and from spreadsheet and wordprocessing packages in school.

If your spreadsheet can import files in the Lotus 1-2-3 format, complete worksheets can be transferred. If not, the CSV format can be used, although this only reads data and not the formulae used to generate it.

One minor quibble with the A-link is that it is not very forgiving if you set it up in an incorrect sequence. Care needs to be taken with the Pocket Book's *active* files which it will not be able to read – indeed, the A-link software crashes requiring a complete restart.

This is a small point and the bottom line is that the Pocket Book is superb.

SIMTEC Upgrades

ARM3 + FPA = £199

Last September we launched the first ARM3 upgrade board to incorporate, as standard, an integral socket to take ARM Ltd's Floating Point Accelerator chip (FPA). Now to celebrate the chip's release by Acorn, we are offering a special package price for our ARM3 upgrade board complete with fitted FPA chip. The upgrade plugs easily into a 300, 440, A400/1 or R140 machine, but 305/310 and old style 440s will also need upgrading with a MEMC1a for an ARM3 to work correctly. The upgrade's ultra-low profile construction allows it to be fitted to an A3000, although a motherboard modification is required which can be carried out by a Surface Mount Service Centre.

Integration of the ARM3 and FPA socket onto a single 4-layer PCB eliminates any possible interconnection problems that could occur with a separate plug on FPA adaptor, as well as avoiding the purchase of an extra board.

We also offer the same ARM3 upgrade but with empty socket. This retains the option of fitting the FPA at a later date, when the chip can be plugged into the vacant socket if desired.

ARM3 with FPA socket - £139

Other upgrades in stock....

A3010 memory	1 - 2 Mb	32.00
	1 - 4 Mb	106.00
	4 Mb Turbo	130.00
A5000 memory	2 - 4 Mb	74.00
A3000 memory	1 - 2 Mb **non-expandable**	43.00
	1 - 2 Mb **expandable**	47.00
	1 - 4 Mb	99.00
	2 - 4 Mb chip upgrade	60.00
A3000 Serial upgrade kit		15.00
305/310 memory	4 Mb	127.00
Risc-OS3 carrier board		17.00
MEMC1a upgrade kit		24.00
An efficient three-day fitting service is available, which includes: courier collection of your machine, fitting of the above three items, testing and return for a special price of		185.00
A400/1 memory	1 Mb packs	36.00
PLCC extractor tool for MEMC and ARM3		8.00

We are an authorised SURFACE-MOUNT SERVICE CENTRE fully capable of servicing and repairing Acorn computers to component level. We also offer a fitting service for any of the above upgrades - please contact us for details.

Quality Assurance Our products are designed and manufactured to the highest standards by SIMTEC in the UK. Everything we sell is rigorously tested before despatch and fully guaranteed.

17½% VAT to be added to orders. Carriage free in UK.

SIMTEC ELECTRONICS
Avondale Drive,
Tarleton,
Preston, Lancs PR4

Desktop Tracker £49.95

"...programming at its best" - Acorn User January 1993

Continuing in the tradition of the immensely popular Tracker package, use Desktop Tracker to create fantastic tunes with no extra hardware.

Desktop Tracker has been completely re-written to incorporate many new and innovative features:

- Up to 16 tracks
- Fast playroutines
- 4 effects per note on each track, allowing up to 64 simultaneously
- Real time effects include pitch bend, arpeggio, volume slide, phasor effects, note retriggering and many more.
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QD Bug £69.00

"....a must for assembler programmers, and comes very highly recommended" Archimedes World May 1993. (overall rating 95%)

QD Bug is the definitive debugger for all ARM coders both beginner and expert. It has many powerful features including: single stepping, skip and force instructions, SWI history lists and trapping, customised flexible windowing system, view BASIC sources and text files from within the program, keypress emulation with macro record and playback.

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PRODUCT SPOTLIGHT

Product: Schedule
Price: £19.95 (inc VAT) until 30 Sept
then £49.95 (inc VAT)
Supplier: Local Acorn dealers

Time management

Pam Turnbull has appointments in her pockets and on her desktop

UNTIL now, one of the problems with the Pocket Book was the limited time management it gave you in an age where Filofaxes are a pre-requisite, courses on prioritising time *de rigeur* and a wide range of people carry small electronic address books as readily as pocket calculators.

Paper records remain the major medium because of size and as they need no power source – but you do have to remember to look at them.

Schedule allows you to have an electronic record which is compact, only needs a couple of batteries – that last long enough to forget about them – and with the release of Event and Occasion you can transfer details on to a single desktop machine or a network.

It'll also jog your memory about meetings and remind you in advance about that important presentation if the alarm options are set. And I've yet to hear a paper appointment diary beep when a meeting is due.

Loading and installing the application is straightforward whether on SSD (solid state drive) or floppy via the A-Link following the format of other, applications such as Abacus and Write.

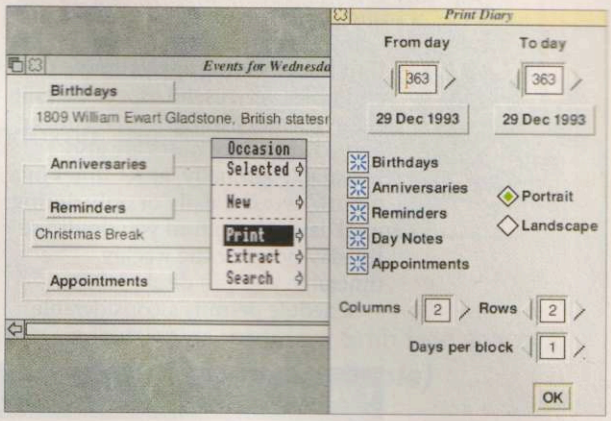
You can view the Schedule in five ways: The usual monthly calendar with appointments noted by a symbol graphically by the side, a weekly timetable, the day's appointments, notes on the day and a *to do* list with priority and *needed by* dates.

You can cycle through these with the Escape key or by pressing a key – if you've assigned one to the applications.

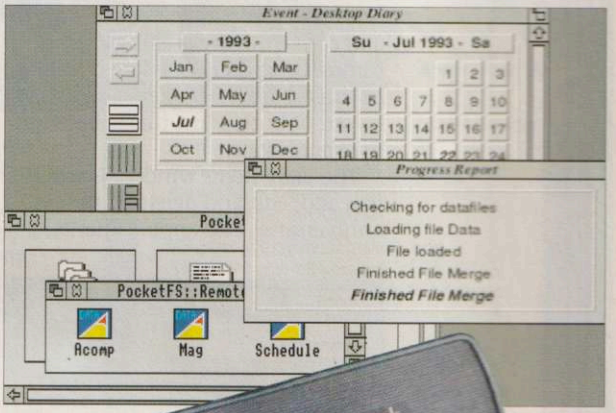
The whole package is very intuitive to use even if you are unfamiliar with other Pocket Book programs. You can also create files for different people or areas of work and merge these into their Schedule on another Pocket Book via an SSD.

You can jump to certain dates and customise weeks to your way of working – starting the working week on a Saturday rather than the default Monday as well as setting the beginning of your day or appointments at 6am or 5pm.

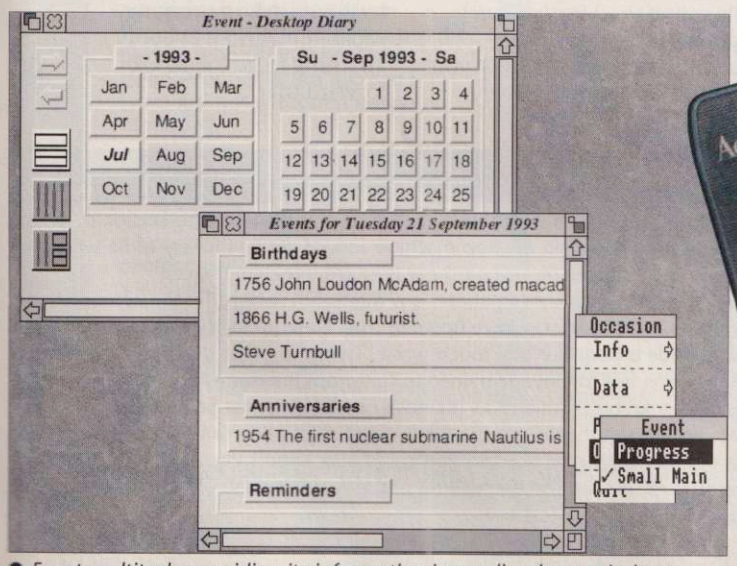
There are two ways to set alarms either for an appointment – *10 minutes to go* – or for a particular day – *Buy that birthday present*. A bell symbol appears next to the item ➤



● *The print options give you a good deal of control*



● *Attach the A-Link and your Pocket Book to keep one set of files at home and on the move*



● *Event multitasks providing its information in small or large windows*

➤
and can be removed or silenced.

If the event is a regular one you'll find the repeating appointments and notes very useful especially as it is less memory hungry than cutting and pasting. Day notes are also repeatable annually, at set times in a month, weekly, daily or only during workdays. If you find you don't use the day notes or the weekly timetable you can disable them.

Schedule permits a considerable amount of customisation and I found the to-do list one of the best facilities. Initially your tasks are all displayed by due date and priority but you can cycle between lists of tasks for individual subjects. Subjects can also be searched to find notes or appointments using keywords or wildcards.

However, if you have several alarms in different files you'll have to make sure that they are all open at the same time. Schedule uses the Alarm application so this program will also show any alarms due to go off in the next 24 hours.

Schedule expands the flexibility of the Pocket Book and takes it out of the realms of *for school children only*.

The Psion made a good impact on the business world and from the envious look from various people in marketing and sales the Schedule running on the Pocket Book could do the same for the Acorn owners.

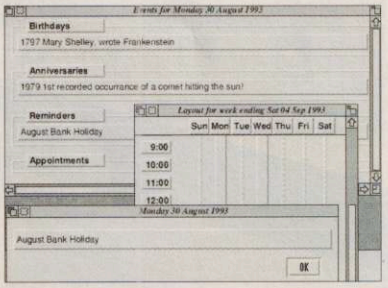
Event

THIS diary program has beaten its big brother Occasion – to be reviewed in a later issue – to the desktop first. Quite simply, it is a multitasking diary which, thankfully, is not so memory hungry as some programs – it works happily on 1Mb and 2Mb machines.

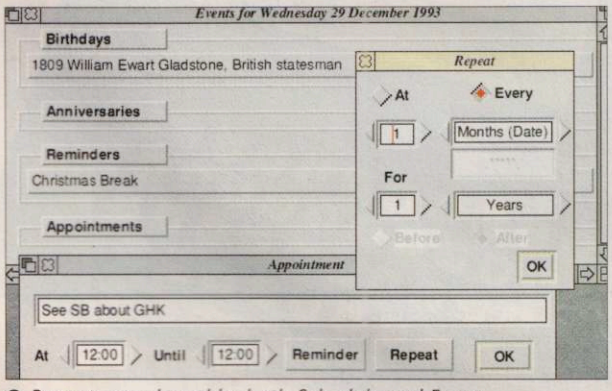
Loading it on to the iconbar you can opt for a large or small window approach – the small window showing the current year and month, leaving the large window option to display the previous and next year too.

I found the small window version sufficient for most needs and you can cycle through the years, months and days intuitively with information on a schedule displayed in three ways: Daily items, weekly layout or both – just toggle between the three icons.

The daily items window is where you add, edit and delete birthdays, anniversaries and appointments.



● *Event and Occasion give Schedule's events RISC OS flexibility*



● *Repeats are shared by both Schedule and Event*

PRODUCT SPOTLIGHT

Price: £24.95
Supplier: ExpLAN, St Catherine's House, 20 Plymouth Road, Tavistock, Devon PL19 8AY.
Tel: 0822 613868

Special historic events are noted here, too, so I know I share my birthday with Mr Gatling of machine gun fame. There is also a section called *reminders* where notes on the day are added with the option to *repeat* the information.

Here, too, is the option to print some or all of the information, extract it as a datafile in Schedule, Occasion or CSV formats or search the data. For every entry you make there is the option to make this event repeat or remind you in advance or arrears of its existence.

These are powerful features and ones for which you will have to resort to the manual the first time you use them. For instance, anniversaries can be set to repeat annually, weekly or daily. Meetings can be set to occur at the same day every month or on the second Thursday of every third month, for example, using the *Months (Date), (Start)* and *(End)* options.

Pattern is particularly useful if you want to sent a meeting for every other day for the foreseeable future but not at weekends like this: .*.*... where the first dot is Monday. This particular feature I haven't seen before and was a hit with a colleague who works regular shifts.

Reminders act like repeats as they, too, can be set for a once-only entry or to recur at a fixed interval – useful if you want to be reminded of a birthday before the event.

This is a very attractive diary and a must for anyone with Schedule on their Pocket Book as information can be copied out of Event and loaded – via the A-Link – into Schedule. With the minimum of fuss you can share the same information on both machines or integrate your files.

There is a problem transferring patterns to the Pocket Book and back because the information is stored differently, but it's not a serious drawback.

When you take files from the Pocket Book they are removed rather than copied to your desktop machines. It works well enough and means that Schedule doesn't have to cope with duplicate items.

Occasion promises more database facilities with networking capabilities and if Event is anything to go by, I look forward to it.

Interactive office

The one drawback I have with the Pocket Book is the size of the keyboard. Event allows input from the main desktop machine and, as you're unlikely to be writing a dissertation in Schedule, the keyboard size is no real problem there.

However, setting up the database is a different matter. To the rescue come Minerva (0392 437756) who have updated their Desktop Office integrated suite of programs to be a boon for any touch typist. Trying to input details on the Pocket Book is a bit of a trial for anyone trained to start from the *home keys*.

Minerva's solution is unique as it's now possible to type your entries into the DTOBase and export the files via the A-link without resorting to CSV or TSV formats.

Data flows in both directions so you could also import Pocket Book Cards data into DeskTop Office and use the features of the wordprocessor, spreadsheet, graphs and communications applications.

All new versions of DeskTop Office will have this as standard and existing users can upgrade for a mere £10 – well worth the money if you use the Pocket Book.

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Prophet ACCOUN

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'Currently the leader of the pack because of its general ease of use, comprehensive nature and high RiscOS factor. A well thought out and well supported program. Recommended' - Arc World, July 1993.

The above reviewer is not alone since all the other Acorn magazines have also given Prophet excellent reviews, but the people who really know how good Prophet is are its users (who are not without a sense of humour!).

The following extract is from a recent letter: 'Just returning Prophet V1.29 for upgrading in due course. Its getting better all the time...if you could get it to go out and take photographs for me while I go windsurfing I think that should probably do it!' - E Williams, Photographer.

Compared with other accounting programs Prophet is a breath of fresh air. The few accounting terms which are used are explained in **clear English** as is the illustrated 188 page manual (see the review in Acorn Computing - Oct 1992). This combined with our **free telephone help line** and **free upgrades** will help ensure you don't go wrong.

You can use as much or as little of Prophet's extensive features as you need - from simply entering your income and payments - to calculating your balance sheet and even your tax liability. (Your data can be entered **in any order** as sorting by date is automatic).

All your data is kept in a single file for the whole year which means that you can edit any of your entries and produce reports on any aspect of your accounts for any period any time you like.

You can also run as many different sets of accounts on it as you wish and if you're VAT registered Prophet also caters for the Cash Accounting scheme and many of the retail VAT schemes - it is also accepted by HM Customs & Excise for VAT purposes.

Other features include **Automatic Standing Orders**, Multiple Bank/Cash accounts. Stock Control. Invoicing, Statements, Purchase Orders, Credit & Delivery Notes (**all of which** can be set up to your own specification in Prophet's own DTP windows), **Mail merging** and exporting of data and reports to all the other popular packages.

Prophet is fully multi tasking and compliant with all versions of RiscOS. It will run on any of the Acorn 32 bit range of computers with a minimum of 2mb of memory.

Prophet costs £199.75 inclusive of postage and VAT. An entry level version is also available for £10 inc. **which includes the save option** so you can really give Prophet a test drive. (the cost is refundable on full purchase).

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The current version of Prophet has a myriad of extra features based on user feedback and this combined with our policy of **free upgrades** ensure that Prophet will always remain the number one choice for small business accounts software on the Archimedes.There are over 500 Prophet users which include Acorn dealers such as: 4Mation, EFF, Stallion, Spacetech, Davyn, Arm-Tech, Topologika.....

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New

Maths (Algebra)

For Children 6 to 16 Years

10 out of 10 Mathematics (Algebra) is packed with subjects, levels and activities to challenge all children from Key Stage 1 right up to Key Stage 4.

The graphics are automatically selected to suit the age of the child playing the games but a parent/teacher override allows the games to be **customised to meet the child's needs** both educationally and for the gameplay. This wide age range coverage means that the product offers **excellent value for money** and can be used by a family or school for many years.

As with all the titles in the *10 out of 10* series, the six games in the algebra suite have been carefully designed to **motivate and reward** the children playing. And, in addition to the six mathematical games, there's an extra one supplied **FREE**.

The free game – **WordFit** – is based on the popular game in the *10 out of 10 English* package. It has been specially adapted to help children to practise **spelling words** connected with Algebra.

The SIX challenging games cover ALL these Levels of National Curriculum ATTAINMENT TARGET 3 – and MORE!

Graphoid
- 3b.2 Use inverse operations in a simple context
- 4c.2 Work with co-ordinates in the first quadrant
- 5b.4 Use co-ordinates all four quadrants
- 6c.2 Plot simple mappings
- 7b.1 Solve simple inequalities (graphically)
- 8b.2 Locate regions by inequalities

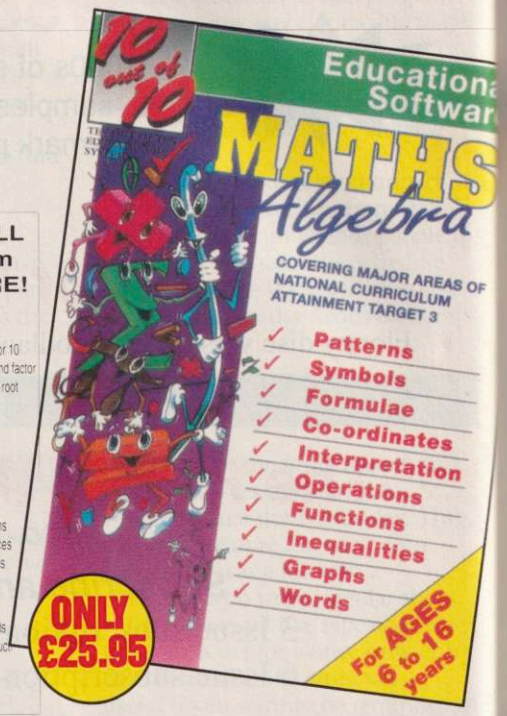
Hook It!
- 2b.1 The use of symbols in place of numbers
- 3a.4 Recognise whole Nos. divisible by 2, 5, or 10
- 4a.1 Recognise terms like square, multiple, and factor
- 5a.3 Understand terms like prime and square root
- 6b.1 Solve linear equations
- 8a.1 Manipulate algebraic equations

Processor
- 2a.2 Use number patterns up to 10
- 3b.1 Inputs and outputs to simple function machines
- 4a.2 Explore the properties of numbers
- 4b.1 Use simple formulae expressed in words
- 6c.1 Use simple mappings
- 8b.1 Solve a variety of linear and other inequalities

Turbo Raft
- 1a.1 Continue repeating patterns in objects
- 3a.2 Explain number patterns
- 5a.1 Add to sequences
- 5a.4 Recognise patterns in equivalent fractions
- 7a.1 Symbols to express the rules of sequences
- 9a.2 Indices for negative and fractional values

Chain Up
- 2a.3 Distinguish odd and even numbers
- 4a.3 Recognise Mult'n. and Div'n. are inverse opp'ns
- 5b.3 Understand co-ordinates in all four quadrants
- 7b.4 Simultaneous equations – graphical methods
- 8a.4 Interpret graphs of the form y=mx+c
- 8c.1 Know the shape of graphs (eg. quadratic & cubic)

Rib Tickler
- 2a.1 Explore simple number patterns
- 4b.2 Use simple equations expressed in words
- 5a.1 Generating sequences Interpreting instruc
- 5b.1 Express simple functions in symbols
- 7b.2 Solve simple inequalities
- 8a.2 Using and rearranging functions



ALSO AVAILABLE – other subjects in the *10 out of 10* Series

Early Essentials

For Children Under 7 Years

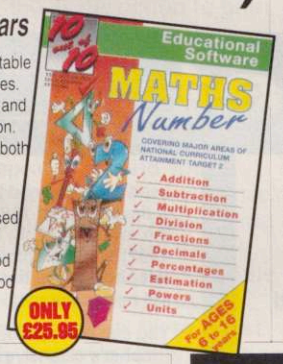
Early Essentials is outstanding. All of the activities are not only very enjoyable but they're well thought through. Infant teachers in my school who've seen the package have been most impressed and I feel that it's one of the best multi-purpose infant packages I've seen in a long while. If you have young kids then get it for the home. If you're a teacher, hammer on the headteacher's door and beg for enough money to buy a copy.
– Archimedes World (July '93)

Maths (Number)

For Children 6 to 16 Years

This is a first rate set of games suitable for a wide range of ages and abilities. They are educationally worthwhile and exciting to play – a rare combination. They are highly recommended for both home and school use
– Archimedes World (Dec. '92).

10 out of 10 is unique in home-based programs because of the National Curriculum link and it makes a good resource for parents as well as good educational fun for children
– The Micro User (Sept. '92)



English

For Children 6 to 16 Years

With its elaborate system of colour-coded levels of achievement and multiple levels of difficulty, 10 out of 10 is a useful compilation of programs based on the current National Curriculum for English... The zappy delivery and range of activities is guaranteed to sustain the attention of even reluctant learners
– RISC User (Jan./Feb. '93)

Most importantly as the games are fun children can't help but learn.
– Acorn Computing (March '93)

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Early learning

Pat Janes takes a look at a collection of programs for young children

● Get it right and the stars will be one of your rewards

● Whoever's in charge can easily customise the games

I HAVE found the 10 out of 10 series excellent and the collection of Early Essential programs is well up to their normal standard. These have been designed for children between the ages of three and seven with the intention of giving practice in recognition and aiding further learning.

The format is very similar to other programs in the series, though a nice addition is a selection of letters with appropriate pictures around the menus.

The package start with **Gnasher** a dog who keeps appearing throughout the games. In this first challenge – which can be selected by name in the menu or by picture – the easiest level matches shapes and colours. This progresses automatically to level two when you achieve over 50 per cent.

Link up presents you with a pin board and you must link like to like. You start with shapes and move on to digits and numbers of items, upper to lower case letters, collections of symbols, time, pictures to words.

The next game some of the younger aged children did find a little fiddly, but this didn't dent their enthusiasm.

Artist, as its name suggests, is a matter of painting. It starts with colouring a house, progresses to painting by numbers and moves on in stages to colouring the right answers to sums, matching rotated coloured shapes and painting specific body parts.

There are six levels to each game and adults can change these via the function keys. In addition, for extra challenge you can press F6 which adds a *Super* level to each game. These really are taxing and some go far outside the intended age range – how many seven year olds know where a style is in a flower?

This appears on the highest level of Artist, but the correct answer is shown and the child can learn through trial and error if necessary. To my mind this extends the use of the program as well as its life span.

With imagination on the part of the teacher or parent, a great deal of valuable learning is available in fun form especially as customisation is built into the program.

GrabIt again demands matching skills and develops these through the levels to introduce coordinates and codes at the higher levels. **Stones** is all a matter of sequences from the simple to the complex.

Finally **Racer** puts you in a racing car and you must drive over actions, letters in sequence, words to pictures, missing numbers, words to meanings and time.

The record of achievement is very useful, as the areas which need extra work and practice are obvious. Children like to see how well they are progressing, too, and certificates recording their skills and successes were very popular as was the high score table

The only note of dissatisfaction I have is that the size of the print in the Player and Parent/Teacher Guides is somewhat small. Certainly the text in the Player Guide needs to be larger.

Children who are just learning would much rather read the instructions for themselves but are used to larger print. However, this is a minor niggle which can be overcome by enlarging on a photocopier.

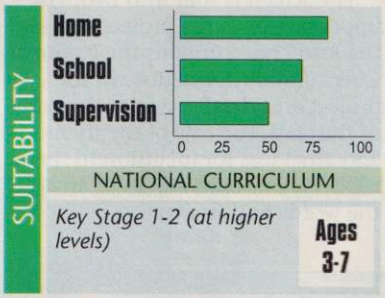
PRODUCT SPOTLIGHT

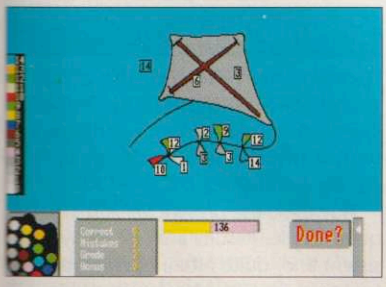
Product: Early Essentials
Price: £25.95 (inc VAT)
Supplier: 10 out of 10 Education Systems, 1 Percy Street, Sheffield S3 8AU.
Tel: 0742 780370

Summing up

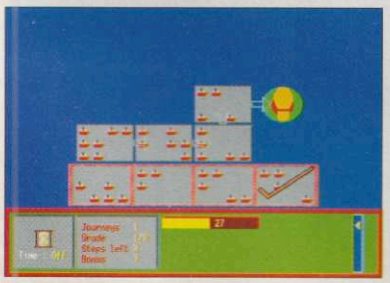
The target audience of Early Essentials thrives on challenge and enjoys learning. The games are well graded, and encouragement and acknowledgement is given through the certificates and reward schemes built into the program.

The graphics are good and I liked the use of digitised sound. Younger children especially liked the little pink face which popped up on menus to wink and say hello. Excellent value for money and the best yet from this company.

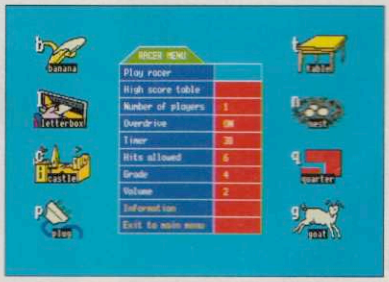




● Artist asks you to colour this kite by numbers on level 2



● Journey on these stepping stones – but get the sequence right



● The easy-to-use menus give you full control over the game

Searching for administration solutions

School organisation software is often PC-based. Frank Jukes examines a RISC OS conversion

PRODUCT SPOTLIGHT

Product: Harmony
Price: £80
Supplier: On-Target Solutions, 80, Headcorn Drive, Canterbury, Kent CT2 7TX

HARMONY aims to make life with the National Curriculum easier. As well as searching through the entire text of the National Curriculum for subjects via keywords you can just browse.

Any matches can be stored as references to particular parts or as sections of the actual text which may subsequently be manipulated.

Written for use on PC compatibles as well as RISC OS it has few, if any, concessions to those of us who choose to use Acorn machines.

Most disappointingly, Harmony doesn't run in a window but takes over the whole screen preventing some potentially useful multi-tasking.

The screen is split into two. The upper section is the project area and the lower one contains the National Curriculum information. In the project area details such as the name of the class, the title of the theme and any ideas for inclusion in the topic may be entered. All or any of the words in this area can be highlighted as keywords to search against later.

Selection of keywords and various options associated with the area is achieved by clicking on words in the area's border or through the keyboard with Control key combinations.

Rather annoyingly, the Delete key doesn't work as normal as the keyboard appears to be configured to respond as a PC keyboard.

By clicking on the word Search in the border of the lower area, or by pressing S – no need for Control key combinations in this area – a small menu is revealed.

Through this it is possible to choose National Curriculum subjects to search, to select those elements of the subjects which are of most interest to you and to determine how keyword searches are to be made.

Care is necessary to set up searches if they are to be successful. I spent some time marking everything in sight with the intention of searching the entire curriculum. Nothing appeared. No matches.

I repeated the operation. Again, nothing. I was told later that by selecting everything I had in effect selected nothing. The default is *everything selected* and marking items serves to restrict searches to just those marked items. The mechanism doesn't seem entirely logical.

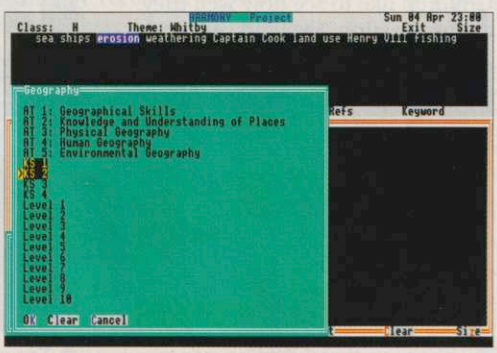
Once I had mastered how to set up a search, the system worked quite well. Matches to the various keywords appeared in the lower area of the display along with references to their place in the National Curriculum. Care must be taken, though, in entering the keywords. If they are entered on separate lines only the one on the last line seems to be used.

Once matches have been obtained they can be marked, in whole or in part, and then transferred to the upper window where they can be edited if necessary. By using keywords you can determine how much of the National Curriculum can be covered by a topic and to see how many cross curricular links there may be.

This is important. With page after page of National Curriculum orders it is well nigh impossible for any teacher to ensure that all of the cross curricular links which may be available are utilised or at least considered.

Once a search is complete and text has been transferred, it can either be printed or saved to disk as can the whole of the Project complete with keywords, text and references. As Harmony doesn't support hard copy via the usual printer drivers, anything for output via them needs to be saved and printed later.

● *The initial search on erosion brings up these subjects*



● *You can refine the search to particular Key Stages*

Summing up

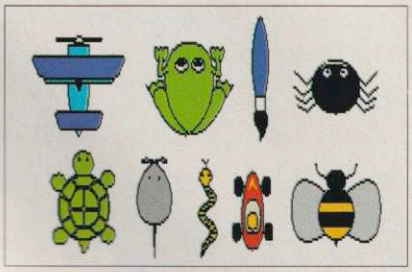
Harmony has potential. The ability to search the whole of the National Curriculum and to extract references from it is most useful in terms of both planning and checking.

However, the present version (1.03) is quite fragile. Results are not always consistent and, quite often, operations seem to fail. I would also be happier if it worked within the desktop.

PRODUCT SPOTLIGHT

Product: First Logo
Price: £24
Supplier: Longman Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS.
Tel: 0223 425558

Logo for beginners



● *First Logo comes with a range of turtle substitutes*

Rog Frost finds out if Longman Logotron have taken a step forward with their latest release

SOME of the main software publishers already produce cut-down versions of Logo – usually just the Turtle Graphics – for schools to use. Now, Longman Logotron, who produce the definitive full version, have entered the fray with a new, all RISC OS product.

First Logo is as different from full Logo as chalk from cheese. The first thing to see on loading is that the unfriendly screen, with a triangle in the centre and a question mark prompt has been swept away. First Logo loads on to the iconbar and runs alongside other programs.

One click on the symbol on the iconbar brings up two windows. One looks rather like the !Draw window with a tool bar on it. This is indeed the drawing screen and contains a large bold turtle as a pointer. The other window is for text entry and contains the familiar caret.

Standard turtle graphics commands can be entered into this window and the turtle leaves a trace behind. Words such as forward, back, right and left can be used. The initial set of commands is limited – it is a First Logo – but there are very useful colouring words and ones for finishing or closing a shape.

I particularly like the option of moving the turtle north, south, east or west. Also useful is the Stamp command. This allows sprites to be stuck on to the screen at the turtle position. A number of suitable sprites are provided and the facility to measure on-screen distances and angles is also very useful.

Entries can be typed in, or the pre-defined function keys can be used. Some commands, such as circle, square or triangle, can be selected by clicking on the appropriate graphics window tool.

Two different *slates* can also be selected to allow the mouse to be used to enter commands. Entry can be in English, Welsh or French with a clever shadow option to allow for instant translations.

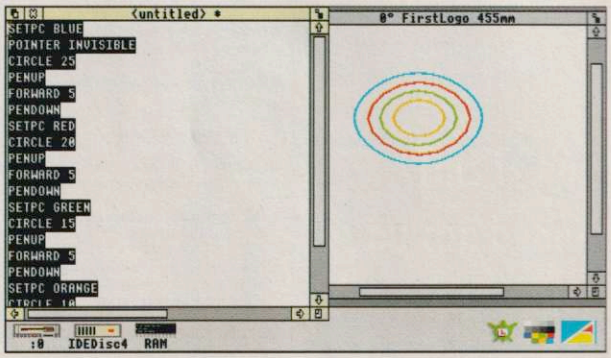
If turtles don't take your fancy, a selection of other pointers is available. These can range from the utilitarian cross hair through to a car, plane or various creepy-crawly creatures. The invisible pointer is useful since it means screens can be saved without an inappropriate animal on display.

First Logo has the best method yet for creating new commands and saving them. The text entry window works just like a wordprocessor and it is possible to mark a section of the text and save it as a procedure.

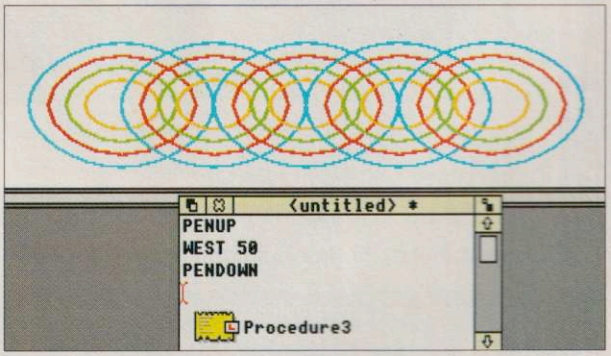
Procedures can be repeated as often as required, again by a simple process. The program follows so closely to expected RISC OS routines that children familiar with any other standard program will have no problems in mastering the management of this one. This leaves them free to concentrate on the problem-solving process instead.

Once a problem has been solved or a drawing created, it can be saved as a drawfile. This means they take up little disk space and can be printed out with ease. It also means that creations can be easily modified and teachers can incorporate drawings into their own worksheets created using any DTP package.

The programs used to create the drawings can be saved either as First Logo files or as plain text. These, too, may be printed or incorporated into another document.



● *The text window contains a program marked for saving. The drawing window shows the result*

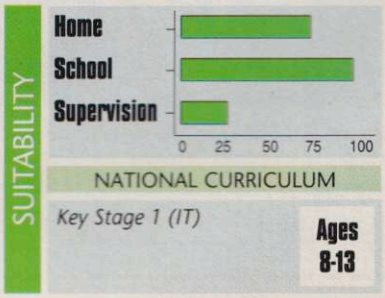


● *Repeating a procedure is easy*

Summing up

The support materials are simple, but useful. The guide is short – it doesn't need to be anything else – and apart from advice on using the program it contains some sample worksheets. These can be used alongside the scenes on the disk and provide for a variety of curriculum areas.

If you don't already have an early learners' version of Logo or Turtle Graphics in your school, First Logo could be the one to go for, particularly if your pupils are already Acorn-literate. It's a good program for home users too.



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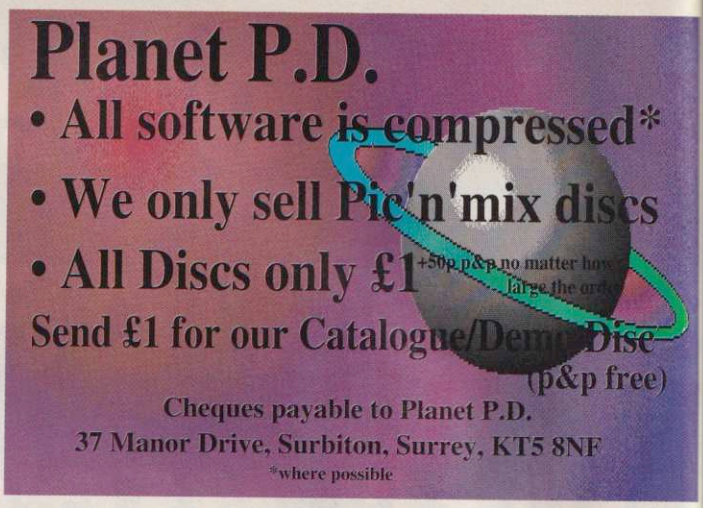
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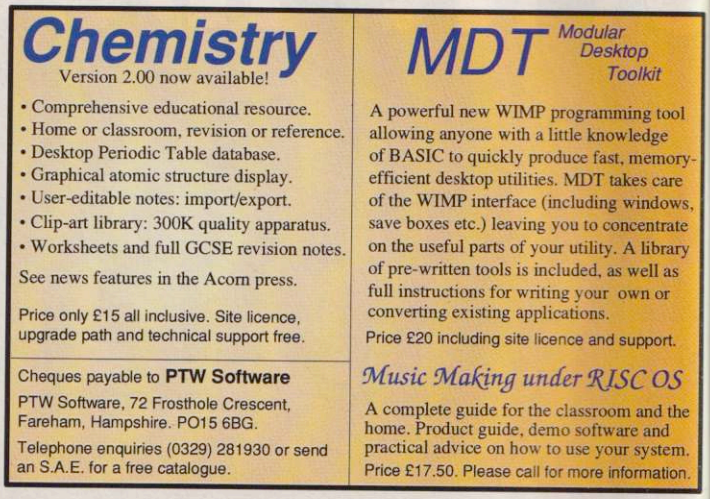
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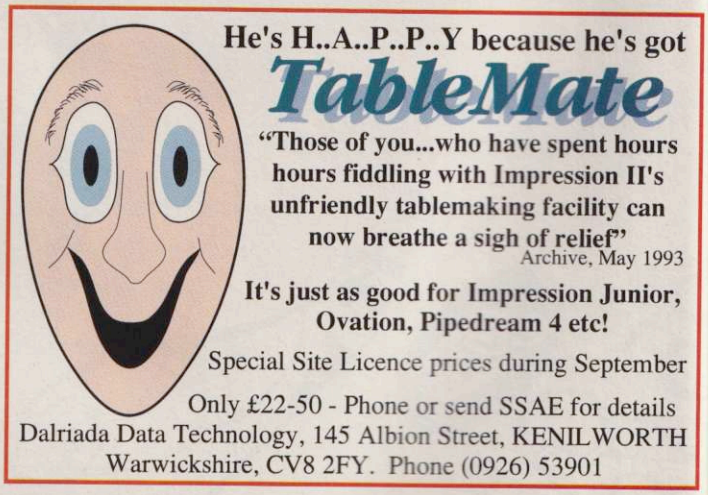
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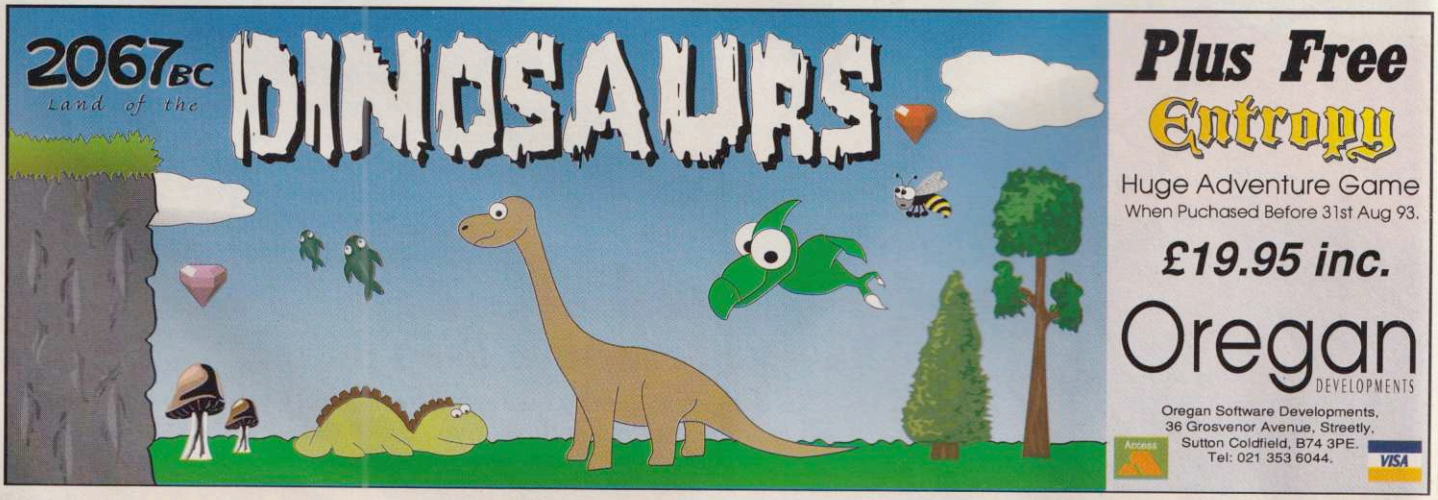
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Custom and practice

This month Teri Paul looks at various ways to make your machine special

IF YOU browse through catalogues from PD libraries you'll find a huge amount of certain types of software. Tracker files and clip art fall into this category with little to differentiate the specially composed or drawn, from the PC and Amiga conversions.

That is not to say that one is all bad and the other all good, but personally I like images – musical and drawn – which are of good quality and unique to the Acorn. But I always was a romantic.

One thing that the Acorn 32-bit machines do lend themselves to is the ability to customise the desktop, iconbar and sprites to your heart's content. Programmers can create their own enhancements, but lesser mortals can wait for Acorn's new set of desktop sprites – due any time now but only if you've got RISC OS 3.1 – or delve into some of the PD's offerings.

Fontastic

You can add fonts to your font's directory – disk space permitting – *ad infinitum*. Commercial fonts aren't too expensive now either with DataFile's Letraset conversions starting as £3.50.

But with hundreds of fonts your font manager is about to go into overdrive. It's best if you separate fonts into different directories for different uses but you'll also be asking the font manager to do more work than necessary. Enter **WhichFont?** – a RISC OS 3 program from Mrs Miskin.

By dragging font directories to the icon on the iconbar you add them to the window, where they can be selected, added to Font$Path – a system variable which lists the location of all the font directories – or deselected to remove them.

The menu on the window allows font directories to be removed permanently from the display, and provided a printer driver has been loaded, a hard copy of individual fonts or families can be produced.

What can you do with your now huge fonts directories? Well, **DeskFonts** is a utility from Rob Davison which replaces the default system font with an outline font of your choice in the desktop and wherever else VDU5 type text is used – such as Edit.

DeskFonts loads on to the iconbar and clicking select opens a window which displays the program's functions. The Fonts button lets you choose a font from any in your current font directory but some will need resizing and positioning to fit neatly on to your desktop.

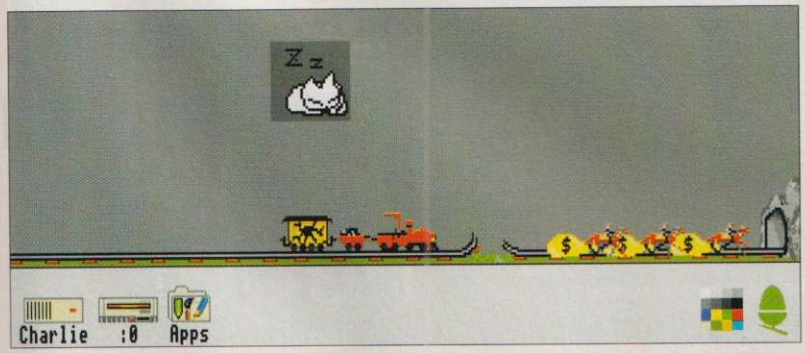
The Size X and Size Y options allow you to change the text size horizontally and vertically while the Offset options position the text by highering and lowering it as necessary.

Three radio buttons give you control over the colour checking:

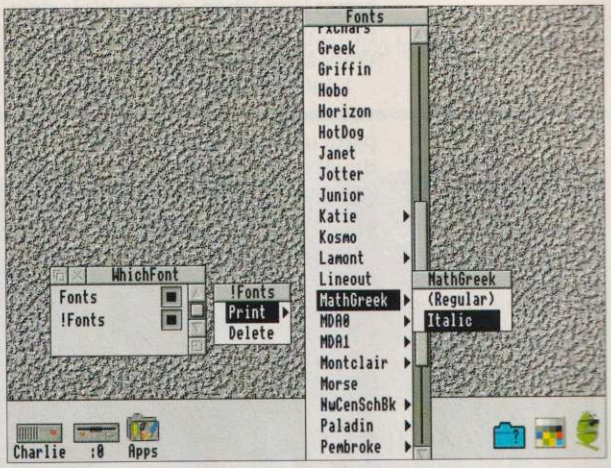
- **None** gives black text anti-aliasing to white everywhere
- **Partial** changes the text foreground to the colour the normal system font would be printed in at the same place but leaves the anti-aliasing at white
- **Complete** tries to guess the colour the text will be anti-aliased to.

For instance, if you're using Pinboard you'll find Partial the best option.

It is easy to experiment with this program and give your desktop an elegant or trendy aspect. You can save, load or reset your machine to the default quite easily which makes it an excellent way for relative newcomers to RISC OS to customise their machines. I particularly liked the Partial Quit option on the iconbar icon which removes the program but leaves the DeskFonts



● *The mouse pointer is still, so Neko sleeps while the bandits make off with Locomo's loot*



● *Managing your font directories is made easier with WhichFont?*

PD writer's meeting

William Cooke would like to arrange a meeting of all PD and demo writers at the Acorn World Show in October. If you are interested contact William to arrange a time and date by sending an SSAE to William Cooke at 27 Downside Gardens, Potton, Sandy, Beds SG19 2RE.

➤

module active, displaying the last settings you chose.

DeskPatch was proclaimed by someone looking over my shoulder as an *anorak application*. Not a nice term as I personally prefer my pink Parka (*I thought it was a pink Rolls-Royce driven by Parker. Ed*)

Whatever, this is an excellent addition which patches code on top of RISC OS 3.1 desktops to give you a choice of 12 textured wallpapers – a PC term by the way which seems to be adopted by Acorn along with *furniture* to describe the desktop – from concrete to leather.

Putting on the ritz

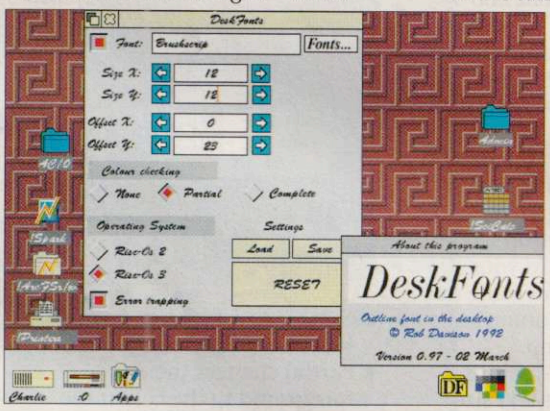
The program is in version 2 and will only work from a network or hard disk. Apart from giving you a more granular backdrop it offers a choice of enhancements to give solid dragging of individual files, a slab-in effect when clicked, plus a special group icon when you multiple drag items which also works on the Pinboard if you want.

You'll also notice changes on your hard disk free option and particularly cute is the Switcher – the Acorn to the far right – which sports a new cool image as well as outline fonts and 3-D dialogue boxes.

Ting Kuei has also changed the fonts and given an extra dimension to !Calc, !Paint, !Edit and Palette. More is promised for the next version and the new facelift has been a hit with those who have used it.

Of the same genre **NewIcons3** from Oliver Clark has been around for some time and simply adds a certain *je ne sais quoi* to the desktop with a choice of differently styled 3-D icons which look their best in multi-scan modes in RISC OS 3.

If you're happy with the icons but would like to change your window bars then **Tools** from Hugo Mills and Chris Marshall is a very simple application to do just that. There are four sets to choose from: 3D, Chrome, Weishaupt and NeXT.



● *With DeskFonts you can have whatever font you want from the easy-to-read Junior to more elegant fonts such as Brushscript*

Even sillier

If you appreciated KangaKoe featured last month, you'll like an earlier program from the van Guliks called **Locomo**. This is a story of trains, robbers and the long arm of the law. So while you get down to the mudanity of spreadsheets you can experience adventure on your desktop. If you can opt for a wide screen mode such as 31 you'll get the full panorama.

For animal lovers **Neko** needs a good home. This playful little kitten pounces and prowls around the desktop after – you've guessed it – your mouse pointer.

If you don't move the mouse for a while, in true cat style Neko will wash himself and then go to sleep. But not for long, the moment you move the mouse he's off. A nice bit of coding means that he doesn't enter windows though if you're using PlaceIt or Pinboard you'll have to distract Neko over the other side of the screen before double-clicking on a backdrop icon.

HOUSE NEWS

So what are the public libraries up to at present? Arcaynia with disk prices starting at 99p are doing very nicely especially with their 20 games for £25 offer. Top games at the moment are Invaders following closely by Gyrinus and Tertris.

Moving south Low Cost PD is closely involved with the Archimedes User Club which costs £8 a year to join but for AUC members PD prices are even lower, while in Middlesex Digital Illusions now incorporate two disk-based magazines, Illusions and Virtuality. ARM PD also have another persona that of the Children's Acorn User Club.

Meanwhile, in the centre of the cosmos – Cheshire – Datastream include a non-PD section where they sell a variety of *licenceware* including clip art, programming tutorials and games. Amicorn also have a growing shareware section and unusually are a dual format library with programs for both the Amiga and Acorn machines.

DigiTech are now concentrating on bespoke software (programs tailored to one individual) and commercial products but they do have a small catalogue worth looking at. Last, but not least, Jamie Munro and Stewart Duncan have started Planet PD and have a pic-'n'-mix range on offer.

Craig Beech has some of the more unusual titles in his library and is also venturing out of the PD world. If you've wondered where many of the demo writers have gone I'm sorry to relate that the lure of big bucks has taken them to pastures new. Our loss.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 1 Oakwood Drive, Heaton, Bolton BL1 5EE.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Mad Rabbit PD, PO Box 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE.
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3PD Swapshop, 66e Picardy Road, Belvedere Kent DA17 5QN.
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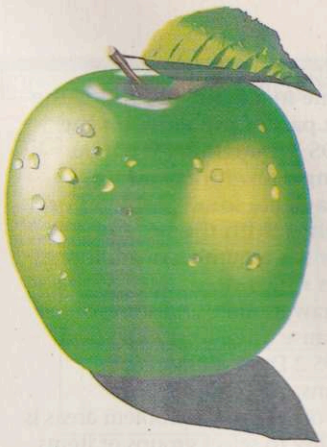

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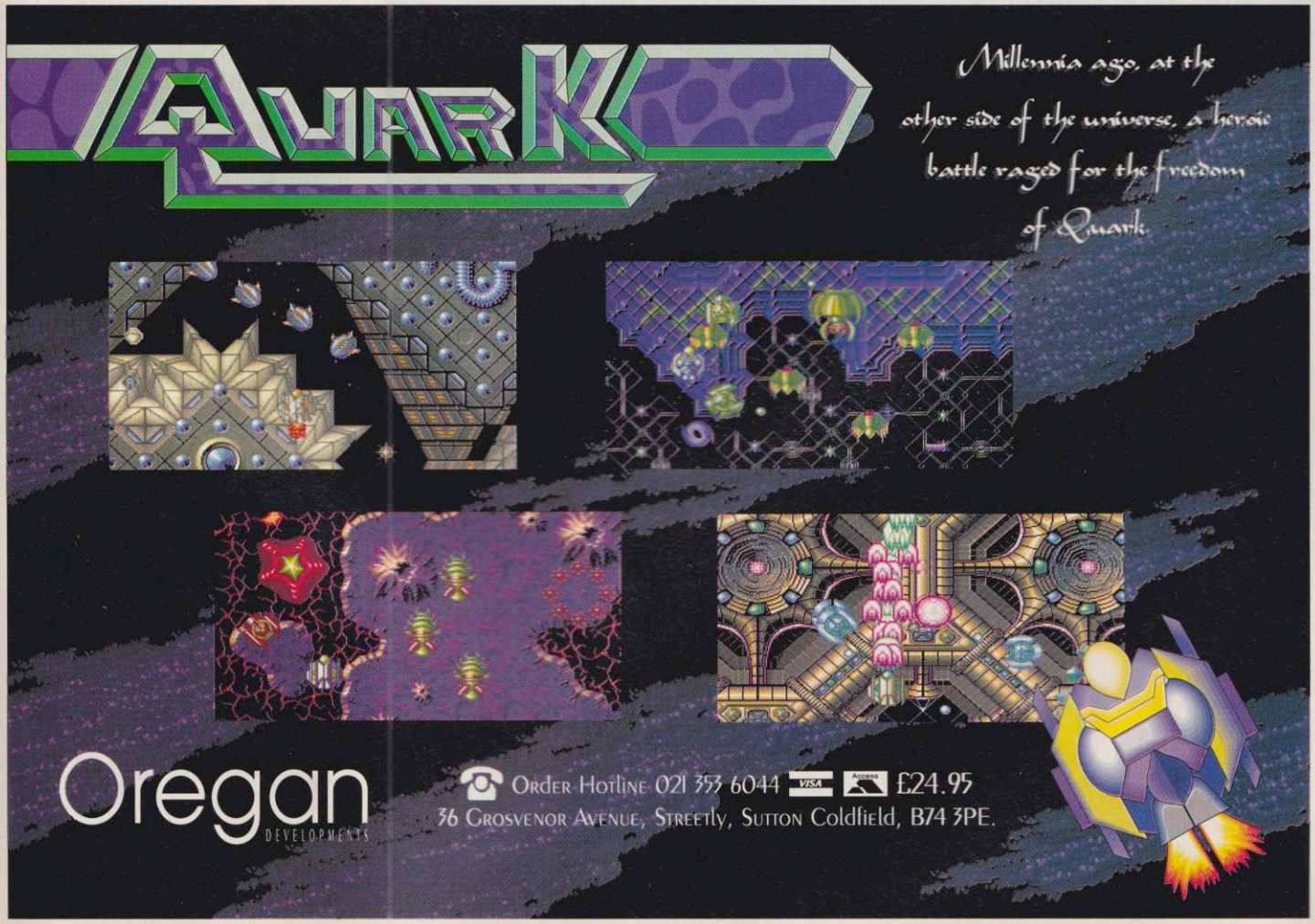


Out of the fryin

Geoff Gallacher concludes his short series on RISC OS 3.1

WELL, all good things must come to an end and this is the last part of my series on the RISC OS 3.1 upgrade. We'll be covering a few hints and tips to help navigate some problems or difficulties with the system.

Draw has a number of additional features which were added to the core Draw module and some of these cause those upgrading from RISC OS 2 Draw all kinds of problems.

One of the major problem areas is the ability to select groups of items in different *planes*. However, it is important to know how objects are handled in Draw to understand how a multiple group command works.

Each of the overlapping objects you draw can be thought of as being in a different plane. This is similar to thinking of your drawing in 3-D – the first item you put on the paper will be farther away from you than the second overlapping shape. It is easiest to explain this by referring to this third dimension as the Z axis or as a plane.

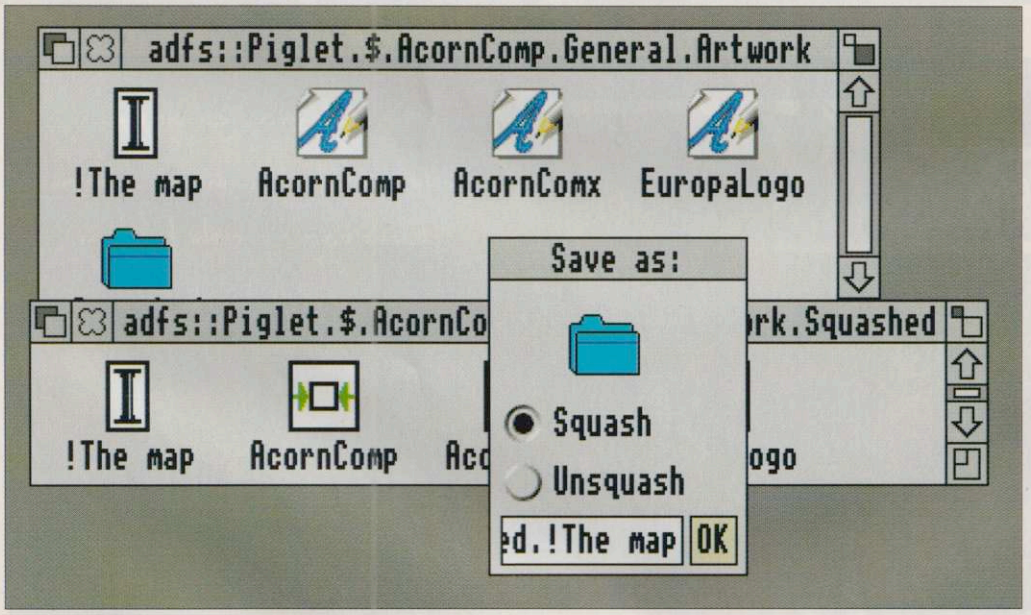
When you select an item you place the dotted box around the nearest item to you. So, if you want to select the first item placed on a drawing and there is a more recent one in front of it, you have to select the front item and *walk* back using successive Selects till you reach the one you want.

Though this works for simple shapes and items, when a drawing becomes more complex or you want to group more than one item from a large number of objects in different planes, the problem of how to select these items becomes more daunting and laborious.

It can be achieved by sending the front item to the back until you reach the desired item but this can be very long winded.

In RISC OS 2 you could use Adjust to select the second and third items to form a group – but only if these were in a plane in front of the first selected item. Likewise trying to select an item between two planes using Adjust was impossible as the item in the top plane always got selected. RISC OS 3 can cure this by clicking Adjust over the item you want and clicking Select before the double arrow disappears.

My example, opposite, was produced by making the smallest rectangle first and successive rectangles in order of size on top of the first. It's worth experimenting on a few different types of objects to get the feel of this.



● *Squash is useful but it has its problems*

Bug cure

A bug in the RISC OS 3.1's Draw manifests itself as an unrecoverable error which crashes Draw when you try and copy objects from one window to another. It's quite specific and causes an immense amount of hair pulling, although the preconditions are quite strict and can be avoided.

If you want to copy selected items from one drawing to another make sure that the first drawing you open on the desktop is the one you want to copy to. If there have been any alterations to your drawings there will be a * next to the filename at the top of the window. If this is present save your work before copying.

If you get an error box from Draw with a message about saving work in always select the OK option. Draw will quit from the iconbar but the drawing might be saved in the !Scrap directory.

To get it back you need to open the !Scrap directory using Shift+double-click, Select and then double-click on ScrapDir to open it and the same on the Draw sub-directory. You should find at least

one file – 0 – though there might be more numbered sequentially.

If you load these into Draw one of them will contain your drawing from when the program crashed. You can now re-name it and move it to a suitable directory. It is worth drawing very carefully as sometimes this disaster recovery doesn't plot things properly.

Having touched on the Scrap directory I wonder when you last cleaned it out? If you have any directories under the ScrapDir directory this is taking up valuable disk space. In general you can delete all these directories as they are created as and when needed by specific programs.

Scrap is part of the operating system which all applications use as temporary workspace or for disaster recovery. For instance, if you use !Printers there will a directory under ScrapDir used as a temporary workspace.

A bit of a squeeze

Another program with an annoying bug in it is !Squash which I use all the time as my hard disk drives are always full. However, there is a nasty bug in here which causes files to be deleted rather than decompressed. If this happens don't try to decompress another file as the error *will* recur. Instead, press F12, type *RMReInit Squash and press Return twice.

This will reinitialise the module and all should be fine. I haven't found the cause of the problem but the cure seems quite effective. The moral is that backing up your data in an uncompressed form might take longer and use more disk space but it has to be worthwhile – hasn't it?

There are some excellent PD and commercial programs around which will do incremental backups with and without compression and allow you to flag files to be excluded and so on.

However, you can do this without a backup program. Format a number of floppy disks – plus a few extra just in case – put a disk in the drive, choose Name Disk from the menu and pick a suitable name for the disk.

Click on the drive to open the Filer window and select all the files you want to and drag over to the open floppy disk window. When the disk is full, an error message appears so remove the first disk and label it with the date and number it in sequence.

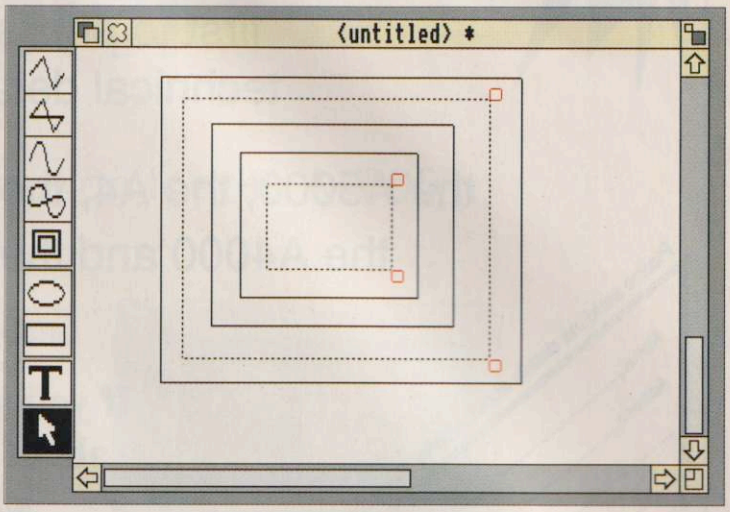
Continue the process with the second disk using Name Disk to change the name to exactly the same as the first disk. Click retry on the disk error box. If you click Restart by mistake you'll get the dreaded *Ambiguous Disk Name* error but simply clicking Retry will override this and the copying process will continue.

This second disk will fill with the next chunk of data and the error box will reappear when full. Repeat this procedure until all your data is backed up. You should now have an exact copy of the files copied from your hard drive.

If you need to restore a file from these backup disks use the dismount option in the drive menu as all the disks have the same name and this will confuse ADFS. You might suffer from the Ambiguous disk name error which is even more ridiculous that the old FileCore in use error on RISC OS 2.

It is usually caused by opening a directory viewer on one machine, ejecting the disk without dismounting, putting the disk in another machine, writing data to it and putting it back in the first machine and clicking on something in the open Filer window.

The cure is to press F12 and type *RMReInit ADFS press Return twice and click on the drive icon. This *fix* is useful if you have more than one machine and are constantly transferring data between them via floppies.



● *A simple selection group was impossible without sending the largest rectangle to the back in RISC OS 2*

Customising Filer_Action

IF you have the available memory you can go to the Task Manager and drag the Filer_Action memory bar to any value you want. If you are using high density, drag it up to 1700k if possible to speed up the disk transfer.

Effectively you are telling the Filer_Action program that it can use 1700k of memory to read the data into before having to write the data out to the floppy. The operating system default is a maximum of 640k which is Okay for most file copying but a bit limiting for backing up purposes.

For a permanent change you can alter the *Next* slot specification in the Desktop !Boot file, change:

```
WimpSlot -next 640K
```

to:

```
WimpSlot -next 832K
```

and then 800k disks can be copied in one go while 1.6Mb disks take two.

How to set values

YOU can set the duration of the double arrows by simply altering the value from !Configure. These are in 1/100th seconds and normal values are around 5 to 25. You'll have to experiment to find the value to suit you.

g pan . . .

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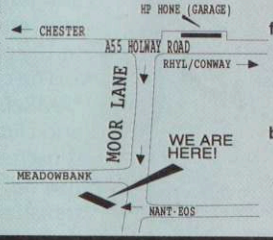

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Faster and faster

Steve Turnbull assesses the turbo option for the A4000

THE desire for more speed seems ingrained into the computer developer's heart, so it was to be expected that an upgrade to the Acorn machines that use the ARM250 processor, was inevitable

The ARM2 can be upgraded to an ARM3 but the ARM250 can't be exchanged because it's completely self-contained. So where can you make an improvement? Well, making the memory more responsive can improve the speed and that's what Simtec provide.

The upgrade requires modification to the motherboard which can only be done by Simtec or an approved Acorn service centre. The price of fitting will vary, of course, which is why we've provided the basic cost of the upgrade rather than the full cost.

The operation of the machine is not apparently affected, after all it's just a change to the memory chips, but you'll find after a while that the machine has a certain sprightliness that it didn't have before – window dragging has a little more ooomph and so on.

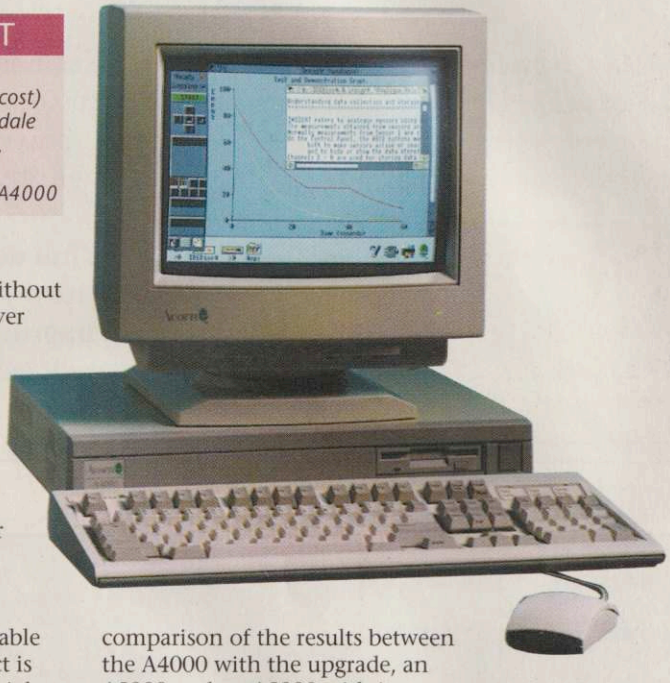
The overall speed increase is estimated by Simtec to be about 40 per cent – in other words if something takes 10 seconds without the upgrade, it will take just over seven with it.

One of the most important features of the upgrade is that the higher memory speed gives a better processor bandwidth. In practical terms it means that the updating of the screen can take place faster and it's this that gives the overall performance increase – less time is spent on screen handling so more time is available to the application. A byproduct is that the machine can handle higher screen modes more effectively and with less *slowdown*.

We devised a number of tests to check the capabilities of the system and the details are given in the panel. The table shows a comparison of the results between the A4000 with the upgrade, an A5000 and an A5000 with its memory cache turned off – which is roughly equivalent to an unmodified A4000 although it does have faster memory.

PRODUCT SPOTLIGHT

Product: Turbo memory upgrade
Price: £129 (not including fitting cost)
Supplier: Simtec Electronics, Avondale Drive, Tarleton, Lancs PR4 6AX.
Tel: 0772 812863
Requirements: A3010, A3020 or A4000



Putting the upgrade to the test

1: Processor
This involves reading instructions from memory and performing register-based operations. The cached A5000 works like lightning because of the cache, but the improved memory in the A4000 shows its worth.

2: Memory
This performs widely spaced loads and saves to memory, trying to bypass, to some extent, the A5000 cache. In this case the A4000 is nearly 50 per cent better than the uncached A5000 but still three times slower than the cached one.

3: BASIC Integer
Whole number calculations in BASIC. There's some improvement but not a lot.

4: BASIC Fractions
Floating point calculations show roughly the same increase as Integer.

5: BASIC Power
Power series calculations have increased speed but only marginally.

6: OS Graphics
Random graphic shapes in random colours with random plotting styles. The percentage increase remains constant.

7: ArtWorks
A practical demonstration of power, plotting a fairly complex ArtWorks picture on to the screen with the highest detail. The A4000 is only half the speed of the full A5000 so the gain in speed is quite dramatic – definitely worth having.

Summing up

It's clear that the upgrade makes a significant difference to the machine's performance. Whether you decide you want the extra speed depends on the type of application you usually use on your machine.

Game players probably wouldn't need it but for serious programming and graphics work it is clearly a much better performer. You pays your price and takes your choice.

How the machines fared – in seconds

Test	A5000	A5000 (no cache)	A4000 Turbo
1	6.77	38.93	22.22
2	10.32	63.32	32.33
3	12.09	99.79	88.21
4	14.71	116.83	103.51
5	16.86	119.44	108.64
6	10.37	44.05	38.18
7	6	22	12

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C.S.

The Summer's Still Here!

...although as I write this it doesn't seem like it! We've reduced many of our prices this month (and corrected a couple of errors!). We are now looking to you to do your duty and buy lots of software before we have to put them back up again to keep body and soul together.

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P.S. Don't forget we will be closed until the 12th August when we will pack away our buckets and spades and resume our normal high standard of service

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Douglas Berry concludes our in-depth look at Ethernet with protocols, systems and software

THE previous articles have described the standards making up the physical layer and hardware of Ethernet. However, simply having all computers connected by Ethernet does not guarantee they can communicate.

As a simple analogy, two people can use the same telephone system but unless they can communicate via a common language they cannot hold a meaningful conversation.

A further level of standardisation is needed to allow computers to talk a common language – at the very least all computers should have a common means of indicating which language it is that they are using. This allows a machine that receives a message in a *foreign* language to immediately reject the message without wasting time trying to interpret it.

Communications protocols for computers are – in some respects – analogous to languages. Protocols define a set of rules governing the information flow within a communication system. They control format, timing, error correction and recovery, sequencing and so on for messages on a network.

They are essential for a computer to be able to interpret incoming information. Suites of protocols are often used in networks, with each protocol responsible for one part of a communications function. Usually one protocol level within a suite will provide services for another. Such groups of services are also called Protocol Stacks.

To understand more of the issues involved in network planning it is important to look at some of the relevant international standards for protocols. Their purpose is to ensure inter-operability of computers from different suppliers.

In 1977, the ISO (International Organisation for Standards) chartered a committee to study the compatibility of network equipment, in order to allow *standardised procedures to be defined enabling the interconnection and subsequent effective exchange of information between users*. It published the Open System Interconnection (OSI) Reference Model in 1978.

Open systems

The term *open systems* is important, referring to a network model *open* to equipment from competing manufacturers. Frank Derfler and William Stallings in their *Manager's Guide to Local Networks* (Prentice Hall, 1983) commented that the OSI reference model is useful for anyone involved in buying or managing a local network because it provides a theoretical framework by which networking problems and opportunities can be understood.

However, OSI is only a model that describes procedures and provides service definitions in an abstract manner and doesn't define how ➤

OSI Equivalent Layer	TCP/IP Protocol Suite Layers
Layer 7	TELNET, FTP, SMTP
Layer 6	ASN.1
Layer5	LLP
Layer 4	TCP, UDP
Layer 3	IP, ICMP
Layer 2	802, HDLC etc.
Layer 1	802, 232 etc.

● *Figure 1: A world of abbreviations – the network protocols and where they fit in TCP/IP*

➤
each of these layers is implemented. For example, there are numerous implementations of the physical layer: Ethernet, Token Ring, FDDI and so on.

One of the important definitions of the OSI model is the idea of connectionless and connection-oriented operation. In the latter, the communicating computers set up a *logical connection* before the transfer of data occurs.

For example, before transmitting data the sending computer may transmit a message to enquire if the destination station is there and ready to receive.

Certain other options regarding data transfer may also be *negotiated* at this point.

Additionally, the connection-oriented service also provides for the receiving computer to acknowledge all data sent. Both negative and positive acknowledgements are catered for.

TCP/IP

Before development of the OSI model, TCP/IP had been the *de facto* standard for networking protocols. This suite was used and developed by the American Defence Advanced Research Projects Agency and the US Department of Defence.

The protocols build up to and include layer four of the OSI model but there is no exact correspondence layer for layer. Three main protocols sit above TCP/IP: TELNET, FTP and SMTP.

The three most important protocols defined by TCP/IP suite are IP (Internet Protocol), TCP (Transmission Control Protocol) and UDP (User Datagram Protocol).

IP is a connectionless protocol and computers using it usually depend on another layer – normally the transport layer – to provide connection to oriented services. IP data packets are called datagrams.

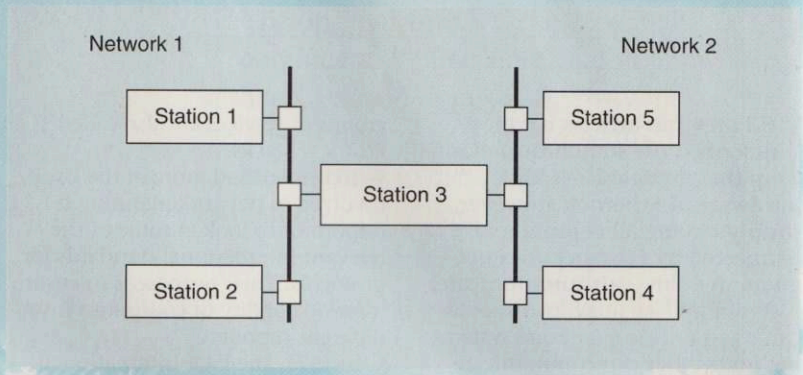
A datagram is a data packet that contains sufficient information to be independently routed from source to destination without relying on any previous transmissions.

This is obviously crucial for a connectionless service.

The fundamental purpose of IP is to provide a routing service. Routing is required in complex systems built up of multiple networks.

In Figure II, Station 3 has two Ethernet interfaces and connects to both networks. If Station 1 wishes to transmit to Station 4 it must do so via Station 3.

The Ethernet MAC layer must use



● *Figure II: How do you send data from Network 1 to Network 2?*

Atomwide (0689 858852)

All Acorn 32-bit machines are supported for 10base2, 10base5 and 10baseT in either 8-bit mini-podule format for the A3000, A3010, A3020 and A4000 or 16-bit cards for the full-size machines, the network interface slot on the A3020 and A4000 is not used. Any single card costs £149 (plus VAT) with volume discounts for 10+ units.

Atomwide will be happy to recommend a recognised and competent local dealer and can also provide consultancy services, rates by negotiation but educational establishments receive a discount. Technical support is offered with training courses on request and a money-back guarantee.

Standard AUN software is provided with free upgrade by disk or electronic mail. Rom upgrades are £20 or £10 if the original chip is returned.

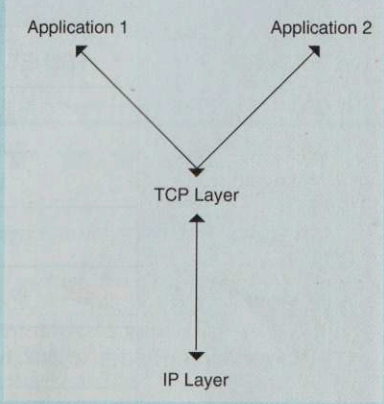
i³ Ltd (0223 413717)

All the 32-bit machines (except A4) in the Acorn range are supported to full IEEE802.3 standards, prices available on application, for 10base2 and 10baseT implementations.

Apart from the standard AUN client software, additional software in the form of the !AppFS is supplied. Free software upgrades are provided and the interface software on the card is upgradable from the network file server without any machine having to be disconnected or opened up.

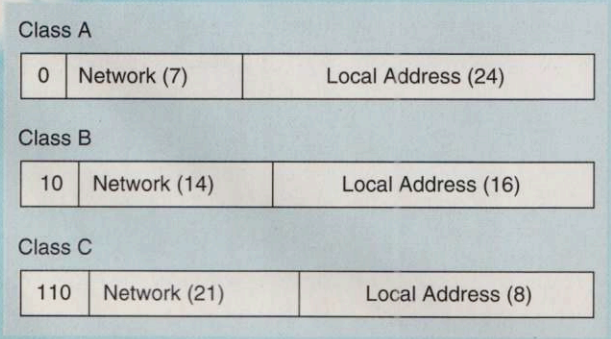
*i*³ Ltd provide a 16-page User Guide with every card, telephone technical support, assistance with network debugging and advice on network planning.

There is a consultancy service which costs £200 a day plus expenses, although it may be free under special circumstances. Site surveying for network planning is charged.



● *TCP/IP provides network services to application programs*

● *Figure III: Formal IP addresses come in three types*



the physical address of Station 3 when transmitting.

However, the data must be marked to indicate that Station 4 is the final destination. So when Station 3 receives the frame it will know to send it on. This task is the responsibility of the IP.

For this an IP address is assigned. Formal IP addresses are provided by the Network Information Centre (NIC) in SRI International.

However, formal addresses need only be used when communicating on the world-wide Internet network otherwise users are free to chose their own private IP address.

These are 32 bits in length and identify the host and the network to which it is connected.

Depending on the expected ratio of networks to host machines, an address will be assigned in one of three classes, as shown in Figure III.

The network portion of the address is common to all machines on a network while the local address is different.

It should be noted than an IP address does not identify a host as such, but rather the host's connection to its network.

For example, if a computer is moved from one network to another its IP address will change while the physical address of its Ethernet interface will stay the same.

Transmission control protocol

TCP provides a connection-oriented service. As such it's responsible for providing reliable transfer of data to the upper layers.

Some of the services that TCP provides for are:

Flow control: The receiving station is able to slow down the senders transmit rate if it is sending too much data.

Data acknowledgement: All packets are acknowledged either positively or negatively.

Lost/corrupted packet retransmission: If a packet is negatively acknowledged or no acknowledge is received at all the transmitting station will retransmit the packet.

S. J. Research (0223 416715)

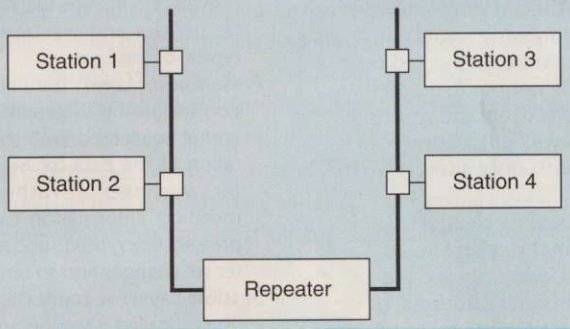
Probably the most successful independent network system, Nexus, is entirely proprietary. Not using Ethernet hardware, although the software is AUN-compatible, the system is designed specifically for schools with clusters of up to 12 RISC OS machines connected to a single Nexus disk sharer. The clusters are linked to expand the network.

It has a high level of security and is easy to get going. Consultancy services are available at £20 an hour for installation to £40 an hour for senior design and commissioning engineers. There's no charge for preliminary discussions.

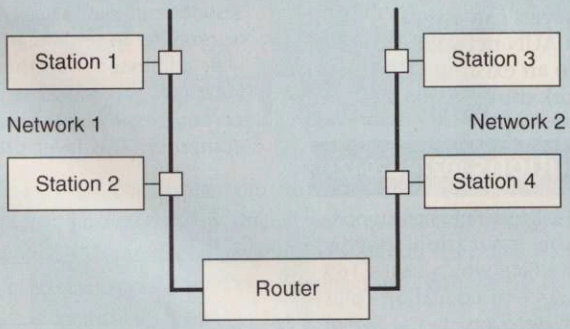
The interface hardware is provided for all Acorn machines except the A4, although that is being developed. The cards load the latest software from the local Disk Sharer so only that needs to be upgraded. Bug fix upgrades cost nothing while enhancements are charged at a nominal rate.

Acorn universal networking

At the heart of Acorn's networking strategy is AUN. It provides a flexible and structured approach to building network resources. The structured approach allows schools ➤



● *Figure IV: A repeater can extend a network*



● *Figure V: While a router is used to add a new network*

Douglas Berry graduated in Physics from Glasgow University and did a Ph.D. in multi-processor design. He worked on advanced digital signal processing and then on parallel processing using transputers. He is now a Director of β^3 who produce Ethernet products for Acorn machines.

RISC Developments (0727 840303)

They have recently released three Ethernet cards which contain 64k buffer memory and are able to operate at the full Ethernet speed of 1.25Mb a second. The cards carry the software on board and separate software is available on disk to allow operation with the TCP/IP protocol suite.

A5000, A540, A300 series and A400 series: Have a standard expansion card with connectors for 10base2 and 10base5 networks. Price £139.

A3000, A3010, A3020 and A4000: These have a mini expansion card which provides connection to 10base2 networks. Price £139.

A3020 and A4000: Have a special network slot which these cards use. They provide 10base2 connection and protect against connection to an incorrect network type. Price £139.

Education prices for all the above hardware is £127.88. Hardware for connection to 10baseT is in development. RISC Developments provide a free advisory service while on-site engineer support costs £150 per day plus expenses – if needed.

As the software is in eprom, permanent upgrades require the card to be unplugged as with most other interface cards.

➤

to develop their site network at their own pace and without risking existing investments in Econet.

AUN is based on the TCP/IP protocols so provides all the benefits of industry standard protocols, open systems approach and inter-operability within the Acorn world and beyond.

The principle aim of AUN is to create a framework for upgrading the networking hardware and protocols to provide for an industry-standard layered architecture that could be utilised on any underlying networking hardware while maintaining Econet SWI calls.

Future proofness

This allowed the underlying network to be radically changed while still preserving the existing user interface. It therefore builds in a level of *future-proofness* that previously did not exist.

Due to the enhanced routing capabilities that AUN provides – via IP and IP addressing – Archimedes computers can be connected on a campus-wide net made up of hundreds of station and multiple networks as well as in a single classroom with only a few stations.

AUN addressing retains the familiar Econet naming and addressing. Users only see the *net.station* format of address, or more usually file server – or other shared resource – names which system managers can assign.

Where an AUN network is connected to an existing TCP/IP based network using format IP addressing then more care must be taken by the networking manager in assigning addresses.

In order to build a large network certain precautions must be observed. The limitations of Ethernet were covered in the July issue. To extend a net beyond the 185 metres and 30 station limitation segments of cable must be connected by a variety of devices.

A Repeater works at the physical layer regenerating the signal form one cable segment on to another. The two cable segments form one network – all frames transmitted on to one cable segment are also transmitted almost

> A well-planned network will be future proof, have low long term costs of ownership, combined with inter-operability with existing equipment

Oak Solutions (0274 620423)

All Acorn 32-bit machines are supported with the education-specific ClassNet interface which cost £169 retail and £149 to education (plus VAT) volume discounts start at five or more.

The ClassNet system (with ClassShare and ClassRom) provides much faster file transfer than the AUN/Level 4 file server with hard disk protection and management software. Oak Solutions provide a consultancy service at £350 a day.

The ClassNet software has proven completely reliable – the first release is still in use – but new developments are made available on disk as they occur.

Summing up

You should now be well aware of the key issues involved in planning and installing a network. A well-planned network will be *future proof*, have low long term costs of ownership combined with inter-operability with existing equipment.

Ethernet provides flexible and reliable networking well suited to educational sites. Achieving an economical network requires planning and informed installation. If in doubt contact your local dealer or any of the networking companies mentioned in these articles.

The ISO model of networks

Application Layer: Provides services for network users and supplies means for application processes to access the network. Services such as identification of the intended network user and authentication of his identity are provided. Software such as file transfer utilities and electronic mail are typical of this layer.

Presentation Layer: Translates information for use by the application layers and is concerned with the representation of the data for network transfer purposes – rather that its meaning. Information can be compressed, encrypted, undergo character set changes and so on.

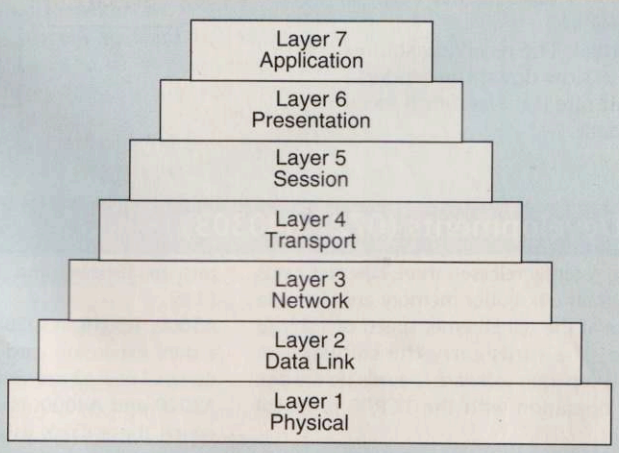
Session Layer: A connection between users is called a session and could be used to simply transfer a file. Multiple sessions can exist at any time within a computer so sessions are numbered – or addressed – so that a remote computer can address a packet to a certain session within a particular computer. This layer provides services for establishing and maintaining sessions.

Transport Layer: Concerned with reliability and provides services for error recovery, flow control, data acknowledgment and multiplexing /de-multiplexing.

Network Layer: Primarily concerned with routing and relaying data. A key issue being how the route is determined.

Data Link Layer: Responsible for sharing physical medium between competing stations. It must also recognise frame boundaries and detect and correct errors occurring in the physical layer.

Physical Layer: Concerned with transmission of bit streams across physical communications channels. It defines the electrical characteristics – modulation methods, voltage levels, timing parameters and so on – and the mechanical characteristics – the types of connections and cables used in the network.



● *How the model of computer networking is built up*

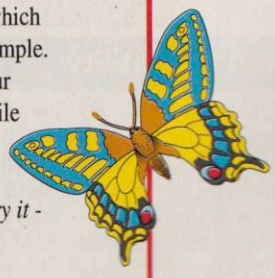
220 OUTLINE FONTS £169 AND A COPY OF ARTWORKS FREE!

In fact the 220 fonts comes free with ArtWorks, but it does emphasise the extraordinary value for money that ArtWorks offers.

ArtWorks has been acclaimed by numerous reviewers as quite simply the best drawing and graphics program for the Archimedes. It offers features found on no other drawing program, be they on Acorn, Apple Mac or PC computers; features such as anti-aliased drawing and lightning fast graduated fills, and infinite undo - there are far too many to list here. Recent performance figures indicate that the redraw speed of ArtWorks on an A5000 computer is as fast as an Intel Pentium based 64-bit PC - and around three to four times faster than the fastest 486 based machines.

ArtWorks

ArtWorks is not only fast, but also easier to use than the alternatives, which makes it suitable for all drawing and illustration work, no matter how simple. Yet it also provides professional illustration tools, such as full colour separations, overprint control, CorelDraw, Freehand and Illustrator file compatibility, amongst many others.



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Puzzles and posers, tricks and traps

Acorn COMPUTING

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Subscribe now, turn to Page 38

Bells: Ringing the changes

BELL ringing is performed by thousands of enthusiastic campanologists in belfries across the country. With the aid of this program, you can extend it to the privacy of your own home.

The program implements bell change ringing by playing campanological *methods* using *place notation* as a compact form of storing the necessary information.

All methods begin from the playing of rounds – bells sounded in descending order of pitch. Information relevant to the swapping for each successive row is separated by a period and given in place notation. Full details of the format are supplied in the program.

Most bell ringers prefer to have the order of bells in each row written out in full, rather than in the notation format and this is displayed when playing through a method. Red is used to mark the highest pitched bell from row to row and blue indicates the bells a given individual ringer is to play.

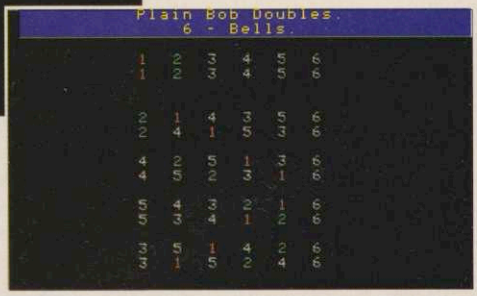
For ease of use, Bells is menu driven and includes comprehensive instructions. You can choose to practise playing part of a method – which is done by tapping Return at the correct point in time – while the computer plays the others, or simply sit back and let your micro do all the hard work. A maximum of 12 bells can be modelled and methods may be entered, edited and saved to disk.

An example datafile – *Methods* – is provided to get you started, as well as an extra program *MethPtr* which allows you quickly to view the contents of any methods file you create.

In addition to the 14 methods given in the example file, many others are available. These can be found in campanological literature and entered using the program. You may even feel confident enough to attempt to compose your own.

Nigel Thomas

● *The methods provided with the program – ring them bells*



● *An example of ringing the changes*

AutoRun: A star utility

THE BBC BASIC language is very good for all aspects of programming. However, unlike machine code images, programs are always loaded into memory at the current setting of PAGE and cannot be executed with *RUN.

This utility helps to circumvent these problems. It works by tagging a small machine code shell to the rear of a given BASIC program and adjusting its execution address, allowing the use of both CHAIN and *RUN. This means that your programs can now also be used directly as !Boot files – useful for a menu system on a crammed disk – if the option is set using *OPT 4,2.

An extra machine code call can also be inserted at the front of your program. This prevents it from being CHAINed, or LOADed directly into BASIC essentially acting as a low-level form of protection. More comprehensive protection would require some form of encryption and a means of containing errors and Break presses.

When *AutoRun* is executed, you are asked to enter the name of the original BASIC program which is to be used and the target filename. Following this you need to decide whether you wish to be able to load and list the new version. Finally, you are requested to specify the value of PAGE at which the program is to be loaded.

This can be anything from &E00 up to &7300 – in multiples of &100 – depending on the length of the program in question and the screen mode(s) it uses. If you have chosen to make it so your program will not load, add &100 to the value upon which you decide.

For a BBC Micro with Acorn DFS the default PAGE setting is &1900 while the Master and Compact are always &E00. If you are unsure as to your standard setting, press Control+Break and enter:

```
PRINT ~PAGE
```

For those who are curious, the machine code segment operates by switching off output to the screen, adjusting the setting of PAGE as necessary, inserting the OLD and RUN commands into the input buffer and finally re-enabling the screen.

Stephen Harrison

WordSrc: Doing away with the hard work

ARE you obsessed with attempting wordsearch puzzles? You know the sort of thing: There's a competition for a new car or bottle of champagne in the local rag – all you have to do is find 15 words from a matrix of jumbled letters and fill in the entry coupon.

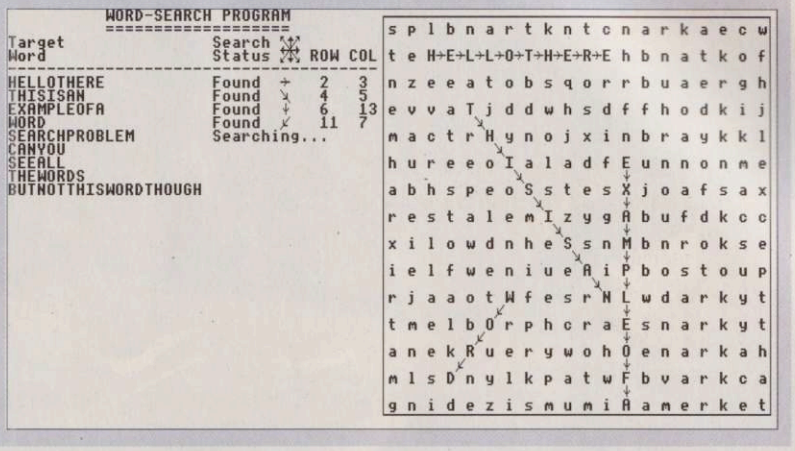
Along with a few thousand others, you find the first 14 words in 10 minutes, then spend an hour trying to find the last one – which you could swear isn't in the box.

This program aims to take away the teeth-grinding as it systematically interrogates every position in the grid until the next target word has been found, or the grid has been exhausted. When it finds a word, the position at which it starts and direction it follows are returned. If it couldn't be found you're told so.

To use this program, simply amend the data to fit the puzzle, taking care not to alter the line numbers. Next type RUN and go off to make a cup of coffee. By the time you return the search should be all but complete.

The maximum size of grid is limited by memory to 15 rows x 20 columns, with the ability to search for up to 20 target words – this limit can always be exceeded by using the program twice or more with different target lists. Good hunting.

Howard Smith



3D Maze: Can you escape?

THERE you were, sitting at the keyboard of your trusty old Beeb when, all of a sudden, a tremendous walled maze appeared around you.

Perplexed by this totally weird phenomenon, you became unable to do anything at all other than turn to your left or right, or stagger forward in hope of finding your passport to freedom.

Your only means of escape is through the elusive exit which appears as a solid white section in the maze wall. If you find it be sure not to miss your opportunity.

The maze is cleverly drawn using data based on a two dimensional grid. As you weave your way around the maze, your view is updated from the grid to give an accurate representation of your surroundings and line of sight. Walls appear as outlined sections, and paths simply as gaps in these walls.

A simple maze editor is also included so that you to design your own challenges in two dimensions and attempt to solve them in three. To make things really interesting, you could make a small adjustment to the program to allow a time limit to be imposed.

Gameplay controls:

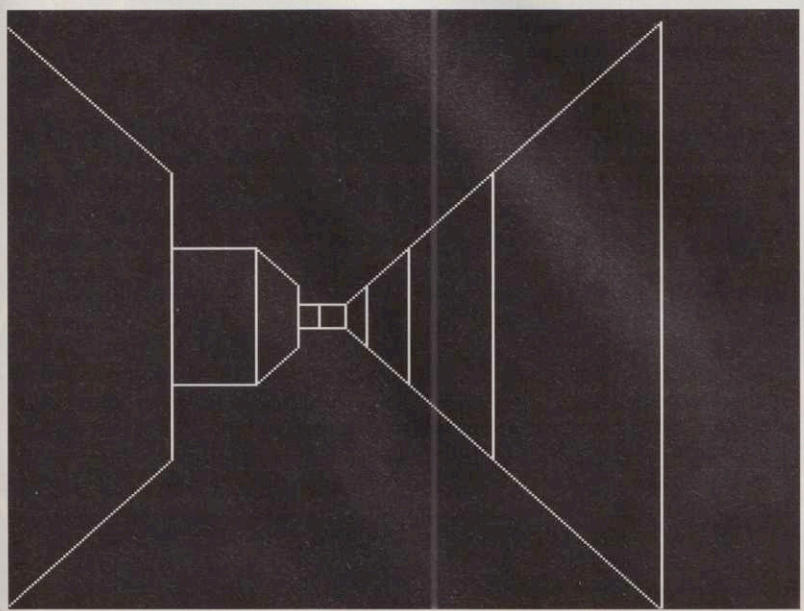
Key	Action
Z	Rotate anti-clockwise
X	Rotate clockwise
/	Move forward

Maze editor:

Key	Action
Z	Left
X	Right
K	Up
M	Down
/	Select object
:	Place object at cursor
E	Return to Editor menu

NB: O indicates a wall, E the exit

David Johnston



● *Getting lost in the 3D maze*

PD Bonus: Something to watch, play and do

Eleven pieces of public domain software have been included on this month's disk, including a selection of fun and frustrating games, impressive graphics and handy utilities:

Graphics: CokeCan, LettBox, Shapes

Games action: Fall, Marbles, Paras, Short

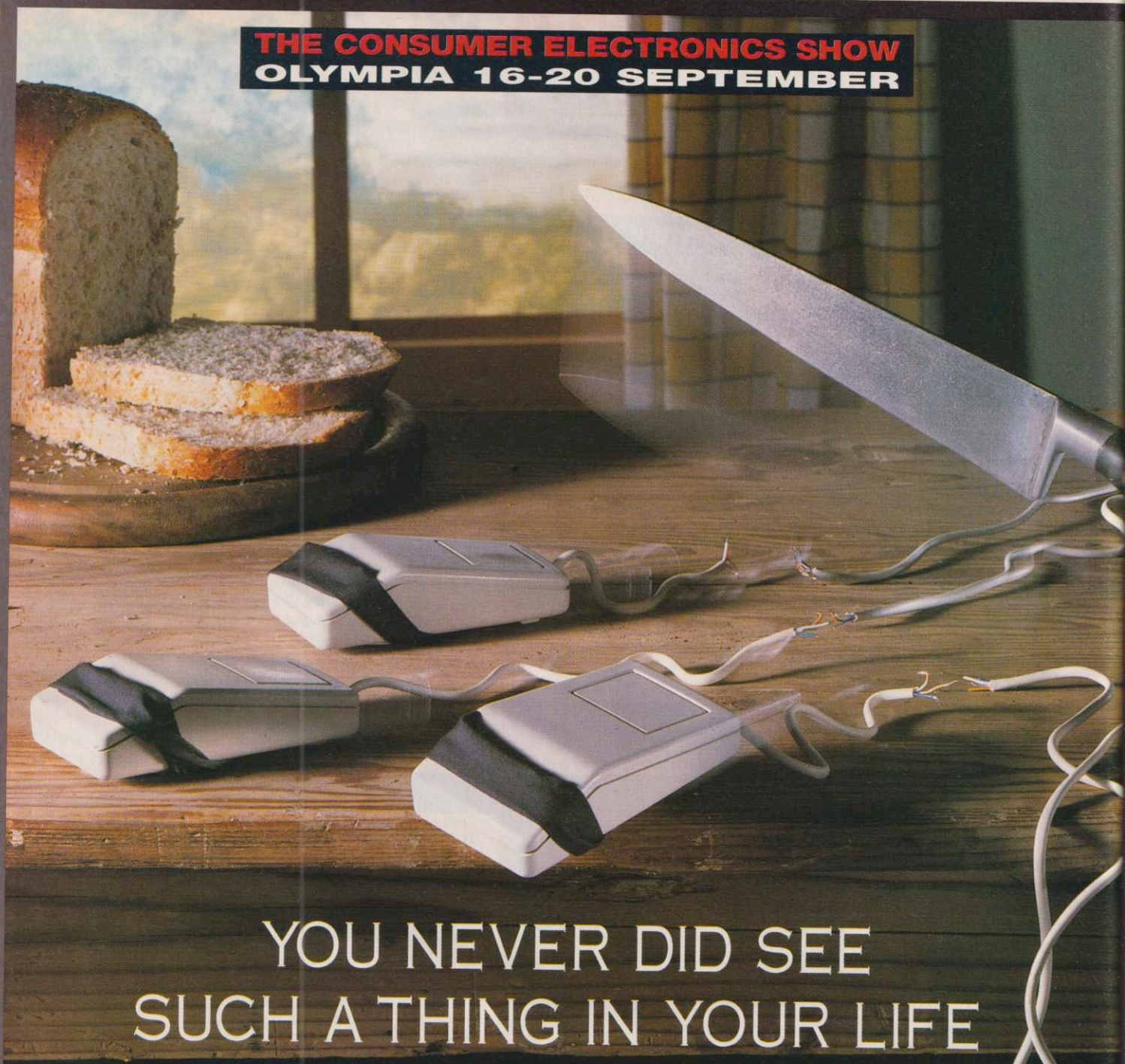
Utilities: BasRead, BigBen, Cursor, NumConv

FAULTY DISK?

If your subscription disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

Datapulse Disk
Unit 5
Station Road
Hungerford
Berkshire RG17 0L7

If there seems to be a fault with one of the programs please contact us at the magazine by post describing your machine set-up and exactly what happens when you run the problem program.



YOU NEVER DID SEE SUCH A THING IN YOUR LIFE

LIVE '93, The Consumer Electronics Show, is a cut above any other exhibition.

For a start, you'll actually be able to get your hands on the latest computer hardware and software.

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Pick 'n' mix

Mike Cook dips into the postbag to help with your technical questions

Q IS IT possible to attach the Electron Plus 1 to the user port of the BBC Micro? The reason for this is that I would like to use rom cartridges with my BBC Master.

I miss the 8-bit programs from the *Acorn Computing* but still enjoy the magazine. Is there anyway to run or load a program automatically from disk at switch on? I do have an eprom programmer.

Also is it true that the A3010 is not colour? So would it work on a colour monitor or TV? – **Philip Deponeo, Upton, Wirral**

A *No, it's not possible to connect the two computers in this way without a lot of software being written for both machines and you having sideways ram in the BBC Micro.*

I could see a system that would allow you to transfer the contents of a cartridge on one machine into sideways ram on the other but it is quite involved and frankly not worth it.

If you want to use the rom cartridges from the Electron simply open it up, remove the chip and fit it into the sideways rom socket. However, it is possible that the software would not work as are there are slight differences between the hardware configuration of both machines.

Alternatively, you could make a sideways rom socket adapter that would accept the cartridge. All you need is a 28-pin header plug and a PCB edge connector wired up correctly.

As programmers move on to the power of 32-bit machines, fewer of them want to bother with the older, restrictive technology. However, there are others who see this as a challenge and since the advent of the newer machines there has been an unprecedented rise in the number of 8-bit PD houses – the market is far from dead yet.

You have no need to put anything into eprom to make your computer automatically run a disk program. At the left-hand corner of the keyboard is a double row of holes for links. The fourth from the right will reverse the action of Shift+Break.

If you make this link – solder a wire between the top and bottom holes – each time the computer is switched on, it will attempt to load a !Boot program from the disk as well as every time Break is pressed on its own. On a Master you can use *CON.BOOT *which will tell the filing system to do an auto-boot whenever Break is pressed – but not if Shift is held down.*

The A3010 has a modulated RF output so plugs into the back of a TV set. It has the electronics inside to produce a PAL colour signal. However, I know from my own experience that low colour modulation produces very variable results, working fine on one model of TV but producing washed out colours on another. I have always found Sony TVs to give the best results as they respond well to this type of circuit.

Making good connections

Q I AM trying to build a device that connects to the serial port of a computer and converts the datastream to a series of tones similar to those used in the tape systems of old.

I have searched through all the magazines to no avail. I found a few circuits but they required a clock signal from the computer as well – usually the master frequency for the serial chip – which when divided down by that chip determines the baud rate.

Unfortunately, I cannot gain access to this signal – all I have is the signals available on the socket. I have thought of using a simple clock whose frequency is determined by the data from the serial port.

The problem I can foresee with that method is that the serial port data and the clock frequencies are not synchronised and may require switching in mid-cycle generating spurious data. So I think I need to regenerate the clock signal from the serial signal but this is obviously difficult since the only guaranteed features are the start bit – and stop bits ➤

AGENDA

- Using old monitors
- Analogue to digital converters
- Trading in the BBC
- Encoding serial signals
- Accessing old BBC games
- Using roms, rams and eproms

New lamps for old

Q I AM writing in the hope that you will be able to enlighten me as the modern alternative available to the original BBC Micro.

The one I presently own was bought at the time when you had to wait for it to be delivered by the postman after a wait of several months from the date of ordering and payment.

I have used my computer to build up a formidable file of stockmarket data dating back to before the 1987 stock market crash using the Synergy Software Sharemaster system.

It is, therefore, most important that the replacement computer should be compatible to the extent that I can use this mass of data without having to re-input from scratch over five years of information.

My present BBC Micro is also fitted with the Watford Electronics DFS and Computer Concepts WordWise. I would like to know if the chips for these systems could be refitted in a more modern Acorn computer. Obviously I would prefer to retain them since I now feel thoroughly at home with them.

Bearing in mind the age of the present computer it would be preferable to buy a brand new model but should such a product not be available what is the latest model of second-hand Acorn I should try to obtain to meet the above criteria? – **Malcolm A. Knapp, Henfield, West Sussex**

A *The problem of compatibility with a new computer is always a tricky one. Acorn have done more than any other manufacturer to make existing software run on new equipment. Having said that you are still faced with some difficulty. You won't be able to use the WordWise chip directly. Some time ago there were extension boards for the new 32-bit machines to allow this sort of thing but they weren't very successful. However, Computer Concepts sell WordWise Plus on disk (£29 +VAT) for these later machines.*

Sharemaster is not available for the 32-bit machines. However, Shareholder from Silicon Vision (081-861 2173) will do what you want and was reviewed in the August issue of ***Acorn Computing.***

You can transfer your data across if Sharemaster will let you save the data in viewdata file format. It is also possible to keep the data intact if you save it out as a textfile but this is a little more complicated.

As to what computer to get, the newer A3010 series is good value but at the moment there is no third-party support for the older 5.25in disks. But the A3000 and A5000 models have access to a 5.25in disk interface from Risc Developments (0727 840303) so you can attach the 5.25in drive.

Whatever model you opt for you can transfer data directly from 5.25in BBC disk to a Acorn 32-bit machine using a file transfer link which plugs into the serial port – if you buy an A3000 check that it has been upgraded with a serial port – which is very reasonably priced from RGSC (0582 761395) and Risc Developments.

If you are not too bothered about getting the very latest model, the original A310 is excellent value if obtained second hand.

With a memory upgrade it is still a very viable machine and can be further enhanced with ARM3 processor and the latest operating system to produce a machine virtually identical to any of the more modern ones.

➤ which I don't intend to use.

Am I worrying too much about clock frequencies and not being synchronised? I had anticipated using 1200 baud for the serial port and use suitable frequencies for the 1s and 0s – one being double the other.

I have even thought of using bi-phase coding or is it Manchester coding where a 1 is designed as a change of state halfway during a period and a 0 is defined as no change of state, similar to that used by SMPTE/EBU timecode – I managed to build a decoder for that a few years ago using a BBC Micro.

For recovery, I had just anticipated using a monostable triggered on a leading edge. Its time period is three quarters that of the lower frequency. The data retrieved in this way could be fed back to the serial port. Is this right or is it too simplistic? – **R.A. Austin, Ventnor, Isle of Wight**

You can write to Mike Cook c/o Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

He will answer any questions about difficulties you may be having with your machines, mainly those to do with hardware. If you want a personal reply ensure that you enclose an SAE with your letter.

A *When you are encoding serial signals with audio waveforms there is normally no need to synchronise the data rate and the tone frequencies. After all that is exactly what a modem will do when you connect up your computer.*

There is a problem however, when the modulating frequency is close to the carrier frequency. You are quite right in saying that there will be a phase discontinuity when switching.

The effect of this will be to widen the bandwidth of the signal. Most modems overcome this problem by only changing the signal 300 times a second – even when transmitting 2400 baud. This is done by using a mixture of amplitude and phase modulation so that one tone carries more than one bit.

However, simpler modems are capable of running at 1200 baud without using that trick. That works because they have a more complex system of filtering and decoding than you suggest.

Your decoding system using a monostable will work, but only at these high data rates when the encoding tone is synchronised.

I am not sure what you are planning to do with the data when you have it in audio form. If you are going to store it on tape, it's not very reliable for a number of reasons. The best system use the audio data to recover the serial chip's clock. If you are going to transmit it over the air, phase discontinuity will increase the bandwidth of the signal excessively.

I think you have two possible solutions. The first is to use a lower baud rate – such as 300 – so the phase discontinuity will not be a problem. The second is to use a modem chip to do the coding and decoding. These are not a lot cheaper than they used to be. See my July '84 article on an acoustic-coupled modem to get an idea about the circuit to use.

Running 8-bit games

Q I HAVE bought an A3010 from Watford Electronics after deciding that an 8-bit machines wasn't good enough for me. My BBC Micro has a double-sided double-density 40/80 track switchable 5.25in drive and I have a lot of games on disk.

I was wondering if it is possible to fit the 5.25in drive to the Archimedes and be able to run the software on the 32-bit machine.

If it is possible would I be able to transfer my BBC Micro games on to 3.5in disk or even on to a hard disk? – **Mark Tordoff, Baildon, West Yorkshire**

A *You can try to transfer data using a serial link as long as you still have your original BBC Micro, of course.*

However, be warned: Virtually all commercial games written for the 8-bit machine will not work on the 32-bit even on the emulator because of the copy protection used on most of them.

Monitor recycling

Q I OWN a BBC Model B and hope to upgrade to an A3010 very soon. I have an Amstrad CTM 644 colour monitor with an RGB 6-pin din connector. However, the A3010 does not have an RGB socket. If I want to fit this monitor to the A3010 will I need a converter?

I am also concerned as someone told me that you cannot repair the computer if it goes wrong because of the thick film boards inside. Is this true? – **Andrew Docking, Scarborough, North Yorkshire**

A *The A3010 does have an RGB output. However, the Amstrad monitor is only a TTL colour monitor therefore it will not give the correct colours – some of them will be missing and others will be incorrect – and it is virtually useless with this type of computer.*

Finally, there is a lot of rubbish talked about fixing computers: They are repairable. New construction techniques simply mean that the repairer has to have a different sort of equipment.

Monitor recycling 2

Q I HAVE an A3010 which comes without a monitor but access to a Commodore 1802 colour monitor. Is it possible to use the monitor and what leads would I need? – **S.M. Paye, Northallerton, North Yorkshire**

A *The Commodore 1802 colour monitor is rather a strange beast. Instead of accepting the Red, Green and Blue signals of normal monitors, it expects a Luma (brightness) and Chroma (colour) signal. These are generated inside the A3010 in order to feed the UHF modulator so you can connect it to a standard TV set.*

However, these signals are not available on any sockets and you would have to poke about in the innards of the computer to coax them out on flying leads. This would definitely void any warranty.

Assuming you were to put up with this, then, knowing the general quality that Commodore normally build into their products, I personally doubt the results would be worth it.

In theory it would be possible to convert the monitor into a standard one as the Luma and Chroma signals have to be converted into RGB signals any way. Therefore, it should be just a matter of cutting out some of the monitor's circuitry. However, this should only be done by a qualified TV engineer in order that it is done safely.

Converting A to D

Q I WOULD like to enquire about analogue to digital converters and if your Body Building series includes such a circuit. If so, which issue of *Acorn Computing* is it in? – **Bob Gay, Newcastle upon Tyne**

A *Analogue to digital converters have been covered many times – December '91, June '91, December '89, May '87, February '87, April '85 and March '84. Without knowing what machine you have or what you want the A/D converter for, it is impossible for me to say which article you would find most useful.*

Photocopies of past Body Building articles are available for £1 each from Musbury consultants. The address and order form can be found in this month's Body Building article on page 93.

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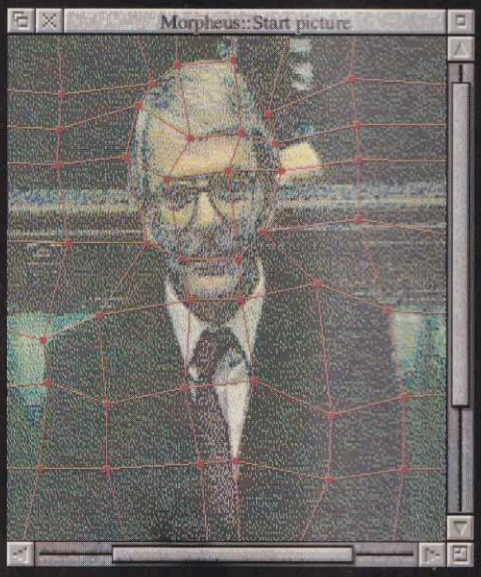

The latest buzzword in computer and video graphics at the moment is 'morphing', a software technique that enables computers to perform shape animations similar to the mercurial delights in Terminator2, and just about every TV advertisement currently screened.

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Not more repeats!

Steve and Anne Bruntlett explore some of the possibilities of textile design

IF you've spent a lot of time drawing/painting on a computer you might be wondering if there's anything else you can do with the resulting images apart from printing them on paper.

Well, you could try using parts of them as the basis of one of the forms of textile design in work which goes beyond the computer. In this article we'll try and give a flavour of some of possibilities of textile design using the computer to outline some of the techniques involved.

Many paint packages can be used for the basics of textile design but specific packages have textile design procedures built in:

- Artisan 2 (Clares), for instance, has a separate colour separation facility
- Imagine (Topologika) has a tesselations menu allowing you to fill the screen with repeating patterns in a variety of ways
- Revelation (Longman) has an integral pattern processor and a Colour Shift dialogue box used for colour separation and other colour processing facilities.

Other packages are just as suitable as the first example will show.

Again, again and again

Repeat pattern work can be mechanically repetitive or more free form if you want something a bit more hand-finished.

The kind of work you produce also depends on the method of pattern production.

For example, if you draw a design or motif and cut it out as a rectangle you can either paste it manually a piece at a time until the screen is covered or use a sprite repeat facility to automatically repeat the sprite across and down the page until the page is full.

Such sections of the screen are generally referred to as sprites but in this context I'll refer to them as a repeat unit or motif.

The speed of this is impressive, unlike the result. What you need is some control over what the computer does, and how it does it, such as making sure it fills the screen with whole sprites with no bits left over.

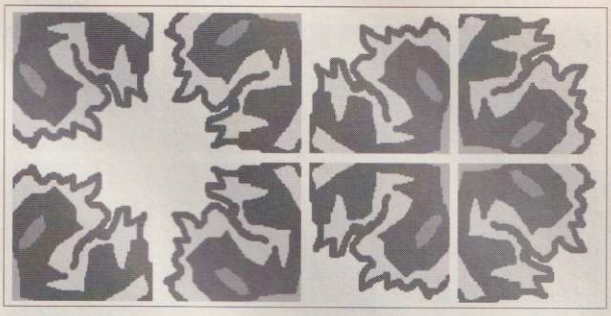
Then you can add some variation in the way it places the sprites with alternate left and right facing sprites to give some kind of intentional design.

I've not found a program yet that lets you combine two or more sprites but some allow you to change their orientation using a pattern dialogue box. If your program has no such facilities you can achieve the results manually.

The easiest way to do this is to group sprites in a block which when repeated will give the chosen effect. First design a motif within a square or rectangle, cut it out and using copy, cut and paste and flip produce a variety of differently oriented motifs. There are eight possibilities.

Enhancing originality

Once you've produced a few variations you can cut out one of them and produce a different colour variation using global fill techniques. This can be combined with the original to produce a new motif or sprite which will produce a more complex pattern.



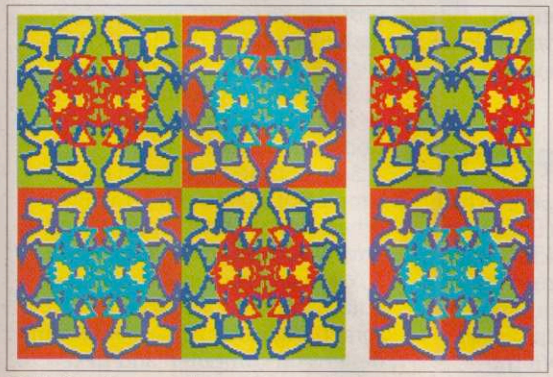
● *Here are eight possible orientations of motifs*

If you arrange four sprites of two different colours or orientations diagonally in a block – like a slice of Battenburg cake – you should be able to produce a basic chequer board pattern.

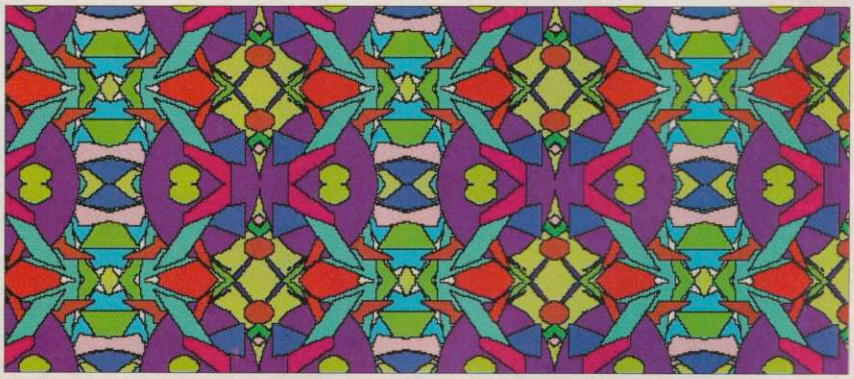
Using half sprites combined with the original, *brick* and *half-drop* patterns are possible. By producing repeat units like this rather than single motifs or sprites you can overcome the lack of pattern making facilities in all but the most basic packages.

If the motifs are positioned to give vertical and horizontal symmetry other colouring possibilities come into play. These include filling the areas which now join at the corners producing a textile design which is more like a surface pattern design than a repeat pattern design – you can't see the joins or the edges of the original

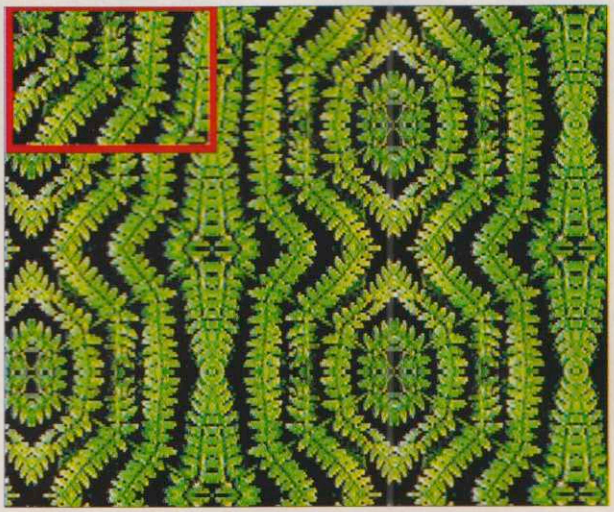
➤



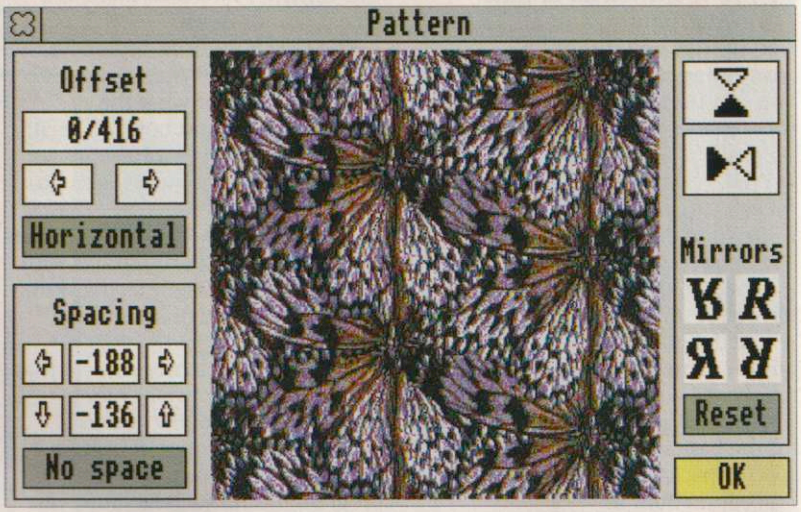
● *Half-sprites can be used to produce brick and half-drop repeat blocks*



● *If the motifs are positioned to give vertical and horizontal symmetry other colouring possibilities come into play for producing textiles designs*



● *The pattern was produced from a digitised fern – the original can be seen in the top left*



● *The final image with overpainting and collaged elements fof the original image*

➤

blocks. The key to computer aided textile design process is knowing when to stop.

Designs can also be made up of bits of your own paintings or bits of digitised or scanned images. By using cut and paste and horizontal and vertical flip options you can generate a complex pattern from almost any source.

The key is to keep the selection simple making sure that when repeated it becomes an overall design distinct from the original and not just a few blocks repeated in a disjointed manner looking as though you've had no control over what's been produced.

Automatic control

If you want automatic control you need a program like Revelation ImagePro which uses a pattern processor to produce all the flipping, reflection and closing in and spacing out of motifs. However, this doesn't allow you to alternate colours, though there are ways round this if you choose two alternately coloured motifs as a single motif before patterning starts.

One of the really powerful tools in computer-based textile design is the ability to produce a number of different colourways really quickly. A colourway is a set combination of colours for a particular textile design.

If you've bought tiles, wallpaper or dress material you're probably aware that these are sometimes available in a variety of colour combinations. In a sense it doesn't matter what colours you've used to produce the design as these can be altered until you find a suitable combination.

There are different approaches to this, from the colour wheel option in Revelation ImagePro to the local and global fill options available in all but the very basic of paint packages.

By using fill options you can add individual patches of colour no matter how small and no matter where. If you are working with a handful of colours it's easy enough to try different combinations of colours to give warm or cool effects.

It's also easy to fine tune a design so that all the colours contrast giving distinct patterns or are close in colour to give a much subtle-shaded effect.

● *ProArtisan 2 comes into its own in designing and adding variety to colourways*

Expanding the options

ProArtisan II has a grid option which lets you cut and paste sections of the screen accurately. This facility along with the usual flip options makes repeat pattern design child's play.

The grid size can be adjusted so that the resultant blocks fit the whole screen accurately with no bits left over at the edges – something you can never be sure of with other packages without distorting the original motif.

There are other options for textile design apart from regular repeat patterns. Secondary designs can be produced from original tiled designs or freeform textile designs can be produced using hand positioning.

Various ways of treating the design include edge-detection to give you a basic outline to work from or by producing patches at different sizes you can combine these to produce a much more varied design. If you mix bits of different textile designs you can produce something completely new.

For instance, the way to produce a combination of patches of designs of different sizes and colourways is quite straightforward. The first stage involves shrinking the full screen to quarter size and repeating that to produce a new full screen to give a finer design.

This can be repeated until the pattern almost disappears. It gives a range of scaled textures which can be useful in giving various designs.

Hopefully, this article has given you a flavour of some of the possibilities of pattern making and textile design. In the next article we'll take a look at some of the methods of production which may be suitable for textile production at home and school.

Some of these are based on a simple dot-matrix printer while others deal with techniques such as screen-printed textile designs.

Whatever equipment you have you should be able to produce something worthwhile, so try some designs on computer and next time we'll look at how to get them into production.

Last week the Express reported on the complaints of

branch was not aware of

make the views of the

aluminium cans are stored was

SCHOOL CHILDREN PROVE THAT NEW BYPASS WILL DAMAGE THE LOCAL ENVIRONMENT

EXCLUSIVE BY MATTHEW DAVIES

USING an innovative new program on their classroom computer children from St. Chad's School have shown town planners that a proposed new bypass would have a detrimental effect on their local environment.

The children surveyed the local area and fed details into their Topographer program, which allows them to look at the relevant area in 3D. They then added the new road along its proposed route and it became obvious that the road would not only affect an area renowned for its badger population but would also distract children in the classroom as they would be able to see traffic moving along the new road.

The children even went as far as to propose a new route for the road to the town planners. The proposed route would have a negligible impact on the area but still provide the much needed relief to existing roads.

A SERIES of sweeping proposals which would abolish free parking in district shopping centres, change some bin collections, increase lettings charges and scale down mileage claims by some council officers, have been announced by Labour.

In the first indication of their intentions si
seizing power jointly with the Conservati
party has produced a h
1,000 "
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● REDUCING mainten

Other econ
departmental b
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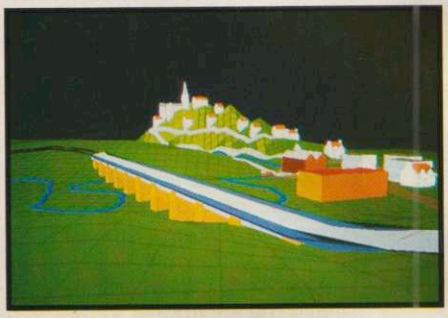
Th

Topographer is a major application for the Geography curriculum which allows children (and teachers) to have lots of fun whilst learning all about maps, contour lines, valleys, rivers etc. In fact *Topographer* covers virtually all items found on a map.

The real break through with *Topographer* is its 3D section which allows you to convert a 2D map into a 3D model on screen. Imagine turning a set of flat contour lines on a 2D map into a 3D model which clearly shows the hill — no more cardboard cut out models or papier mache! You define where you look from, and what you look at.

Topographer also covers aspects of the IT and maths curriculum with its modelling capabilities. Just stop for a minute and think of the projects that you could do with *Topographer*. You could make a map of the local area with churches, pubs, woods etc. and then view it from various places. If there is a bypass proposed you could add it in to the existing landscape and see where it is visible from and what impact it is likely to have on the community. I'm sure you can think of a hundred and one topics.



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Sampling for pow

LAST month we looked at the basic principles which could be applied to any sampler, be it a professional standalone machine or an Acorn-based package such as Armadeus or Sampler 8.

In this article we'll consider some of the more advanced aspects of sampling which will help turn you into a *power user*.

The main thing to bear in mind is quality. Ideally you should record at the highest possible sample rate and at the highest volume level without clipping the signal.

With a little care you should always be able to sample at the optimum level but, as discussed in last months article, it may not always be possible to record at the highest sample rate, primarily because of ram considerations. But there are a couple of functions which can help.

Over-sampling and re-sampling

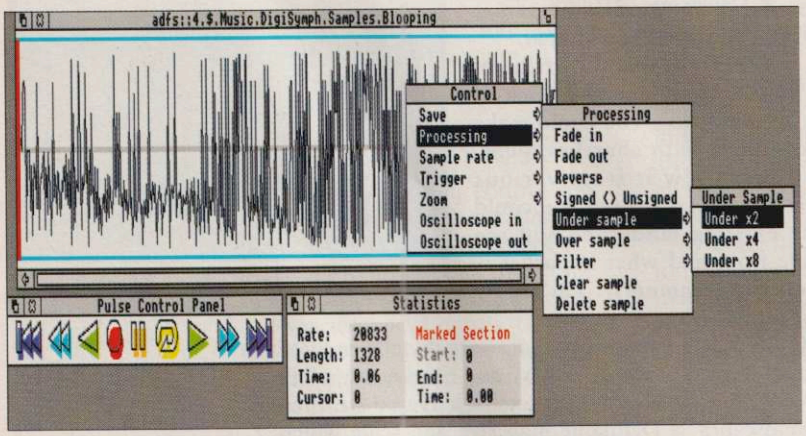
Over-sampling is the process of recording at a sample rate higher than the one you are going to use and then scaling it down. The higher rate creates a more accurate picture of the sample and when this is averaged out during the reduction, it will result in a more accurate sample than could be achieved by originally. Well, that's the theory.

Re-sampling – sometimes called under-sampling – is similar to the reduction part of the previous process. The idea is to save memory while retaining as much quality as possible. Armadeus has a re-sample function while Leading Edge's Pulse Sampler has under-sampling and over-sampling functions.

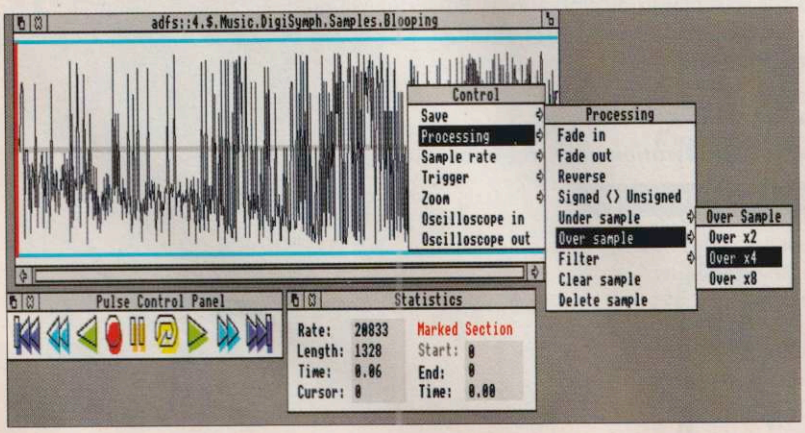
The Pulse manual says the over-sampling process inserts extra bytes into the sample and under-sampling removes them – for instance, every fourth byte on a reduction factor of four. Under-sampling should really be a process of averaging out and not one of straightforward removal. Over-sampling is normally regarded as reducing the sample rate of a *highly recorded* sample, not a process of squeezing in extra bytes.

The Armadeus manual doesn't explain exactly how its re-sampling process works although it does say that it's a good idea to re-sample most samples which would seem to indicate that it uses an averaging process.

True over-sampling and re-sampling can improve the quality of your samples and save space so it's worth exploring these functions in your sampler software.



● *Pulse's under-sampling function and...*



...over-sampling. Both offer three multiplication factors

What to sample

There's a certain satisfaction about sampling someone blowing across the top of a bottle and turning it into a flute, or recording a dog barking and playing a tune with it. The world, as they say, is your sampling oyster. However, in practice you are limited to the sounds in your immediate surroundings.

You're unlikely to have access to the individual instruments in the London Philharmonic or to a Steinway Grand – much of the quality of which would be lost in an 8-bit sample anyway – but lots of local sounds can be pressed into service as a source of pitched sounds and sound effects.

I like playing with organic sounds such as animal noises and vocals as they are completely different harmonically to instrument and

er users

Ian Waugh completes his advice on getting the best results from your resources

object-oriented sounds.

After recording a sample, play it outside its recorded pitch range. If you have some sample manipulation software, edit it and see what the middle sounds like without the attack. Paste the attack section of one sample on to the middle phase of another. Reverse it, filter it and add digital effects.

If you want to use samples to imitate real instruments you not only have to record good samples, you have to play them in a realistic manner.

For example, most string, brass and woodwind instruments are monophonic – they can only play one note at a time. To make these samples sound as realistic as possible, play or program single lines, not chords.

Guitar chords and riffs are often difficult for a keyboard player to reproduce convincingly because the guitar fretboard layout means guitarists use a different set of pitches to that found on a keyboard. To play a convincing guitar you have to use the same range of notes. Don't forget to add a little pitch bend from time to time.

Sampling and the law

If you read the music papers you may be aware of the growing controversy over the use of samples in modern records. The issue isn't about whether the results produce good music but rather about how much the record companies can squeeze out of someone who samples part of a record and uses it in a commercial recording.

The copyright law regarding samples is quite complex but it boils down to this: If you want to sample any part of a record, however small, you must have permission from the copyright holders. Nowadays, permission is usually only granted on payment of a hefty fee. The exception to this is sample CDs which contain copyright-free samples.

To complicate matters further there are often two copyright holders – the person who wrote the song and the company who put it on to a record. There is also another hassle – the right of integrity – with which an artist can prevent you using a sample of his record if you are going to use it in a derogatory way.

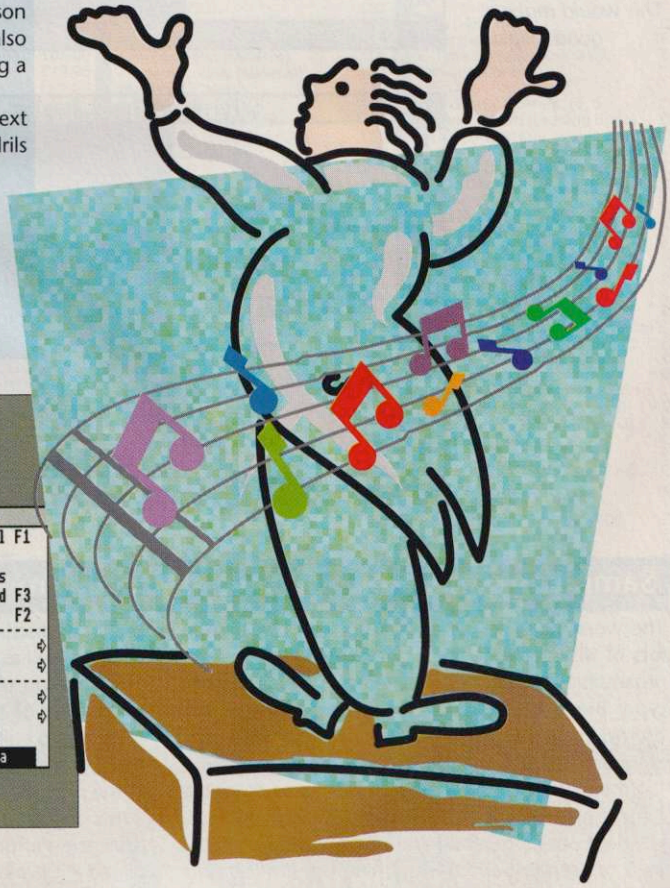
It's as well to be aware of these restrictions – just in case you create the next Number One Mega Mix on your Arc. But the copyright issue has pushed its tendrils down into the world of PD demo disks – those which are built around pop songs.

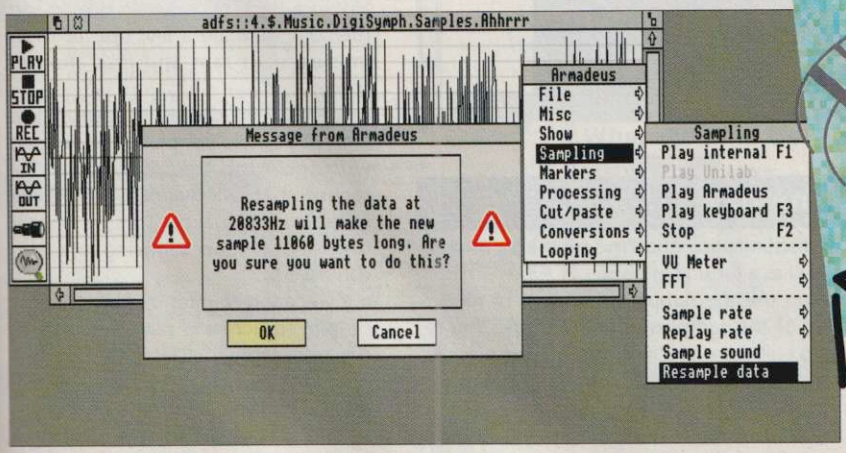
In a classic case last year, the South West Software Library who had a large collection of demos were raided by Trading Standards officers and their disks seized. They have since closed.

The bottom line is this – if you have any thoughts at all of using samples in a commercial way you must get clearance.

Good loops

One of the hardest things to do with a sample is to create a good loop. It's almost impossible to do this by ear – you need to do it by sight. Essentially, you need to look at the start and end points of the





● *Armadeus' re-sample function tells you what effect the process will have on the sample*

Sample CD contacts

AMG, PO Box 67, Farnham, Surrey, GU9 8YR
Tel: 0252 717333

Time + Space, PO Box 306, Herts, HP4 3EP
Tel: 0442 870681

Ninja Tunes, Livingston Studios, Brook Road, London, N22 6TR
Tel: 081 365 8616

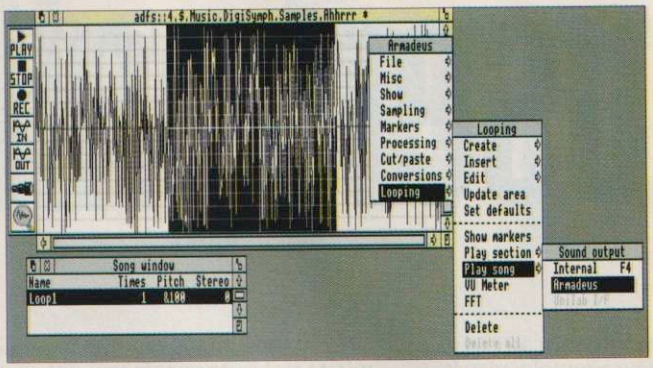
Patchworks, Frederick House, 211 Frederick Road, Hastings, East Sussex, TN35 5AU
Tel: 0424 436674

section of sample you want to loop. Then find an end point which is similar to the start so the end flows smoothly into the beginning. If the two points aren't the same you'll hear a glitch.

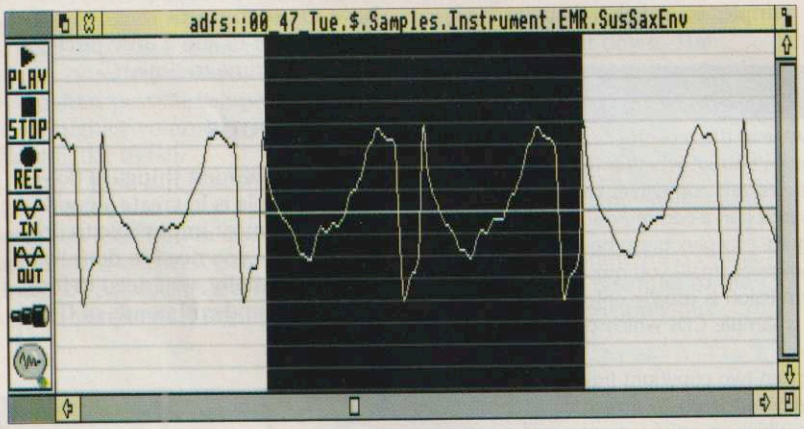
Some sampler software and processors have a loop facility which can be a great aid to loop creation. Armadeus has a Looping menu but this only lets you control the loops, it doesn't actually help you find good points. However, Leading Edge's Pulse sampler has no loop facilities at all.

EMR's Sound Engineer has a Auto Loop function which offers you six loop points and lets you change them on the fly. The sample editor in Digital Symphony also has a function to help you find the best points.

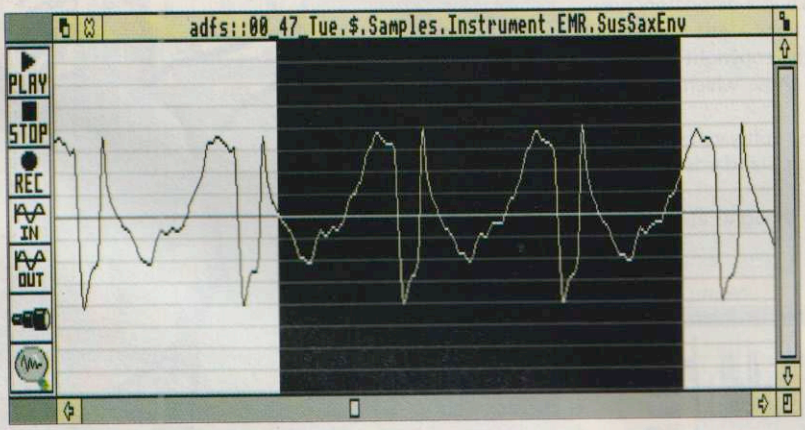
If you are serious about your samples, you may consider investing in a sample CD. These are intended primarily for people with professional samplers but they can just as well be used with your Archimedes.



● *Armadeus' Looping menu lets you organise loops but it doesn't help you to create them*



● *To find the perfect loop, the end of the loop section must lead naturally into the beginning of it. This would make a good loop...*



...but this would not

The main drawback is price – most tend to be about £29 to £49 – but there are some cheaper ones around. In all cases you get an awful lot of sounds for your money.

One of the cheaper CD sets is DJ Food Jazz Brakes from Ninja Tunes which comes in three volumes at only £11 each.

They mainly contain breakbeats but at the time of writing, Patchworks are offering a Mega Beats CD containing over 700 sounds from over 30 classic drum machines for only £14.95.

AMG and Time + Space have an amazing range of CDs, far too many to mention, but do ask for a catalogue. You'll find everything from orchestral and synth sounds, drums, breakbeats and sound effects.

● *Next month and in the next few issues we'll look at sequencing, from basic principles to advanced use.*

Sample organisation will save space and money

The worst possible thing any user can do is to fill lots of disks with samples without any regard for organisation. I categorise my samples by instrument type: Brass, strings, pianos, basses, bells, voice, drums, exotic percussion and so on. I also use a separate disk for each category.

When you've done half a dozen takes to get a sample just right, be ruthless and discard the substandard ones. I'm afraid I'm a bit of a squirrel and I used to keep just about everything but I'm learning the art of discrimination and I'm saving a lot of shelf space as well as a fortune in disks.

When you use the samples in a piece of music, use copies of the samples in your library. You're then free to edit them specifically to suit the piece in hand, perhaps freeing up more ram and disk space in the process.

It's a good idea to remove all unused material from the Performance disks when a piece is completed – it avoids confusion at a later date.

Managing memory

Bearing in mind that good samples are always a trade-off between quality and memory, here are a few tips for maximising your ram and disk storage space:

● Ideally you should record at the highest possible sample rate – samples with few high frequencies can be recorded at a lower rate with little reduction in quality. To save space, never use a higher sampling rate than you have to.

● If you are recording multi-samples to be played across a range of pitches don't use more root samples than necessary.

● If you find you are only using the first second of a two or three second sample, trim off the excess. Never use a longer sample than you need.

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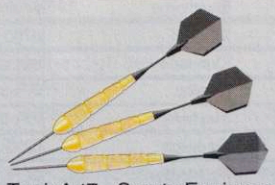

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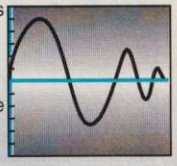

QuickS(ou)nd allows you to load, play, convert & resave existing samples. Armadeus, Tracker, raw data formats are supported. Samples can also be converted into modules for use with the sound system, Maestro, Rhapsody etc or converted into stand alone Utility sample modules which when called, via a star command, loads the utility, plays the sample and then removes itself completely from memory. Special effects which can be applied to samples include Reverse, Echo, Max Vol, alter replay rate and resample at other frequencies. QuickSound is perfect companion to the Oak Sound Recorder.

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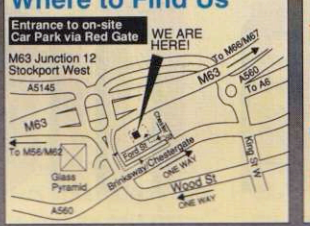

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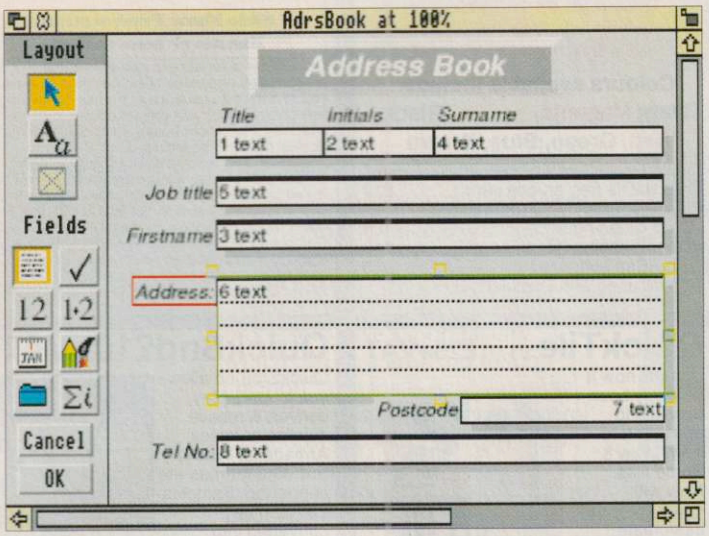
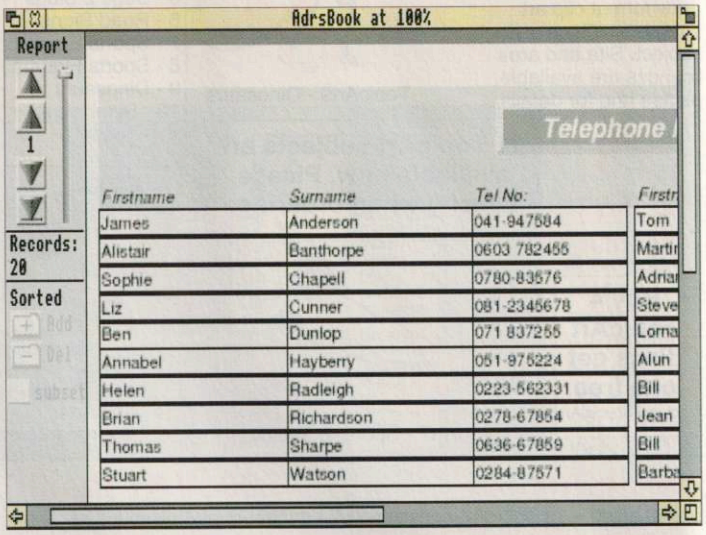


● *Read about the Layout Editor toolbox before you start*



● *You can view the same information in different ways*

After researching interactive computer simulation methods, John Allen moved into journalism, becoming Science and Technology Producer for BBC Radio Continuing Education, Independent Radio News' Science and Environment Correspondent and is currently the Programme Controller of LBC Newstalk.

It's in the cards

John Allen sees if DataPower matches its stable mates

DATAPOWER might well be called *Senior Database* as it follows on from Iota's earlier Junior Database. In truth it is a great deal more than a souped-up version of the earlier product – this is even easier to use and much more powerful.

So what are its strengths and weaknesses? It can be used to store text, real and integer numbers, dates, boolean values, graphics, files and formulae. Records can be displayed singly in a card format or the whole database can be shown at once.

Datapower makes good use of RISC OS's graphical capabilities and uses outline fonts for displays and output. On the negative side it is not fully programmable like S-Base, nor a relational database like Squirrel, but it's much simpler to use.

The layout editor

For a database to be easy to use it is crucial that cards – or in DataPower terminology, Views – can be laid out in a simple and intuitive way. Datapower's Layout Editor is easy to use but a few minutes examining the manual is needed to get the hang of its tool box on the left of the window.

Text and graphics can be added around a view to customise the display. One handy feature is that it is possible to define several different layouts or views for the same database and swap between them via a menu option.

Data entry is very simple – click on the + icon in the toolbox and away you go. The text cursor starts in the first field and pressing Return moves it on, field by field. Return after the last field saves the record and displays another blank. Sprites and drawfiles are inserted by dragging them to a graphical field and files are likewise dragged to a blank file icon.

The tool box to the left of the display window has the usual controls – click on different icons to move to the beginning or end, or forward or back by a record. A slider can also be dragged to move more rapidly through the records.

Databases from a wide variety of sources can be imported into DataPower with a minimum of fuss. AdvanceDB files go straight in, as they use the same file format. Junior and Desktop Database files are completely understood, since their facilities are a subset of those in Datapower, and TSV and CSV files can be added to a defined database.

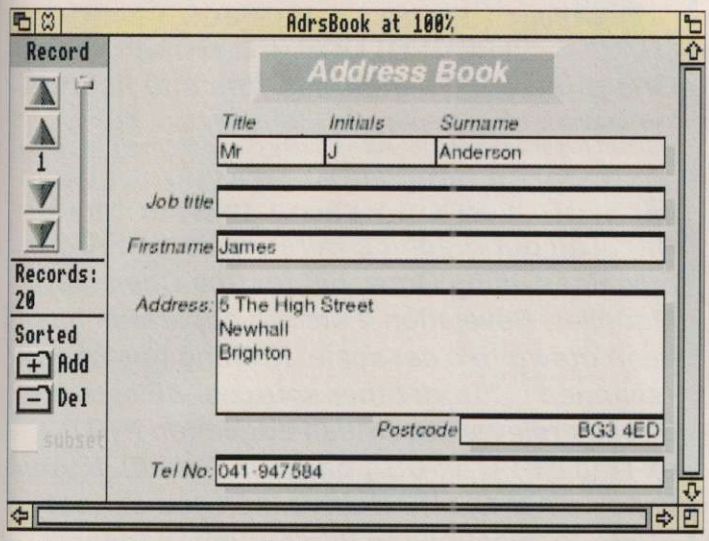
PRODUCT SPOTLIGHT

Product: DataPower
Price: £149 (£15 for each extra credit, site licence also available)
Supplier: Iota Software, St John's Innovation Centre, Cowley Road, Cambridge CB4 4WS.
Tel: 0223 421542

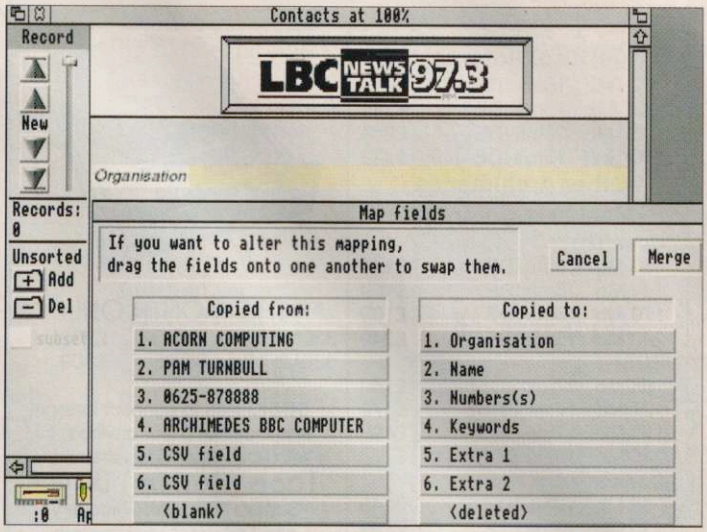
Search conditions

The search criteria are logical and easy to use. It is possible to search for an exact match or, for text, wildcards of * for any number of characters and ? for a single character can be used. The operators >, <, <=, >= and <> can be used to select a range – for text these work in Ascii character order.

The operators AND and OR can be used to combine conditions. Put together with the use of brackets this gives great flexibility. It is possible to use names of other fields to define complex conditions.



● *Change between views via the menu option*



● *DataPower accepts a host of file formats*

There is also support for files from DataKing, Grass, DataCard, Quest, DataPick, QuestD, Key, Ourfacts, Key+ and Viewstore.

Sorting and searching

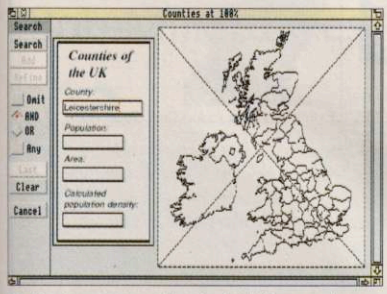
Records can be sorted into order or reverse order based on any or all of the text, number, date, boolean and formula fields. New records are automatically inserted into the correct place in a sorted database.

Searching for particular records or groups of records is equally straightforward. Datapower displays a blank card and you type in the search conditions for any or all of the fields that can be searched – these are the same field types as those which can be sorted.

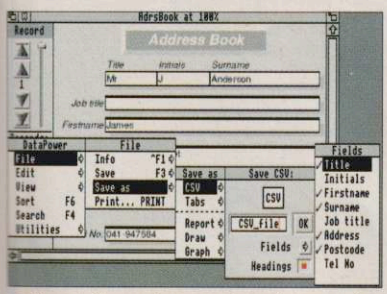
Datapower then displays a subset of the database which fulfils the conditions.

One unusual and handy feature is the **Any** option which searches for matches in any fields of the same type. This means that it is possible to give a search string of, for example, *Money* in a text field, click select on the *Any* icon and the database subset displayed will contain all records where any of the text fields have the word *Money* within them. This is similar to the searching performed by pocket computers such as the Psion Organiser.

It's possible to search a subset further using a *Refine* option or to add to a subset using *Add*.



● *Data retrieval is straightforward*



● *Your information can be taken to other programs in the standard CSV format*

Extracting information

Datapower allows a selection of fields from the whole database, or a subset, to be saved in a CSV or TSV file. Such a file could be used as data to mailmerge into a wordprocessor document or for another application like a database or spreadsheet.

Reports containing data from DataPower can be created and printed using the RISC OS printer drivers. The facilities for doing this are very powerful and – as Datapower uses RISC OS outline fonts – the results can be impressive.

A report is defined as a View by the Layout Editor with the type of layout set to Report. The window then becomes the size of the paper and main header and footer text as well as page headers and footers can be added. Headers and footers may contain summary fields which contain sums, averages, minimum or maximum values for a particular field.

Datapower is unusual in being able to produce graphs directly without passing the data to an external application. It can produce pie, scatter, line and block graphs in two or three dimensional form. These can be printed, or saved as Drawfiles.

Installation

Getting Datapower up and running is not as simple as just dragging the supplied application directory to a working floppy or hard disk. First the original disk needs to be initialised by entering your name and address in a window and calling Iota for a support number.

The disk then has a certain number of credits on it and can be used to create up to that number of working copies of DataPower. This means that if you only have one credit and, for example, have a RISC OS computer at home and in the office you will have to carry the credit with you between the computers, rather than have a copy on each hard disk.

In this untrusting world I can see why Iota adopt this policy but it is rather a nuisance, not to mention the problems that will follow an accidental deletion of a working version from a disk, or the corruption of a disk containing a vital credit.

Summing up

DataPower is an excellent database and a worthy successor to Junior Database. Unless you need relational facilities or the fully programmable environment provided by S-Base it is difficult to fault this product. I particularly like the ease of producing reports and graphs and the ability to search all fields for a particular match.

My only gripe is with the installation process. I suppose that something like this is needed for security, but it makes me uneasy about disk crashes.

But it is better than *Junior Database* which treats the original disk as a key disk which is required each time the application is loaded, even from a hard disk.

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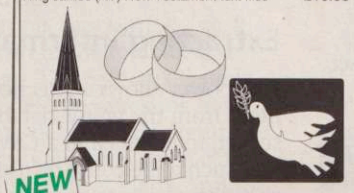

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A spoke in the wheel

Rob Miller takes a new 3-D designer for a spin

COGS is a 3-D designer that allows solid objects to be created, edited and animated. It consists of two main parts, the actual designer and a set of SWI (Software Interrupt) call routines that can be incorporated into your own programs.

Installing COGS and getting it started is simple. Just drag the application on to your hard disk and double-click on the icon. It then loads itself on to the iconbar like any other RISC OS application.

One of the hardest problems to overcome with a 3-D editor is how to present the object being created/edited. Some programs such as Silicon Vision's Solids Render use a number of windows, each of which contains a different view.

Oak's Euclid, on the other hand, displays all the information in one window. If you want a different view of your object, you simply rotate it. You can, of course, have a number of windows showing the same object, each displaying it from a different viewpoint.

Like Euclid, COGS uses just one window to display an object. You can rotate the object to get a different view, but unfortunately, you can't have multiple views.

PRODUCT SPOTLIGHT

Product: COGS
Price: £70
Supplier: Android Systems, 32 Addison Close, Lancing, West Sussex BN15 9TD.
Tel: 0903 756443
Requirements: 2Mb ram

Unlike most other 3-D editors, there's also no way of changing the actual viewpoint – the point in space from which you are observing the object. The result is a rather flat looking, 3-D object which is only given any depth by colouring it in.

The colour system used by COGS is peculiar to say the least. Rather than choosing a single colour for any particular surface, you select a group of shades. If you had a rectangle, for example, and wanted to colour it red, you must choose from a block of 12 rather washed-out reddish-browns, a block of eight, slightly better, pale reds, or a block of four bright reds.

Depending on the angle of rotation of the rectangle, COGS will colour it using one of the shades from the selected block. I must say, that I prefer the system employed in Euclid where a single colour is used for each face and the shade of the colour is calculated each time the object is rendered.

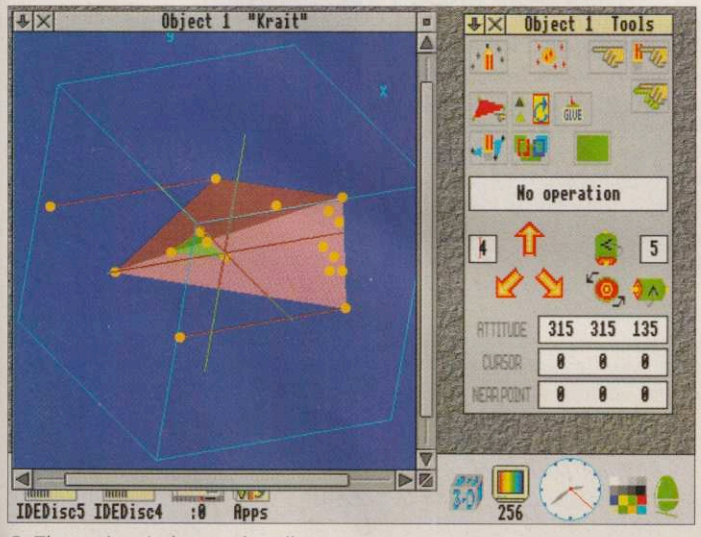
No attempt is made in COGS to dither colours to obtain more shades. This seems a strange oversight, especially as COGS will function perfectly well in a hi-res mode such as Mode 21 where dithering is particularly effective.

Building blocks

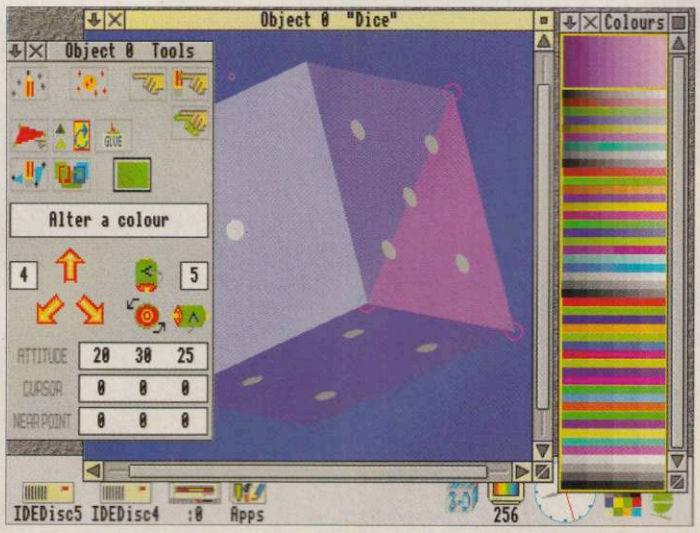
Creating an object in COGS all comes down to triangular surfaces – or trifaces for short. Any shape or object, whether it is two or three dimensional, can be formed out of trifaces which are created by defining three points in space and then instructing COGS to join them together.

Points can be specified using one of two methods: By moving a cursor to the required position, or by ➤

● *The COGS toolbox is very easy to use*



● *The main window and toolbox*



● *Colouring a triface in COGS to add to the effect*

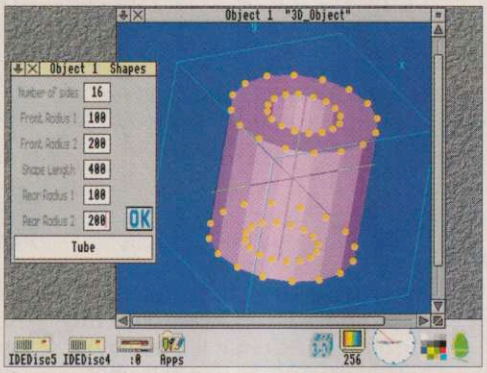
> Once shapes have been generated, they can be edited and/or moved around just like ordinary objects

typing the coordinates in directly. In both cases, the chosen points are indicated in the main window and can be altered before you create the triface.

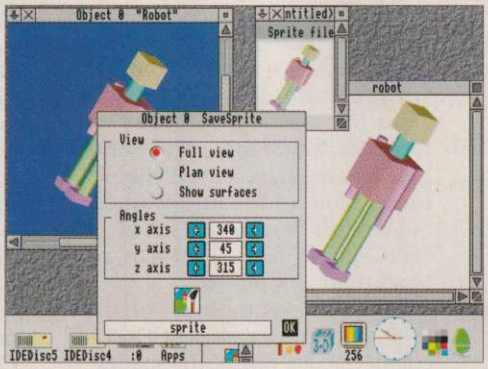
The one-window system that COGS uses to display an object means that you have to control the cursor *indirectly* via three arrow icons. I think it would have been quicker to be able to just point the mouse cursor in the main window, but the current set-up works okay once you get used to it.

An object containing more than one triface is created exactly the same way as before but a particular tool is used to link the necessary components.

Complex objects are relatively simple to construct and once one triface has been produced, it can be duplicated and moved to a new position. The individual trifaces can then be joined together to create the finished object.



● *Going through the creation process*



● *Exporting your finished sprite from COGS to Paint*

Ready mix

If typing in loads of coordinates seems a bit too much like hard work, there is fortunately a special tool that allows shapes to be generated to order.

Virtually any figure, 2-D or 3-D can be created and even objects with holes in – *tori* for those in the know when it comes to geometry – are catered for.

The generator takes up to six parameters that control all aspects of the shape, and creates the finished object in the centre of work area. There is no option to define the position of an object beforehand, although it can be moved to the desired location afterwards.

Using the generator is simple, but understanding how it works is not – well at least for the first few attempts. Some examples of different types of object are given in the manual, complete with some informative illustrations, but no real attempt is made to explain why what happens does.

Once shapes have been generated, they can be edited and/or moved around just like ordinary objects. You can also link separate objects together by creating new trifaces between the different points.

Doing this, though, can produce some quite unexpected results and you must make sure that you have the right points selected before doing so.

The second part of COGS consists of a number of routines to provide animation facilities. These are in the form of SWI calls which can be incorporated into your own programs, and are included in a relocatable module.

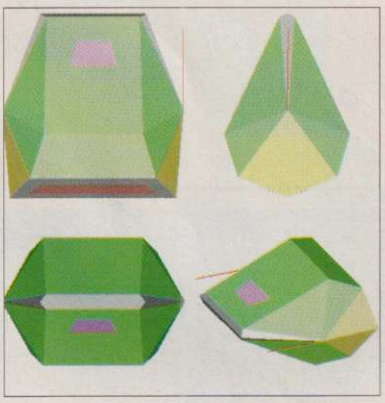
The advantage of this, is that it doesn't matter what language you're programming in. SWI calls will work in Basic, C or whatever you choose.

A number of demonstration programs are included on the COGS disk to show off the things possible with the SWIs. Two are in Basic and are a little on the slow side – even on an ARM3-based A5000.

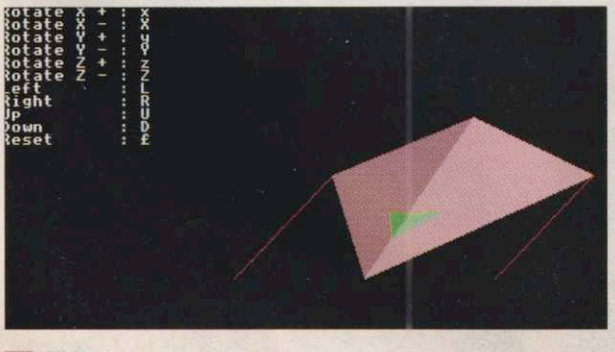
The third program is written in compiled C and benefits from a significant improvement in speed.

Writing a program in Assembler would not increase the speed noticeably over C as it's the SWIs which actually handle the manipulation of the COGS objects that take the time.

● *Various views of the same object*



● *An example of using COGS objects in Basic*



Summing up

It would have been nice to have seen a few more utilities on the disk. Some kind of viewer program would have been useful – you could, of course, write your own, but then again, not everyone is a programmer.

No facilities exist for any kind of perspective projection of objects. Such a capability would greatly enhance the overall package and would extend its usefulness to serious design work and the like.

The ability to save files in Draw format would also increase the uses to which COGS to be put.

At present, it's only possible to save images as sprites although these aren't really much use if you want to include them in high-quality desktop publishing or design work.

Plan, side and front elevations of a COGS object can also be saved as a sprite.

COGS contains some novel approaches to 3-D design, but at £70 doesn't stand up particularly well to competition such as Euclid which is cheaper.

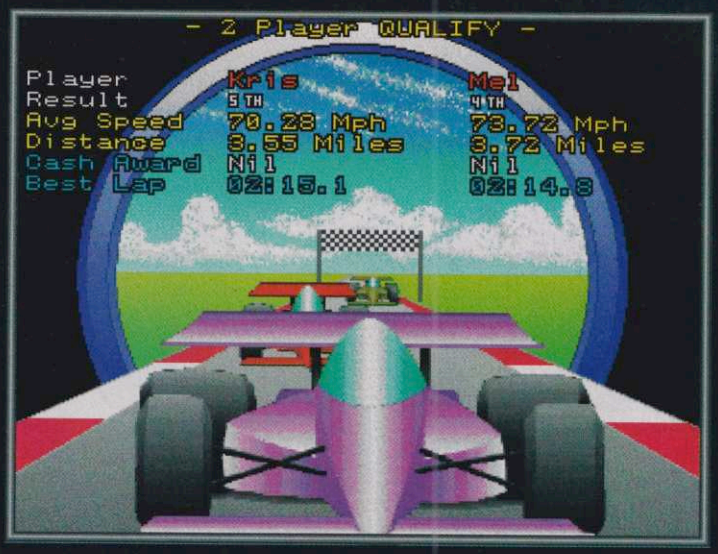
The front end of the toolbox and work window has a distinctly amateur feel to it although I should point out that this in no way effects how the program functions.

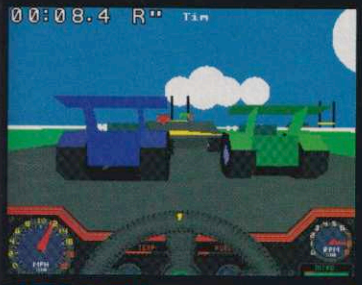
What is basically a good idea needs a bit of cosmetic revamping, a few more utilities on the disk and a more informative manual.

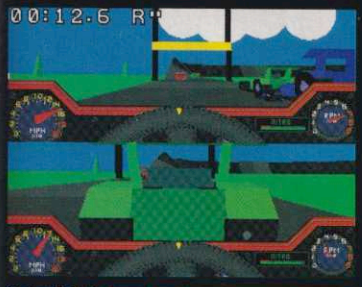
COGS is produced by Android Systems, a one-man-band, and deserves support from users in order to develop. I personally, would prefer to wait for the next release where the teething troubles should have been sorted out.

Stunt Racer 2000

'A game ahead of its time!'







The creators of *Chocks Away* are proud to present *Stunt Racer* 2000.

The year is 2037 and the world of motor sport has changed considerably to meet the demands of the excitement thirsty audiences. The World Federation Entertainments Network (Known as Fednet or WFE) broadcast Stunt Racer 2000 to a worldwide audience of over 750 million. Those who are brave enough to race can reap the rewards of stardom, wealth, fame and glory or be lost amongst the mass of failed Stunt Racer 2000 drivers. The racing season takes place on 16 demanding tracks over all terrains including desert, arctic and lunar tracks featuring a wide selection of jumps and stunts. After completion of all 16 tracks the top drivers will get to race on the Supreme Stunt Racer 2000 track which is the ultimate test of driving skill.

Stunt Racer 2000 has been carefully developed by the Fednet team over the last year and includes all the best features from other racing games and many innovative new features. The game is designed to be pseudo technical whilst keeping the easy to play arcade feel.

GAME FEATURES INCLUDE:

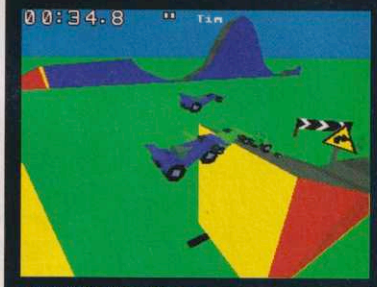
- Fast solid 3D vector graphic with a large selection of viewing angles and track side cameras.
- Lots of sampled sound effects and plenty of in-game music.
- Two-player split-screen or serial link options.
- Easy to use icon driven menu system to select the many features.
- 'Practice', 'Qualify' and 'Race' on a total of 19 varied and demanding tracks over 60 miles in length.
- Review your performance with the excellent replay feature.
- Vast selection of track pieces including Bank Corners, Various Jumps and Bumps, Moving 'Surf Track, 360 Degree Loops, Raised Sections, Track Hammers, Wave Bridges, Twister Jumps, Transporter Gates, Car Lifts and Acceleration Gates to mention but a few.
- Cash awards for winning races allowing you to increase your cars performance by buying Extra Tyre Grip, Increased Engine Power, Nitro, Mega Boosts and Car Scanners.
- Selectable gear ratios allowing you to fine tune your cars performance to suit the varied tracks.
- All player and computer controlled cars are accurately modelled using sophisticated alogrithms to calculate skidding, collisions, gravity, acceleration etc.
- Two player 'Killer' – destroy your opponent on specially designed tracks. Save player files and game configuration onto disc.

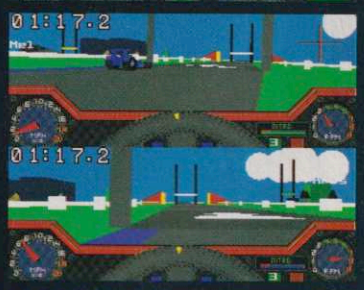
FedNet 25436 - 32

WFE World Federation Entertainments Network

This transmission has been certified suitable by the federal censorship board for viewers aged 12 and above.

PG STUNT RACER 2000





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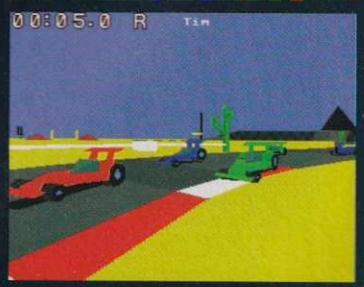


THE DATABAY

HAL opens its electronic doors for the first time

WELCOME to the newest information bank for games news, cheats and tips – The Databay! I am HAL, your resident guide, and to start, let's take a look at what promises to be one of the most exciting new products of 1993.

For those of you whose appetites have been whetted by reading the snippets of news in *Acorn Computing* concerning this *interactive multi-player*, I've got some good news and some bad. The good news first.

The 3DO, with its ARM processor, is capable of some remarkable number crunching. Imagine a moving video image wrapped round a sphere that was bouncing round the screen – then imagine it in real-time.

The console doesn't just play games, either. It has audio CD and Kodak PhotoCD compatibility and an optional MPEG decoder cartridge will enable it to replay whole feature films from one compact disc. Rewinding videos may become a thing of the past.

Now it's time for the bad news. The 3DO is only being released in the United States this autumn, and its release date here in the UK is the April 1, 1994. And before you ask, I don't think it's a joke.

Thanks to Vertical Twist for this information – they intend to be strongly involved with the 3DO console, so contact them on 0243 531194 for more detailed information.

Total Eclipse

Eclipse, the games publishers who brought you Blowpipe and Worldscape two years ago, are re-entering the Acorn scene with some superb titles. This autumn, they will release the Bitmap Brother's classic shoot-'em-up Xenon 2, accompanied by James Pond 2 – Robocod, the fishy platform caper from Millennium.

Eclipse will also re-release the innovative Software 42 games Cycloids, F.R.E.D. and Ixion under their new label. Planned conversions for the future include Rome AD92, Global Effect and Daughter of Serpents.

Contact Eclipse at Albany House, Oving Road, Chichester, West Sussex, PO19 4BH and keep watching these pages for more news.

Turbocheats

With the advent of software-based hacking packages such as *The Hacker* from Doggysoft or *Games Wizard* from Vertical Twist, it is easier for everyday games players to find cheats for their favourite games. So I intend to squeeze a few modules or script files on the MegaDisks whenever there is space.

Talking of *The Hacker*, the current version is 3.08 and it will now deal with Zool, Axis, Cycloids, F.R.E.D. and TwinWorld, which previously gave it indigestion. Andrew Clover is also planning version 3.10, hopefully including interactive help and a hexadecimal calculator.

Zooling the easy way

I believe it's a little too early to declare a full-scale hacking war on Zool just yet, but I hope you'll be satisfied with these tips to get you

● *Tired/depressed? Irritable?...*

...then use a little Databay knowhow...

started. The easiest way to boost your score is to look out for the huge bonus objects stashed away in the levels, as they are worth a respectable 10,000 points each. They can be hidden quite well at times, so bear in mind that walls aren't as solid as they appear and Zool is a pretty strong ninja.

In area 1:3, the four small boxes marked HIT will yield a bonus if punched in the right order. Punch the first and the third and they will explode, showering you with sweets and sugar canes.

If the thought of tackling the killer bee at the end of the level fills you with dread, try this cunning way of leaving the world.

Let the timer run down to 50, then punch your way through the first large right hand wall to discover a bonus room, two extra lives and an exit. The more adventurous could defeat the bee and then return for those well-deserved goodies.

When fighting the end-of-level guardians on later levels, remember to aim at their eyes – it's the only way to defeat them.

Finally in this Zool run-down, two whole bonus levels are hidden in area 2:1. For the first, travel as far right as you can from the start until you find a restart point. Leap on to the ledge above it, then leap off to the right. The game move to a sideways scrolling shoot-'em-up, in which Zool takes to his own bloodstream.

For the musical out there, try playing the tune from *Close Encounters* on one of the giant pianos in the level to find the second bonus shoot-'em-up. Thanks to Colin Stokes and Nick Clarkson of Gremlin Graphics for their help, and watch out for more Zool tips next time.

...and show 'em who's boss

Passcode Corner

Andrew Clover has sent me a list of passwords for **Axis**, which should ease your progress through the game.

Level	Password
2	yFishTankW
3	ankelRotar
4	yEngineVib
5	raphoneKin
6	gSolomansW
7	inesTheArc
8	hitectSket

The almost infamous Nathan Atkinson has examined **Chocks Away Extra Missions** and come up with the following cheat. Press pause on Practice Map C and hold down the letters T, I, M and E. While these are pressed, tap the spacebar, and then release all the keys.

You should be able to fly at 10 times the normal maximum speed and you are invincible. If you die, you'll restart in midair, but you must press 8 on the numeric keypad to restore your view.

Thank you to A. Macfarlane Smith, Simon Naisbitt and Michael Johnston for furnishing me with the passwords for **Nevryon II – Technodream.**

Level	Password
1:2	ASTRA
1:3	BLUEROOM
2:1	EARTH
2:2	GAIA
2:3	MOONDUST
3:1	NEBULUS
3:2	ORBITAL
3:3	STAR

Michael has also come up with a quick cheat. Hold down the spacebar after the *Loading, Please Wait* message appears and keep it pressed until the game starts.

When the blue spaceship appears, it should already be in possession of a ram, missiles and an extra life.

Appeals and apologies

I realise that many of you will be wondering where the solution to Exile has disappeared to. The truth is, so am I. I apologise most humbly and I promise to feature it once again as soon as I have got hold of it. Could Daniel Doran, Peter Tillotson and Kevin Rooney help me out here and send in the solution once more? It won't get lost, I promise.

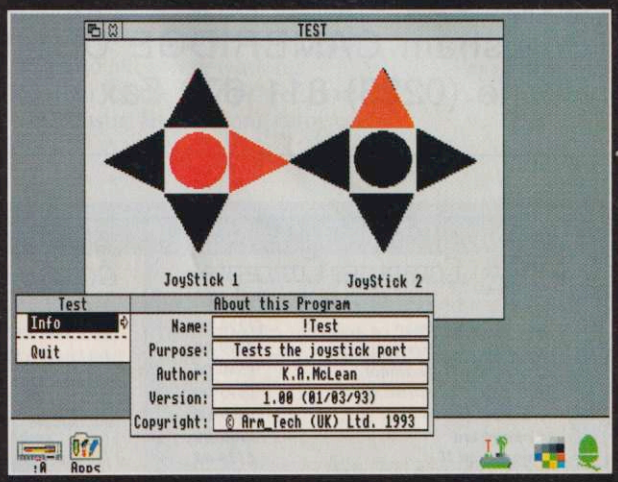
8-bit Power

For BBC Micro 8-bit owners everywhere, C. J. Richardson of 8-Bit Software has sent me a huge selection of cheats and passwords as well as two articles to help you find cheats. I think the best way of passing on this information is to perform a request service.

So, if you have a game that you are having particular troubles with, write in to tell me and I will see what information I can dig out. Alternatively, if you would like to get your hands on the whole bundle, write to C. J. Richardson at 8-Bit Software.

No more credits

There are two ways that I could fill The Databay: With the cream of game-playing tips and cheats sent in by loyal readers all over the country, indeed, the world, or some pretty pictures of Lemmings. It's up to you.



● *Coming soon to The Databay – a review of !ArmStick*

If you have any cheats, hints or information to share, no matter what the subject – okay, well, I suppose there are limitations, I don't know much about tectonic plates – write in to The Databay here at *Acorn Computing*. If you would like a reply or you are sending in disks to be returned, please enclose a stamped, addressed envelope.

Given the chance, I would like to include more *Hacker* and *Games Wizard* style cheats, so if you have either of these, get hacking and send me your results.

In future articles of The Databay, I hope to talk to some of the people behind your favourite games. With a bit of luck, I will also be able to prise out a few details of future releases, so keep reading. It looks like I've run out of space for this column, so I'll see you again next time.

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Inside the Crystal Maze

Acorn Computing meet Digital Jellyfish Design – the men behind the code

NEW Zealand has been the dark horse in the secretive world of programming where graphic artists and programmers have been snatched up and kept under wraps by publishers such as 4Mation, Clares and Sherston. Now one programming team in particular are about to put NZ well and truly on to the Acorn map with the coding and design of The Crystal Maze.

With Sherston's acknowledged background in producing educational games appealing to a range of ages and abilities, they were Chatsworth TV's obvious choice when they decided they wanted an *educational* version of their blockbuster show. Having already seen tantalising glimpses of the zones, we can guarantee that fans of the Channel 4 series are in for a real treat.

The Crystal Maze is due to be launched at the Acorn World Show and in our next issue we'll have an exclusive preview. But just who and what are Digital Jellyfish Design? We set our intrepid reporter on their trail across the Atlantic and the Pacific Oceans stopping off in Shanghai en route *(How? Ed)*.

How did you all meet?

In prison. (Joking!) Actually, Nick and Justin are brothers. Sean and Nick met in a room full of Apple II computers – back in their heyday, about 10 years ago – and Choong and Justin met while studying the same graphic design course about four years ago.

How long have you been together?

Previous to this project, Sean and Nick were working together for the nearly three years while Justin and Choong came on

➤

Who's who?

Nick Westgate

Born in Bedfordshire, UK 1970. Moved to NZ aged six. Spent early teens learning martial arts, how to program and playing computer games. Studied at Auckland University 1988-1990, graduating with a BSc in Computer Science.

Favourite subjects: Astrophysics, computer graphics, Artificial Intelligence. Other interests: Miniature figure painting, listening to music, reading and the pursuit of knowledge

Sean Fausett

Born in Auckland, NZ. Grew up playing rugby league and softball, but an inquiring mind and a taste for *arcade* games led to a serious interest in computers. Later completed a BSc degree in Computer Science at Auckland University – a few years ago now.

He has owned various computers including: Sinclair ZX-81, Commodore Vic-20, Apple IIe, Apple IIgs, IBM 386-40 and Acorn A5000 systems. Some of his current interests include studying computer graphics, playing pub chess and attending film festivals. To keep fit he was a lifeguard but now does some tramping and circuit and weight training at the local gym.

Justin Westgate

Justin was born in England, spent his early childhood in Africa but has lived in NZ since then. His first involvement with computers was mucking around on an Apple II in his early years.

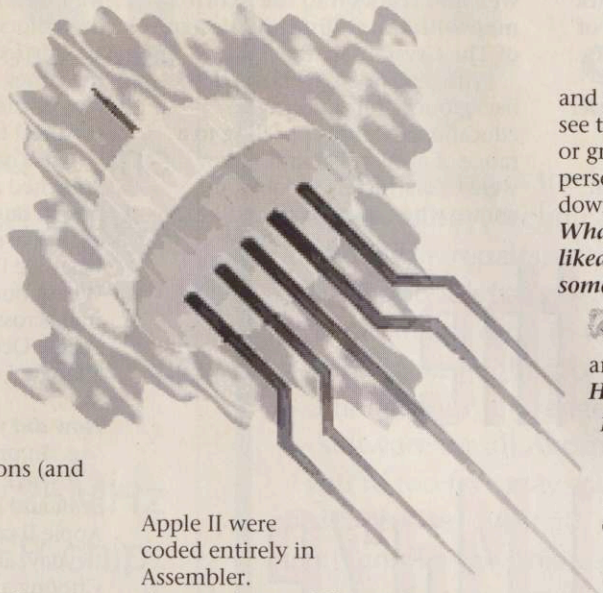
During studying for a Diploma in Graphic Design his interests moved from computer graphics and animation to environmentally conscious design. He now works for a design studio specialising in the environment and social justice using high-end Macintoshes.

The chance to work on a computer game with both entertainment and educational value he found impossible to turn down. He finds both working in the computer medium and on another platform challenging finding the Acorn 32-bit machines very impressive.

Choong

Spent 10 years in Asia, first as a draughtsperson then as an architectural renderer. He found himself moving away from the limitations in subject matter that traditional work imposed.

He then moved to NZ, its relaxed pace of living contrasting Asia's and he studied for a diploma in graphic design for the next three years. He now hopes to utilize computers in his illustration and design work, possibly in the fields of game design and animation, and his favourite number is five.



> The Crystal Maze hadn't been aired in NZ, so we had to wait for videos of the show to arrive to see what all the fuss was about

to the scene about March this year.

Who does what?

Nick and Sean are the programmers /game designers, working closely with Justin to resolve the many design issues. Justin handles all graphic design aspects, from the look and feel of the project as a whole, to liaising with illustrators. Choong does the illustrations (and the dishes).

Who's in charge?

Vox populi. Vox Dei.

Where did the name Digital Jellyfish come from?

Ever noticed how logic gates look a a lot like jellyfish?

How much time do you program and what do you do to relax?

Full time, any time....there are no rules, so we must all be very disciplined. Sean works by exercising at the gym, crashing through the bush, or listening to Smashing Pumpkins and relaxes by coding interactive entertainment.

Nick works by cooking to Steely Dan, training to Sepultura, or dancing to Rage Against the Machine and relaxes by coding to Prokofiev, thinking to NIN and juggling between compiles.

Justin works by mountain biking and going bush. In fact we all love tramping to the middle of nowhere with nothing but a Victorinox. But seriously, we all work hard and these are the things we used to do when we had the time.

What other programs have you written?

Before this project we've done freelance/contract work, including 4GL applications for Mac/PC systems, low-level comms for Unix systems, and a few commercial ports – eight to the Apple II, and one to the Archimedes.

We usually code in C but thoroughly enjoy the *under the hood* control of coding in Assembler. Indeed, all eight ports to the Apple II were coded entirely in Assembler.

Any cravings to follow some of the other NZ programmers and come to the UK?

Maybe.

But not at this stage.

What do you think of the Crystal Maze TV programme?

Very professionally put together and a lot of fun to watch. Obviously, no expense has been spared in constructing the lavish sets and puzzles, and with the creative game designs involved, it's no wonder the show's been so successful.

What did you think when Sherston approached you with the project?

We couldn't resist such a challenging venture. It pre-empted another concept we were developing at the time – now put on hold – since once it was confirmed it required an immediate start. It soon became apparent that it was a huge undertaking.

What are the biggest difficulties about converting a successful TV programme to the computer screen?

Capturing the essence of the show in a very different medium, given that the software will be compared to the show.

Where do you start?

Absorbing all available resource material. The Crystal Maze hadn't been aired in NZ, so we had to wait for videos of the show to arrive to see what all the fuss was about. Immersion in information eventually gives you enough to start making decisions.

What design steps did you go through?

Top-down design. Start with a global precis then recursively sub-divide into manageable tasks until they are implementable. Generate as many ideas as possible and bounce them off each other to see them either shot down in flames or grudgingly accepted – by the person whose idea you gunned down only minutes ago.

What program would you have liked to have created which someone else has already done?

[Nostalgia Alert] The original classics Pac-Man, Defender and Wizardry.

How do you decide when a program is finished?

Ideally improvements can always be made, but realistically the budget and the deadline decide.

What are the most innovative ideas you put in?

Probably our design tools – used behind the scenes – which speed development by ease of utility, expandability and portability.

What do you think of Acorn 32-bit programmers?

They are yet to make the most of this excellent platform.

How does programming the Arc compare to other machines?

A powerful, intuitive GUI and a fairly decent C compiler make it very enjoyable to develop on. ARM assembler with its nicely orthogonal RISC instruction set makes for some really efficient coding, and it's fun too.

What are its limitations?

The 15 general purpose registers aren't quite enough for a decent matrix multiply, the *kludgy* 256-colour display system makes manipulating the palette messy at best. The very late adoption of a joystick standard means that use of an analogue joystick cannot be assumed – so user input is severely limited. Also the ARM lacks an integer divide.

What would you like Acorn to add to their new high end machines?

Any new machines – both high and low end – need maximum expandability, minimising the use of propriety components, providing more accessible upgrade paths. At least the CPU, graphics, sound and memory subsystems should be upgradeable in order to compete with the next generation of computer hardware. Acorn should also develop a serious PDA – Personal Digital Assistant to the uninitiated.

What next?

It looks like the PC port of Crystal Maze. After that we've a few more ideas...

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Established 1972

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Archimedes micro

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A5000-L/C 2Mb HD80	–	–	£1445
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3 SPECIAL PURCHASE OPTIONS

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OR
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Acorn JP150 Ink Jet Printer £175
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- Spectra Colour Handscanner **£539**

Watford Electronics Headquarters – Luton

Scan256 Grey Scale Scanning

If you need a 256 grey-scale hand scanner for your Archimedes then look no further.
Scan256 gives you up to 256 levels of grey at a maximum of 400dpi and is supported by state-of-the-art sophisticated software – **for only £159.** This makes it the only sensible scanning and image processing solution for the Acorn 32-bit range. Just compare these features:

- More than one copy of the image held in memory at once.
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- Highly advanced dithering and image size reduction.
- Convolution digital filtering with over 100 filters gives high quality images from poor quality scans.
- Adjustable scale and size during scan.
- Supports State Machine G8 Graphics Card.
- Includes shearing and rotation.
- Saves images in industry standard formats: TIFF, Sprite and AIM.
- True brightness, contrast and gamma correction.
- Multiple options – scale to page, centre sideways selected area.
- Selectable scanning modes.
- Plus much much more...

Please specify Archimedes type, not compatible with A3010, A3020, A4000. **£159**

- Scan256 for A3000 Micro **£169**

A3010 DTP Pack

Supplied with 3.5" Floppy Disc Drive and a mouse, Colour Monitor and lead, TV modulator, 30Mb fast IDE Hard Disk Drive, 'Compression' utility to increase the Hard Drive capacity to typically 60Mb, the highly acclaimed Computer Concept's Impression Junior DTP package, EasiWord wordprocessor, Quest for Gold game, applications suite of software packages and comprehensive audio training tape.

RRP: £1095

Sale Offer Price: £775

- A3010 DTP Pack with Learning Curve **£875**
- Additional 1Mb RAM fitted **£39**

Special Education discounts available on micros, RAM upgrades, ARM 3 Turbo Card, etc. Please write in or telephone:

0582 74 55 55

RISC OS 3.1 Upgrades

- A 5000 Software Upgrade Kit **£14**
- Software Upgrade Kit for the rest **£35**
- Hardware Upgrade Kit 300/440 **£22**
- Bulk (10) Software Upgrade kit **£275**

Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

- **R300**-4 Layer RAM upgrade board (Bare). **£25**
- **R302**-A3000 – to 2MB RAM Upgrade **£29**
- **R303**-A3000 – to 2MB RAM Upgrade (expandable to 4MB) **£49**
- **R304**-A3000 – to 4MB RAM Upgrade **£99**
- **R305**-A3010 – to 2MB RAM Upgrade **£39**
- **R306**-A3020/A4000 – to 4MB RAM Upgrade **£70**
- **R311**-A305 – to 1MB RAM Upgrade **£30**
- **R312**-A305/310 – to 2MB RAM Upgrade **£85**
- **R412**-A410/1 – to 2MB RAM Upgrade **£25**
- **R413**-A420/1 – to 4MB RAM Upgrade **£50**
- **R414**-A410/1 – to 4MB RAM Upgrade **£75**
- **R810**-A410/1 – to 8MB RAM Upgrade **£329**
- **R820**-A420/1 – to 8MB RAM Upgrade **£299**
- **R840**-A440/1 – to 8MB RAM Upgrade **£239**
- **A5000** – 2Mb to 4Mb additional RAM **£82**

Desk Top Publishers

Acorn's Archi DTP Package	**£69**
• **Equasor** **£36;**	• **Expression-PS** **£19**
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Impression Junior	**£63**
Impression Business Supplement	**£39**
Impression II Borders Disc	**£18**
Ovation DTP	**£82**
Desk Top Thesaurus	**£16**

Archi Wordprocessors

Pendown Archi	**£46**	EasiWord	**£43**
Pendown Plus	**£67**	Prime Word	**£50**
Easiwriter II	**£114**	Wordz	**£85**

Databases

Flexifile	**£69**	Multistore v2.01	**£99**
Knowledge Organiser II	**£75**	Pinpoint	**£64**
Magpie	**£39**	Pinpoint Junior	**£23**

Spreadsheets

Eureka	**£95**	Schema	**£89**

Business Graphics

GammaPlot	**£39**	Sigmaplot	**£39**

Integrated Packages

- Pipedream 3 **£70**
- Pipedream 4 **£117**
- Desktop Office – Database, Graphs & Charts, Wordprocessor Spreadsheet, Communications **£69**
- Desktop Folio – Wordprocessor, Desktop & Interactive Publishing. Ideal for school **£59**
- Acorn Advance package **£88**

Acorn Multimedia

- Multimedia Expansion £485
- Multimedia Expansion + 16 bit SCSI £585

Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.
Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine.
A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.
By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

A300/A400 Internal IDE Drive

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	£159
ADA 0550	80Mb	17mS	£195
ADA 0530	105Mb	16mS	£235
ADA 0570	210Mb	15mS	£359
ADA 0880	330Mb	15mS	£465

All above 3.5" Drives are supplied complete with Controller Card & cable for use with A300/A400/A500 series machines.

AAA 0300 External Case & PSU for A3000 £85
AEA 1060 Archi IDE Hard Disc Podule only £89

A5000 Internal IDE Drive

Can be used as 2nd Internal IDE Drive

ADA 1030	80Mb	17mS	£149
ADA 0940	105Mb	16mS	£189
ADA 0950	210Mb	15mS	£259
ADA 0580	330Mb	15mS	£399

A3000 External IDE Drives

ADA 0780	44Mb	28mS	£225
ADA 1020	80Mb	17mS	£265
ADA 1050	105Mb	15mS	£309
ADA 1070	210Mb	15mS	£399

New IDE ROM Software for RISC OS 3 (upgrade) for existing users £16

Internal Hard Disc Drives for A3000/A3010

State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0770	30Mb	19mS	£159
ADA 0750	60MB	18MS	£199
ADA 0720	80Mb	18mS	£219
ADA 0730	120Mb	16mS	£285

Supplied ready assembled. No soldering required. Simply plug into the allotted space.

Access VISA AMERICAN EXPRESS

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Archi IDE Hard Cards

"Simply plug and play"

Watford's easy to instal, low cost, high performance, revolutionary IDE Hard Cards for the A300 & A400 series Archimedes.

ADA 0800	30Mb	19mS	£189
ADA 0890	60Mb	18mS	£229
ADA 0670	80Mb	18mS	£249
ADA 0680	120Mb		£295

(All above Hard Cards can be used as Removable Hard Drives. Ideal for Military and Education use.)

Archi to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.
- Risc OS 2 Version £15
- Risc OS 3 Version £16

(P.S. For A3000 Serial Upgrade **(£19)** required)

A3000 Accessories

- 3.5" External Drive £95
- Technical Manual £32
- A3000 Dust Cover £5
- Acorn Carrying Case for A3000 £10
- A3000 User Port/Midi Upgrade Card £44
- A3000 User/Analogue/IIC I/O Card £38
- A3000 External Podule Case £15
- Monitor Stand £15
- Serial Upgrade £19
- Micro+monitor cover £9

A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

Features
- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices. **£38**

Cortian CKAI Interface

Eliminates need to have a User port in A3000/305/310/400/540 when using Concept Keyboard. £28

Concept Keyboards

- A4 Standard Pack £89
- A3 Standard Pack £94
- Designer Pack A4 £104
- Primary Pack £95
- Primary Pack £99
- A3 D Pack £104
- Universal 2010 Keyboard A3 £107
- Universal 2010 Keyboard A4 £104

NEW Special Finance Deal

Now everyone can afford an Archimedes Micro with Watford Electronic's up to 60 months instant credit facility.

(Please telephone 0582 74 55 55 for details)

Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.

Price £21

Back Plate Extension

- A300/400 £15; • A3000 £14

ARM 3 Turbo Card MkII

Simply The Best

Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £145. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.
Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £24.
(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

Special Offer £125

Network Accessories/Software

BBC B Econet Kit	£42
Master Econet Module	£40
Archimedes Econet Module	£40
A3020/4000 Econet Module	£49
Acorn A4 Econet Module	£50
Archimedes Ethernet Card	£139
A3020/4000 Ethernet Card	£179
AUN/Level 4 Fileserver	£379
Econet Starter Kit	£137
100m Econet Cable	£99
Econet Socket Box	£7.50

(P.S. Full range of Network Accessories/Software/ Site Licences available. Telephone for details.)

Leasing finance at very attractive rates now available to Businesses (subject to status), Schools, Colleges, Universities, Government Depts. and Local Councils.

Continued→ → → → → → → → →

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Computer control	French program for beginners	£26
Computers at work	Program simulating computer control	£26
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Fun School 3 (5-7)	Varied range of Education subjects	£17
Fun School 3 (Over 7)	Varied range of Education subjects	£17
	Varied range of Education subjects	£17

Archi Educational Software

- 10 out of 10 Early essentials £18
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- 10 out of 10 Maths £18
- Animated Alphabet (3-6 yrs) £21
- An Eye for Spelling £31
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- Numerator £39
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Archimedes Software

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Mogul	£20
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Investigator 2	£20
Magpie 2	£40
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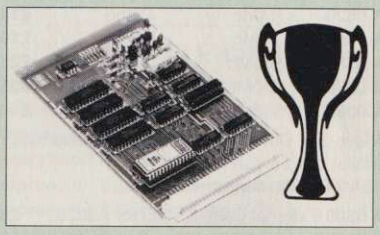
ExcellonDRILL	£49	PowerROUTER	£125
SolidCAD	£65	FilmMAKER	£55
SolidsRENDER	£65	SolidTOOLS	£169
SuperDUMP	£17	SuperPLOT	£17
RiscBASIC Compiler	£66	RiscFORTH Comp	£66
RoboLOGO	£35	DataVision	£66
ShareHolder Pro	£129	Payroll Manager	£66

TEX EPROM ERASERS

Over erasure of EPROMs very rapidly turns them into ROMs!
The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast.

- **ERASER GT** – Deluxe version erases up to 8 chips. Has automatic safety cut-off to switch off the UV lamp when opened. £36
- Spare UV tubes. £12

Archi Real-Time Digitiser



Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £75

A Set of Colour Filters for colour image grabbing using a video camera £16

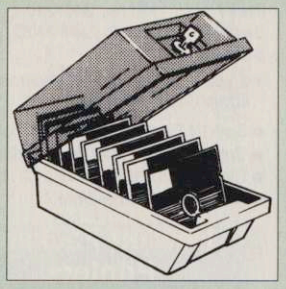
Vision Digitiser

Working in real time, the Vision Digitiser is available in either monochrome or colour versions with a software upgrade to colour. Create high quality images simply by connecting the digitiser to a PAL video source, such as a camcorder, video or digital camera. Includes powerful RISC OS software.

Mono Vision Digitiser £44.00

Colour Vision Digitiser £74.00

Antistatic Lockable Disc Storage Units



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- **M85** – holds up to 95 5.25" discs **£6.95**
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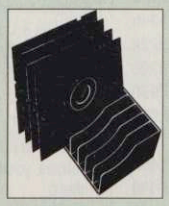
* Not lockable

Disc Plonker Rack



When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

£2

3M – Diskettes

Lifetime warranty on 3M Discs

- *10 x 5.25" S/S D/D 40T (744)* **£5**
- *10 x 5.25" D/S D/D 40T (745)* **£5**
- *10 x 5.25" S/S D/D 80 Track (746)* **£6**
- *10 x 5.25" D/S D/D 80 Track (747)* **£7**
- *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT* **£8**
- *10 x 3.5" S/S D/D 40/80 Track* **£6**
- *10 x 3.5" D/S D/D 40/80 Track* **£6**
- *10 x 3.5" Double Sided High Density* **£10**

Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- *10 x **M3** 3.5" D/S D/D 80 Track* **£6**
- *10 x **M9** 3.5" D/S High Density* **£10**
- *10 x **M4** 5.25" S/S D/D 40 Track* **£5**
- *10 x **M5** 5.25" D/S D/D 40 Track* **£5**
- *10 x **M7** 5.25" D/S D/D 80 Track* **£6**
- *10 x **M8** 5.25" D/S H/D Hi-Density* **£9**

Special Bulk Offer Discs

(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£25	£30	£35
• With Sleeves 5.25"	£28	£33	£38
• 3.5" D/S D/D	£21 for 50	£39 for 100	
• 3.5" D/S H/D	£40 for 50	£75 for 100	

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00**; Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

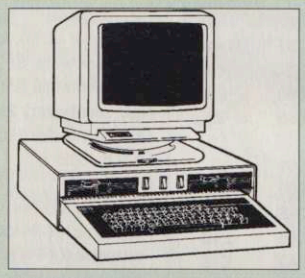
3.5" Disc Drive

These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	£59
• **CLD35:**	Twin Disc Drives, 800K	£109
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	£82
• **CD35:**	Twin Disc Drives, 800K	£126

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drives in Monitor Stand



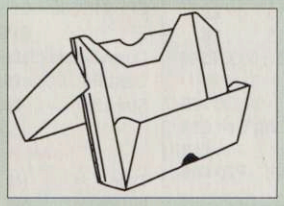
• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£150

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£145

Plastic Library Cases



DLC1 – Holds 5 x 3.5" Discs. **£1.50**
DLC2 – Holds 10 x 3.5" Discs. **£1.90**
DLC3 – Holds 5 x 5.25" Discs. **£1.60**
DLC4 – Holds 10 x 5.25" Discs. **£2.00**

Disc Albums

Attractively finished in leather-look PVC Vinyl

DW1 – Holds 6 x 3.5" Discs **£2.50**
DW2 – Holds 6 x 5.25" Discs **£3.00**
DW3 – Holds 20 x 5.25" Discs **£3.50**
DW4 – Holds 40 x 3.5" Discs or 5.25" Discs **£4.50**

Cleaning Kits & Aerosols

- 5.25" Disc Cleaning Kit **£4**
- 3.5" Disc Cleaning Kit **£4**
- PC Cleaning Kit **£7**
- Professional PC Cleaning Kit **£12**
- Aerosol Dust Spray Can **£3**
- Servisol Foam Cleaner Can **£3**
- Antistatic Aerosol Spray **£3**

Acorn & Watford DFSs

- Watford sophisticated DFS ROM **£16.00**
- Watford DFS Kit complete **£49.00**
- DFS Manual (comprehensive) **£6.95**
- Acorn DNFS ROM **£17.00**
- Acorn ADFS ROM only **£25.00**
- Acorn 1772 DFS ROM Kit **£49.00**
- Acorn DFS Kit complete **£48**

Watford's MkII 1772

Single/Double Density DFS

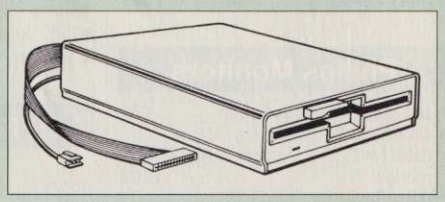
Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

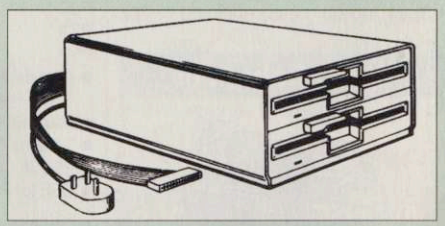
- Complete Kit Special Price **£44**
- DDFS Manual (No VAT) **£6.95**

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).
P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"





Our Disc Drives conform to BS415

Type	Description	
	Disc Drive without PSU	
• **CLS400S:**	Single, 40/80 track 400K Double sided Drive	£75
• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	£138
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	£85
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	£149

Credit Card Hotline: 0582 74 55 55

Continued→ → → → → → → → →

Microvitec Monitors

- **1431** – Standard Resolution #£175
- **1451** – Medium Resolution #£215
- **Cub3000** Medium Res for A3000 #£195
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239
- **Touchtec 3000** (For RiscOs 2 only) £POA

3 years parts & labour warranty

Multiscan Monitors

Eizo T240i	£483	Pan TX1713MAB	£616
Eizo F340i-W	£625	Phil 4CM4270	£289
Eizo F550i-W	£899	Phil 7CM3279	£249
Eizo T560iT	£1345	Phil 7CM5279	£269
Eizo F560i-W	£1195	Taxan 787	£229
Eizo T660i-T20"	£1899	Taxan 787LR	£239
NEC 2A-N	£274	Taxan 789LR	£289
NEC 3FG	£360	Taxan 795-PC	£465
NEC 3FGe	£352	Taxan 875+ LR	£737
NEC 4FGe	£479	Taxan 1075-20"	£1189
NEC 5FG	£899	Taxan1150	£1699
NEC 5FGe	£789	Taxan	
NEC 6FG	£1599	1095LR-20"	£1699
Panasonic C1381	£199		

Panasonic monitors carry 2 years on-site maintenance warranty

Aries AlphaScan Monitor

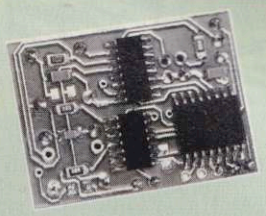
Its multiscan circuitry provides automatic adjustment for frequencies between 31 and 56KHz horizontal, and 43 and 70Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes. **£299**

- Aries Alphascan 17" Plus £585

Philips Monitors

- **BM7502** 12" Hi-res Green £88
- **CM8833ii** 14" med. Res Colour. Ideal for BBC B; Master & Archimedes £192
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

VIDC Enhancer



Our two unique VIDC add-on boards for the Archimedes cater for all VGA and Multiscan monitors and screen modes. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

Super VGA VIDC Card: Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control **£35**

MultiVideo VIDC Card: As above but for MultiScan monitors only. **£19**

Printer Leads

- BBC Centronics 4' £5; 6' £6
- Archi Parallel 2m £5; 5m £9; 10m £13
- PC Parallel 2m £5; 5m £9; 10m £13
- 25 pin D Male/Male 2m £5; 5m £10
- Centronics Double Ended 4' £5; 6' £6; 5m £10; 10m £14
- RS232 Leads Various £POA

Integrex Ink Jet Printers

- Paper Roll for Integrex 132 £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £23
- Black Cartridge £14
- 100 A4 OHP transparencies £55
- Colour Jet 2000 £599
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43
- Integrex Colourjet Series 2 £335
- Auto Sheet Feeder for Series 2 £45

Star Printers

	Printer	CSF	Ribbon
LC15	£185	£135	£5
LC20	£102	£60	£4
LC100C	£119	£65	£9
LC24-15	£242	£135	£5
LC24-100	£142	£69	£5
LC24-20 Mk2	£170	£65	£5
LC24-200C	£209	£65	£12
LC200 C	£151	£65	£12
Star Jet SJ48	£169	£43	£16
XB24-200C	£322#	£80	£12
XB24-250C	£389#	£139	£12
ZA-200C	£258#	£89	£12
ZA-250C	£324#	£139	£12

Includes 12 months on-site warranty

- Black Ribbons for Colour Printers £5
- Serial 8K I'face LC10/15/24/200 £52
- 32K Buffer LC/XB24-10; 15; 200 £52
- Star/Archi Colour Printer Driver £15

NEC Printers

	Printer	CSF	Ribbon
P22Q	£190	£59	£6
P32	£255	£59	£6
P62	£335	£89	£8
P72	£395	£115	£8
P90	£577	£115	£8

- Jetmate J400 £169; • Jetmate J800 £249

- Black Ribbons P20; P32 £6
- Ribbons P60/70/P90 Black £8; Colr £14
- P60/70 Colour Option Kit £59
- CSF for P20 £59; P60 £89; P70 £89

Panasonic Printers

	Printer	CSF	Ribbon
KX-P1123	£129	£59	£6
KX-P1170	£98	£59	£6
KX-P1624	£267	£126	£8
KX-P1654	£334#	£126	£8
KX-P1695	£270	£126	£8
KX-P2123M	£148	£79	£8
KX-P2124	£220	£89	£8
KX-P2180M	£128	£79	£8
KX-P2624	£272#	£126	£8
KX-P2023			£POA

FREE – Printer lead with every Panasonic printer listed above

Includes 12 months on-site warranty

- Dustcover for 80 column printers £6
- Serial Interface for above Printers £46
- Black Ribbons for P1081, 1180, 1124 £6
- Brown, Blue or Red Ribbons for KX-P1081/1592/1595/1695 £9 each
- 32K Buffer for above Printers £16

Colour Kit for KX-P2180; KX-P2123 and KX-P2124 £37

Laser Printers

All Laser printers (excluding HP Lasers) include 12 Months On-Site maintenance

Brother HL4-PS Postscript	4ppm	£969
Brother HL6 – NEW –	6ppm	£449
Brother HL10-PS	10ppm	£1285
Brother HL10-DV	10ppm	£1149
Brother HL10-DPS	10ppm	£1439
Canon LBP4 LITE	4ppm	£535
Canon LBP4+ 1.5M RAM	4ppm	£644
Canon LBP-8 Plus IIIR	8ppm	£1435
Canon LBP-8 IV 600DPI	8ppm	£975
Epson EPL-4300	4ppm	£520
Epson EPL-5000	6ppm	£459
Epson EPL-5200 – NEW –	6ppm	£544
Epson EPL-7500 PS	6ppm	£1139
Epson EPL8100	10ppm	£920
Fujitsu VM600	5ppm	£569
Fujitsu VM600E	6ppm	£709
HP Laserjet 4 ML	4ppm	£POA
HP Laserjet 4	8ppm	£1065
HP Laserjet 4L – NEW –	4ppm	£475
HP Laserjet 4M PS	8ppm	£1445
HP Laserjet 4si	16ppm	£2225
HP Laserjet 4Si MX 1200 DPI	16ppm	£2399
NEC Silentwriter S62P PS	6ppm	£990
NEC Silentwriter S102	6ppm	£980
NEC Silentwriter2 290	8ppm	£1149
NEC Silentwriter 290P PS	8ppm	£1469
OKI OL400E	4ppm	£449
OKI OL410		£589
Panasonic KX-P4410	5ppm*	£459
Panasonic KX-P4430	5ppm*	£592
Panasonic KX-P4451 DB	11ppm*	£895
Panasonic KX-P4455 PS	11ppm*	£1279
Star LP-4 Post Script	4ppm	£774
Star LS-5	5ppm	£499
Star LS-5 EX (RISC Based)	5ppm	£625
Star LS-5 TT True Type+Mac	5ppm	£775
Star LP-8 III postscript	8ppm	£1130

*2 years on-site warranty

HP Laserjet 4L 3 years on-site	£100
HP Laserjet 4si 3 years on-site	£505
HP Laserjet 4/4M 3 years on-site	£170

Laser Toners

Canon 2, 3 & 4	£52	KXP4420/50/55	£20
Canon LBP8-IV	£75	KX-P4410/30	£29
Canon 8/Star LP8	£59	NEC SWriter	£84
Epson GQ	£12	HPII/D, III/D	£60
EPL 40/41/4300	£55	HP IIP, IIIP	£54
EPL 71/7500	£117	HP4/4M	£72
EPL 8100	£117	HP Laserjet 4L	£65
Qume Crystal(3)	£84	OKI OL400/800	£21
Star LP4	£52	OKI OL400e	£17
Star LS5	£69	VM800 8K pages	£99

Laser RAM Upgrades

Type	1M	2M	4M	
IIP; IIIP	£49	£80	£132	
II & IID	£60	£96	£142	
LJ4/4M	£–	£75	£175	8M/£279
EPL4100	–	£120	–	512K/£52
KX4420/50i	£59	£89	£149	
NEC S62/S102	£99	£180	–	
Star LBP	£139	£275	–	
Laserjet 4L	£75	–	–	

Jetpage Postscript Cartridge

- HP IIP/IIIP £225 • IID & III £227

Various Add-Ons

- Laserjet Appletalk Interface £135
- HP Adobe Postscript+ Cartridge £359
- Pacific Page Postscript £259
- HP Premier Font Collection £28
- Laserjet Various Font C'tridges from £45
- HP Postscript Module for LJ4 £270
- Laserjet 4 Powered envelope feeder £199
- Jetdirect Ethernet Card for Laserjet IIIsi/4/4Si £359
- 500 Sheet paper cassette (3rd Bin) £205
- HPIIP/IIIP Lower Cassette Tray £115
- Canon LBP-4 Lower Cassette Tray £96
- KX-P4420 Ozone Filter £8

Citizen Printers

120D+	£94	Swift 200	£178
PN-48	£179	Swift 240	£200
Swift 90	£132	Swift 240C	£212
Swift 90C	£198		

2 years parts and labour warranty on all above Citizen Printers.

- Swift 24 Ribbons: Black £4 Colour £13
- Cut Sheet Feeder for 80 col. printers £75
- Citizen 120D Ribbons £3.50
- Archi Colour Printer Driver £15

Hewlett-Packard Printers

DJ500 colour	£339	Desk Jet 1200C	£1045
DJ 550 Colour	£499	DeskJet 1200C	
DJ Portable	£185	PS	£1479
Deskwriter	£299	Deskwriter 550C	£459
Deskwriter 500C	£349	PaintJet XL300+	£1675
Quiet Jet plus	£299	PaintJet XL300PS	£2619
Desk Jet 510	£242		

+ Includes 12 months on-site warranty
3 years on-site maintenance available as follows:

DeskJet & DeskWriter mono	£55
DeskJet & DeskWriter colour	£65

- Paintjet Cartridge Black £15; Colour £23
- DJ Portable CSF £49; Carrying Case £49

Special Offer

When you purchase any Hewlett Packard printer from us, you qualify for the following software offers:

- Adobe Type Manager v2 £45
- Designworks Software pack at £39
- Lotus Organiser Software at £39

Hi-quality InkJet Paper
A4 90gsm 500 sheets £12

Desk Jet 500 Accessories

- Ink Cartridges Black £16; Colour £23
- High Capacity Ink Cartridges Black £21
- **Ink Refill Double Pack (JetFill)** £10
- **Ink Refill High Capacity (JetFill)** £16
- **Deskjet Turbo Driver** £45
  (only £39 when purchased with printer)
- Archi – DJ550 Colour Printer Driver £14
- Epson FX Emulation Cart.(500 mono) £45
- IBM Proprinter Emulation Cartridge £59
- Wordperfect Cartridge £89
- DJ 500 Dust Covers £6
- 636G 50 x Transparencies A4 £40
- 636J 50 x Glossy Paper A4 (also XL) £40
- 630Z 50 x Cut Sheet Paper A4 £15

Plug In Font Cartridges for DJ 500

22706B - Prestige, Elite, Line Draw	£55
22706C - Letter Gothic & HP Line Draw	£56
22707P - Proprint Emulation Cartridges	£57

HP Paintjet/XL Accessories

- 630P 200 Z-Fold paper 8.5 x 11 £14
- 630Q 50 Transparencies 8.5 x 11 £39
- 630S 50 Transparencies A4 £40
- 630Y 200 Cut Sheets 8.5 x 11 £14
- 631Y 200 Cut Sheets A4 £18

Fujitsu Printers

- B-100 InkJet – HP Deskjet compatible 300dpi, whisper-quiet & 6 fonts #£179
- B-200 InkJet – HP Desk Jet compatible 300dpi. Built in Cut Sheet Feeder. Optional 2nd Bin/Tractor available #£279
- DL-1150 Dot Matrix – 24 pin, 110 column Colour optional £239
- DL-1150colour Dot Matrix – 24 pin, 110 column With colour option £269
- DL1250 £329; • DL4600 £799
- DL3600 £439; • DL5800 £999
- Joywriter £269; • DL1250 colr £369
- B-100 Cut Sheet Feeder £49
- B-200 2nd Bin Sheet Feeder £89
- B-200 Tractor Unit £69
- B-100/200 Ink Cartridges £14
- DL-1100 Colour Upgrade £39
- DL-1100 Ribbons Black £5 Colour £11
- B100/200 Jetfills Twin Pack £9

Epson Printers

	Printer	CSF	Ribbon
FX870	£268	£47	£4
FX1170	£335	£69	£6
LQ100	£147	£–	£4
LQ570+	£201	£47	£4
LQ870	£355	£47	£6
LQ1060	£585	£155	£6
LQ1070	£310	£69	£6
LQ1170	£434	£69	£6
LQ2550	£673	£360	£6
LX100	£114	£–	£4
LX400	£92	£69	£4
LX850+	£134	£69	£4
LX1050	£203	£125	£6
SQ870	£409	£170	£23
SQ1170	£555	£155	£23
SQ2550	£669	£–	£23
Stylus 800	£240	£–	£10

Epson RS232 Interface

Standard £28; +8K Buffer £75

- LQ100 Tractor Feed £29
- FX850/LQ800/850 Tractor Feed £69
- FX/LQ1050 Tractor Feed £85
- LQ2500/2550 Tractor Feed £90
- Dustcovers for 80 col printers £6
- Stylus 800 Transparencies (50) £35

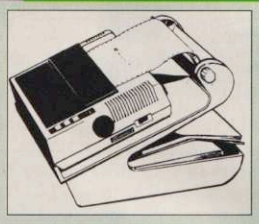
Canon Bubblejet Printers

	Printer	CSF	2nd Bin	Ink Cart
BJ10EX	£156	£43	–	£16
BJ10SX	£165	£43	–	£16
BJ200	£265	–	–	£16
BJ230	£290	–	–	£16
BJ300*	£329	£88	£88	£12
BJ330*	£369	£110	£79	£12
BJC800C	£1289	–	–	£16

- BJ10E/10EX/10SX/200/230 Jumbo Ink Refill pack (Jetfill Twin Pack) £12
- Optional Battery pack for BJ10EX/SX £33

* includes 12 months on site warranty

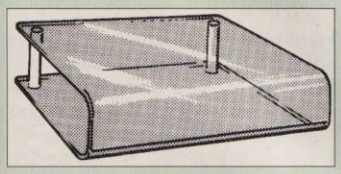
Professional Printer Stand



The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £16
132 Column version £25

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version £14
136 Column version £18

Access VISA AMERICAN EXPRESS

24-Hour Credit Card Order Line
(0582) 74 55 55 / 48 77 77

Universal Printer Sharers

Connect up to 4 Micros to 1 printer or 4 Printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Sharers

Connects	Serial	Parallel
2 to 1	£8	£9
3 to 1	£11	£12
4 to 1	£15	£16

Professional Sharer Units

Connects	Serial	Parallel
2 to 1	£12	£13
3 to 1	£15	£17
4 to 1	£24	£26

Auto Printer Sharer Switch

Connects	Serial	Centronics
2 to 1	£27	£29
4 to 1	£44	£45
8 to 1	–	£75

256K Multi Spooler

These Parallel Auto printer sharer switches have built-in 256K Buffer.

- 2 In / 2 out £99
- 4 In / 2 out £115
- 8 In / 1 out £149

(Cables for all printer switches are from £5 each please specify the type required when ordering.)

Compact Converter Unit

Serial to Parallel & Parallel to Serial £32

Listing Paper

- 1,000 Sheets 9.5" x 11" Fanfold £7
- 2,000 Sheets 9.5" x 11" Fanfold £11
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold £21
- 1,000 Sheets 15" x 11" Fanfold £9
- 2,000 Sheets 15" x 11" Fanfold £16
- 1,000 Sheets true A4 Fanfold Paper 70gms £11
- 2,000 Sheets true A4 Fanfold Paper 70gms £21
- 500 Sheets A4 80gms Bond £3.50
- 500 Sheets Special Hi-Quality InkJet printer A4 Paper £12

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	–	£6.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£3.25	£6.00
EX800/1000	£6.00	£6.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£6.00	£6.00
LQ400/500/550/800/850	£5.50	£6.00
LQ1050/LQ2500	£12.00	£6.00
LX400/800/850	£3.50	£6.00
M1009/GLP	£2.95	£6.00
NEC P2200	£4.50	£6.00

Dust covers for most 80 column printers available at £6 each

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	£6.00
1,000 90 x 36mm (Twin Row)	£6.25
1,000 90 x 49mm (Twin Row)	£7.50
1,000 102 x 36mm (Twin Row)	£6.75

Laser Printer Labels on A4 Sheets

3750 – 70 x 29mm (3 Rows x 10)	£15.50
2400 – 70 x 37mm (3 Rows x 8)	£15.25

Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold £7
- 2,000 Sheets 9.5" x 11" Fanfold £11
- 1,000 Sheets 9.5" x 11" NCR 2 Part £21
- 1,000 Sheets 15" x 11" Fanfold £9
- 2,000 Sheets 15" x 11" Fanfold £16
- 1,000 Sheets true A4 Fanfold 70gms £11
- 2,000 A4 Fanfold Paper £19
- 500 Sheets A4 80gsm Bond £3.50
- 500 Sheets 90gsm hi-quality Inkjet paper £12

Psion Series III

- Series 3 Computer128K £108
- Series 3 Computer 256K £159

RAM Solid State Discs (SSD)

- 128K £48
- 512K £97
- 1Mb £199

Flash Solid State Disc (SSD)

- 128K £30
- 556K £48
- 512K £79
- 1Mb £139
- 2Mb £199

Communications

- Parallel Interface Link £25
- RS 232 Serial Link for PC £58
- RS 232 Serial Link for Mac £59

Various

- Mains Adaptor 9V AC £12
- Spreadsheet £59
- Professional Finance £42
- Spelling Checker/Thesaurus £42

Voltmace Joystick

Delta 3B Single Joystick	£10
Delta 3B Twin Joysticks	£15
Delta 14B Single Joystick	£11
Delta-Cat A mouse eliminator Joystick for the Archimedes	£24
Analogue aircraft style yoke Joystick to run in the analogue port of the BBC B & Master 128	£25

Commander Joystick

- Connects directly to BBC Analogue port
- Fully compatible with all BBC Joystick controlled games.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

Price: £15

Beeb PC (BASIC)

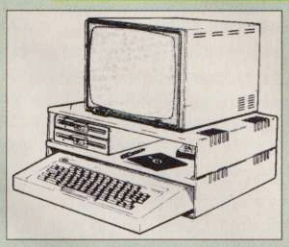
Designed for program authors to convert BBC programs to run on IBM PCs.

Price: £38

Plotters

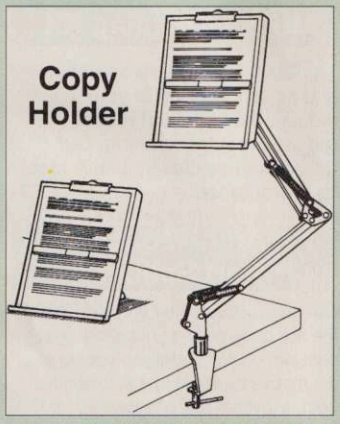
- DXY1100 £650
- DXY1200 £835
- DXY1300 £1049
- Sketchmate A4 £349
- Sketchmate A3 £495
- Roland Plotter Fibre Tip Pens £7.50
- HP7440AU £665
- HP7475AU £899
- HP7570A £POA
- HP7575AU £2529

Plinths for the BBC Master and A3000



- Single 490 x 310 x 105mm £14
- Double 490 x 310 x 210mm £27
- A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive £15

Copy Holder



Available in 2 full A4 versions, desk resting and shelf clamping. Paper is held firmly by means of a plastic retaining ruler and a clip grip.

- Desk Top £8;
- Angle Poise £12

NEW

Copy holders as above but with a battery operated, remote controlled cursor/ruler. (By hand or foot pedal.) (Batteries 2 x AA not included.)

- Desk Top £15;
- Angle Poise £20

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightning or thermostats switching.

Protection for only £8.50

4 Way Mains Distribution Socket

4 way top quality mains trailing sockets. Supplied wired up with mains plug ready for use. Can be screwed to floor or wall if required.
Very useful for tidying up all the mains leads from your peripherals. £9.50

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System £16

Continued→ → → → → →

QUEST MOUSE Mk III

- Quest Mouse III & Quest Paint £39
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont £59
- Quest Mouse III only £25
- Quest Paint Software only £23
- Quest Font Disc (22 Text Fonts) £15
- Quest Mouse Mat (Red or Blue or Green please specify) £3
- Conquest (Quest Paint Extension) ROM £24
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer £18

(P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose £3

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. £10

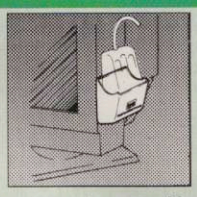
Mk III AMX MOUSE

- **AMX Mouse plus Super Art £39**

(Please specify for BBC, Master or Compact)

- AMX MOUSE ONLY £25
- AMX SUPERART Package £20
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse £18
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker £13
- AMX DESIGN (ROM) £23
- AMX EXTRA EXTRA £16
- MOUSE MAT £3

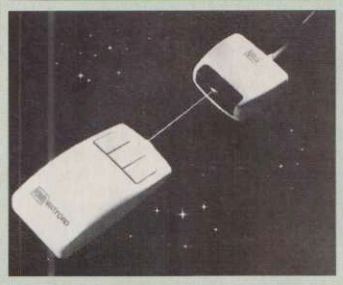
WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

Archi Cordless Mouse



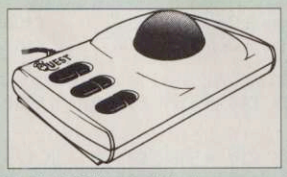
Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 minutes inactive
- Auto Power Shut-Down after 20 minutes inactive

Price £29

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version £25
QT-20 Archimedes Version £26

Archi Mk II Hand Scanner

Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion podule. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines. Images can be printed on any printer supported by RISC OS.
On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

AHS-4 Archi 300/400 Version £89
AHS-3 Archi A3000 Version £99

OFFICE MASTER

• CASHBOOK • FINAL ACCOUNTS • MAILIST • EASILEDGER – • INVOICES & STATEMENT

All this for only **£12** (Disc)

OFFICE MATE

• DATABASE • SPREADSHEET • BEEBPLOT

Only £10 (Disc)

Award winning Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Wapping Editor Software Pack £39
Wapping Editor plus Mouse £59

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc. Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out. £15

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are two Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions. £12

Wapping Font Disc 2

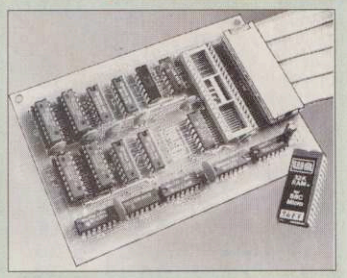
This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). £13

Archi A4 Scanner

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures. Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

Archi A4 Scanner £199
Sheet Feeder for above £75
Scanner + Sheet Feeder £269

32K Shadow RAM/ Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

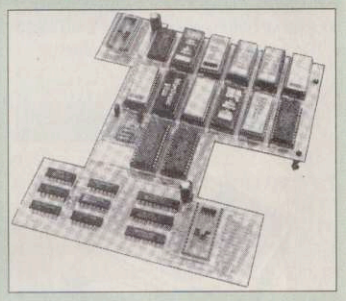
Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.

- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.

Only £45

Solderless Sideways ROM Socket Board



- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £32
Battery Backup fitted **£35**
Battery Backup only **£3**
16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

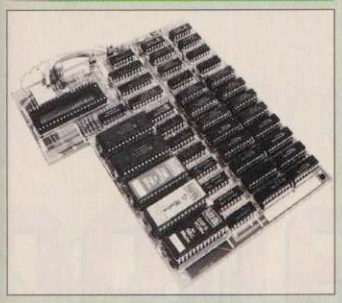
Only: £8

Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below). £14

Watford POWER DUCK £8

ROM/RAM Card



- No Soldering required to fit the board.
- Compatible with BBC B
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).

PRICES:

- ROM/RAM card with 32k DRAM **£39**
- ROM/RAM card with 64k DRAM **£52**
- ROM/RAM card with 128k DRAM **£83**

OPTIONAL EXTRAS:

- 16k plug-in Static RAM kit **£8**
- 16k DRAM for Upgrade **£13**
- Battery backup **£3**
- Read and Write protect switches **£2 each**

Complete ROM-RAM card with all options fitted **£99**

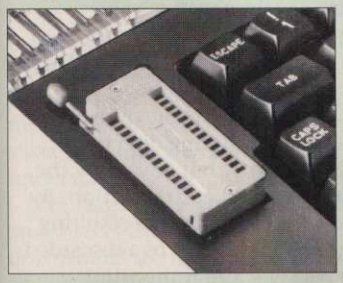
ROM Cartridges for the BBC Master

Will accept the larger Piggy Back ROMs like Interword, Quest, etc.

• Twin **£9;** • Quad **£14**

24-Hour Credit Card Order Line dial (0582) 74 55 55

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without having to open the lid. The ZIF socket is located into the ROM Cartridge's position. It is very simple to install. No soldering required. Also included in the price is a plastic see through storage case with antistatic lining, which allows you to store 12 ROMs. **£18**

Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

Special Offer £6

User Port Splitter Unit

Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows you to connect two devices simultaneously to the BBC B & Master user port.

Excellent Value at **£22**

View Printer Driver ROM

View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

Price: Only £29

Assorted ROMS BBC B/Master

ACORN ADFS	£25
ACORN BASIC 2 plus User Guide	£22
ACORN DNFS	£17
Acorn OS B+	£25
Acorn OS 1.2	£14
Beebmon	£22
Dump Out 3	£25
Graphics Extension Rom GXR-B	£21
GXR-B+	£22
Logotron LOGO	£43
MASTER OS ROM	£38
Master ULA (47)	£15
Master ULA (60)	£10
Numerator – Archi	£69
Numerator – BBC	£39
Pendown ROM	£32
SERIAL ULA	£13
TED	£15
Video ULA	£14
1Mb OS ROM	£39

View 3.0	£45	Viewsheet	£36
Viewstore	£36	Viewspell 80T	£25
InterBase	£49	InterChart	£25
InterSheet	£37	InterWord	£36
Mega-3 ROM	£76	Spell Master	£42
Wordwise Plus			£38#

Price includes a FREE Wordaid Rom

Word-Aid

This advance utilities ROM extends the power of your Wordwise plus ROM.

Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Beeb Dos

Allows IBM PCs/Compatibles to read Acorn format Discs **£39**

Beeb PC Basic

BBC Basic for IBM PCs/Compatibles **£38**

Spares for Archimedes

A3000 PSU	£49;	Disc Drive	£59
Controller VIDC	£39;	MEMC	£29
I/O Controller			£39
ARM 2 CPU			£39
A400 Disc Drive			£59
Fan Filter			£6
A300/400 PSU	£89;	Keystrip	£5
Cased Archimedes Keyboard			£120
Replacement Archimedes Keyboard			£29
A3000 Keyboard			£45

BOOKS (No VAT on Books)

15 Hr Wordprocessing BBC/View	£6.95
15 Hr Wordprocessing BBC/WW & WW+	£6.95
30 Hour BASIC (BBC Micro)	£12.95
1st Word Plus – Mastering	£13.95
1st Word Plus Rel. 2 Manual	£10.00
A3000 Technical Reference Manual	£29.00
A5000 Technical Reference Manual	£65.00
Acorn DTP A Guide to **Advanced User Guide for BBC**	£17.00 **£10.95**
Archimedes 1st Step – Beginners Guide	£9.95
Archimedes Assembly Language	£14.95
Archimedes Basic V Guide	£9.95
Archimedes BBC Basic Guide	£20
Archimedes DTP Manual	£10.00
Archimedes Game Maker Manual	£14.95
Archimedes Operating System	£14.95
Archimedes Risc-Os Programmers Reference Manual	£79.00
Assembly Language Quick Ref.	£21.95
BBC B Micro User Guide	£15
Budget DTP on the Archimedes	£12.95
C Big Red Book of	£8.95
C_Dabhand Guide to 3rd Ed	£16.95
C Programming Lang. 2nd Edition	£24.95
DISC FILING SYSTEM (DFS) Operating Manual for BBC	£5.95
DTP on the Archimedes	£12.95
Epson RX/FX Printer Commands Revealed	£5.95
File Handling for All	£9.95
FORTH on the BBC Micro	£9.95
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Example Programs on Disc for above	**£4.95**
Mysteries of Disc Drives & DFS Revealed	£4.95
PASCAL Programming	£10.95
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RISC Technical Manual 260 pg	£14.95
Understanding Interword – A Beginners Guide	£4.95
View 3.0 User Guide	£10
Viewsheet User Guide	£10
Viewstore User Guide	£10
Wimp Programming for All	£12.95
Wimp Programming –A Beginner's Guide	£12.95

Spares for BBC Micro

UHF Modulator			£4
Speaker	£3;	Speaker Grill	£1
Keyswitches			£1
16MHz Crystal			£2
17.734 MHz Crystal			£2
32.768MHz Crystal			£2
Replacement 17 way Flexible Keyboard Connector			£4
BBC Master Power Supply			£69
BBC Master Keyboard			£62
BBC Master Casing			£49

Refurbished BBC B Spares

BBC B Casing	£13
Clear Perspex Keystrip Holder	£3
BBC B Keyboard	£35
BBC B Power Supply	£49

ACORN to PC

Stop the Confusion!

Do you have to use both Acorn computers and PC's? Would you like to use your Archimedes or A3000 in PC-emulation mode but are unsure of the new commands?

Although Acorn machines (such as the BBC B, the Master, the Archimedes) are mainly used in education, most commercial computers use other operating systems, particularly MS-DOS. As a result school computer users are at a disadvantage when moving into 'business' computing. PCs and other commercial computers use MS-DOS as the operating system, so commands for formatting, copying, backing up, printing and the modem are not the same. Even file names are written differently! And did you know that there is one Acorn command which, if used in MS-DOS, wipes everything in the current directory?

'ACORN TO PC' enables you to change over painlessly. It shows clearly and quickly how, why and where the two systems (Acorn and MS-DOS) differ. As with a foreign language dictionary, you can use the book to transfer either way – from Acorn to MS-DOS, or from MS-DOS to Acorn.

Price: £6.95 (No VAT)

- Official orders accepted from government, educational establishments and PLCs.
- Shop Hours: 9am to 6pm, Monday to Saturday. Late night Thursday until 8pm. Free customer car park.
- Mail Order Inquiries: 9am to 6pm. Monday to Friday only
- Technical Inquiries: 9.30am to 5.00pm, Monday to Friday

Carriage (incl. Insurance) Charges

	1st Item	2nd & Subsequent Item
Software	£6.00	£2.00
Hardware	£7.00	£5.00
Lasers	£9.00	£7.00
Accessories	£5.00	£2.00
Small Items	£4.00	£2.00

P.S. Many software packages qualify for the small item tariff

For Next Day Working Day delivery service simply double the cost. All charges subject to VAT

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Watford Electronics Ltd

Established 1972

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Tel: 0582 48 77 77 Tlx: 8956095 WATFRD Fax: 0582 488588

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VAT: UK and EC customers: Please add 17.5% VAT to the total cost, including carriage.

Altered images

THE images on your monitor are created using lines, and if we can isolate each line the picture can be distorted and manipulated in various ways. The program Grafix! – on the MegaDisk – includes many different methods of modifying a sprite.

Before you begin, create a sprite file called *Facefile*, using !Paint, and make at least one sprite, without a mask, in Mode 13, size 100 wide by 150 high and call it *Pic* – you can use the one on the disk. It does not have to be a face but if you can draw yourself or the face of one of your friends, you can exact terrible liberties.

The first four effects (or FX) take horizontal slices of the image and move them in various directions using the command:

```
RECTANGLE FILL X, Y, Width, Height TO newX, newY
              | |    |       |    |   |    |
              | |    |       | Move to New XY coordinates
              | |    |     Height of rectangle
              | |   Width of rectangle
              XY (bottom left) of rectangle
```

Very handy command this. By stating the bottom left XY of the rectangle and then its width and height you can move a portion of the screen to a new XY location.

In the first FX procedure each line of the face, starting from the bottom of the image, is moved to the right four more pixels than the line below it. This produces a parallelogram but the slant angle can be increased or decreased by altering the line:

```
Z% += 4
      |
      Movement offset
```

Alter the 4 to a 1 and the slant is less severe. Try a negative number and the slant goes in the opposite direction.

A point worth noting here is how you always get something for nothing with a micro. If you look at the fourth parameter of the RECTANGLE FILL command you will see that it is a zero indicating that the height of the rectangle we wish to grab is nothing.

I started out with a 4 here which I thought was the minimum pixel resolution height but kept getting strange results. Although I quite liked the outcome it was not what I had expected or indeed wanted – try altering the zero to a 4 and you will see what I mean.

Anyway, rather like FOR ... NEXT loops which are always executed once, for example:

```
FOR I% = 0 TO 0
```

a zero in the RECTANGLE FILL height parameter instance will grab you one line of pixels.

So having managed to understand where the micro is coming from – I already know where it'll be going to – it was a simple enough business to create more interesting FX.

The second procedure (fx2) pushes lines of the image out to the right until half way up and then reverses direction.

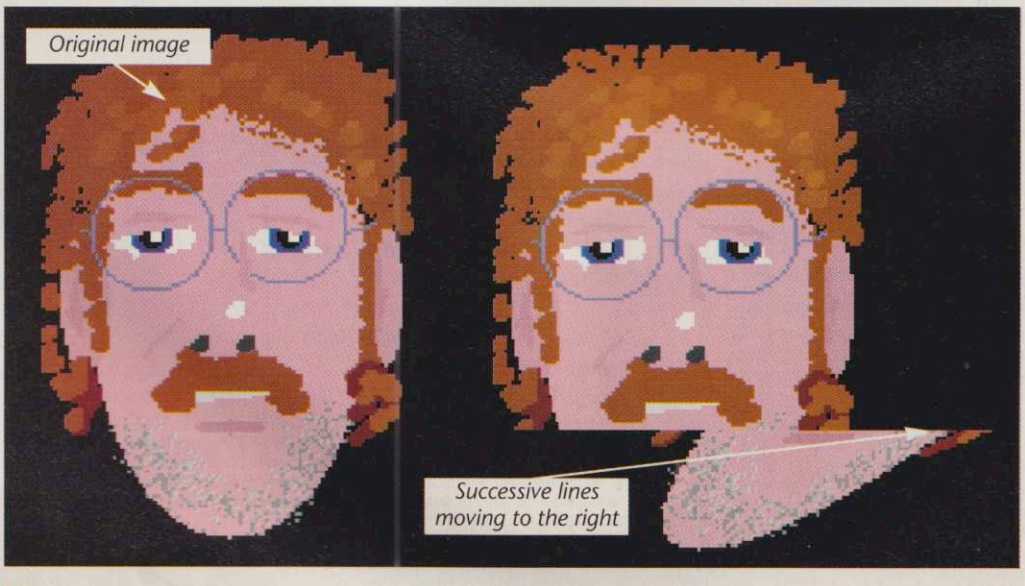
With the variable *offset%* set to 4, an *arrow*-like distortion forms. By altering both instances of the variable *offset%* to different values a more or less pronounced alteration occurs – again negative values reverse the direction. Try *offset%=1* for a slightly wobbly *I've just got up* face.

Fx3 builds on the previous procedure by altering direction more frequently but always by the same amount in each direction. By zig zagging the lines, the resulting image resembles that of a discarded crisp packet – and if the wind changes your face will stay like that.

Altering *offset%* again will produce quite unexpected facial contortions – this time try steadily higher values for that *I'll just have orange juice next time* look.

Fx4 divides the image in half vertically and pushes each half into the middle until there is no face left. Although this procedure follows the programming technique of the others, this is not the best way of doing it but I'm going for consistency here and not technique.

This is perhaps the least interesting effect and takes the longest to finish but demonstrates



Mike Goldberg manipulates his visage in interesting ways

how a screen can be cleared marginally more interestingly than with just a CLS.

Switching from horizontal to vertical we can do the same thing as procedure fx5 demonstrates. Like fx1, each line four pixels wide is dropped four more pixels than the line preceding it resulting in a vertically slanted face. Depending on the processing speed of your machine, you may see the creation of this effect more readily than the horizontal ones.

I can only imagine this to be down to the screen memory layout where successive horizontal pixels are numbered sequentially in units but vertical ones are an offset, doubtless of some multiple of 256.

Fascinating dissolve

Anyway, on my aged A310 you can clearly see the sweep of the alteration as it occurs left to right – indeed, originally I had placed a delay in each of the procedure loops as watching the image dissolve from one state to another was fascinating.

Try it yourself so you can see more clearly the dislocation of each successive line which will help in understanding the process.

Fx6 takes every other vertical line and directs them steadily downwards so that you become half the person you used to be. It is amazing how discernible the original image still is despite half of it having been removed – in fact, both halves give quite a lasting impression as to the original.

Rather like using a macabre bacon slicer, you can request thicker or thinner slices by altering the variable *width%*, zero being the thinnest slice you could read a newspaper through. The remaining, fx7 to fx9, move away from rectangles to circles.

Fx7 was my first attempt to illuminate one part of the face within a circle which is not as easy as it would at first seem. I could have drawn ever decreasing circle outlines in the background colour until I was left with a *peephole* image that way but even *I* find that inelegant.

No, what was required here – if any development of the idea was to follow – was some proper programming, my lad, (*we'll make a programmer of you yet. Ed.*)

Knowledge gained back in the BBC Micro days, when you had to know about masking techniques and what logical operators – like AND and EOR – did, has stood me in good stead for this problem.

First, EOR your face image on the screen – note the three as the last parameter in the fx7 procedure:

```
SYS O$, &222, area%, pic%, X%, Y%, 3
                                   |
                Exclusive Or image to screen
```

Now the circular area you want to be left with, you AND to the screen (GCOL2,0) over the face image. When you again EOR the original face over it the action of EOR cancels out all previous EORed bits but sets the bits that have been ANDed over. This can be a difficult concept to wrap your brain around.

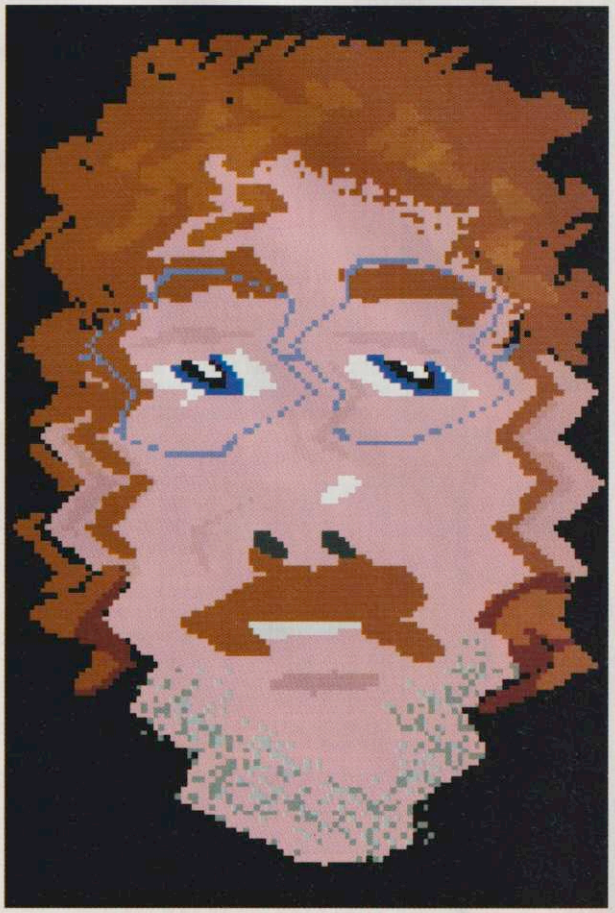
But if you want to go into the maths of it you will see how sweetly it all works and then instantly forget you ever wanted to know why in the first place.

To help see what is going on you could do what I did when creating this procedure by removing the REM from each of the lines starting thus.

The colours are wrong but highlight in stages the process by subsequent key presses.

Fx8 expands on this highlighted circle idea by moving the circle over the face randomly. This resembles a searchlight and is something I have been wanting to do for ages.

I could not resist adding a couple of lines to represent the light source which you can toggle on and off. As this procedure uses bank switching, make sure that the Desktop is in Mode15 or any suitable 160k mode to avoid flicker.



● *Face like a discarded crisp packet*

Lastly, fx9 is one of many ways to make an image appear other than just plonking it on screen. Using virtually the same code as fx8 and by drawing ever increasing circles ANDed over the face, the image appears like a pupil dilating.

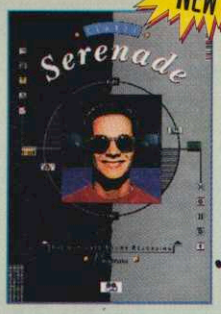
KEYS	
1 to 9	Start FX1 to FX9
0	Put default face back on screen also halts FX8 and FX9
Return	Halt FX8 and FX9
B	Add beam lines to FX8

READER OFFERS

Acorn COMPUTING

Serenade

NEW



This is a desktop Multi tasking, 16 track Midi sequencer for Acorn machines. A great deal of effort has gone into creating a graphical user interface that gives access to the power of Serenade without making it complex to use. Some of the many features include:

- Fully RISC OS2 and 3 compliant.
- Accurate keyboard capture.
- Intuitive interface (using piano roll display).
- Auto drop which allows your to insert notes in real time whilst re-playing.
- Guitar windows which allows chord input offering an alternative to the standard keyboard.
- Scores to Rhapsody via Standard Midi format type 1

It can also generate Real Time Midi events which enable real time mixing, panning, record etc with convenient snapshot facility and has remote control triggering via MIDI keyboard.

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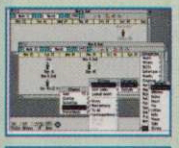
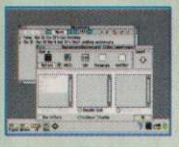
With the Image Scanner software – called Image Display – you can change the resolution and contrast of the scanner, plus you can zoom in on any area you want to see in more detail.

Image Display has optional rulers for both axes that match the rulers on the scanning base plus you can cut any oprtion of the scan and export it separately to the rest.

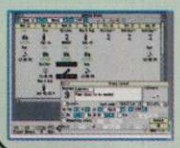
Mono (serial)	£399
Mono (parallel)	£498
Colour (parallel)	£739

Almanac...The power to plan





Be in control of your life with Almanac. it will give you the power to plan your life quickly and easily. Almanac is a complete address book for home and business which can keep track of all correspondence, phone calls and E-mail to and from any person, plus automatically display any letters text notes and pictures associated with a communication.



You can keep up with birthdays and appointments, just enter it once and Almanac will display it whenever you view the day, week, month or year it happens in. Add a task to the database and it will display the things that have not been done yet, urgent tasks and tasks finished ahead of time. You can also link all types of records to any other type via a special sticky record Also every record can have its own category type.

£70.50

Render Bender II

Render Bender II is another top rated graphics package from Clares. It is a powerful ray tracing package which consists of four applications:

Illuminator - a graphical front end to Render Bender which enables you to create Render Bender files using a graphics program similar to Draw.

Render Bender - the Ray Tracing part of the package. It takes a file from Illuminator and generates a ray traced image.

Animator - takes a sequence of screens and delta compresses them to produce an animated sequence.

Converter - converts compressed screens into sprite files and enables you to extract individual screens from an animation file.

£85.00

Rhapsody II

A score writing program which has been designed to allow you to create and edit your own musical scores. You can enter your music by hand one note at a time, drag the notes on to the stave or you can even use a Midi instrument to capture music in real or step time.

If you have a Midi instrument attached to your Archimedes you can play a part and then transcribe it on to a stave. This can be repeated and each part entered via the Midi keyboard and transcibed on to the appropriate stave. And of course you can play your score back through the Midi Keyboard.

The package features automatic beaming, up to 24 staves, changes of tempo and volume, ties, triplets, user defined trills and so on.

When your masterpiece is complete you could print the whole score or individual parts in the usual way.

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A Guide to WIMP Programming on the Archimedes

This book introduces the techniques to create applications that use the Wimp environment – Windows, Icons, Menus and Pointers. This means that the program runs under Desktop and also achieves multi-tasking – running at the same time as other software. Your creation can have the same appearance and 'feel' as commercially-produced packages, for example by using the standard RISC OS method of dragging an icon to load and save files. Everything is presented step-by-step – with each step fully explained and followed wherever possible by running the program and observing the result. The text is illustrated at intervals by pictures taken from the screen.

£12.95

Archimedes Game Maker's Manual

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Now you can find out how to use your Archimedes and Basic 5 to build high quality games whether for education or for recreation. Ideal for the experienced or novice Basic programmer, Terry Blunt takes you through the seven major aspects to writing a successful and professional product: Planning a game; Critical games stages; Graphics and animation; Arcade games; Role playing games; Strategy games; Professional tips and tricks. You can see the principles laid out in fully tested listings. This book is sure to become an essential reference written in an informative and easy to read style. If you want to know how to use the Arc's graphics capabilities and sprites to full advantage and make better games, buy this book now. It's the only one you'll ever need - quote from *Micro User August issue.*

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Acorn COMPUTING

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AC9

Stop that thief!

Mike Cook looks at the problem of preventing hardware theft

ONE of the great things about being on the *Acorn Computing* stand at exhibitions is that I get to meet the readers. Often the conversation turns to things you would like to see in the magazine.

On a recent occasion one visitor talked to me about his concern regarding security, so I would like to look at that this month. Therefore, I am presenting not one project but several small additions you can make to your computer.

The most important thing you can do to help is to take a universal graphics generation device – a pencil – and write down the serial numbers of your machines. It is amazing how many people don't do this. If your computer is ever stolen there is no way of identifying it even if it's recovered.

However, a much better way of ensuring recovery is to have some form of identification on the computer. This is not much use if it is a sticky label as this is easily removed, but if the label is inside it could escape initial detection.

Another good method of marking equipment is to use an Ultra Violet Security pen which writes in ink that is invisible under normal light but fluoresces under UV light. Therefore, any thief taking your computer with him to a disco would be easily nabbed – failing that you can get a UV light source to check what you have done.

A totally permanent method of marking your computer is with a soldering iron. I would not personally recommend this but I do know of several educational establishments where their name and address was written in large letters by a hot soldering iron in the plastic of the lid.

This might be thought a little drastic and somewhat lacking in aesthetics but it does make the product less attractive to a thief.

There are also electronic ways you can tag your equipment. For example, you could have your name and address coming up on the screen every time the computer is turned on. On the old 8-bit machines this was relatively simple, you could blow an eprom and have it put out your message during the start up sequence.

This, however, tied up a socket and was easily removed. One way round this was to take the operating system rom and search it for the Acorn message and then replace that with your own. Then you replaced the rom, so the message couldn't be removed.

On the newer 32-bit systems this is more difficult as most are set to power up in the desktop mode. You could arrange a permanent window with your name but again that would require a plug-in podule slot dedicated to the task and it could be removed.

Mention anti-theft measures and most people think of some sort of burglar alarm. The basic idea is to make so much noise that the potential thief is forced to abandon his work. However, it must be constructed so that it does not interfere with the normal workings of the computer.

One good way of catching tampering is to detect when the computer is unplugged. The simplest way is to use a power failure alarm plug. This simply replaces the plug on your equipment and when the mains is removed due to a power failure, or the plug being removed, it makes a noise. The noise stops when power is restored or the battery is exhausted after about 60 hours.

Now while you might think this is an expensive way to stop your mains lead from being stolen you can always super glue the lead into the back of the computer. Alternatively you could do the same trick inside the computer. What you need is a mains-powered relay and to wire up an alarm system to the normally closed contacts.

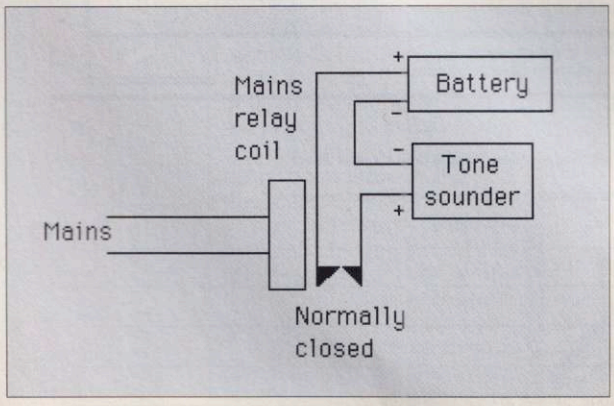
Sounding the alarm

The idea is shown in Figure I. When power is available the relay is energised and the alarm does not sound. When the power is removed the relay turns off and the normally closed contacts turn the alarm on.

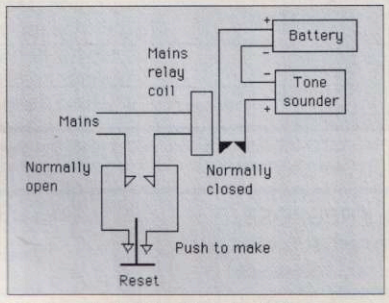
This consists of a battery and tone sounder. There are many types you can use, but generally the louder the sound the more the battery consumption. The ones I used are rated at 12V but you can get quite a good sound from a 9V battery.

This would need to be built inside your computer and would involve tapping the mains voltage from where it enters the computer. Remember, as you are dealing with mains voltages you need to be very careful. I cover exposed mains connecters with a blob of silicon rubber to prevent any shocks.

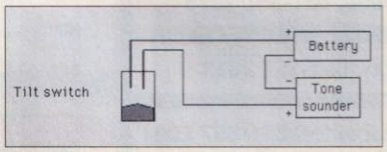
Any such modification would most definitely void any warranty. However, the advantage of this do-it-yourself approach is that you can make the device behave exactly how you like. For example, if you want the alarm, once triggered, to continue even when the power is restored, you can use the



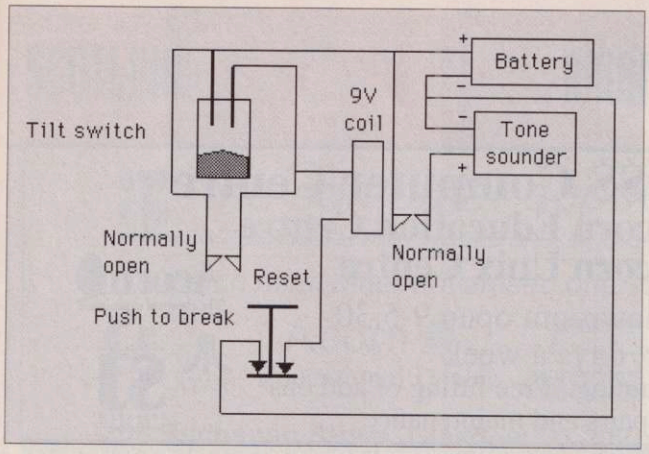
● *Figure I: Simple mains failure alarm*



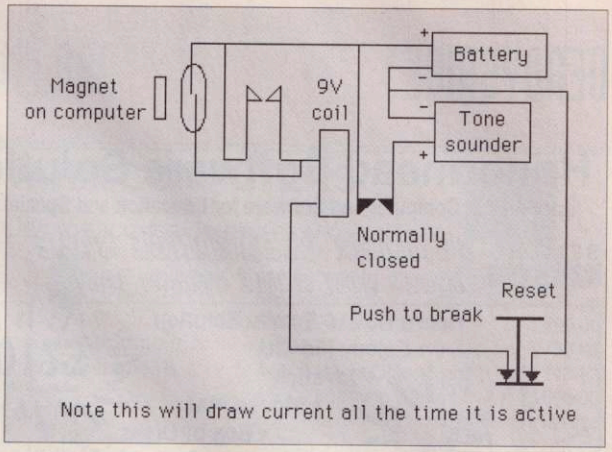
● *Figure II: Latched mains failure alarm*



● *Figure III: A simple tilt switch*



● *Figure IV: A latched tilt switch*



● *Figure V: A latching micro switch*

arrangement shown in Figure II.

This uses the normally open contacts to supply power to the relay once it is on.

However, when it goes off these contacts open and the relay can only be turned on again when the power is restored and the contacts are shorted out using a reset switch.

This can be a simple push to make switch or, for greater security, it can be a reed switch. With a reed switch youplace a magnet close to the switch to reset the alarm.

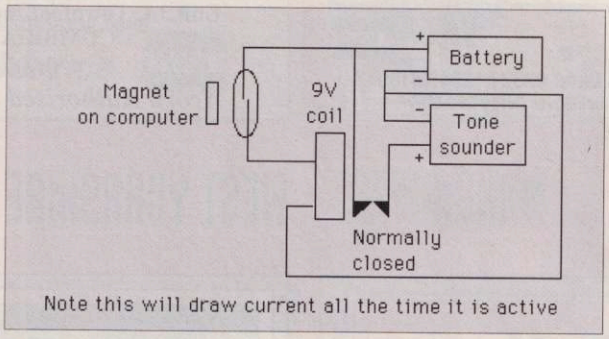
Mercury switch

If you don't fancy tapping into the mains you could use a mercury tilt switch. The idea of this is that when the computer is tucked under the arm it will go off. Just like the previous alarms you can have a latching or non latching version, as shown in Figures III and IV.

With the latching version the relay uses the normally open contacts to power itself until reset by a push to break reset switch. Again this can be a normally closed reed switch if you like. It should be possible to make such an alarm fit inside most computers.

If there is no room inside the computer you can arrange for the alarm to be outside. Here you must attach a magnet to the computer with glue or screws and it must be close to the alarm box. A surface-mounting magnet and reed assembly can be used. When the computer is removed from the alarm it will sound. Again you can have a latching or non-latching circuit shown in Figures V and IV.

Perhaps a better approach to security is to physically prevent the components of your computer system from being removed. Most of these kits involve some sort of large self adhesive pads or screw on



● *Figure IV: A simple micro switch*

eyelets that attach to your computer and bench.

Then you thread a cable round your system and finally lock it together so it can't be removed. This won't prevent small rearrangements of equipment but it won't allow it to be removed.

This is possibly the best solution when computers are on open access as in a school.

Most of the parts for the security systems I have discussed are available as a Body Build pack, see the coupon. However, perhaps the best form of security is to make the computer unattractive to a thief.

To this end you could try putting a label on the side of the computer saying *PC compatible* – that should deter most intelligent people.

Unfortunately most criminals are not very intelligent so perhaps the label *Not PC compatible* would act as a better deterrent.

● *Keep safe, see you next month.*

> Take a universal graphics generation device and write down the serial numbers

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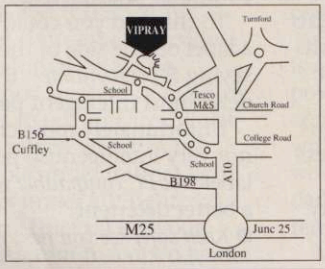

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Unconventional programming

I WONDER how many Acorn computer users like myself have a quick browse through the cover disks before getting down to some serious work, only to find that one of the programs has changed my system which prevents or disrupts an application from running properly.

I am fed up with programs that cannot be escaped from without resorting to a hard reset and those that allow escapes but change the system. It is about time that programmers allowed easy exit from their applications and set the system variable to their previous values.

On a completely different note can you tell me what wordprocessors allow the use of a printer's own fonts rather than using the computer's resident fonts. I have a Panasonic which has four perfectly good fonts which produce very acceptable results. – **Mike Carr, Crookes, South Yorkshire**

● *We quite agree about not resetting system variables and there's usually no excuse for it. However, most modern PD programs don't cause this type of disruption.*

Wordprocessors that fit your bill are EasiWord from Minerva and First Word Plus available through Acorn dealers.

Painting tip

HAVE you ever noticed how difficult it is to trim the left and bottom edges of a sprite in Paint. The right and top edges are easy because you can use *adjust size*. I used to struggle with *delete rows* and *delete columns* which are much trickier.

Then I realised that it's much easier to perform a *horizontal* and *vertical flip*, use *adjust size* then flip back afterwards. It's obvious when you think of it and saves a lot of fiddling about. – **Mike Williams, London**

Games in the making

MY FRIEND and I are getting very bored of all our old computer games for the A3000 and have decided to make our own. The problem is we don't know how to go about it.

We are not complete beginners and we know how to create sprites but we don't know how to use them. Could you give us an idea of where to get a *fairly* simple book on how to achieve our goal. – **J. Clark and S. Johnson, Mansfield, Notts**

● *A good starting point for you is a book from Sigma Press by Terry Blunt. It is called the Archimedes Game Maker's Manual and can be bought from any good book shop – or through our Reader Offers.*

Sprite files

WHAT I want to know is how do you use sprite files as directory or file icons instead of the normal icons.

Please answer this as if I were a beginner because even though I've been working on various computers for years now – Sinclair, Commodore, IBM and so on – I only started using the Acorn range last year and I'm just beginning to realise what I've been missing. – **Bruce Roney, Dundee**

● *You can change the directory icon to something else by creating a spritefile that contains a sprite called* directory. *It should be Mode 12, 17 pixels high by 34 wide and should have a mask but no palette.*

You load it into the system using the IconSprites command. For example, if the spritefile is saved under the name NewDir *on an ADFS hard disk called* Hard4 *in the directory* Pix *you would press F12 and type:*

```
*IconSprites adfs::Hard4.$.Pix.NewDir
```

Application directories have a file inside them called !Sprites containing a sprite which has the same name as the application.

This is automatically loaded if there's no !boot file. If there is, it should contain a line:

```
IconSprites <obey$dir>.!Sprites
```

On the Apple Mac it's possible to force any directory to have a special icon and although we can't say much about it at present, there is a program, which may be PD, being developed for RISC OS 3.10 machines that will allow any sprite to be used for any directory as well.

Basic understanding

I AM an Archimedes user who is eager to learn how to program my computer. Is there any book which provides a tutorial in Basic programming.

At present I have no programming skills so I would need to start right at the beginning. – **David Habbershaw, Heage, Derbyshire**

Basic understanding 2

CAN you help? I have a nine year old son who, like many, is fairly computer crazy. He is, however, very excited by exploring all aspects of the machine not simply games.

I feel he would enjoy learning some programming techniques in Basic but I have been unable to find a suitable manual. Have you any suggestions where to start. I have little such

Flickering morphs

I READ with interest Mike Goldberg's Morphing article in the June issue. However, I found the program on the MegaDisk to flicker. I looked into the program and made this alteration:

```
840 DEFPROCswitch:SYS6,112,Z%:
Z%=3-Z%:SYS6,113,Z%:WAIT:CLS:E
NDPROC
```

By the way, why did Acorn put that extra large zero on the keypad instead of a comma? I find it very annoying when I'm entering long data lists.

Also, is there a command I can put into my Basic programs to tell if the disk in the drive is write-protected without generating an error? – **R.J. Waters, Spalding, Lincs**

● *The original morphing program will flicker if you have it running in Mode 12 but should be fine if you start in Mode 15.*

Acorn use a standard PC keyboard as they are cheaper. I agree with you as I miss the comma but it's unlikely that Acorn will change back.

The simplest way to check for a write-protect error – although you'll get the same result if there's no disk in the drive – is from a procedure that has a local error routine.

*Try writing something to the disk, perhaps with a *SAVE command, trap any error and return a value depending on the result.*

If an error occurs the disk is write-protected or missing – you can invent some all purpose message to print – if not you can just carry on. But the program itself doesn't crash. Something like this:

```
DEF FNdisk_okay
LOCAL ERROR
ON ERROR LOCAL:=FALSE
OSCLI("*SAVE x 8000+0")
=TRUE
```

experience and tend to use our A3000 for wordprocessing and DTP work. – **L. Whisper, Sheffield**

● *Getting started in programming is fraught with dangers – not to the computer – but in terms of learning bad habits which are hard to lose later on. But some fairly good books are BASIC V: A Dabhand MiniGuide, £9.95 from Dabs Press (0772 623000) and you'll need the BBC BASIC Guide, £19.95 by Acorn available through Acorn dealers.*

Search and find

IN THE November 1992 issue of *Acorn Computing* you published my letter about the Acorn Computing Index program I wrote using a BBC Micro. It contains all the details of every article from 1984 to 1992 and a simple search program to let you find any record at will.

I have recently upgraded my system to an A3010 and decided to put my brief crash course of WIMP programming to the test by rewriting the program and data for the Archimedes machine.

The program is fully multitasking and will work on any of the 32-bit machines running under RISC OS. It is much faster than the BBC Micro version and has some new powerful search facilities to make finding a record even easier. Records can be viewed on screen or dumped to a suitable printer.

I have found the program invaluable in locating those vague memories of articles buried in heaps of back issues and I would like to share my efforts with other readers who would also find the application useful and time saving.

If any readers are interested, they should send a blank formatted 3.5in disk – 800k or 1.6Mb – or 5.25in DFS S/D 40/40 track disk for the Beeb, with a stamped self-addressed envelope and £4. – **Tim Boughton, 33 Westbourne Avenue, Harrogate, North Yorkshire HG2 9BD**

Bouquet for IFEL

I WOULD like to inform others of my dealings with IFEL in Saltash, Cornwall. During the time I have owned some A3000 I have dealt with them for upgrades, technical help, repairs and general advice. To all, IFEL have responded professionally, quickly and courteously.

I cannot sing the praise for this firm enough in an age where this king of service is getting so hard to find. – **D. Lewis, Plymouth, Devon**

● *If anyone else has received particularly good service from a company in the Acorn market we'd like to hear about it.*

Added control

IT WAS good to see your article on Ground Control Teletext systems and that you preferred the excellent system which I have used every day for over three years using both the standard and more recently the advanced system. However, I thought that your article left out certain points.

Both types of Ground Control system have 10 channels. Since I live in an area where I can receive both English and Welsh channels as well as a satellite channel, I am already using nine of these.

Furthermore, the Ground Control System gets all the letters of the different European languages correctly – except for Czechoslovak and Spanish ones. – **D. S. Allen, Great Sutton, South Wirral**

Kermit notes

ON looking through some back copies I can across a letter asking about Kermit. Just before Ceefax closed its Telesoftware broadcasting, it transmitted this program as a rom image for loading into sideways ram. The manual was transmitted as a textfile.

However, Lancaster University can provide a manual and also free updates. They also welcome suggestions on the program's use. If anyone is interested contact: Communications Group, Department of Computing, Computer Building, Lancaster University, Lancaster. Tel: 0524 65201 ext 4881.

Perhaps we could have a series – long overdue in my opinion – on communications, protocols, models and so on soon. – **Paul Weddell, Blackpole, Worcester**

● *You'll be delighted to know that we'll be handling the subject of comms with the same clarity and thoroughness as we have Ethernet, starting in the October issue.*

On your marks

WHEN I click on an A3000 datafile, the error message *No run action specified for this file type* appears. How do you specify a run action for a file? I've looked through all my programming books but can't find anything to do with it. – **Peter Hague, Dronfield, Derbys**

● *Rather than give away all the secrets here's a hint. Press F12 and then type:*

```
*Show Alias$@*
```

You should find that that gives you all the information you need.

Calling Mr Prommer

YOU requested a copy of the June 1987 ***The Micro User*** *disk, which we have copied for you. Unfortunately, we haven't got your address. Please get in touch so we can send you the disk.*

Right to reply

AFTER reading comments like *Axis is excellent* in Paul Mason's review I am glad I spent those four years working on it. Axis was developed entirely on an ARM2 1Mb machine and most of the time without a hard drive.

So I hope you'll allow me to reply to the few grumbles your reviewer had.

I really hope that in saying ARM 3 recommended he meant *better if you have one*. The ARM3 version was added after the game was completed simply because I could do it.

Players who see the the ARM3 version first look down on the ARM2 version, but when they discover that the game plays exactly the same way – hard and fast – they do not mind which version they play as long as they can get a go. GamesMaster's Dominik Diamond was *hooked* on the ARM2 version.

Another reason people get addicted to Axis is because once it has loaded a level it is available instantly.

The first game I bought made me swap disks, wait for animated sequences and forced me to look at the high score table. Axis puts the current level in memory so it takes no time to reload.

Finally, if you buy an SN Pro Pad make sure that it's specially for the Acorn machines. TBA are producing modified ProPads and driver software so that you can use all eight fire buttons on Axis and on older games too. – **James Briant, Author of Axis**

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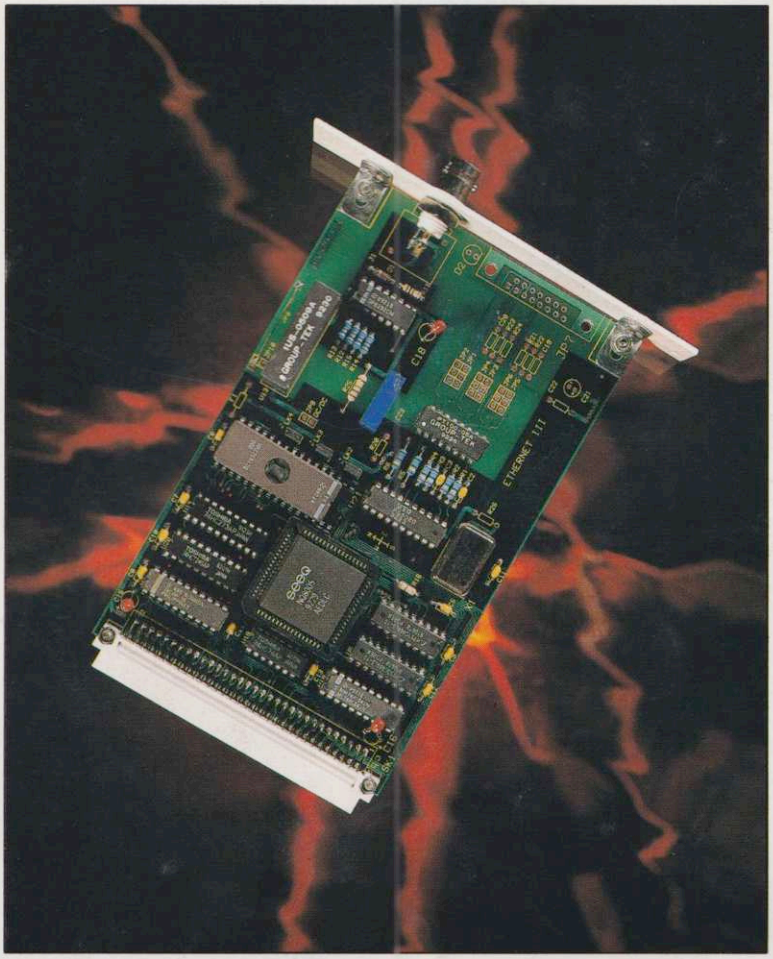

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