

RISC

user

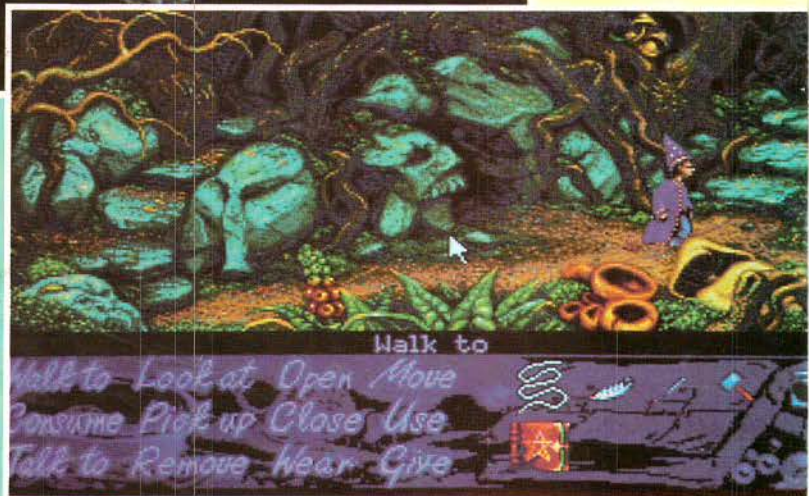
The magazine for users of Acorn RISC computers

NOVEMBER 1993
Volume 7 Issue 1
Price £1.90

Video Nouveau



ProArtisan 2
Simon
the Sorcerer
Mapping the World



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VOLUME 7 ISSUE 1

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THE MAGAZINE FOR USERS OF ACORN RISC COMPUTERS

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Welcome to the first issue of volume 7 of RISC User. It is now twelve months since we revised and enlarged the format of the magazine, and the response that we have received has been almost universally in favour of the 'new look'. However, no doubt there are many of you reading this who were unfamiliar with the RISC User of old.

This issue is timed to coincide with *Acorn World '93*, which from the distance of mid September (when this editorial was written), looks certain to be the most interesting and significant specialist Acorn show ever held. As a consequence our news coverage has been greatly extended to bring you the up-to-date details of new products which will be unveiled for the first time at Acorn World, and other news on the latest developments in the Acorn marketplace.

We will have our own separate stand at Acorn World, stand 75, devoted to RISC User (and associated products). This gives us a real opportunity to meet and talk with readers, to hear your views and ideas. It also gives us the opportunity to introduce ourselves and RISC User to many more Archimedes users. If this is the very first issue of RISC User you have seen or read, then I hope that you find its editorial mixture and style very much to your liking.

RISC User is aimed at all discerning users of Acorn's 32-bit range of computer systems. We do our best to help you get the maximum pleasure and benefit out of using your Acorn system, whether you are a newer user or an experienced 'old hand'. Our emphasis is on quality throughout. All our articles are carefully researched for accuracy, all programs whether published in the magazine itself or on the associated magazine disc are carefully checked, reviews are written in an authoritative and objective style by users with appropriate experience, and we put considerable emphasis on the style and clarity of English used throughout the magazine.

While RISC User has a reputation for catering for more technically oriented users, we have sought to broaden our appeal over the past ten issues. This has been achieved partly by ensuring that all articles are written in a clear and readable style, partly by including specific items geared towards the needs of newer users. We have also addressed the educational market in particular, by including a regular educational feature in every issue, and by extending our reviews to include specifically educational software. Put all together, our aim is to provide a quality mixture of editorial pages which will help all users to gain more from using their Archimedes system.

At the same time, we are always very ready to listen to the views and comments of readers, and we carry out regular surveys of readers in order to obtain more specific and detailed feedback. Indeed, reader input to the magazine and magazine disc forms an important and significant part of each issue. We very much welcome articles on all topics and at all levels, programs and applications for publication, plus hints & tips, letters, technical queries etc. For anything major, we do request that you obtain a copy of our *Guidelines for Contributors* and that you do follow these. If in doubt please contact the editorial office and discuss what you propose to send in. All items, large and small, are welcome, and all material published, including hints & tips, is paid for.

NEW FOR VOLUME 7

With this issue of RISC User we are enclosing a printed index to the whole of volume 6. The Volume 6 Special Disc is now available to subscribers only at the special offer price (£5.95 inc. VAT). This will be available at our stand at Acorn World. We also expect to have two new fonts discs, plus the first of a new series of thematic discs, so there is much to look out for.

M.W.

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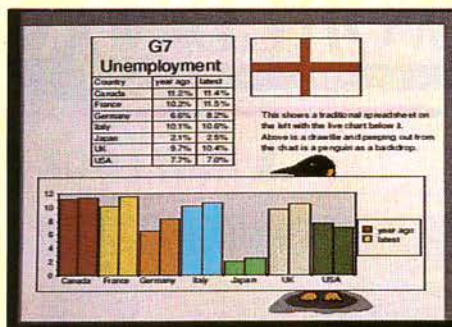
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A NEW LOOK FOR RISC OS 3

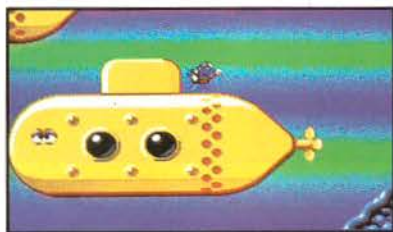


Following much speculation and anticipation, Acorn Computers, in conjunction with TDK, will be giving away a free copy of its new application *NewLook* to visitors to Acorn World '93. *NewLook* is designed for use with RISC OS 3, and provides the user with a very attractive new Desktop display featuring 3D icons and scroll bars, as well as a textured backdrop for most windows. *NewLook* also provides replacement template files for the applications in ROM, and those on Application Discs 1 and 2, to give them 3D icons and buttons.

THE NAME'S POND, JAMES POND!

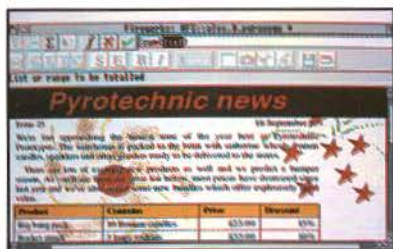
Following hot on the heels of *Xenon 2*, the latest conversion from the GamesWare/Eclipse stable, *James Pond 2 - RoboCod*, should be on the shelves by the time you read this. Described by many as "one of the finest platform games ever", and "far better than Sonic", the original *James Pond* has already sold in excess of half a million units across the popular formats.

James Pond 2 - RoboCod, a "massive oceanic adventure", sees Dr Maybe continue his dangerously fishy plans for world domination. Can James Pond, alias RoboCod, thwart his slimy efforts? *James Pond 2 - RoboCod* costs £25.99 inclusive, and should be available from all good Acorn stockists, or else direct from GamesWare at Unit 26, The Bartlett, Hamble, Hants SO3 5RP tel. 0703 456523.



GUY FAWKES COMES EARLY FOR ARC USERS

Guy Fawkes day will be a week early this year for Acorn users. Colton Software is planning to launch *Fireworkz*, its integrated spreadsheet and word processor, at Acorn World '93. *Fireworkz* combines the full power of Colton's word processor, *Wordz*, and the only recently released spreadsheet, *Resultz*. The integration of these applications enables the user to create complex documents and reports containing live charts, data and formulae, all in a fully WYSIWYG environment. Colton Software has designed *Fireworkz* to be as future-proof as possible; its forthcoming database application, *Recordz*, due for release during 1994, will plug into *Fireworkz*, adding further to its functionality. *Fireworkz* will sell for £169 ex. VAT, and will be available from Colton Software at stands 46 and 47 at



Acorn World '93, and afterwards from all good Acorn dealers. Users of *Wordz* and *Resultz*, who have registered both programs by the time of the show, will receive a free upgrade to *Fireworkz*. Users of just one of the applications will be able to upgrade at a discounted price. For further information, contact Colton Software at 2 Signet Court, Swans Road, Cambridge CM5 8LA, tel. 0223 311881, or see them at Acorn World '93.

CHANGING THE WEATHER

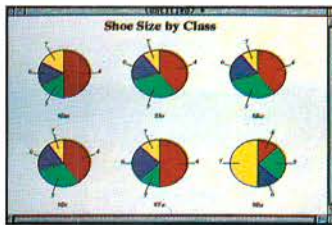
Spacotech will be demonstrating new versions of its weather satellite stations and related image processing software at Acorn World '93. *PDSview* has been upgraded to a professional specification, with many new features and a new manual, including 24 bit colour processing and colour separation, support for various graphics and colour cards, and multispectral classification. An allied package, *PDSmap*, will be shown for the first time. This allows images as large as 150Mb, such as those from SPOT and LANDSAT, to be previewed and processed on the Arc. For information of upgrade paths and prices, contact Spacotech at 21 West Woods, Portland, Dorset DT5 2EA, tel. 0305 822753, or visit them at stand 38 at Acorn World '93.

TO C OR NOT TO C

RISC Developments has announced the release of *Easy C*, an easy-to-use C development system aimed at programmers who wish to learn or develop their skills in programming in the C language. *Easy C* provides a powerful Wimp front end to drive the compiler and linker so no complicated command line sequences need to be remembered. It also supports the Throwback mechanism, so errors can be passed automatically to a compatible text editor for correction in the source code. *Easy C* costs £49.00 ex. VAT and p&cp. For further information, contact RISC Developments at the usual address, or see them at stand 77a at Acorn World '93.

STALLION TO ORGANISE YOUR ACCOUNTS

Stallion Software is developing an enhanced version of its personal organiser application, *Almanac*, which will allow you to manage your home accounts in addition to your time. The accounts section will handle your cheque books, credit cards and direct debits, as well as reconciling your bank balance at the end of every month. Stallion Software does not yet have a price for this version of *Almanac*, but you can contact them at Arundel House, Arundel Road, Camden, Bath BA1 5JX, tel. 0225 339090, or visit them at stand 56a at Acorn World '93.



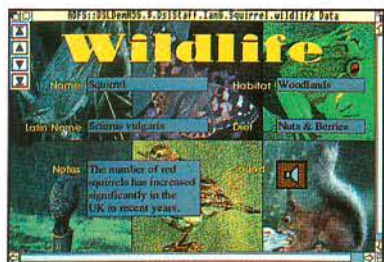
Digital Services has announced a major upgrade to its popular *Squirrel* database. *Squirrel 2* has 38 separate enhancements over the previous versions including data compression, the ability to store sprites, draw files and text on the backdrop, spreadsheet format editing, subset updating, a new graphing module, and many others. Existing users can upgrade to version 2 for £25, or £35 including the revised manual. Digital Services will also launch two new products at Acorn World

LOCK UP YOUR SQUIRRELS

'93. The first is an Ethernet expansion card for the A3000, A3020 and A4000, and incorporates two unique features. Firstly, the computer's CMOS RAM can be password protected, preventing unauthorized personnel from tampering with the configuration, and secondly, the *Netgain* client software has been included in the ROM, enabling fast application loading when used in conjunction with the *Netgain* server pack. The card costs £139.00 ex. VAT. The CMOS RAM security system is also available as a separate application called *ArmLock*. It prevents unauthorized access to the CMOS RAM and designated files/directories on the hard disc. Both the CMOS RAM and the hard disc can be password protected, although the hard disc

does not have to be partitioned into read-only and writable areas as the system utilises file attributes to grant or revoke file and directory access. *ArmLock* costs £35.00 ex. VAT for a single user, and £135.00 ex. VAT for a ten user site licence.

Digital Services is at 9 Wayte Street, Cosham, Portsmouth, Hampshire PO6 3BS, tel. 0705 210600, or you can visit them at stand 17 at Acorn World '93.



DESTINATION GERMANY

With the popularity of Acorn computers in Germany, particularly amongst professional users, rapidly increasing, a growing number of companies are launching German versions of their software.

Stallion Software, the company behind *Almanac* and *StrongEd*, has launched a German version of *StrongEd* with the help of the German Archimedes Group, GAG. You can contact them at Arundel House, Arundel Road, Camden, Bath BA1 5JX, tel. 0225 339090, or visit them at stand 56a at Acorn World '93.

4Mation, in association with the German publisher Schnieder & Scholz, is currently working on German versions of *Vector*, *Hatchback*, and *Chameleon*, and plan to tackle *Poster*, *Snippet*, *Chatter* and *Noot* during the coming year. Full details are available from 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. 0271 25353.

Icon Technology has also adapted its range of word processors for the German market. *EasiWriter* and *TechWriter* can now perform both spell-checking and hyphenation in German, although *StartWrite's* speech option is still in English. Icon Technology is at 5 Jarrow Street, Leicester LE2 7DH, tel. 0533 546225

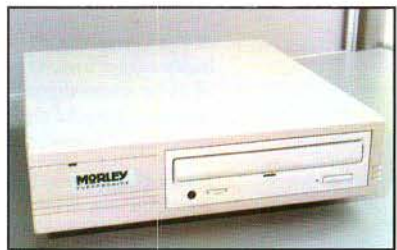
EXPLORE WITH FLOSSY THE FROG

4Mation claims that its latest release, *Explore with Flossy the Frog*, is an exciting program that children will want to go back to time after time. In a colourful interactive adventure, *Flossy* travels to nine different locations, with each location containing a number of sub-scenes and activities accessed by clicking of the various objects. Although intended for children up to the age of 8, it's entertaining enough for almost everyone. *Explore with Flossy the Frog* costs £28.79 inclusive, and is available from 4Mation at 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. 0271 25353. 4Mation will be demonstrating a sign language version of *Flossy* at Acorn World '93.



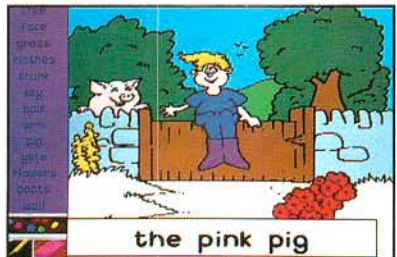
IT'S REVOLUTIONARY

Morley Electronics has recently released its *Revolution* CD-ROM system. Developed in conjunction with Sony UK specifically for the Acorn market, the *Revolution* is suitable for all Acorn computers from the A3000 to the A540. Designed mainly for the educational market, the *Revolution* uses Acorn's CDFS, supports Kodak multi-session PhotoCDs, can play *Replay* films at both 12.5fps and 25fps on suitable systems, and can even play your audio CDs, all for only £299.00 ex. VAT. For more information, contact Morley Electronics at Morley House, West Chirton, North Shields, Tyne and Wear NE29 7TY, tel. 091 257 6355, or visit them at Acorn World '93.



CAN PIGS TALK?

Wyddfa Software, the Welsh-based educational software company, will be demonstrating several of its products at Acorn World '93. *Talking Stories* is aimed at helping children to read and write, and emphasizes the link between spoken and written words. *Talking Pictures* is a colouring book with a difference - it talks. It provides young children with an easy and attractive introduction to computing. The *Spoken Word* is designed to help stimulate an interest in reading and is suitable for National Curriculum English Attainment Targets 1 and 2. For more information, contact Wyddfa Software at 3 Preswylfa, Llanberis, Gwynedd LL55 4LF, tel. 0286 870101, or see them at stand 94 at Acorn World '93.



MINERVA BRINGS YOUR SPRITES TO LIFE

Minerva will be launching two new products at Acorn World '93. The first, *PrimeMover*, is a sprite animation package that provides more than just a simple frame sequencer. Using a real-time system for all its animation control, *PrimeMover* allows you to define the relationship between the various elements of the animation, specifying times at which events occur and periods over which movements take place.

Minerva's second new application is *Keyboard Trainer*, which has been designed to help you learn to play a MIDI keyboard. As well as more than

sixty lessons, *Keyboard Trainer* also includes nine fun games to develop keyboard skills and note recognition. Although ideal for the classroom, where it fulfils National Curriculum requirements relating to music in the primary sector, it is equally suitable for home use by children and adults alike.

PrimeMover and *Keyboard Trainer* will sell for £79.95 ex. VAT each. More details can be obtained from Minerva Software at Minerva House, Baring Crescent, Exeter EX1 1TL, tel. 0392 437756, or you can visit them at stand 42 at Acorn World '93.

PLAY IT AGAIN? REPLAY PLUS

Irlam Instruments will be launching an upgrade to the Acorn Replay DIY kit at Acorn World '93. *Replay Plus* consists of a hardware upgrade and new software, and considerably improves the image quality of movies created with *Replay DIY*. Features of the software include several new movie formats, time lapse recording,

improved movie editing and better sound facilities. The new movie formats require less disc space, and can be played back immediately for story-board use, etc. The sound sampling facilities allow the kit to be used as a high quality, direct-to-disc stereo sound sampler, with samples created in *Armadaeus*, Microsoft Wave, or Creative VOC (*Soundblaster*) formats, or output direct to sound-only Replay files. The cost of the *Replay Plus* upgrade is £139 ex. VAT.

Irlam will also be demonstrating its professional sound sampling card, which until now has only been available to Acorn developers for the creation

of high quality samples for *Replay* movies and CD-ROM applications. With the highly original name of *SoundCard*, the system supports direct-to-disc recording of 16-bit stereo samples at up to CD or DAT sampling rates. The card also contains a powerful digital signal processor which can perform real time audio effects and compression. *SoundCard* costs £299 ex. VAT.

For further information contact Irlam Instruments, Brunel Institute for Bioengineering, Brunel University, Uxbridge, Middlesex UB8 3PH, tel. 0895 811401, or visit them at stand 121 at Acorn World '93.

POINT-AND-CLICK PROGRAMMING WITH S-BASE

Longman Logotron will be launching a new version of its relational database development system, S-Base, at Acorn World '93. S-Base 2 will contain numerous new features, including SAM, the S-Base Application Manager. SAM will allow the user to create code and templates for applications by simply pointing, clicking and dragging, with "absolutely no programming required".

Other interesting features of S-Base 2 are its support for multimedia, free form text, a powerful natural query

language, and drag and drop support for importing dBase and Squirrel files.

Longman Logotron will also be previewing for the very first time a new release of its data handling application, PinPoint.

Details about S-Base 2, upgrade paths and prices can be obtained from Longman Logotron at 124 Cambridge Science Park, Milton Road Cambridge CB4 4ZS, tel. 0223 425558, or at stand 72 at Acorn World '93.

CREATIVE ADVENTURES

Alpine Software, the company behind the popular adventure games *Plague Planet* and *COPS*, has released a new version of its arcade game designer. *Creator II* contains dozens of new functions and actions, including facilities for creating platform-style games, scroll text options, tiled backgrounds, a map designer and even an ARM processor detector, which returns which version of the chip is present. *Creator II* is available for £49 ex. VAT, or £20 ex. VAT to registered users if you return both original discs.

Explorer is a new educational package from Alpine Software, suitable for Attainment Target 4 at Key Stages 3 and 4. A space exploration game, the package includes a detailed database of information and photographs on all the planets in our solar system. *Explorer* costs £30 ex. VAT.

In addition to the above, Alpine Software has also released a compilation of its adventure games. The *Alpine Adventure Collection* includes full versions of *Plague Planet* and *COPS*, together with a previously unreleased adventure called *Kidnapping*. The collection costs £15 ex. VAT. Alpine Software can be contacted at PO Box 25, Portadown, Craigavon, BT63 5UT, tel. 0762 342510.

LIFE ON A CD-ROM

A CD-ROM which could be of great interest to schools, colleges and universities is the *AI CD-ROM* produced by Network Cybernetics Corporation. As well as artificial intelligence, the CD-ROM contains a large assortment of software and information on topics such as artificial life, virtual reality, expert systems, robotics, machine vision, etc. All the files should be readable on the Archimedes, although the programs will need to be recompiled in most cases, for which the source code is also included (not a trivial task unless you know your way around the C language). The cost of the *AI CD-ROM* is £80 ex. p&cp. Lambda Publications is handling its European distribution, and can be contacted at 194 Cheney Manor Road, The Green, Swindon, Wiltshire SN2 2NZ, tel. 0793 695296.



ACORN DOWN UNDER

Acorn Computers Australia has recently announced that almost a quarter of Australian schools are using its equipment. Following the price reductions in the UK, the Australian prices for Acorn computers have also dropped substantially, a move that is certain to increase its market penetration even further. The new education prices (in Australian dollars) ex. tax are:

Acorn A3020 Colour System	\$1695
Acorn A4000 Multiscan	\$1995
Acorn A5000 HD80	\$2695
Acorn A5000 HD170	\$3295
Acorn A4 Portable	\$2995

For further details contact Mr Peter Revell, National Marketing Manager, Acorn Computers Australia Pty Ltd, 12 Gipps Street, Collingwood Vic 3066, tel. (03) 4193033.

ARMED FOR EDUCATION

The ARM Club has formed an education group to build links between the club and those Archimedes owners who feel they are not getting the educational best from their systems. Their long term aim is to put together a suite of programs to help teach the National Curriculum. If you want to get in touch with The ARM Club, visit them at either Acorn World '93 or The ARM Club Open Day, which has been rescheduled to the 5th December. For more information on The ARM Club or the open day, contact Bruce Dickson at The ARM Club, FREEPOST ND6573, London N12 0BR, tel. 081 959 3321.

MORE PENNIES IN YOUR POCKET

Acorn Computers has extended its current special promotions on both the Pocket Book and *Schedule*, the combined diary, personal organiser and timetable application, until the 31st December 1993. The Pocket Book will thus remain on sale at just £169.95 ex. VAT instead of the full £212.72 ex. VAT, and *Schedule* will continue at the introductory price of £16.98 ex. VAT. The Class Pack rates for both products will also remain at the introductory prices.

HIGH FLYERS - EAGLE AND LARK

Wild Vision and Computer Concepts will be launching several multimedia products at Acorn World '93, including the *Eagle M2* multimedia system, the Lark sound sampler, and the *Chroma 500* digital genlocking card.

According to Wild Vision, the *Eagle M2* is an expansion card which represents a new concept in hardware technology - it is able to "do everything"! It will provide a full motion video digitiser that can perform real-time hardware scaling and dithering, a stereo sound sampler and a MIDI interface, all on a single width expansion card, and will be bundled with several applications, including software for creating and playing back *Replay* movies, and Computer Concepts' new sound editing software, *AudioWorks*.

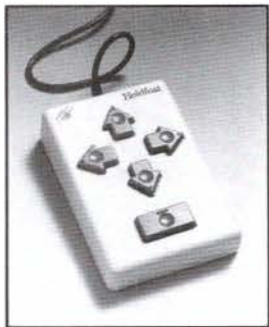
Lark is a high quality 16 bit stereo sound sampler. It can sample and play back sounds at frequencies up to 48kHz, and is packaged with *AudioWorks* and a "mixing desk" application.

The genlocking card, *Chroma 500*, supports high resolution, broadcast-sized screen modes up to 768x576 pixels, as well as both PAL and S-VHS systems.

Eagle, *Lark* and *Chroma 500* will be demonstrated at the Computer Concepts/Wild Vision stand (67/68) at Acorn World '93, or you can contact Wild Vision at 15 Witney Way, Boldon Business Park, Boldon Colliery, Tyne and Wear NE35 9PE tel. 091 519 1455.

JOIN THE NURSERY

Holdfast has developed a *JoyPad* for younger children who find keyboards, mice and joysticks too much to handle. Suitable for Special Needs education, the *JoyPad's* chunky shape suits hand-held, tabletop or floor use, and provides a robust and easy-to-use alternative to mice and joysticks. It will plug directly into the joystick port on the A3010, while other Acorn systems will require an interface such as the Leading Edge Joystick Interface. *JoyPad* is available now for £24.99 ex. VAT from Holdfast Computing at Strode House, Strode Gardens, Alveston, Bristol BS12 2PL, tel. 0454 411126, or you can see its full range of products at stand 73 at Acorn World '93, where Holdfast will also be launching a BBC adapter for the *JoyPad*.



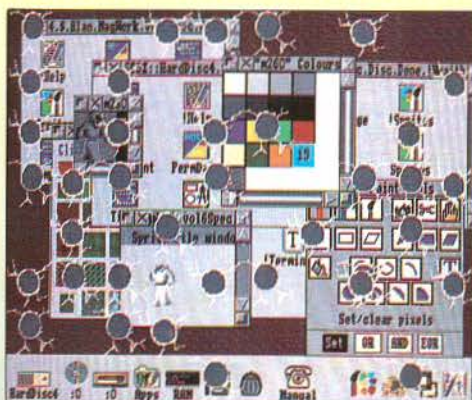
EMR TURNS UP THE VOLUME

EMR has announced several new developments in the Acorn music field. It is planning to release a wide range of new software products and hardware interfaces, produced in conjunction with HCCS, at Acorn World '93. *MicroStudio 2*, the 24-track MIDI sound software, has been rewritten for the Desktop, and enhanced for RISC OS 3. *Desktop Scorewriter*, the music printing application, can now play up to 8 score parts through the Arc's internal sound system, and includes an extra 'Alpha' font that allows fast keying of music data using the computer as a music typewriter.

Music Player 3 has been created to support a new EMR/Yamaha package called Hello Music, and will play any MIDI format file, EMR song file, and various sound sample formats. EMR music library files now have presets to match the latest GM format, and *Studio 24Plus* Version 3 will auto-change voice presets and drum kits to suit other instruments. *Studio 24Plus* now also supports direct-to-disc recording using the new MIDI/Sampler interfaces developed by HCCS. Sampling rates of up to 50kHz are supported, and *Studio 24Plus* can record a vocalist, choir or acoustic ensemble whilst playing MIDI instruments, SMPTE-controlled video/multitrack machines and graphic animations/karaoke-style vocals in sync! Prices and information on these products are available from EMR Ltd, 14 Mount Close, Wickford, Essex SS11 8HG, tel. 0702 335747. EMR will be exhibiting in the restaurant area at Acorn World '93.

RISC user Volume 6 Special Disc

The latest in our highly acclaimed series of RISC User Special Discs is now ready. Our aim with every Special Disc is to put together an interesting selection of the best applications from the previous ten issues of RISC User, augmented as always with a number of totally new and original items. Furthermore, previously published items will often have been updated in the light of user feedback.



Font Manager

An excellent application for managing the many fonts now available on the Archimedes in a simple and effective way.

Guitar Player

A highly playable implementation of a guitar. Create and store chords; use the mouse to strum the strings; play along with RISC.

Stencil

Create a multitude of stencil affects with your Draw files with the help of this application.

Outline Fonts

Two completely new and original outline fonts - Dynamic Shaded and Rob Roy, in normal and italic styles.

Pinboard Backdrops

A selection of mood backdrops for use with the Desktop Pinboard

Harry Organiser

RISC User's own personal organiser now updated for the Volume Six Special Disc.

ScanDisc

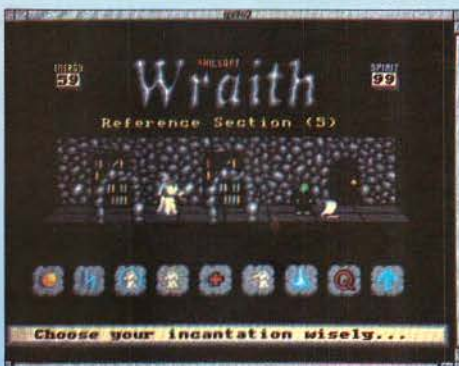
Use this updated application to create ArcScan compatible and ASCII files of all your favourite discs. Ideal for cataloguing and indexing sprites, clip art, PD discs etc.

Terminator

A brand new novelty which produces startling consequences when you come to the end of a session.

Wrath

A highly original and challenging arcade adventure game for hours of nerve-racking fun and entertainment.



Full supporting Help System.

RISC Developments Ltd

117 Hatfield Road, St Albans, Herts AL1 4JS
Tel. 0727 840303 Fax 0727 860263.

FilerMate

A handy application which provides much more convenient access and control of many Filer functions on the Desktop.

Complete **Volume 6 ArcScan Index** for RISC User.

A Mysterious Bonus Item!

SPECIAL OFFER

only to **RISC user** subscribers

Until 31st December the Volume 6 Special Disc is available for

£6.95 (inc. VAT and p&p)

Stock code: PV6S

Normal members price will be £10.95 (inc. VAT and p&p)

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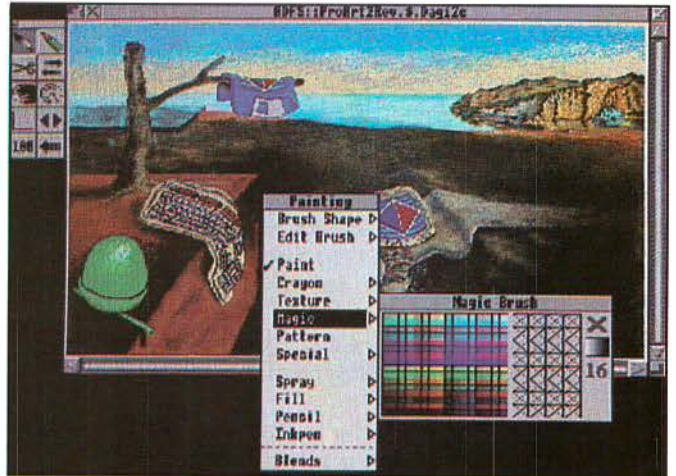
After many months of waiting, Clares' successor to the popular ProArtisan graphics package has finally arrived, completely revitalised for the Desktop. The price tag of £135 inc. is fairly hefty, so is ProArtisan 2 worth both the money and was it worth the wait?

ProArtisan 2

Reviewed by Richard Hallas

IN THE BOX

I was pleased to find that the usual flimsy card wallet has been replaced with a proper box for this release. *ProArtisan 2* comes on two discs, one for the application itself and another resource disc full of pictures. The 78-page manual starts off with a tutorial which gives a good taste of the package's features. I found this to be a good way of getting into the package, but was disappointed that there weren't any more worked examples. However, the manual redeems itself by having an appendix full of short exercises, some of which make use of the files on the resource disc. The bulk of the manual is dedicated to a description of all the menu options: I found some of the explanations rather sketchy, and often wished for more detail.



Eye spy with my little i

IN USE

ProArtisan 2 endeared itself to me immediately by having a full set of extremely attractive high resolution icons for multisync modes. In fact, it is recommended that you use a high resolution screen mode if possible, as *ProArtisan 2* stores all its images internally in a high resolution, 24-bit colour format. A minimum of 2Mb RAM is also recommended, and full support is provided for the Computer Concepts and State Machine graphics cards.

Eat your heart out Salvador Dali

Clicking on the icon bar icon pops up a small window which allows you to create a new sprite. This helpful window tells you how much memory is available, how much is required for the picture size you have selected, and will convert all measurements between pixels, centimetres and inches. There is also a preset range of page sizes. Clicking on *Create* opens up the main picture window, to

which is attached an ArtWorks-like toolbox which can be flipped between horizontal and vertical. This toolbox represents what would otherwise be the main menu. The first five buttons in the toolbox each invoke a different mode, namely: *Painting*, *Drawing*, *Sprites*, *Input-Output* and *Image Processing*. Clicking Menu on the main drawing window brings up a different menu for whichever of these modes is selected. The toolbox also lets you open the

palette window, and provides access to the so called frisket mode, the zoom settings and a single-stage undo.

FRISKETS

In the real world, a *frisket* is a frame carrying a piece of parchment which protects the non-printing areas on a hand printing press. The ability to use simulated friskets in a picture is ProArtisan's real claim to fame, and is a splendid idea: you simply define a frisket to cover up the parts of the picture you don't want to touch, and then any painting or image processing tools you use will only affect the uncovered areas.

This idea is easy to grasp and very effective; it's just like putting a piece of transparent plastic over the areas of picture you want protected. Friskets can be made out of almost any drawing operation in *ProArtisan 2* or you can draw into them directly, and they can be as simple, or as complex as you wish. This feature must surely be one of the main selling-points of the package, and its usefulness cannot be understated.

PAINTING

A wide range of painting tools is provided in the *Painting* menu. There are a total of twenty preset brush shapes, one of which you can edit. Usefully, by choosing a brush with Shift held down, you can see the actual shape in use, as it replaces the pointer arrow.

The last item on the *Painting* menu, *Blends*, is the most important in many ways. There is a preset range of 16 blends, any of which you can edit. You simply pick the start and end colours, and the computer shows as many intermediate colours as it can find in the palette. The blends are used for graduated fills, but their other uses are far more extensive than is at first apparent. Many other tools can make use of them, such as the *Magic Brush*, this ingenious feature lets you define up to sixteen colours which, when painted over, will be replaced by other colours of your choice.

The *Crayon* and *Texture* tools both make use of a range of sixteen pre-defined textures. You can either apply them in solid colour, using the crayon, or actually paint textures onto existing areas of the picture (very effective with the canvas texture). A *Special* sub-menu leads to some interesting special effects such as very realistic charcoal-style smearing.

The *Spray Can* has a novel extra feature: you can spray one area of your picture onto another area! All you do is select a source point for the spray, and then spray a copy to a different place.

The range of fills provided is comprehensive. As well as the plain, graded and circular fills (which operate by dragging an arrow to indicate angle and distance, as seen in other packages) there is also a 3D option, which uses the current blend colours to create a kind of bulging effect, working horizontally from the edges to the middle. This can be quite effective, although I was surprised that it would only work in one direction. Fills can be banded or dithered, and there is also a *spritestretch* fill which fits a sprite into any shape you choose.

DRAWING

ProArtisan 2's *Drawing* menu should be familiar to anyone who uses Draw, as the tools it contains are similar to those in Draw and operate in the same manner. Of course, you cannot edit the paths after you have placed them as you can in Draw. There are *Rectangle*, *Ellipse*, *Polygon* (up to 32 sides), *Line* and *Curve* tools, and also a Text-Entry window from which you can select any outline font. A *Style* window lets you choose *Fill Style*, *Line Thickness* etc, and it is possible to turn on a screen grid, to which the drawing tools will optionally lock. *ProArtisan 2* can also import Draw files directly into its pictures.

A DIP IN THE POOL

Clicking on the *Sprites* icon in the toolbox opens up a small window entitled *Pool*. You can drag sprite files into this window to be merged into a sprite pool, from where you can use them directly in your work. Sprites in the pool can be individually renamed, flipped and deleted, and information is provided about the dimensions and memory consumption of each. You can also select the opacity of the sprite for pasting, or choose from a range of preset pasting options.

The *Sprites* menu lets you cut sprites out of your picture in both rectangular and irregular shapes, and a special *Magic Wand* is good at extracting multi-coloured irregular details of pictures automatically. For the purposes of cutting, you can also select a range of colours to be treated as transparent. Sprites can be rotated and scaled, and you can map a sprite into any four-sided object or wrap it around a sphere.

MISCELLANEOUS FEATURES

ProArtisan 2 creates sprite files, but it will load sprites which have been compressed by Acorn's *Squash* utility directly, and can also save sprites in that format. Although sprites are stored internally in a greater range of colours than can be displayed by current hardware, users of graphics expansion cards will benefit because *ProArtisan 2* will make use of the enhanced palettes which they provide in 256-colour modes. With either of these cards installed *ProArtisan 2* will let you define the palette yourself. You can even get an analysis of the colours used in the picture.

The printing facilities are quite extensive and very easy to use. As well as the usual percentage size and portrait/landscape options, there are also buttons to centralise the image on the page, or you can specify the position of one corner in centimetres or inches. All this is helped by a graphic representation of your image on the page, and you can drag the thumbnail-size image around to position it.

IMAGE PROCESSING

ProArtisan 2's most impressive menu is certainly the *Process* menu. As well as a section for manipulating friskets, there are two sub-menus attached which are entitled *Filters* and *Effects*. All these tools work in conjunction with friskets, which makes them enormously powerful, as the shapes which they can be applied to can be as complicated as you wish.

Filters are provided for colour and greyscale shifting, brightness and contrast processing, noise removal, threshold detection and anti-aliasing, as well as others.

The *Effects* are even more interesting: the delightful *Emboss* feature makes a 3D picture out of a 2D one; you can apply a texture to the picture, or wrap the whole picture round a sphere. There are many other options, but perhaps the most interesting is the *Generic Filter*. This window in itself provides a range of sixteen processing filters, some similar to ones on the *Filter menu*. The powerful part is that you can redefine any of the filters by altering the *rule* shown in the window. This is quite complex, but gives you a huge range of image processing options.

CRITICISMS

I did encounter quite a number of bugs, which was a pity because in general the package is

beautifully implemented. However, Clares know about the bugs, so they will probably have all been fixed by the time you read this.

I wished there were more keyboard shortcuts: there is currently a grand total of five. Comparisons are bound to be made with *Revelation ImagePro*. Whilst this is not the place to make an exhaustive comparison, I did find that I missed *ImagePro*'s huge flexibility in handling of *motifs*, where virtually any tool can use a sprite rather than a colour. *ProArtisan 2* is not quite as flexible in this respect, although it does make up for it in other ways. I particularly liked the way the spray can could spray one area of the picture into another area, but I was surprised that the same facility was not available for brushes.

I would have liked to be able to define new textures, as the range is limited to sixteen presets. Similarly, it's a pity that the *Generic Filter* window is limited to a preset range of sixteen; it would be nice to be able to create, load and save additional definitions.

CONCLUSIONS

Aside from the above comments and the teething troubles, I found *ProArtisan 2* to be an absolute delight to use. It's fast, flexible and beautifully presented. What's more, you can freely change screen mode without upsetting your picture, although you can convert the image between modes if you wish. This is how all art packages should be. It's also hard to overstate the usefulness of the frisket facility.

All Acorn sprite formats are handled (including grey-scale) and sprites can be of any size. This fact, combined with the friskets and the wide range of image processing options, means that *ProArtisan 2* is ideal for processing scanned or digitised images as well as original artwork. To sum up, then, *ProArtisan 2* was certainly worth the wait, and it's worth the asking-price too. Very highly recommended.

PRODUCT INFO

Product	<i>ProArtisan 2</i>
Supplier	Clares Micro Supplies 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA. Tel. 0606 48511 Fax 0606 48512
Price	£135 inc. VAT £67.50 as <i>Artisan</i> upgrade; £87.50 as upgrade from any other art package until 31st December 1993



Video Nouveau

David Spencer looks at what's in store video-wise for the next generation of computers from Acorn.

The last few months have seen countless rumours emerging about a new range of computers that Acorn are set to launch, and whilst no firm details are available, it is a safe bet that a main feature of the new systems will be improved video capabilities. Such enhancements are made possible by the new VIDC20 video controller recently launched by ARM Ltd., and the purpose of this article is to look at the most important features offered by this chip, and hence almost certainly by any new machines.



The new VIDC20 video controller from ARM Ltd.

A BIT OF HISTORY

To date, all Archimedes systems have used essentially the same video controller - the VIDC1, which was designed over six years ago. At the time when the A310 was first launched in 1987, the facilities offered by VIDC1 were more than adequate, and even now, it is far from being totally outdated. However, in the last six years, the video systems on other computers haven't stood still, and PC owners can now enjoy vastly superior graphics systems compared to those on the Arc.

There are three main areas where VIDC1 falls down badly. Firstly its range of colours is limited to only 256 on screen at any one time, and because of constraints on the original design, there are further restrictions on what these colours can be in 256-colour modes. Secondly, the maximum rate of the so-called 'dot clock' (see later) is relatively low (at most 36MHz) and this limits the maximum resolution available whilst still retaining a flicker-free display. Finally, VIDC1 has to compete with the ARM processor for memory accesses, which leads to ridiculous speed reductions in high-resolution modes (try using mode 21 on a non-ARM3 computer). Another weak area not directly related to video, but provided by VIDC1, is the Archimedes sound system.

A WARM WELCOME TO VIDC20

As already mentioned, VIDC20 is the new video controller from ARM Ltd., and supersedes VIDC1, addressing all the above issues. The remainder of this article is a brief summary of some of the new and extended features offered by VIDC20.

COLOURS

As you probably know, VIDC1 supports 2, 4, 16 and 256-colour screen modes, and as already said the 256-colour modes are not as flexible as they could be. Additionally, the palette which maps colour numbers onto real colours only supports 4 bits per primary colour (red, green and blue), giving a total number of possible colours of $2^{(4+4+4)} = 4096$.

VIDC20 retains all these existing modes, but with two major extensions. Firstly, in 256-colour modes, all restrictions about the range of colours that can be used have been removed, and secondly, 8 bits of data can be used for each primary colour, giving a total range of colours of $2^{(8+8+8)}$, which is in excess of 16 million.

Of much more importance, though, is the fact that VIDC20 supports new 16 and 32-bit per pixel modes. This in effect gives 65536 and 16 million colour modes - ideal for displaying digitised pictures. Anyone who hasn't seen a 16 million colour display will probably not appreciate the sheer quality, but when you think that this range of colours is better than that provided by broadcast TV, you can begin to get the picture.

Another nice feature of VIDC20 is that 4 bits of extra information can be added to each colour, these being output separately by the chip. This feature could be used by external hardware to achieve effects such as overlaying of video signals and fancy fading between the two.

SCREEN RESOLUTIONS

The limits on maximum screen resolution depend on a number of factors, not least the capabilities of your monitor. However, from VIDC's point of view it is the so-called dot clock that imposes the ultimate limit. This dot clock is a master timing signal that is divided several times to select the horizontal and vertical resolutions, the sync rate and the refresh rate. Early Arcs used a single dot clock of 24MHz. This has been extended on newer machines to include 25.175 and 36MHz clocks as well. The former is needed to support VGA modes properly, and the latter allows the Super VGA resolution of 800 x 600 to be displayed without flicker.

VIDC20 provides a much more flexible arrangement for the dot clock. Firstly, several different fixed clocks can be connected with no extra hardware, and these can be up to 100MHz (as opposed to about 36MHz for VIDC1). This will allow much higher resolution modes, including the XGA 1024 by 768 standard and beyond. Secondly, VIDC20 includes a circuit called a Phase Locked Loop which allows the dot clock to be synthesized by multiplying up a lower frequency clock. This allows a wide range of dot clock frequencies to be generated from just a single clock input. The upshot of this is that when designing screen modes, the dot clock frequency best suited to that mode can be chosen, rather than having to put up with the closest frequency available. This opens up all sorts of possibilities, such as having sets of screen modes tailored to particular models of monitor.

VIDEO RAM

One major feature of VIDC20 is its support for so-called video RAM (VRAM). This differs from the normal RAM found in a computer in that two different locations can be accessed at the same time. The idea is that the processor can read or write locations in a random order as normal, whilst the video system can read locations in a sequential fashion totally oblivious to the processor's actions (or vice-versa). The beauty of this arrangement is that VIDC20 can go about its business of accessing the display data from the VRAM, without ever holding up the processor, or tying up the system data bus, as is the case in existing systems. This solves in one hit all the problems of the machine's speed being crippled in high-resolution modes.

For use without VRAM, VIDC20 can support dual banks of RAM with 64-bits of data being moved around at a time, rather than the 32 used currently. This will also reduce the load on the system bus, because moving one set of 64-bits is considerably quicker than moving two sets of 32-bits.

SOUND

VIDC20 retains the basic sound system of VIDC1, albeit extended to allow a clock source separate to that used for the video system. This gets around the problem found on current machines where the sound system is out of tune in VGA display modes. However, a new approach to sound generation is also provided, in which the built-in 8-bit digital to analogue converters (DACs) are replaced by two external 16-bit DACs of the type used in CD players. As you may expect, this gives true CD-quality sound output.

OTHER FEATURES

For portable applications, VIDC20 contains the functionality of the custom-designed LCD ASIC chip used in the A4 portable. This allows VIDC20 to drive various types of LCD displays as well as normal monitors. Limited features are also included for connecting to colour LCD display panels.

Interlaced display operation has also been improved over that offered by VIDC1 in that it is now usable! In fact, this change owes more to a new memory controller, MEMC20, which goes with VIDC20, but that is beyond the scope of this article. The principle of an interlaced display is that instead of displaying all the lines of the image on each frame, one of each pair of lines can be shown on one frame, and the alternate lines on the second frame, interleaved with the first ones. This effectively offers a doubling of vertical resolution, albeit with a slight increase in flicker. For example, this could be put to good use to emulate VGA modes on TV-standard monitors.

CONCLUSION

To sum up, it can be safely assumed that all future Acorn machines will use VIDC20 as the heart of the video system. This will potentially bring about the benefits talked about above - namely, higher resolution displays; a better range of colours and more colours at a time; less impact on the speed of the computer; and, higher quality sound.

Any mention of when we are likely to see such machines would only be pure speculation, but my bet is around the middle of next year. I would also guess that if Acorn launch a whole range of new machines, some of the features offered by VIDC20, such as very high resolutions, VRAM and better sound will only be standard on some models, and as options on the others. What I can say is that at the recent ACEC exhibition in Australia, Acorn had on display an A540 that had been modified to work with a VIDC20, and the pictures it was displaying looked very impressive.

The future for displays looks very bright indeed.



Mapping the World

Jeff Davies shows just how good the Arc can be for producing statistical maps and displays.

Several articles have appeared in the Acorn press about producing maps using Draw and other more powerful packages. Nothing has appeared so far, however, on producing the type of maps which one sees in geography and other publications where statistical data has been analysed

and presented in map form. These are statistical maps of the type that one encourages GCSE and A level geography students to try to emulate in their own projects. Programs on the PC or Apple Mac like *Mapmaker* are intended to produce such maps, but at a cost!

It is possible to produce statistical maps of publication quality on the Archimedes using quite general software. By using a

drawing package (*Draw*, *Vector* or *ArtWorks*), possibly in conjunction with a program which produces statistical diagrams such as bar and pie charts (*ChartWell*, *GraphBox Professional*, or, *PresenterGTi*), it is relatively easy to produce any of the following:

- maps which include bar or pie charts in appropriate places;
- maps which use proportional symbols such as circles;
- choropleth maps (with a CAD package for hatching), and
- flow-line maps.

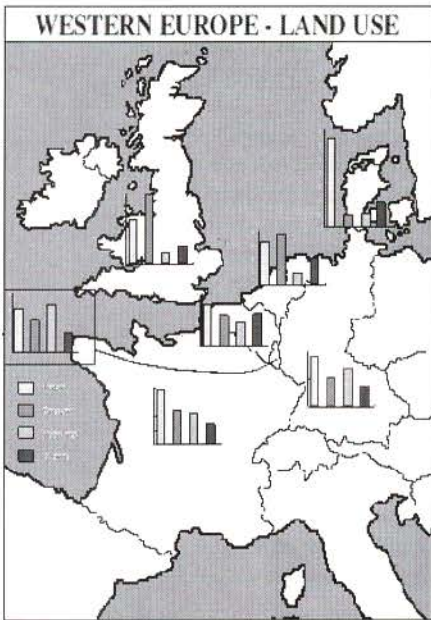


Figure 1. Bar charts superimposed on scanned image

United Kingdom: Trends in House Prices

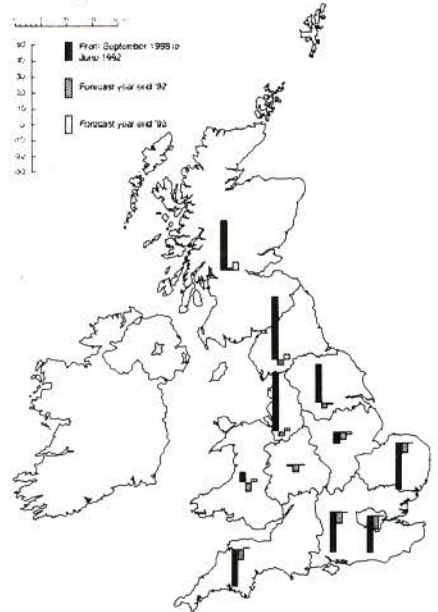


Figure 2. Using bar charts on a map in Draw format

It is the ease of multi-tasking on the Archimedes that makes this possible with non-specialist software.

Distribution Of Pakistani Population by Wards, 1981 (excluding Sutton Coldfield wards)

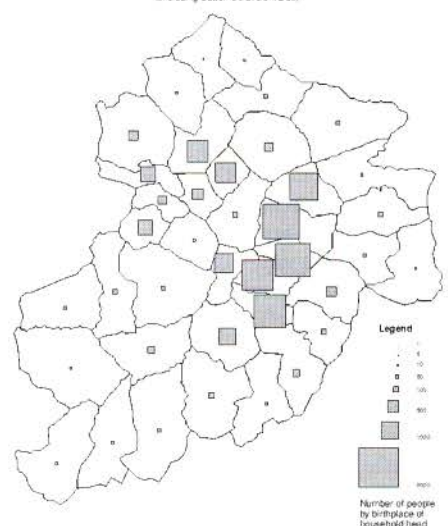


Figure 3. Using proportional symbols (squares)

Obviously, the essential first requirement is a base map which can be imported into your

drawing package - an outline, preferably with the area units being objects which can be filled with a colour or shading pattern. The drawing package also needs to be able to import diagrams from your graphs and charts program.

Bar charts were saved directly from the graphs and charts program into a Draw window. Making sure that all the bars have the same scale can be a problem. After dragging them onto the Draw window containing the map, they all need to be scaled down by the same amount using *Magnify*.

Sussex Parishes - Population Density

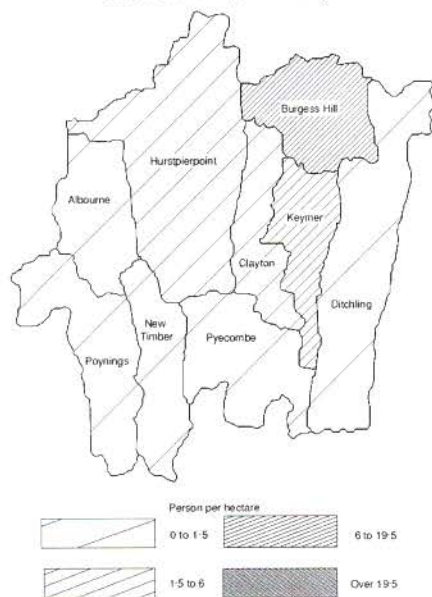


Figure 4.
Example of a choropleth map using cross-hatching

THE BASE MAP

It is possible to scan a map and import the image into a drawing program where you can add charts etc., but the outline of such a pixel-based image will be messy (as can be seen in figure 1), and cannot be edited within the program, e.g. by filling areas with colour. An outline produced by a line-art program is much neater and is also editable.

Base maps can be bought from various sources, but on some such maps countries are not separate fillable objects, which would preclude the production of certain types of map.

BAR AND PIE CHARTS ON MAPS

The first example was produced in an A-level practical class using a scanned image imported into Draw on the Archimedes, and Chartwell running concurrently. Most of the work was done by students, though I have tidied up the final version. The U.K. house prices map (figure 2) was produced using a base map from Pyramid Computer Services, Draw, and PresenterGTi running concurrently.

PROPORTIONAL SYMBOLS

The example shown in figure 3 was produced for a project on racial segregation in Birmingham. The base map was again pre-drawn. Draw was used to produce the symbols, locking to a grid to produce squares of the required size - length of side proportional to the square root of the quantity represented.

The use of squares is not usual for this type of map, but producing circles of exact radius was more difficult. A CAD program called *CADet* is now available which will do this, however.

CHOROPLETH MAPS

The maps shown in figures 4 and 5 were produced using base maps created in Draw (Europe base map from Pyramid Computer Services), and *CADet* for the Sussex map.

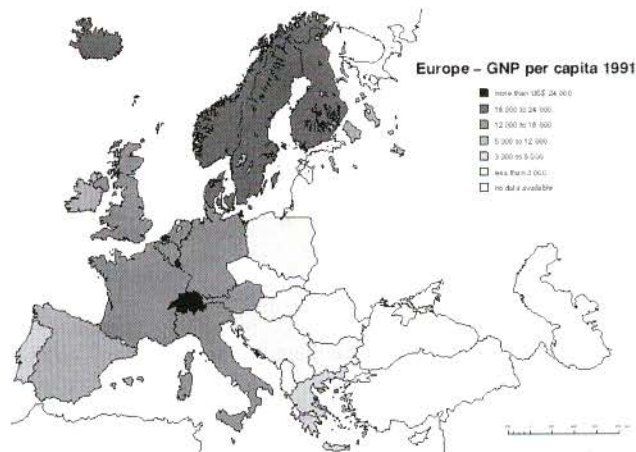


Figure 5.
Choropleth map using shaded areas

As the name implies, *CADet* is not a full, professional CAD package, but does contain the features required for these maps. The base map was put into *CADet* and the parishes and legend boxes filled with hatching patterns (angle and distance between lines can be specified, and other patterns can be chosen or designed if desired). The map was saved as a Draw file

and put back into Draw for the addition of text, as CADet uses its own fonts.

Contrast the hatched patterns of the Sussex map with the grey scales of the Europe map. Hatched patterns evidently have the potential for producing clearer results, especially when data falls into a large number of classes. I find that grey scales are often more difficult to distinguish from each other.

THE SPHERE OF INFLUENCE OF BOURNVILLE COLLEGE



Figure 6.
Flow diagram with straight lines

The use of hatching in this way, especially with lines all running in the same direction, avoiding dot patterns and cross-hatching, is somewhat purist and old fashioned, but I prefer it because it has a clearer relationship with the sequence of data classes.

An alternative way of producing hatching patterns is to use masks, as described in a recent article in RISC User (RISC User 6:5). However, as also described in that article, these will not allow adjacent areas to be filled with a pattern. The exception is Vector's masks (not the pseudo masks). However, those are a special feature of that program and will not go into programs like Impression, for example. (See also *Hatchback* from 4Mation reviewed in this issue - Ed.)

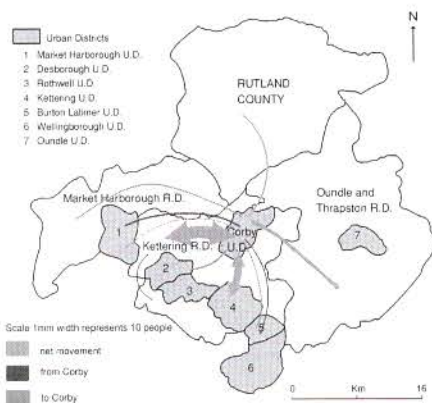


Figure 7.
Flow diagram using curved lines

FLOW LINES

The first example of flow line maps (figure 6) was produced in Draw by a GCSE student for his coursework, using a base map of Birmingham postcode areas drawn by me. The second example (figure 7) is based on an examination question. It was produced by students in an A-level practical class, using a pre-drawn base map.

Draw enables the width and end-shape of lines to be specified by the user so that flow lines are easy to draw, though it is not possible to achieve all conceivable effects properly, such as joining lines or dashed lines. In the latter case an arrow will appear at every dash, though a white dashed line without an end arrow can be superimposed on a solid line to create the desired effect.

These maps can be incorporated in DTP documents, or printed separately for inclusion in students' projects, in colour if you have a suitable printer. Colour is a great advantage when different colours are significant, as in one of the flow-line examples.

Thanks to Andrew Ktoris and Daniel Mills, students at Bournville College of Further Education, and Pyramid Computer Services, 16 Borough Crescent, Stourbridge, West Midlands, DY8 3UT, tel. 0384 396739.

Software referred to:

- ArtWorks - Computer Concepts (0442 63933)*
- CADet - Minerva Software (0392 437756)*
- ChartWell - RISC Developments (0727 840303)*
- GraphBox Professional - Minerva (0392 437756)*
- PresenterGTI - Lingenuity (098 685 477)*
- Vector - 4Mation (0271 35353)*



Gothic Graphics

Martin Price conjures some medieval images from his Arc using the Medieval and Gothic Fonts pack from The Datafile.

The slim wallet which contains the three discs and the associated instructions that make up the Medieval and Gothic Fonts pack give some idea of the uses to which the discs' contents can be put. The Datafile appears to have crammed these discs, the documentation and front cover with as many examples of their clip art and fonts as possible. The discs contain 5 font families, 5 Draw files containing headline display font alphabets (for use as drop caps and the like), half a dozen examples and a variety of other border and decoration Draw files.



Swashes are easily added to your basic text

T.M. Higginson

and the reader is left to figure out exactly which pieces of clip art have been used where, and how they have been manipulated (e.g. rotated, stretched, mirrored, duplicated, etc.).



Drop Caps

Carol
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 Karen
 ABCDEFG
 abcdefghijklm
 Versals
 ABCDEFGHIJKLM
 ABCDEFGHIJKLMDDO

The Headline and body fonts

PRODUCT INFO

Product	Gothic and Medieval Fonts & Decorations Pack
Supplier	The Datafile 71 Anson Road, Locking, Weston-Super-Mare, Avon BS24 7DQ.
Price	£38.18 inc VAT

The fonts divide into three headline style fonts, and two body text fonts both of which come complete with oblique typefaces. The headline fonts are nice enough, although the only one I feel would be unsuitable for body text is *Versals*. The other two fonts, *Carol* and *Karen*, provide beautiful Germanic lower case letters.



There are two manuals, the first of which details the actual fonts supplied, along with methods of customising individual pieces of text, such as the T.M. Higginson quotation (figure 1), which has had the swashes added using Draw. The manual also offers ideas on how and where to use the fonts supplied to achieve the best effect. The second manual gives details of the Draw fonts and the decorative clip art supplied, and details how each of the examples is made

Charlie
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
Charlie Oblique
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
Priory
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
Priory Oblique
 ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz

up from these elements. The manuals, though slim, contain printed copies of each font and the decorations. The decorations do not appear as separate items but as part of an example page,

All in all, I felt that the fonts and decorations complemented each other well, but potential users should realise that printing such complex fonts can be very time consuming. However the quality fully justifies the time taken.

RISC User Fonts Discs.....

The RISC User Fonts Discs each contain ten high quality outline fonts (all available exclusively from RISC Developments) in a variety of different faces. Each disc also contains a number of applications for further processing and manipulation of outline fonts. Font disc 1 also includes Acorn's Outline Font Manager (if you have not yet upgraded to RISC OS 3.10). The fonts and applications are supplied on a single disc in each case with a comprehensive menu system making everything very easy to use. Each disc costs just £9.95 inc. VAT to RISC User subscribers, representing extremely good value for money.

RISC User Fonts Disc 1 - Ten Outline Fonts:

Atlantis

Chancellor

Italian

Austin

Classroom

Mercury

Blacklet

Gangster

MILITARY

Wessex

Plus the following applications

ShowFonts	Displays outline fonts on screen or prints them for reference.
DrawFont	Converts outline fonts into paths for use in Draw.
FontSwap	Allows easy management of multiple font directories.
FontRead	Downloads font definitions to PostScript printers
FontCtrl	Allows easy tuning of font configuration options.

Code PFD1a £9.95 (RRP £11.95)

RISC User Fonts Disc 2 - Ten Outline Fonts (providing 28 different faces):

Buick

Marti

Salisbury

EXTREMITY

NEWTOWN

SLAB

Hudson

OLDTOWN

Rob_Roy

JOPPA

Code PFD2a £9.95 (RRP £11.95)

RISC User Fonts Disc 3 - Ten Outline Fonts (providing 31 different faces):

Citril

Jawjar

STCUTHBERT

Crikey

JungleDrum

Waverly

Curtis

MILLIGAN

SELLERS

DYNAMIC

Code PFD3a £9.95 (RRP £11.95)

Both Fonts Discs 2 and 3 contain the following additional applications:

FontSpace	- Allows you to change the spacing of characters in outline fonts.
Kerner	- Allows you to kern text (RISC OS 3)
Ligature	- Allows easy incorporation of ligatures, smart quotes and dashes in your text (RISC OS 3 only)
ShowFonts	- Displays outline fonts on screen or prints them for reference.

Note: We cannot guarantee that all fonts supplied will function correctly under RISC OS 2, as later fonts take advantage of specific RISC OS 3 features.

Post & packing £1 for one font disc, add 50p for each additional disc.

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Tel 0727 840303 Fax 0727 860263

HANDLING ERRORS

In C code examples, I have seen at least 3 different ways of handling errors *wimpt_complain()*, *wimpt_noerr()* and *werr()*. Can you explain when to use each.

P.R.Richards

Firstly, it is worth mentioning why the first two calls are used with so many RISC_OSLib functions. Most functions in the library do little more than make a SWI call for you, and in every case, the call is made in the X form. This means that errors are not handled directly by the operating system, nor indeed by the function. Instead most functions return a pointer to an error block if an error occurs, or a Null pointer otherwise.

So, when you call a RISC_OSLib function that returns an error pointer, you *must* do something about it. If any error at that point in your code will be fatal - for example a vital template might be missing - then the simplest thing to do is to wrap up your function call with *wimpt_noerr()*. If an error occurs, a message of the following kind will then appear:

**ProgName has suffered a fatal internal error
(error message) and must exit immediately.**

The program will then quit.

If the error is not so desperate, you can use *wimpt_complain()* instead. In this case an error box will again be put on screen, but the program will continue from the next line. This means of course that your code must detect the error, and behave accordingly. If there is an error in opening a data file for example, it is no use trying to read data from it in successive lines. Fortunately, *wimpt_complain()* returns the original *os_error ** pointer, so you can use something like the following:

```
if (wimpt_complain\  
    (sprite_area_save(area,name))==NULL)  
{  
    ...  
}
```

Any code within the braces will only be executed if the call to *sprite_area_save()* returns without error, while if there is an error it will be correctly reported.

The final function that you mention, *werr()* is simply for customised error reporting. The function will put up an error box containing the message supplied when the call is made.

PREPROCESSOR QUOTE HANDLING

Bob Peterson

The preprocessor in the Acorn compiler can handle the insertion of quoted strings even when

C Notebook: Hints & Queries

Compiled and Linked by Lee Calcraft

they fall next to quotation marks. As a result, the following works fine:

```
#define APP_NAME "Test_App"  
  
fptr=fopen("<"APP_NAME"$Dir>.datafile"  
, "r");
```

LET YOUR MACROS TAKE THE STRAIN

Dave Appleby

It is possible to define sets of macros to reduce typing and make your C code more readable. For example:

```
#define ICON_SET(w,i,f)  
    wimpt_noerr(wimpt_set_icon_state(w,i,f,f))  
  
#define ICON_SETALL(w,i,f)  
    wimpt_noerr(wimpt_set_icon_state(w,i,f,-0))  
  
#define ICON_CLEAR(w,i,f)  
    wimpt_noerr(wimpt_set_icon_state(w,i,0,f))  
  
#define ICON_TOGGLE(w,i,f)  
    wimpt_noerr(wimpt_set_icon_state(w,i,f,0))  
  
#define ICON_REDRAW(w,i,f)  
    wimpt_noerr(wimpt_set_icon_state(w,i,0,0))  
  
#define ICON_DELETE(w,i,f)  
    ICON_SET(w,i,wimp_IDELETED | wimp_IREDRAW)  
  
#define ICON_UNDELETE(w,i,f)  
    ICON_CLEAR(w,i,wimp_IDELETED | wimp_IREDRAW)
```

OPENING DIRECTORIES WITH *fopen()*

Lee Calcraft

If you use the ANSI C function *fopen()* supplied with *CLib*, it is worth knowing that the value which it returns cannot be completely relied upon. If for example you call it with:

```
fp=fopen(filename, "r");
```

to open a file for input, it will return a valid pointer even if the name you give it is that of a directory rather than a file (due to a quirk in RISC OS which is reflected in *CLib*). The moral is that you should use *SWI OS_File* to check the file before calling *fopen()*.

Please send us your C hints - all published hints will be paid for.

uR

Sleuth OPTICAL CHARACTER RECOGNITION



Sleuth is an Optical Character Recognition (OCR) package which converts human readable images of text into machine readable form.

Sleuth processes a scanned image of printed material and converts it into an ASCII file which may be further processed using a text editor or word processor. It is ideal for converting magazine articles, newspaper cuttings, legal documents, program listings, other resource materials etc. etc.

Sleuth version 1.0 is a low-cost entry package into OCR and produces excellent results on a range of typefaces. It is the first in a planned family of products which will take OCR on Acorn machines to full professional level. Any future OCR products will be available as upgrades to existing users.

- Fully RISC OS compliant and multitasking
- Sleuth recognises most PostScript fonts and other similar fonts (not bold or italic)
- With good quality 400 dpi images, Sleuth can achieve over 97% accuracy
- Converts text at speeds of 80-250 wpm
- User definable 'zone' used to choose which rectangle on the image to convert
- Handles sizes 9-24pt (you will need a 400 dpi scanner for good results below 12pt)

To use Sleuth you will require a scanner with a minimum resolution of 200 dpi. For best results you will need a 300 or 400 dpi scanner.

● **Sleuth £49**

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|------------------------------|----------------------------|
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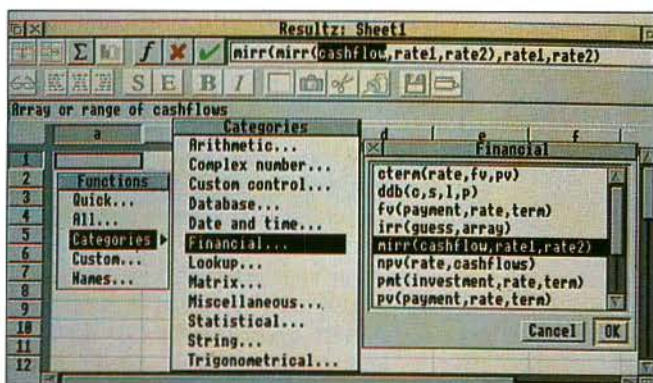
Resultz is the second part of Colton Software's *Fireworkz* series and as the name suggests, is a spreadsheet package. For many years now, Colton has dominated the Acorn spreadsheet field with the *Pipedream* series, culminating in *Pipedream4* which I use on a daily basis. Whilst this is still a formidable package, it is not an easy piece of software to use to the full so I was eager to try *Resultz*. My main question was whether Colton could produce a stand-alone spreadsheet which still had all the functionality of *Pipedream*, but also the ease of use afforded by modern RISC OS software. I have to say that having used it for only a short time, my answer has to be yes.

THE PACKAGE

The software comes on two discs accompanied by three wire bound manuals. One disc contains the main program while the other contains many examples, a tutorial and a working example of all the functions. The software installs on the icon bar in the usual way and a click on the icon produces the default spreadsheet or the choice of any template files you have saved. Those of you who own *Wordz*, Colton's word processor, will be instantly at home with *Resultz*, as the screen layout and style are almost identical.

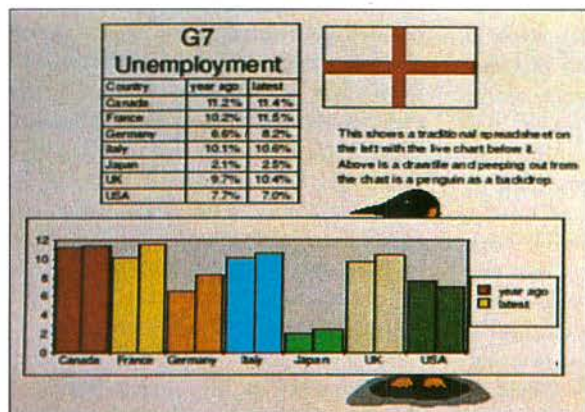
Getting the best Resultz

Alan Hight examines Resultz, the new spreadsheet from Colton Software.



The 12 categories and a few of the 181 functions

number style and cell protection. Any, or every, cell may have a line added to its border in a variety of styles, either individually or within a style. Another useful function is the ability to add regional grid lines in any colour, which can help in defining data entry points whilst not being printed. One of the most frequently used functions in a spreadsheet is the sum command and this is given its own icon. Select a column or row, including a blank cell, click on the sum icon, and immediately the correct function is pasted into the empty cell. This will also work on multiple columns and rows, giving you a total at the end of each row, the bottom of each column and a grand total at the intersection.



Resultz powerful presentation facilities

STYLES AND FUNCTIONS

Resultz uses styles in the same way as *Wordz* or *Impression*, and these styles may be layered one on top of the other and applied to any or all the cells, or even individual characters, giving you total control over colour, typeface,

Clicking on the main *function* icon displays a small menu giving access to the 181 built-in

functions as well as custom functions and user defined names, more of which later. The 5 most used functions, *sum*, *max*, *min*, *avg* and *if*, are available on a quick menu, while all the functions may be chosen from 12 category headings or a full list. A double-click on the chosen function places it on the formula line with any parameters inserted and the first highlighted. A single-click on a cell will insert its reference, while dragging across a range will insert the correct expression, replacing the parameter with the actual reference (figure 1).

THE STATUS LINE

During every phase of setting up your spreadsheet, as much help as possible is given by the status line, which is almost an interactive help system. When you are selecting a function, the status line gives a brief description of the effects of each function, and once selected, you are given the meaning of each parameter in turn. The status line also gives information on row height and column width, along with information on each icon.

ABSOLUTELY WYSIWYG

Whilst *Pipedream4* went a long way to being WYSIWYG, it didn't quite make it. The same cannot be said of *Resultz*, as every effort has been made to let you see exactly what is going to appear on the paper. This includes headers, footers and page numbers, along with page breaks both in the horizontal and vertical. When printing a spreadsheet, you will be told if the page or pages you want to print will fit on the page defined by the printer driver you have selected. If they won't, you can ask *Resultz* to read the driver's settings, and the page will automatically be rescaled to fit. Total control is given over which page, or pages, to print, along with page numbering and placement of headers and footers.

The number of functions has increased, with most, if not all, of *Pipedream's* functions being retained. Several commands have been given additional parameters. My favourite is the age command, which has a built in flattery element. Having just had a birthday it confirms that I'm not 40, as other people say, but only 39 years and 12 months (a mere child)!

CUSTOM FUNCTIONS

The *Names* option allows you to give a meaningful name to a cell, a range of cells or a calculation, with one obvious choice being VAT. Calculations are then carried out by using the name VAT rather than the actual figure. This means that when the rate changes only the name need be updated.

Custom functions are the part of *Resultz* that do the complicated calculations. They are entered in a template file, and are a lot easier to read and edit than their *Pipedream* equivalents. You can create and store as many template files as you like, and these are presented when you click on the icon bar or drop a file onto it. This facility allows frequently used sheets to be stored, with all the styles and formula set, all ready and waiting for the new data.

UNCHARTED TERRITORY

Charts are a major part of any spreadsheet package, and *Resultz* provides bar, line, pie, X-Y and overlay charts, although still no horizontal bar chart. Again selection is made from an icon and each selection has a further sub-section with varying styles of the chart, including 3D where appropriate. There is more control over axis labelling, the automatic generation of which is now handled quite intelligently. Once created, the chart is actually displayed in the spreadsheet, rather than in a separate window, with fairly comprehensive editing facilities still available. Penguin graphics have also been retained; for those who are not familiar with *Pipedream*, this is the ability to use Draw files to fill bars rather than solid colour. The chart may also be used as a background. No matter where the chart is placed, it remains live and recalculates as the data is altered.

Sprites and Draw files may be added to the sheet, and these can be placed in front or behind the text, or used as a backdrop like a chart. You can thus use a scanned image of your pre-printed stationary as a backdrop, to help with page layout, but prevent it from printing out on the final copy (figure 2).

Charts or pictures can either be embedded in a document or referenced to save on disc

space. This means that if you have a company logo, only one copy needs to be stored on disc and every document will reference that one copy.

One feature, to my knowledge unique to *Resultz*, is the ability to resize column width independently down a column, so cell A1 may be 6 characters wide while cell A2 may be 12 characters wide. Not unique, but still not common, is that text in a cell wraps round at the cell border, forcing the row depth to increase rather than overlapping the right hand edge. Both these properties give a much neater look to the screen and allow for a far more flexible page layout.

Resultz can export data in *Lotus 123* format, which preserves formulae, and it can also export ASCII or CSV files, in which case the results are retained but not the formulae. The latest version of *Wordz* recognises *Resultz* files and displays them in chart form, but the data is fixed at the time of transfer.

HOW FAST IS IT?

Colton claims that *Resultz* recalculates faster than any other RISC OS spreadsheet, and provide results of a Liardet500 benchtest to confirm this. My own figures, run on an existing 'real life' spreadsheet in a comparison with *Pipedream4*, confirm this, and show roughly a 12% increase in recalculation speed. However, other figures are not as good. In loading and recalculating the same sheet, *Resultz* was 4 times slower in returning control to the user. To load a CSV file it was 9 times slower, and to convert a large file from numbers to text it was an astonishing 23 times slower. Now I appreciate that this is a seldom used function and my tests were not exhaustive but I do feel that there is a need to improve its overall speed.

I found the program very robust except when it ran out of memory and crashed with no warning. One major omission, in my view, is the search and replace command. There is no way to change formulae without changing each one individually, which can be very laborious. The other option is long winded and requires converting everything to text, exporting it to *Wordz* or a similar text processor, replacing the string and importing it back into *Resultz*. There is also no way of

defining function keys, which is another useful attribute of *Pipedream*.

CONCLUSION

If you want a stand-alone spreadsheet then *Resultz* is one answer, but if you want complete integration then you should wait for *Fireworkz*, which may be on sale by the time you read this. It will take the modules from *Wordz* and *Resultz* (and from *Recordz*, once it has been released) and allow you to create whatever you want on a page - be it a letter, a spreadsheet, a database, or all three, with all the information dynamically linked. Owners of both *Wordz* and *Resultz* will be offered a free upgrade.

Resultz's main competition comes in the form of *Eureka 2*. Longman Logotron has made over 100 enhancements, including the addition of macros, to the original version (reviewed in RISC User 6:5), and after just a brief look at it, I have been impressed that they have taken note of users' comments and added a lot of the missing features mentioned in the review. If you are in the market for a spreadsheet, I suggest you take a good look at *Eureka 2*, as it has some features not found in *Resultz*, namely search and replace, and is faster in areas which may be important to you.

PRODUCT INFO

Product	<i>Resultz</i>
Supplier	Colton Software 2 Signet Court, Swanns Road, Cambridge CB5 8LA. Tel. 0223 311881 Fax 0223 312010
Price	£139.82 inc. VAT

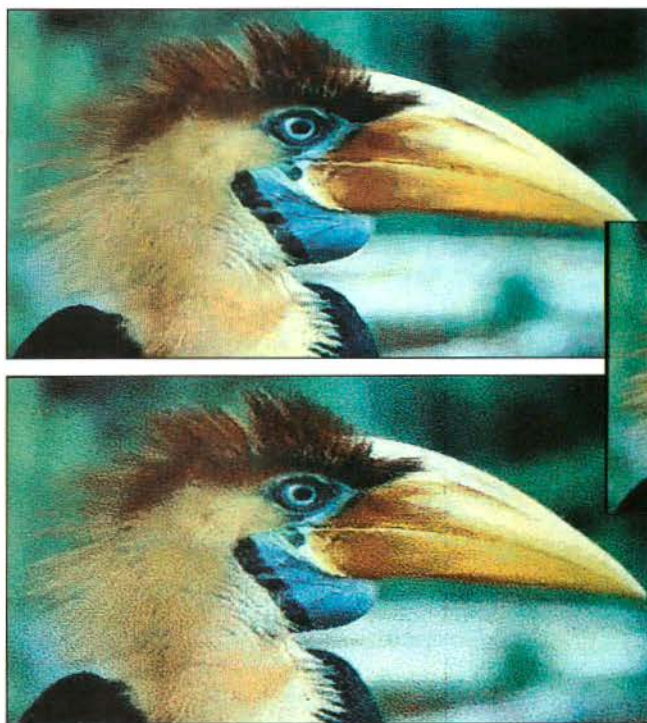
Product	<i>Eureka 2</i>
Supplier	Longman Logotron 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS. Tel. 0223 425558 Fax 0223 425349
Price	£139.82 inc. VAT



Frontiers of Multimedia

Ian Lynch reports on the latest trends as identified at this year's Interactive Learning conference.

Every year for the past eight or so years there has been a trek to Edinburgh on August Bank Holiday weekend to look at the latest in interactive learning technologies. *IL '93* provides an



point, with facilities to turn over pages, to mark a place etc, and then expand the facilities available through hot link words, searches and so on. The really impressive part of this was the realism and intuitive nature of the software user interface. However, the real question is whether or not it will entice book readers from paper to computer screen. For casual readers I am unconvinced, but perhaps for research it gives plagiarism a new dimension!

FRACTAL COMPRESSION IN PRACTICE

Probably the most interesting technology was Iterated Systems fractal compression, which has come a long way since I first saw it last year. Michael Barnsley, the British mathematician behind fractal imaging, gave a convincing presentation of evangelical fervour. The idea behind fractal compression is that pictures can be described by a finite number of fractal elements rather than pixels, and that fractal elements provide infinite resolution from very compact data. In fact, although fractal images can be scaled infinitely, they do still depend on the original information from which the fractals were sourced. They give the impression of ever

Normal scanned image (above), with an enlarged fractal image (above right) and manual enlarged image (below left) for comparison.

opportunity to give you an update on what is happening in multimedia, and to look at what Acorn is doing in this very competitive field.

INTERACTIVE BOOKS

There was a strong representation from the US this year, with Bob Stein of Voyager demonstrating some amazing user interface presentations developed for interactive expanded books. These take the concept of an ordinary book as a starting

increasing fidelity by effectively guessing what should be there from the context of the surrounding data; and zooming in on a fractal image does not cause pixelation. The final results are impressive with a 10K source file producing final images limited only by the resolution of the display device. In fact, a 3K source file produced a full screen image of a face which was better than many of the mode 15 images I have seen grabbed from a video digitiser requiring 160K.

Demonstrations of software-only video were also good, and the full-screen examples I saw running on a 50 MHz 486 PC were of better graphic

quality than Acorn's *Replay*, though jerky in places and limited in subject variety, so objective comparisons are difficult. Although the software is only at beta test stage and was running from a hard disc, I was told that the video component only needed 80-100 K/s to run, and that CD was the target market. Clearly this is a developing area and shows that digital video will continue to improve both through faster hardware, and also through better application of mathematics.

Although demonstrated on Windows-based machines, there are several reasons why fractal compression is of interest to the Acorn world. The high compression, coupled with good quality as far as the eye is concerned, provides the possibility of storing 50,000 high quality images on a CD, or passing images around a network without jamming it with data. A primary school could store a graphics library of 100 images on a single floppy disc and pass images across Econet without waiting a lifetime. The system outperforms JPEG (the current industry standard for compressing still images), and there is evidence that it is still improving at a significant rate. As computing power increases, a compact mode-independent graphics format, which could be displayed without perceptible delay, is very appealing, and on Acorn machines the algorithms would not be hampered by MS-DOS and Windows.

Acorn could of course opt for a proprietary format of their own - there are some very talented people, Roger Wilson, Stephen Streater and Tony Cheal et al, working on Acorn software - or stick with JPEG. The former option is only worthwhile if the results are so far ahead of the rest (as was the original Archimedes in 1987) that it justifies being different, and the latter will result in being tied to a standard which may well be surpassed and therefore result in JPEG-only users being left behind.

An important consideration is copyright. Like PhotoCD from Kodak, this is a proprietary system and Iterated Systems have copyrighted the *Fractal Transform* which is the mathematical technique upon which the technology depends. Copyrighting mathematics is rather dubious - if Newton had copyrighted the laws of motion we might live in a very different world - but mathematicians should be rewarded for creative work. Quantel have successfully copyrighted routines in the world of TV imaging, so I guess we have to live with it.

The crux of the matter will be a reasonable pricing policy which enables mass use, and therefore the

establishment of a de facto standard, at the same time as providing Iterated with enough income to continue and grow. Getting this right might well be more important than the quality of the technology itself. Having said this, Microsoft's endorsement of the product, as demonstrated with their *Encarta* encyclopedia on CD-ROM, is of major significance. I saw Tony Cheal of Oak Solutions reading Michael Barnsley's book on the mathematics of how the system works, and so perhaps we might see fractal compression and decompression in commercial Acorn products before too long.

MEANWHILE, SOMEWHERE IN HAMPSHIRE...

Back from the world of speculation, Martyn Wilson of Hampshire Microtechnology Centre was demonstrating work by children from Hampshire schools, and this made a refreshing change from the marketing hype, slick demonstrations and expensive hardware which dominated this conference. Interactive learning is about what the target user can do, not what a multi-million pound marketing machine can produce, and it is probably the emphasis on the latter which has dogged multimedia and interactive learning. Despite the occasional criticism, Acorn certainly have a better idea of this country's education market than any of the others at this conference, and this obviously matters. There was constant talk of downsizing and the industry lacking a market, but I think that the fact that Acorn are still here proves that they have done and are doing some things right. The multimedia offerings of Hampshire schools brought comments from visitors from the USA such as "Gee, we don't have anything like this going on back in the States", which seemed at odds with Margaret Bell's keynote speech praising what she had seen on a visit to the States with NCET.

OVER TO ACORN

Virtually every machine, PC, Mac and Archimedes was running digital video. Malcolm Bird demonstrated cutting a CD-ROM in twenty-five minutes, emphasising the affordability of the equipment involved. The sheer volume and variety of new products for all the machines is bewildering, and there is no doubt that the Windows and PC combinations on fast 486s have improved the utility of DOS-based machines considerably. Acorn's strength is in delivering inexpensive solutions on its full range of machines. Don't forget that many of the later PC applications require 4Mb to 8Mb of RAM to run, local bus architecture etc, etc. This means that the user still has to radically upgrade a

machine and pay hundreds if not thousands of pounds for software.

If Acorn are to continue to thrive, they need to keep an eye on comparative costs of delivering the real solutions users need, rather than trying to compete on sheer computing power as some commentators are suggesting. These are the arguments of five years ago, not today. The key area of improvement in the multimedia field from a technical point of view is good quality moving pictures at an affordable price. If Acorn can produce a machine that can play VHS quality video full screen at a low price, they are half way to staying in the game irrespective of processor speed. The other half of the equation is in producing well-presented applications that end users want to buy, and this is much more likely to be reliant on third parties such as Oak Solutions, ILP or New Media.

One thing that concerned me about this conference was the continuing rhetoric about change. We hear year after year how learning styles must change, and the vision of every student with access to a computer in the brave new (?) world of multimedia. Some of the best practice - *Granny's Garden*, *Flowers of Crystal* etc. - on BBC Bs is methodologically far more appropriate than many of the mega-buck systems

claimed as the new panacea. It seems that there is an insistence on regression to a zero base when new technology arrives despite the fact that in essence, although the graphics might be prettier or the sound better quality, the all important "game play" is what really matters. Since teachers are the main agents of change in schools, a reasonable strategy would be to make a driving thrust in broadening teacher use of IT including suitable incentives to do so.

Government quangos distributing CD-ROM drives to schools is not the answer, and neither are politically correct bland statements which do nothing to encourage the evolution of information technology in support of learning. All it tells me is that those in high places who should be providing leadership are incapable of doing so.

There is no doubt that multimedia has a major part in the future of general purpose computing, and that data and information formats are becoming more important than processor and operating systems as far as standardisation is concerned. This is good news for Acorn provided they can remain focussed on manageable specialist markets providing quality applications at prices their traditional customers can afford. **R**

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Wimp Topics - Displaying Text in Windows

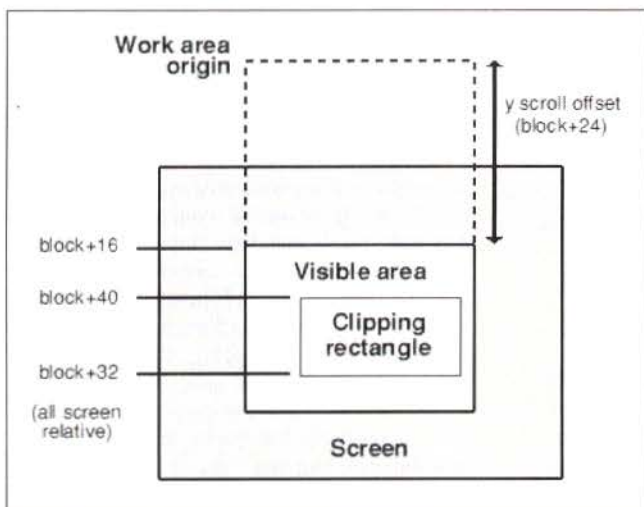
Alan Wrigley describes some useful redraw techniques to help you with textual displays.

Most programmers tackling the Wimp for the first time design windows in which information can be displayed using icons. Often this is quite adequate, since many programs present information that can be neatly packaged up into discrete units - the current status of an operation, co-ordinates, and so on. But sooner or later there comes a need to handle text of a more complex and unpredictable nature - the contents of a help file, say, or a list of items produced by a database search. You may even need to write a program which edits or processes text in some way.

For situations such as these, and indeed for many other purposes such as drawing graphics, the Wimp provides the means for you to draw directly to your window without the use of icons. The basic techniques of window redraw were covered in *Mastering the Wimp* (RISC User 3:3, 3:4 and 4:4), and in the book *Wimp Programming for All*. It is assumed that you are familiar with these basic techniques, but it is worth repeating the main elements of the redraw process here.

Firstly, the window in question must have bit 4 of the window flags unset (which indicates that it wishes to receive redraw requests). The Wimp will then return poll reason code 1 to the task whenever any section of the window needs redrawing. This will happen when the window is first opened, or when a part of it which was previously hidden becomes visible (for example if it is scrolled or moved from behind another window).

Redraw must be carried out using a well-defined process within a redraw loop. You *must not* write to the screen outside a proper redraw loop. The loop is entered after calling "Wimp_RedrawWindow", which returns the information you need to carry out the redraw. The Wimp tells you the co-ordinates of the current visible area of the window, the scroll bar positions, and the co-ordinates of the specific rectangle that needs to be redrawn (known as the *clipping rectangle*). You must perform the loop repeatedly, redrawing the requested areas, until no more rectangles are returned. As an example, imagine that another window is dragged diagonally across yours. Each time the window moves a measurable distance, it will expose an L-shaped section of your window. The Wimp will send you a redraw request, and will return two consecutive rectangles which together will cover the newly exposed area. You then redraw both these rectangles before passing control back to "Wimp_Poll".



When the window to be redrawn contains lines of text, the redraw process can be broken down into three stages - calculating the co-ordinates of the area to be redrawn, deciding which section of text relates to those co-ordinates, and actually putting the text on the screen. Each of these stages will be described in turn.

CLIPPING RECTANGLE CO-ORDINATES

For small amounts of text you can get away with ignoring the clipping rectangle and just redrawing the whole of the work area at each redraw request. Provided you are in a proper redraw loop, it is always quite safe to draw more than is required since anything outside the clipping rectangle will be ignored anyway. For larger amounts this approach will result in an unacceptable time delay, particularly when the window is scrolled down, and this will increase the further away you are from the work area origin. In these circumstances you must take note of the clipping rectangle and only redraw the parts that are needed.

Where text is concerned, this is often not as difficult as it sounds. You can safely ignore the x co-ordinate of the rectangle, and just draw

The relationship between the window's work area and the screen co-ordinates returned by "Wimp_RedrawWindow"

complete lines of text each time, since the overhead involved in drawing part of a line unnecessarily is offset by the fact that you don't need to calculate where on the line to start and end. This means that you only need to take the y co-ordinates into account; and since the text in most cases will have been displayed in equally-spaced lines, it is relatively easy to work out on which lines the clipping rectangle begins and ends, using the values returned by the Wimp.

To do this, you first need to be aware that all the co-ordinates returned by the Wimp are relative to the screen, and not to the window's work area. However, your program only knows where the text is positioned in relation to the window, not the screen, so you must perform some calculations to translate between the two. The notional screen co-ordinates of the work area origin can be found by subtracting the vertical scroll position from the top of the visible area. I say "notional" because its position may actually be way off the top of the screen if the window has been scrolled (see Figure 1). Now you can subtract from this the maximum y co-ordinate of the clipping rectangle to get its top relative to the work area, and similarly the minimum y co-ordinate to get its bottom. Finally divide these by the line spacing in OS units to find out the start and end lines of the section that needs to be redrawn. The following procedure performs these actions:

```

1000 DEF PROCredraw
1010 SYS "Wimp_GetRectangle",,block% TO more%
1020 WHILE more%
1030 xorigin%=block%!4-block%!20
1040 yorigin%=block%!16-block%!24
1050 maxyclip%=yorigin%-block%!40
1060 minyclip%=yorigin%-block%!32
1070 topline%=maxyclip% DIV 32
1080 bottomline%=1+minyclip% DIV 32
1090 REM redraw code here
1130 SYS "Wimp_GetRectangle",,block% TO more%
1140 ENDWHILE
1150 ENDPROC

```

This code should be easy to understand as it follows the process outlined above. First of all we get the work area origin in *xorigin%* and *yorigin%*. Then we get the clipping rectangle which lies between *maxyclip%* and *minyclip%* in work area co-ordinates. Finally we translate this rectangle into line numbers, stored in *topline%* and *bottomline%*. You will notice that we have assumed a line spacing of 32 OS units, which is the same as that used by Edit. If you want more spacious-looking text you could use 36 or 40 instead (though if you are writing in Assembler you will find 32 better as you can do your division using shift instructions). We have

also incremented the bottom line by 1 to ensure that the whole of the line gets redrawn.

This example assumes that the text will start at the very edges of the window. In practice it looks neater to leave a small gap, say 4 OS units, at both the top and the left-hand edge. This can be catered for automatically by offsetting the origin by that amount in both directions:

```

1030 xorigin%=block%!4-block%!20+4
1040 yorigin%=block%!16-block%!24-4

```

MATCHING TEXT TO CO-ORDINATES

So much for the redraw theory, but how do you match up the line numbers to the text you actually want to display? This depends on how you store the text, and can be done in several ways. For example, you could hold all the text in a string array, say *text\$()*, with each element of the array containing one line of text. For the purposes of redraw, this is the simplest solution since you can then just write the text from *text\$(topline%)* to *text\$(bottomline%)* without further ado. The text could be put into the array in the first place by reading DATA statements, or by reading from a file (though if the text doesn't already have line terminators in the right places, you must calculate their positions for yourself so that the correct number of characters is included in each line in the array).

For large chunks of text, or text whose content may change during execution of the program, the array approach is less convenient, since one small alteration to the text may require the contents of some or all of the array elements to be changed around. An alternative method is to store the text directly in memory, and to keep an array of pointers to the start of each line. If the text is altered, the pointers can be updated without having to alter all the array elements. There are various ways of allocating a chunk of memory in which to store the text - these were described in *Technical Queries* (RISC User 5:4).

WRITING TEXT TO THE WINDOW

The process of actually getting the text into the window is quite straightforward. We will stick to the system font for the purposes of this article - outline fonts are a bit more tricky since you obviously have to know the point size before you can position text in the window. The text is output in exactly the same way as you would write to the screen in VDU 5 mode in a non-multi-tasking program, using the same VDU and SWI calls, and specifying the actual screen co-ordinates. However, since it is being done within a redraw loop, the Wimp makes sure that only your window is written to, and ignores any co-

ordinates that lie elsewhere. Before writing any line of text, the graphics cursor must be positioned. Having converted from screen co-ordinates to work area co-ordinates in order to calculate the correct text line, the top of the line must be converted back to screen co-ordinates to find the y position for the cursor (we can't just use the value returned for the clipping rectangle since that may not fall on a line boundary). The x position of the cursor will be the same as the work area origin x co-ordinate, since we are drawing complete lines each time. So the code to display the text would look something like this, assuming the array method of storage:

```
1090 FOR i%=topline% TO bottomline%
1100 MOVE xorigin%,yorigin%-i%*32
1110 PRINT text$(i%)
1120 NEXT
```

WINDOW SCROLLING

When scrolling a text display, it usually looks neater if the top of the window coincides exactly with a line of text. This can easily be achieved by adjusting the scroll bar whenever a request to open the window is received. When the redraw request is then issued, the scroll bar will reflect the adjusted setting and your redraw code will automatically put the text in the right place. If the text is spaced at 32 OS units, all you have to do is ensure that the scroll bar is a multiple of 32 before calling "Wimp_OpenWindow":

```
block%!24=block%!24 AND &FFFFFFE0
SYS "Wimp_OpenWindow",,block%
```

SETTING THE EXTENT

One problem you often face is how to make sure that the vertical extent of the window is the right size for the text you want to display. If it's too short, some of the text will never be seen, while if it's too long, there will be a large and unnecessary amount of space at the bottom. The solution to this is to set the window extent as soon as the length of the text is known (i.e. when loaded from a file or read from DATA statements), and to reset it if ever the length of the text changes. This is quite easily done with a call to "Wimp_SetExtent". For example, if the text is 100 lines long with a line spacing of 32, then allowing for the 4-unit offset at the top, you would need an extent of 3204. Assuming that you have made the window the full width of a mode 12 screen (1280 units), the call would look like this:

```
!block%=0:block%!4=3204
block%!8=1280:block%!12=0
SYS "Wimp_SetExtent",whandle%,block%
```

MARKING TEXT

Finally I want to look at the situation where you may want to mark a line or lines of text. For

example, in Edit you can use Select and Adjust, or a drag operation, to mark a section of text, which is shown by inverting the colours. This particular process is quite complex, but a simpler situation would be where you might want to mark a single line of text when the user clicks over it, perhaps to indicate which item has been chosen from a search list. The procedure we will adopt is to find out the co-ordinates of the click, match those to a line of text, set a variable (*mark%*) to show the selected line, and then to force a redraw of that line with a different background colour (mid-grey). To do the latter, all we need to add to the redraw code is the following:

```
1092 IF i%=mark% THEN
1094 SYS "Wimp_SetColour",3
1096 RECTANGLE FILL xorigin%,yorigin%-i%
*32,1280,-32
1098 SYS "Wimp_SetColour",7
1099 ENDIF
```

This draws a rectangle in colour 3 the width of the window and the depth of one line provided the line is the currently marked one. *mark%* should be set to -1 at the program start to indicate that there is no marked line to start with.

The following procedure handles the mouse clicks (remember that the y pointer co-ordinate is already in block+4 when the event is received):

```
2000 DEF PROCmouseclick
2010 y%=block%!4:!block%=whandle%
2020 SYS "Wimp_GetWindowState",,block%
2030 y%=4+block%!16-block%!24-y%
2040 oldmark%=mark%:mark%=y% DIV 32
2050 IF oldmark%<>-1 THEN
2060 SYS "Wimp_ForceRedraw",whandle%,0,
-oldmark%*32-36,1280,-oldmark%*32
2070 ENDIF
2080 SYS "Wimp_ForceRedraw",whandle%,0,
-mark%*32-36,1280,-mark%*32
2090 ENDPROC
```

This procedure first of all finds out the window co-ordinates using "Wimp_GetWindowState", then subtracts the y pointer position from the work area origin to get the window-relative y position. The marked line number is then stored in *mark%*, but before redrawing the new mark, the old mark position is read. If it is not -1, there must have been a previous mark and so that line is redrawn first to remove it.

This method is suitable for the simple situation given here, but for more complex marking, particularly when dragging, it is unsuitable, since the continual forced redraws cause the screen to flicker unacceptably. In these situations, the area should be updated directly using "Wimp_UpdateWindow". I hope to return to this subject in a later article.

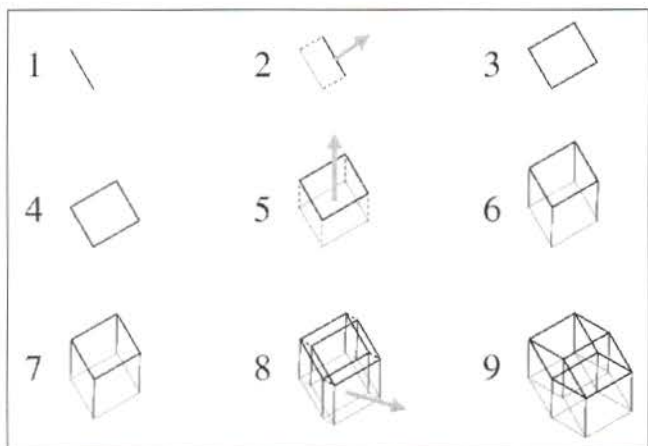


This month's magazine disc contains an application called *Window Writer* which demonstrates the principles covered in this article.

Exploring Hyperspace

Richard Taylor introduces your Archimedes to the fourth dimension.

Imagine a straight line that starts to move at right angles to its direction. It travels until it has covered the distance of its own length and has produced a square. This square then extends 'upwards', at right angles to its plane, until it has made a cube. A hypercube is now created by extending the cube at right angles to each of its three 'directions', so that the instant it



Line to square to cube to hypercube

begins to move, it does not contain a single part of its original frame, just as the square contained no part of its original position as soon as it moved. If you can't imagine this last step you are in good company - to a certain extent no-one can. For in order to make the hypercube in the manner described, the cube has to be moved in a fourth dimension.

We live in a world of three spatial dimensions so we need three co-ordinates to describe an exact position. For example, we often use the three co-ordinate axes of North-South, East-West and Up-Down. The idea of a fourth dimension, perpendicular to all three of the existing ones, is therefore somewhat difficult for us to grasp. A

helpful analogy, produced way back in the 19th century by Edwin Abbott in his book *Flatland*, is to imagine a world of two-dimensional creatures who live on a flat plane and cannot conceive of an up and down.

This short program attempts to give you at least an impression of the fourth dimension, by allowing a projection of a hypercube to be rotated on screen. Equipped with red/green glasses, or as shall be seen, with good control over your eyes, you will be able to see a truly remarkable three-dimensional animation in which the projection moves, turns and distorts as the hypercube rotates.

CREATING THE APPLICATION

First of all, create an application directory called *!Hypercube*, and save inside it a sprite file called *!Sprites*, which contains a 34x17 pixel, mode 12 sprite of your own design called *!hypercube*. Next you should use a text editor such as Edit to create an Obey file containing the following lines:

```
WimpSlot -min 16k -max 16k
Run <Obey$Dir>.!RunImage
```

This should be saved as *!Run* inside the *!Hypercube* directory. Finally you should type in Listing 1 and save it as *!RunImage* in the same directory.

USING Hypercube

Run Hypercube by double-clicking on its icon in a directory viewer. A frame of the hypercube should appear on screen. Because a rotation in four-space is about a plane and not an axis, that is to say two of the four axes remain still, there are six possible completely different rotations. Simply use keys 1-6 to see them in action. I suggest you use the numeric keypad so that it is easier for you to keep your eyes on the screen. Pressing 8 will produce two superimposed stereoscopic images which will give the illusion of depth to the display when viewed with red/green glasses. Hopefully, you will still have the pair you used for the Virtual Reality program in RISC User 5:8, which also explains this display technique in more detail.

Some readers may wish to attempt the 3D effect using an alternative method which does not require the red/green glasses, but still creates the effect of a 3D image rotating in space a foot or so from your eyes. Press 9 and two smaller images will appear on screen, side by side. You

will need to bring these two slightly different projections on top of each other. Make yourself cross-eyed, so that you get double vision and there are four images altogether, then move your eyes until two of the images overlap. The first time you do this, the picture will probably be badly out of focus, but keep staring and it should become sharp. This technique is undoubtedly difficult to master though the results are well worth the effort. (A quick word of warning, though. If you have any concerns about your vision, contact your ophthalmologist before attempting the above.)

Pressing 7 will return the display to two dimensions, while pressing 0 will reset the hypercube to its original position. Use Escape to quit the program.

THE PROJECTION - AN EXPLANATION

The projection can be considered as a shadow of the four-dimensional object. The first two co-ordinates of each vertex of the hypercube simply become the ordinary x and y values on the screen. Now imagine a light source at a fixed distance behind the screen, casting a shadow on to it. The nearer an object is to the light source, that is, the greater the value of its third co-ordinate, the bigger its shadow will be. Thus the x and y co-ordinates are adjusted according to this third value. Although the fourth co-ordinate has so far been ignored, the hypercube is then plotted, and this two-dimensional image is what is seen when the program is first started. However, the hypercube can instead be rotated by a very small amount each way in the plane containing the first (left/right) and the fourth dimensions, and the two slightly differing images plotted. When the left eye sees just one of these images while the right eye is seeing the other, as happens with the glasses or the 'double vision' technique, the result is an image in three dimensions giving an 'impression' of the fourth.

PROGRAM NOTES

The program initially selects mode 12 to make sure there is sufficient screen memory for bank switching, which gives smooth animation, in mode 8. Mode 8 is used because only four colours are needed, and its screen redrawing is significantly quicker than modes 12 or 15. *PROCinit* sets up the arrays the program needs and performs various other initialisations.

These include changing colour 2 to green (colour 1 is already red), and setting the fixed angle of rotation, which could easily be altered by the reader. *PROCerror* simply resets the changes to the machine's status before the program ends.

PROCnew resets the hypercube to its original position. *PROCrotate* performs the actual hypercube rotation. It creates a rotation matrix, *rot()*, and by performing matrix multiplication on this matrix and the array *cube()*, which holds the four co-ordinates of each of the sixteen vertices of the hypercube, a new array, *result()* is produced. *PROCdraw* is then called to redraw the projection in the desired manner. The vertices are joined up in an order called an Euler trail, which is stored in the array *trail%()*. This path goes completely around the hypercube without drawing the same edge twice or 'jumping' between non-adjacent vertices.

ACKNOWLEDGEMENT

This program was suggested, together with general outlines on how it might be implemented on a computer, by A.K. Dewdney in his *Computer Recreations* column in the *Scientific American*. The ideas also featured in *The Armchair Universe*, a compilation of these columns. Readers who wish to obtain a better understanding of the hypercube may wish to read this article and Edwin Abbott's book, *FlatLand*.

REFERENCES

ABBOTT Edwin A. (1952), *Flatland*, Dover Publications, Inc., New York.

DEWDNEY A.K., (1986), *Computer Recreations*, Scientific American, April 1986, pp.8-13.

DEWDNEY A.K., (1988), *The Armchair Universe*, W.H. Freeman and Co., New York.

```

10 REM          >!RunImage
20 REM Program  HyperCube
30 REM Version  A 3.0
40 REM Author   Richard Taylor
50 REM RISC User November 1993
60 REM Program  Subject to Copyright
70 REM          Not Public Domain
80 :
100 MODE 12:MODE 8:PROCinit
110 ON ERROR PROCerror:END

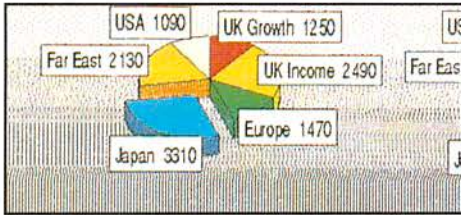
```

```

120 :
130 REPEAT
140 done%=1:SYS "OS_Byte",15,1:I%=GET-
48
150 CASE I% OF
160 WHEN 1 : a1%=0:a2%=1
170 WHEN 2 : a1%=0:a2%=2
180 WHEN 3 : a1%=0:a2%=3
190 WHEN 4 : a1%=1:a2%=2
200 WHEN 5 : a1%=1:a2%=3
210 WHEN 6 : a1%=2:a2%=3
220 WHEN 7 : disp%=1:done%=2
230 WHEN 8 : disp%=2:done%=2
240 WHEN 9 : disp%=3:done%=2
250 WHEN 0 : PROCnew:done%=0
260 OTHERWISE : VDU 7:done%=0
270 ENDCASE
280 IF done%=1 THEN PROCrotate(a1%,a2%
,angle):cube()=result()
290 IF done%=2 THEN d%=800:IF disp%=3
THEN d%=400
300 PROCdraw
310 UNTILFALSE
320 :
1000 DEFPROCinit
1010 DIM cube(3,15):DIM result(3,15):DI
M temp(3,15)
1020 DIM rot(3,3):DIM trail%(32)
1030 trail%()=0,1,3,2,6,14,10,8,9,11,3,
7,15,14,12,13,9,1,5,7,6,4,12,8,0,4,5,13,
15,11,10,2,0
1040 vdu%=2:hard%=1:SYS "OS_Byte",112,v
du%:SYS "OS_Byte",113,hard%
1050 SYS "OS_Byte",11,1 TO ,delay%:SYS
"OS_Byte",12,1 TO ,rate%
1060 OFF:VDU19,2,2|:angle=PI/18:disp%=1
:d%=800
1070 PROCnew:PROCdraw
1080 ENDPROC
1090 :
1100 DEFPROCerror
1110 SYS "OS_Byte",112,1:SYS "OS_Byte",
113,1
1120 SYS "OS_Byte",11,delay%:SYS "OS_By
te",12,rate%
1130 CLS:ON:PRINT REPORT$+" at line ";E
RL
1140 ENDPROC
1150 :
1160 DEFPROCnew
1170 FOR N%=0 TO 15:FOR M%=0 TO 3
1180 IF (N% AND 2^M%)=0 THEN C%=-100 E
LSE C%=100
1190 cube(M%,N%)=C%
1200 NEXT:NEXT
1210 PROCrotate(0,1,PI/4):cube()=result
()
1220 PROCrotate(0,3,PI/4):cube()=result
()
1230 PROCrotate(1,3,PI/4):cube()=result
()
1240 ENDPROC
1250 :
1260 DEFPROCdraw
1270 CLS:ORIGIN 640,512
1280 CASE disp% OF
1290 WHEN 1 : temp()=cube()*2:PROCplot
(temp(),3)
1300 WHEN 2
1310 PROCrotate(0,3,PI/60):temp()=res
ult()*2:PROCplot(temp(),2)
1320 PROCrotate(0,3,-PI/60):temp()=re
sult()*2:PROCplot(temp(),1)
1330 WHEN 3
1340 ORIGIN 320,512:PROCrotate(0,3,PI
/60):PROCplot(result(),3)
1350 ORIGIN 960,512:PROCrotate(0,3,-P
I/60):PROCplot(result(),3)
1360 ENDCASE
1370 vdu%+=1:IF vdu%=3 THEN vdu%=1
1380 hard%+=1:IF hard%=3 THEN hard%=1
1390 SYS "OS_Byte",112,vdu%:SYS "OS_Byt
e",113,hard%
1400 ENDPROC
1410 :
1420 DEFPROCrotate(d1%,d2%,theta)
1430 rot()=0:FOR N%=0 TO 3:rot(N%,N%)=1
:NEXT
1440 cos=COStheta:sin=SINtheta
1450 rot(d1%,d1%)=cos:rot(d2%,d1%)=sin
1460 rot(d1%,d2%)=-sin:rot(d2%,d2%)=cos
1470 result()=rot().cube()
1480 ENDPROC
1490 :
1500 DEFPROCplot(array(),col%)
1510 PROCcoord(0):MOVE xd%,yd%:GCOL 1,c
ol%
1520 FOR N%=1 TO 32:PROCcoord(trail%(N%
)):DRAWxd%,yd%:NEXT
1530 ENDPROC
1540 :
1550 DEFPROCcoord(L%)
1560 x%=array(0,L%):y%=array(1,L%):z%=a
rray(2,L%)
1570 xd%=x%*d%/(d%-z%):yd%=y%*d%/(d%-z%
)
1580 ENDPROC

```


Star has gained the reputation of a company that provides run of the mill printer technology at affordable prices, rather than being particularly innovative. However, as this review will show the launch of the SJ-144 Thermal Transfer colour printer is set to change all that.



Text and graphic printed at 180 dpi

THE HISTORY OF COLOUR PRINTING

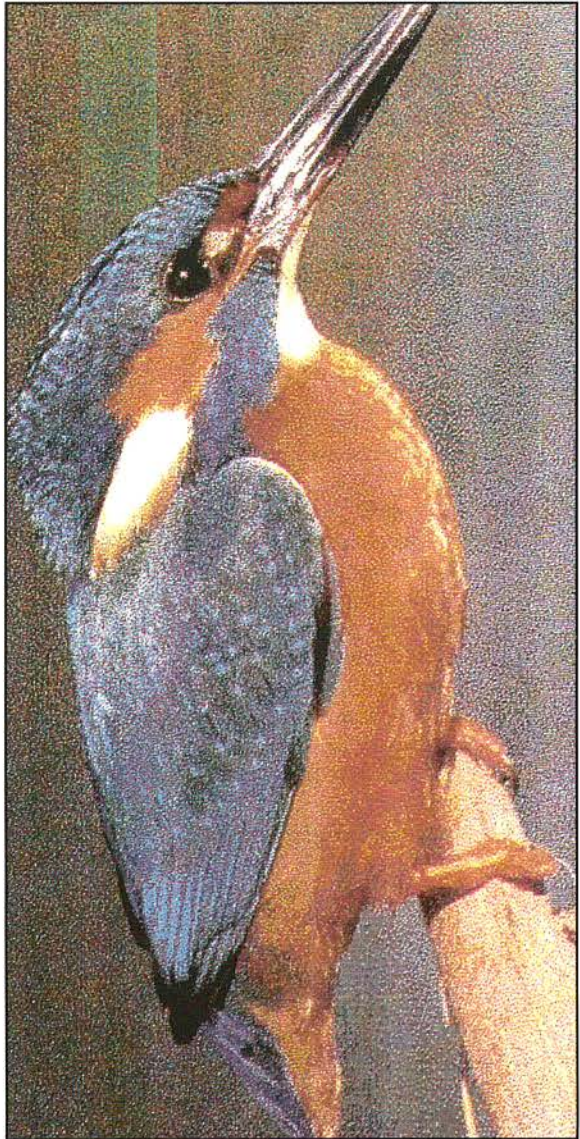
Whilst black and white printing technology has evolved tremendously over the past decade, the movement in colour printers has been much slower. Until a couple of years ago, most colour printers used ribbon-based impact techniques, similar to those used on cheap dot matrix printers. However, these produce poor output, damage the paper, and are very prone to even slight deterioration in ribbon quality. The next stage was the introduction of ink-jet colour printers which replace the ribbon and striking pins with a spray of coloured ink. This type of printer, which currently accounts for most colour printers sold, offers greatly improved quality but suffers from the need for high grade paper to avoid bleeding of the dots.

Following the lead of monochrome printers, you would expect the next step up to be colour laser printers. However, while there are such printers, the idea never really caught on because the xerographic printing process used doesn't really give the desired results when trying to mix colours. Instead, the move is towards a technique called Thermal Transfer Printing. With this method, a wax-type ink is actually melted onto the paper from a carrier sheet. There are separate carriers for each primary colour (cyan, magenta, yellow and black), and for any pixel, each colour can either be melted on or not. Because they are melted from the solid phase, the inks can be made more waxy than liquid ink, preventing smudging and allowing good quality output on almost any grade of paper (or film).

Incidentally, there is an extension of the thermal transfer process called Dye Sublimation, and this allows varying intensities of ink to be melted for

The Star SJ-144 Colour Printer

David Spencer investigates a significant advance in colour printing for the Arc.



Graphic printed at 180 dpi

each dot, rather than just ink or no-ink. The next generation of printers using this technique will allow each dot to be one of many millions of

colours, alleviating the need for dithering, which reduces, the effective resolution.

Traditionally, most thermal transfer printers have used carrier sheets the same size as the page being printed. So, for example, to print on A4 paper, four A4-sized ink carrier sheets would be used - one for each primary colour (and black). These sheets are usually mounted in sets on a roll. Unfortunately, this method bumps up the price of the printer (to about £2500) because of the complex mechanisms needed, and makes each copy very expensive (pounds per sheet rather than pence!).

ChartWell has particular strengths when pie charts are needed. Up to six pies can be included in a single display with the total area of each pie showing the relative total values. Pie charts can be 2D or 3D with a wide choice of other options to meet the majority of user requirements.

**Text printed
at 360 dpi**

ENTER THE SJ-144

This is where the SJ-144 comes in. What Star has done is to take the thermal technology, but do away with complete ink sheets. Instead, they have put strips of ink sheet into a fairly standard ribbon cassette. This has the slight disadvantage that the page is printed as a series of strips, which can give some banding in the picture, but the technique has several advantages that outweigh this. Principally, the simplified mechanism needed, and its similarity to normal dot matrix printers, reduces the overall cost considerably. Secondly, the use of a ribbon cassette is more economical when printing pages containing only small areas of colour, as entire ink sheets aren't wasted for only a few dots. Indeed, these changes have meant that star can sell the SJ-144 at the incredibly low price of under £500 (see later).

The SJ-144 follows the trend towards printers that look more upright than flat, with a footprint of 13" by 5.5", and a height (without paper) of 7". The case is in a nice cream colour that matches the Arc well, with a fold-down paper tray on the back, and a fold-up panel on the front, the lower half of which is in dark smoked perspex. On the top of the printer are an on-off switch and density control, and a panel carrying four push buttons

and fifteen lights, these being used to set the usual options found on a printer, such as auto-linefeed. A compact external power supply unit is used, and this plugs into the side of the printer, with the data cable plugging into the rear.

As well as colour printing, monochrome is supported by use of a single colour ribbon cassette. Both mono and colour ribbons are available in normal versions, and special types for use with over-head projector (OHP) film. There are also special label ribbons that print directly onto self-adhesive label strips contained within the cassette. These are available in a number of colours. Changing between ribbon cassettes is very easy, even in the middle of printing a page.

The SJ-144 provides for three types of paper feed, coping with paper from 4" square to 9.5" wide by 14" deep. In the normal mode, paper is fed from the paper tray and comes out of the front. Up to thirty sheets of paper can be put in at one time. For OHP film and card, paper can be fed one sheet at a time from the rear. This offers a straight-through paper path to avoid jamming. Finally, single sheets of normal paper can be fed from the front, and re-emerge at the front.

PRINTING

Once you have connected the printer to the mains power and to the computer, and turned it on, there is not much more to do before you start printing. This is because the printer can automatically detect the codes being sent to it, and configure its emulation automatically. Therefore, it is simply a matter of loading the printer driver and starting to print.

The SJ-144 supports both Epson LQ-860 and IBM X24E printer emulations, up to resolutions of 360 dpi. For printing from RISC OS 3, the Epson LQ-860 driver can be used. The only slight problem is that this doesn't actually support colour at 360 dpi (only at 180 dpi and below), due to limitations in normal dot matrix printers. However, this can be fairly easily modified, and in most cases 180 dpi is adequate for colour output anyway. I guess that most dealers selling the SJ-144 will supply the modified driver for a nominal charge.

On the first full-colour printout, I found two faults with the quality. Firstly, the print was very dark, and secondly, there was prominent banding

across the picture (each band corresponding to one pass of the ribbon). Luckily, the printer can be adjusted to correct both of these problems. The darkness is controlled by means of a small thumb-wheel intensity control next to the on off switch. I found that the best way to adjust this was to print out a dump of the desktop, and slowly adjust the control down as printing continued until the contrast between the Desktop background and icon bar looked correct. Once set, the intensity control should not need adjusting again.

The banding can be reduced, and indeed almost eliminated, by means of a special set-up mode that fine-tunes the spacing between passes in units of $1/360^{\circ}$. This mode is entered by holding down buttons on the printer when powering up, and works by printing out a series of test patterns that you must assess, and press the appropriate button to adjust if needed. This is described fully in the user guide.

The time to print a screen-dump covering about 80% of the page at 180 dpi in full colour was about five minutes, with control of the computer being returned in just under four minutes. Using greyscale output at the same resolution, the print time was about two and a half minutes. Both tests were done on an A5000. In text mode, the print speed is up to 500 characters per second.

The only real fault I found on the SJ-144 in use was the reliability of the paper feeder. As long as you have a reasonable quantity of paper in the tray (about ten sheets), all is OK. However, too much or too little and you can get two sheets fed at the same time, or worst still, none at all. In this latter case, the paper does get as far as the paper detector, so the printer thinks all is well and starts to print all over itself.

RUNNING COSTS

With any high quality printer, one important consideration that is often overlooked is the cost of each individual page printed. Whilst most mono dot-matrix printers will churn out a page for fractions of a penny, some high-end colour printers work out at around £5 per page. Luckily, the SJ-144 doesn't reach these extremes!

Monochrome ribbons for the SJ-144 cost £10 each, and according to the specification, will last for 345000 characters. This corresponds to about 100 pages, giving a cost of ten pence per page - not dissimilar to a laser printer.

As would be expected, colour output costs more. A colour ribbon sells for £12, and will only last for eight pages if there is a uniform spread of colour over the entire page. This is typical of the output produced by a full size screen-dump, or scanned or digitised picture. Therefore, the cost for this type of output is a rather high £1.50 a page. For colour DTP-type output, where you would typically have only a couple of colour pictures on a page, the cost is likely to be reduced to about fifty pence a page, with a ribbon life of 24 or 25 pages.

Whilst these prices may seem high, the typical costs of one page of full colour output from a DeskJet 550C is £1.42, so the Star costs about the same to run. The SJ-144 also offers the advantage that as soon as the ribbon runs out, printing stops and a new ribbon can be inserted. This allows the page to be printed properly, in contrast to the DeskJet where the output just slowly fades away.

One interesting feature of the SJ-144 is a two-page mode that can be set from the front panel. In this mode, all output sent to the printer is scaled by 50%, and two pages are printed on each sheet of paper. Obviously, this reduces running costs and can be used for draft-type prints.

Another advantage of the SJ-144 over the DeskJet is that it will work with ordinary high-grade photocopier paper, which costs about one penny a sheet, as opposed to the coated inkjet paper that can be as much as fifteen pence a sheet.

CONCLUSION

If the SJ-144 sold for around £1000, I would be writing that it represents high quality printing at a realistic price, but too expensive for the average user. However, the SJ-144 costs only half this, and in my opinion is a fantastic buy. However, given the running costs, I think it would make a better 'second' printer (in addition to a laser printer for example), particularly if colour work only accounts for a small percentage of your printing work.

PRODUCT INFO

<i>Product</i>	<i>Star SJ-144 Colour Printer</i>
<i>Supplier</i>	<i>Star Micronics UK Ltd Star House, Peregrine Business Park, Gomm Road, High Wycombe, Buckinghamshire HP13 7DL. Tel. 0494 471111</i>

The SJ-144 has a recommended retail price of £569 + VAT, but is available from Beebug at £475 + VAT.



It's a Kind of Magic

Alan Bonsor gazes into his crystal ball and sees all his dreams coming true.



I was originally planning to write about all the exciting new developments taking place in the Archimedes games market, with companies such as Ocean, US Gold and Gremlin releasing games for the Arc. However, the arrival of an MS-DOS disc on my desk made me change my mind at the last moment. Not just any old MS-DOS disc, mind you, but a disc containing *Simon the Sorcerer*.



Simon the Sorcerer is possibly the best adventure game ever



Hands up all of you who torture yourselves by browsing through the non-Acorn computer magazines at the newsagent, wishing that we had games like *The Secret of Monkey Island* and its sequel *LeChuck's Revenge* on the Arc. Well I hate to disappoint you, but we're not getting either. There's a good reason, though. GamesWare, the company that's already brought us *Xenon 2* and *James Pond 2 - Robocod*, went on a shopping spree, and was told by some knowledgeable people to forget *Monkey Island* and obtain the conversion rights for *Simon the Sorcerer* instead. That was very good advice!

Simon the Sorcerer is possibly the best adventure game ever. Created by that most famous adventure games company, AdventureSoft, who did, I must emphasize, support the Beeb many years ago with the Scott Adams Adventures,



Simon the Sorcerer will have only just been released for the PC and Amiga by the time you read this. If all goes according to schedule, GamesWare will be demonstrating the Arc version at Acorn World '93, and will have the full release version ready by the end of the year. I've spent the last few weeks playing the PC demo version, from which all the screenshots come, and I've been left speechless. I am actually playing it while writing this; it's running in a window on my Desktop with Aleph One's 386 co-processor (boast, boast).

Simon the Sorcerer is an interactive graphical fantasy. The "hero" of the story is Simon,



a fairly normal 14 year old kid who, in Never Ending Story type fashion, is transported into a magical world of dragons, monsters, dwarves, swamplings and sorcery. You control Simon,



guiding him through over 100 stunning locations, interacting with dozens of wonderful characters and solving mind-bogglingly complex puzzles.

All actions are performed with one of the most easy-to-use and intuitive user interfaces I've ever come across (it's almost as good as RISC OS!). Throw out the keyboard - everything is mouse controlled. The screen is divided into two sections, with the top two-thirds displaying the location, and the bottom-third showing the 12 control verbs and the contents of Simon's magical hat, which is used to store everything he collects, including a voucher for a free beer at The Drunken Druid. As you move the pointer around the screen, you'll be told what different objects are (just like Help on RISC OS). To make Simon walk somewhere, simply point and click over the destination. If you want to pick up something, just click on Pick up and then on the object. To fill up a container with some delicious (not) swamp stew, made from the finest ingredients (swamp mud and woodlouse), click on Use, the container and then the stew. It's as easy as that.



birthday, it seems, everyone has forgotten, and who I imagine looks very much like a pleasant version of Gollum in The Hobbit.

The conversations between different characters are equally good, range from the sublime to the ridiculous, and are full of Hancock-type humour. Most of them take place automatically at certain



times and places, with you being prompted to select an appropriate response from a selection. For example, when Simon enters the dwarves cave for the first time, the conversation runs something like this: "Oi, dwarves only.. But I am a dwarf.. No you're not, dwarves have beards. Now sod off or taste the sharp end of my spear.. I shaved it off.. If you're not out of my sight in three seconds..." upon which Simon beats a hasty retreat.

The graphics are amazing, and have to be seen to be believed



The graphics are amazing, and have to be seen to be believed. Every single location is a work of art. It's as if the most atmospheric textual descriptions from Level 9's best adventures have been thrown into a pot together with the superb graphics from Magnetic Scrolls' games, and a copy of The Hobbit, and left to mature for several years. The animation is superb, with Simon's "walk" made up of 80 frames. In one location, where Simon is contemplating the merits of sampling the Swampling's renowned/infamous swamp stew, over 1000 frames are used for the various animations, which include Simon, quite literally turning green and losing his lunch. The Swampling is an absolutely pathetic character whose

Of course, Simon has a much easier time with the guard if he wears his beard before entering the cave.



When the Archimedes first appeared all those years ago, I remember thinking how great it would be if games like Leisure Suit Larry and Police Quest were released for it. Well it's taken a long time, but it's finally happening. With Simon the Sorcerer, GamesWare and the Archimedes are going to have a fantastic Christmas.



PRODUCT INFO	
Product	Simon the Sorcerer
Supplier	GamesWare
	Unit 26, The Bartlett, Hamble, Hants SO3 5RP. Tel. 0703 456523
Price	TBA
Release Date	TBA



HARDWARE AND SOFTWARE EXPANSION FOR ACORN COMPUTERS

DUAL RS423 SERIAL INTERFACE - two additional RS423 serial interfaces for communicating with RS423 or RS232 devices eg modems (in order to use bulletin boards), printers, plotters, instruments, etc. Up to four cards can be fitted in a computer.

IEEE488 INTERFACE - enables up to 14 test and measurement instruments, from well known manufacturers such as Hewlett-Packard, Fluke, Philips, Tektronix, etc. to be connected to the computer. For example, voltmeters, oscilloscopes, spectrum analysers, function generators, counters, logic analysers, programmable power supplies, plotters, printers, etc.

16 BIT PARALLEL I/O - provides two separate 16 bit input/output ports. Other facilities include four 16 bit counter/timers, two 8 bit shift registers and eight interrupt inputs. Applications range from measurement and control to high speed data input and output.

12 BIT ADC - provides eight single ended inputs each with an input voltage range of -5 to +5 Volts. Up to 166,000 samples per second can be taken.

STEBUS INTERFACE - overcomes the limitation of a maximum of four expansion cards in a computer by enabling the use of industry standard STEbus boards in an external input/output sub-system for measurement and control applications.

Intelligent Interfaces Ltd

P O Box 80

Eastleigh

Hants

SO5 5YX

Tel: 0703 261514 Fax: 0703 267904

SCSI DEVICES - internal and external hard disc drives, magneto-optical removable disc drives, tape streamers etc.

FORTRAN 77 COMPILER - completely compatible with the now discontinued Acornsoft compiler.

GINO-F 3D, GINOGRAPH, GINOSURF and HERSHEY+ - the FORTRAN subroutine graphics libraries.

Intelligent Interfaces are Bradley Associates distributor for GINO-F 3D, GINOGRAPH, GINOSURF for Acorn RISC OS-based Computers.

TERMULATOR - enables a computer to emulate a terminal from the VT range (VT52, VT102 or VT220) or a Tektronix 4010 graphics terminal.

Termulator a trade mark of Acorn Computers Limited is applied to this product under licence from Acorn Computers Limited.

COMPLETE SYSTEMS - configured to customer's requirements by fitting RAM upgrades, hard discs, expansion cards, etc.

ADVICE - SUPPLY - SUPPORT - Intelligent Interfaces were established in 1981 and have enjoyed a long relationship with Acorn Computers. This places them in an ideal position to advise on, supply and support systems purchased from them.

INTELLIGENT INTERFACES

When I first saw the advertised screenshots for *Stunt Racer 2000*, I was rather disappointed. Having played *Hard Drivin* and *Stunt Car* on the Amiga (forgive me Acorn, for I hath strayed), I had great expectations of what this type of game should entail. Now that I've actually played *Stunt Racer 2000*, I am forced to eat my words, bytes and bits.

In exchange for your money you get two discs, a 15 page manual and a loading assistance leaflet. The game can quickly and easily be installed on your hard drive, but the usual key disc system is employed to prevent piracy. On running the game, you are presented with a run-of-the-mill loading screen, after which you enter the main menu. The very helpful manual is almost unnecessary, as you can obtain information on the various options and icons in the menu by simply clicking on them. As in *Saloon Cars*, when you win a race, you receive cash to enable you to increase your car's performance. Tyres, engine, nitro fuel and turbo boost upgrades are all available, and if you later decide that you don't need or want an upgrade, you have the option to sell it.

VARIETY IS THE SPICE OF LIFE?

The game provides several configuration options, which vary from the type of music you prefer to drive to, to the quality of the graphics. Before you can enter a money-earning race, you have to qualify, which involves participating in a qualifying race. The car can be controlled with keyboard, mouse or joystick, and the joystick port on the A3010 is catered for. No matter what controls you opt for, the road handling abilities of the car are, in a word, fun! Throw it over hills, around corners, under bridges and into sign posts, it just keeps on going.

WILL I BE ABLE TO STAY ON THE TRACK?

Unlike *Chequered Flag* and *Saloon Cars* the steering in *Stunt Racer 2000* is very responsive, with the wheel turning when and where you want it to. There is no stalling, and the gears are automatic. Reverse is very handy when you overshoot corners or you just want to take a ramp backwards. For once, the computer controlled cars are not Scalextric in their ability to go round corners at top speed and stay on the track. They have the odd mishap, and take corners badly, giving you the chance to drive them off the road. If you get bored with playing against the computer, or the clock, then *Stunt Racer 2000* offers you the ability to play against a friend, using either a split screen effect, or via a serial connection to another Arc. A variety of camera angles are available while

Stunt Racer 2000

Nathan Brown slips, slides, ducks and dives round the courses of The Fourth Dimension's latest driving game.

playing the game, or when you are viewing your efforts from the replay option. The graphics are simple but effective, and sound effects consist of the usual screech as you accelerate or go round the corner.

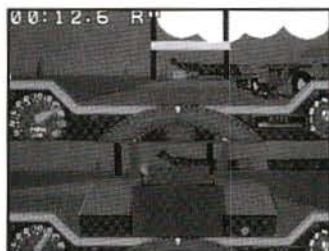
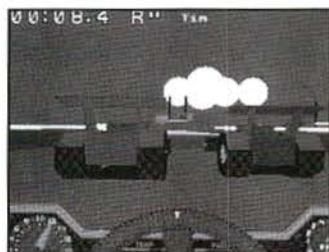
One of the options that makes this game shine is *Killer mode*. A rather dramatic choice for two players only, you pit your wits against your opponent in one of two arenas. Each arena has six gateways leading to more perilous battlegrounds, including tracks suspended high in the air and giant hammers trying to nail you into the ground. You basically have to smash each other off the track or into the obstacles.

LET'S PLAY POOL

Another fantastic arena is one in which you play snooker with your opponent, ramming large spheres towards each other. Excellent! And if you happen to become bored with all of this, extra tracks will soon be available.

THE VERDICT

I can only say that this is the best fun you can have on four wheels with your Arc. Most racing games get a bit repetitive after the first few laps, but with mountain-high ramps and excellent game play, *Stunt Racer 2000* should provide endless entertainment. To leave you with a thought, why stop with a serial cable. In theory it would be possible to play over a modem link! Could this be *International Stunt Racer 2000?*



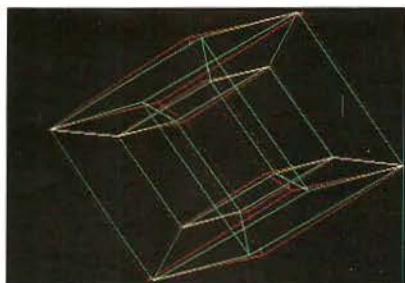
PRODUCT INFO

Product	Stunt Racer 2000
Supplier	The Fourth Dimension 1 Percy Street, Sheffield S3 8AU. Tel. 0742 700661
Price	£34.95 inc. VAT



RISC User Disc November 1993

Rotating HyperCubes



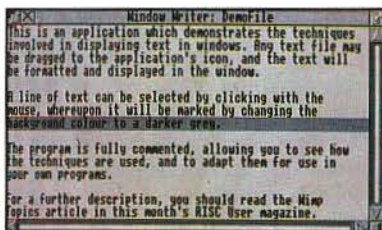
This program attempts to give you an impression of the fourth dimension by allowing a projection of a hypercube to be rotated on screen. Equipped with red/green glasses, or good control over your eyes, you will be able to see a truly remarkable three-dimensional animation in which the projection moves, turns and distorts as the hypercube rotates. More information on this program, and how to get by without red/green glasses, can be found in the article *Exploring Hyperspace* in the magazine.

Text Kerner



Kerning is a powerful typographical technique for moving characters closer together, thus enhancing both the design of the page and the readability of the text. This little application, for RISC OS 3 only, demonstrates the use of the kerning tables built into many RISC OS 3 fonts. It is the perfect complement for *Draw*, which can display kerned text but provides no facility for actually performing the kerning. Kerning is described in the *All About Outline Fonts* article in the magazine.

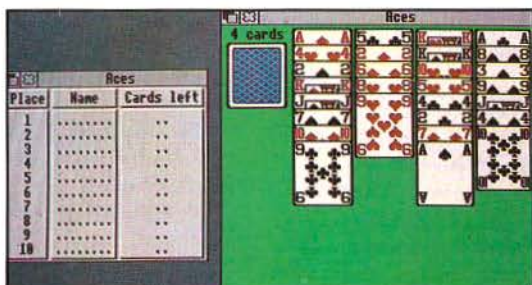
Window Writer



This application, illustrating the *Wimp Topics* feature in this month's magazine, demonstrates the types of routines used by many text editors and DTP applications for displaying large blocks of text in a window, scrolling text by a full line at a time, redrawing certain areas of text, and highlighting words, lines and blocks.

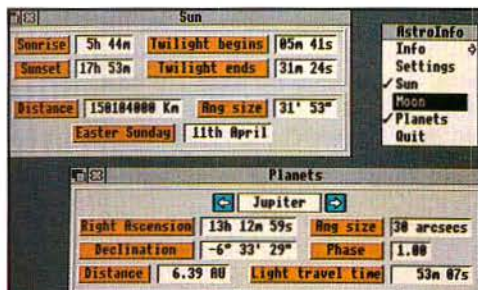
BONUS ITEMS

Aces Patience



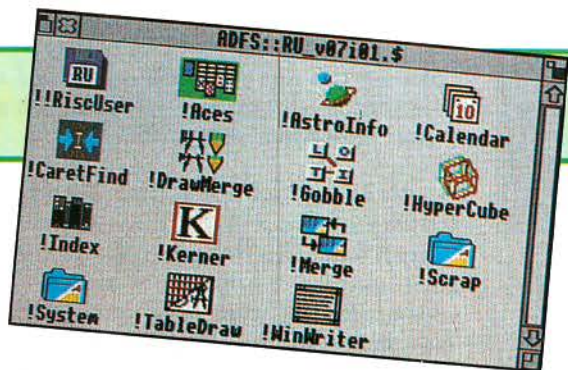
Aces is an addictive version of Patience that runs on the Desktop. It has attractive and colourful cards, as well as a full high score table. The aim of the game is to end up with the four aces exposed, one at the bottom of each column.

Astronomical Information

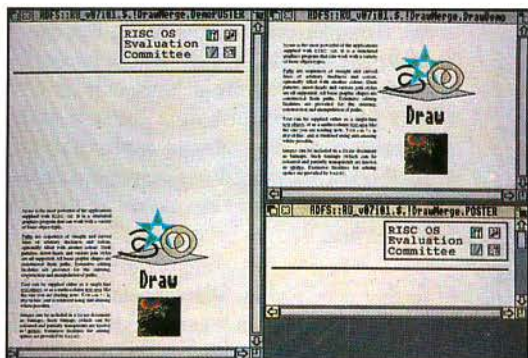


This application provides extensive astronomical information on the Sun, Moon and planets from any given longitude and latitude. It can also be used to determine the day of the week on which a particular date falls, and the date of Easter Sunday.

This action-packed magazine disc costs just £4.75 inc VAT.



Draw File Merger



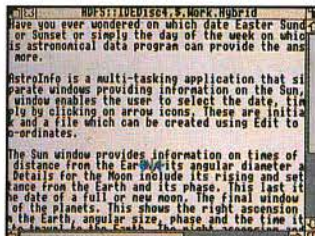
DrawMerge will prove an excellent addition to your CAD utilities directory. It is a very simple application that merges the contents of two Draw files into a single file, with all the objects in the new file retaining their original positions on the page.



ArcScan Data

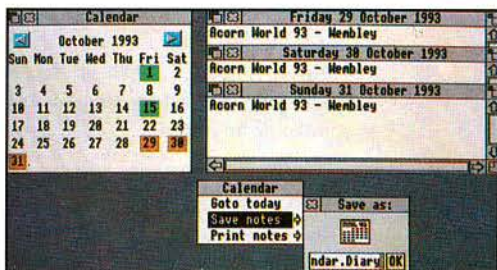
ArcScan Indexes for this month's RISC User and BEEBUG Vol.12 No.5.

Missing Caret Locator



CaretFind is an invaluable utility that sits on the icon bar and displays the position of the caret when you click on its icon. It will work with any application that displays the caret, whether it be in a writable icon, text editor or DTP window, or CAD or art package that allows you to enter text. It is an absolute must for all A4 users!

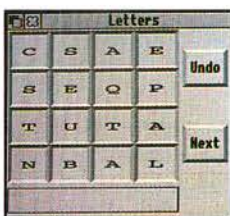
Desktop Calendar and Diary



Calendar is a considerably enhanced version of the *Desktop Diary* application originally published in RISC User 2:9 and 2:10. Its most important new feature is the recurring dates option. Any note that you enter in *Calendar* can be set to repeat either monthly or yearly, and up to ten note windows can be opened at a time.

ADDITIONAL ITEMS DESCRIBED IN THE MAGAZINE

Gobble - The Word Game



Gobble is a challenging word game that will tax your mental and verbal skills. The object is to try and create as many words as possible from a grid containing sixteen random letters. In a race against the computer, you only have as much time to

find words as it takes *Gobble* to scan through its entire dictionary and compile a list of all the possible words.

TableDraw - Table Generator



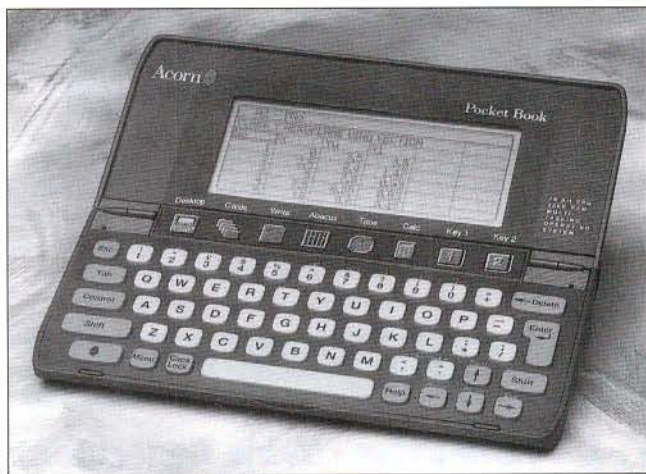
TableDraw is a useful utility for creating tables containing information from spreadsheets, databases or even plain text editors. The tables are created in Draw file format, with all the text in the font of your choice, and can be

edited, modified, rotated, stretched and distorted before importing into your word processor or DTP package.

Palmtop Scheduler

David Cooper finds out if Acorn Schedule and Event from ExplAN, can help you organise your life a little better with the help of your Acorn palmtop.

Ever since I got my Pocket Book, I could not help feeling that Acorn got it wrong when deciding what to take out of the Psion Series 3 to make their palmtop. Considering that this machine was aimed at the schools market, the *Agenda* time management and organiser application found in the Series 3 would have been very useful for keeping track of a school timetable and homework. Instead, Acorn seem to have waited while they wrote their own version - Acorn *Schedule*. ExplAN have also released a complementary product for your Arc called *Event*, so you should be able to



The Acorn Pocket Book

SCHEDULE

Schedule, like *Agenda* on the Psion, is designed to prevent you forgetting meetings or appointments, or perhaps more importantly your wedding anniversary (missing either could be more than your life's worth). It also allows you to make notes and keep track of your outstanding tasks. It does this by providing a monthly calendar, a weekly timetable of appointments, a list of daily

appointments, a page of notes for each day and a 'to do' list: in fact everything you can do with a Filofax, which is pretty much its purpose.

Possibly the most used feature of *Schedule* will be the 'week at a glance' display, which contains the currently selected day, and uses vertical arrows to show how the time in each day is used up with appointments. You can get a more detailed display of the week by pressing a button on the hinge that you assign to *Schedule*. The weekly timetable is displayed in the form of a horizontal bar graph, with a box representing each appointment. Inside each box are the details of that appointment taken from the daily list of appointments. The longer the appointment, the bigger the box and the more details that can be displayed. Unfortunately, short appointments of say an hour, only get a few letters (the number of letters depends on the proportion of the day you want displayed on your timetable). This should not be too much of a problem as abbreviations can always be used to fit inside the box.

If further details of an appointment are needed, then pressing the *Schedule* button again brings you to the daily list of appointments. Any appointment from the daily list can be repeated daily, weekly, monthly, on a particular day of the month, yearly, even work days only (and by using the *Time* application, you can tell it which days of the week you work). It is also possible to set an interval for any of these periods. So if needed, it is easy to set an appointment for the first Tuesday after the 8th on every alternate month. This should be flexible enough for all but those with the strangest of routines.

The *Day Notes* provides an ideal place to keep track of things like birthdays or anniversaries. As with the daily appointments, any note can be repeated with the same flexibility. A nice little feature is the ability to take a line from the *Day Notes* and use it as a title for the appointments for that day. That way, any important fact about a particular day will not get overlooked.

When entering an item on to the *To Do* list, you are asked to provide a subject matter, a priority of either *Low*, *Medium*, *High* or *Urgent* and a due date. With this information the list of things to do is displayed in order of priority and due date. As these lists get much too long for such a small

screen, it is possible to display a list relating to a particular subject matter.

Any appointment, note entry, or item on the *To Do* list can have an alarm set to go off up to 23 hours in advance. When this happens a message giving the details of what the alarm was for is displayed. When *Schedule* is turned off, the details of the next alarm are passed to the *Time* application (which cannot be turned off). The *Time* application will display details of how long before the next alarm. This is very useful, as *Schedule* seems to be quite memory hungry, particularly in its use of system memory, so it is not always going to be possible to leave it active at all times.

Unfortunately, the review copy of *Schedule* was not accompanied by a manual, so I cannot comment about this. However, the fact that it was not missed is a testament to how easy it was to use *Schedule*. Ample explanation of any of the advanced features was provided by pressing the Help key on the Pocket Book.

I found that *Schedule* was just what I had been waiting for. Its omission had, at one stage, caused me to regret not buying the Psion Series 3. It would be nice, therefore, if *Schedule* could be included with the Pocket Book in future, say squeezed onto the SSD with the *Spell* application. It compares favourably to the *Agenda* on the Series 3 providing all but the most obscure facilities that *Agenda* provides

My recommendation is that if you have a Pocket Book then buy it - already I am finding that I cannot live without it.

EVENT FROM ExpLAN SOFTWARE

To coincide with the release of Acorn *Schedule*, ExpLAN Software, a new contender in the Acorn software market, has released a diary program called *Event* for the Archimedes that talks to either Acorn *Schedule* or *Agenda* on the Psion Series 3.

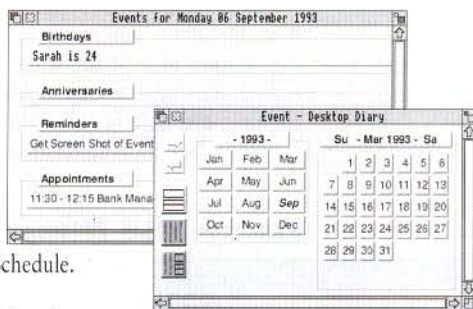
It is described as the 'little brother' of a larger package called *Occasion*, which is being developed to include a telephone and address book, a note book and more. *Occasion* will also talk to the Pocket Book, and is due for release later this year.

The fact that files can be transferred between *Schedule* and *Event* means that they both have

quite a similar feel. Apart from the fact that the displays are larger, there are few other differences. The *day notes* on *Schedule* have now been split into three categories: *Birthdays*, *Anniversaries* and *Reminders*. When transferring to and from *Schedule*, a prefix of *Birth* or *Anniv* is used to ensure compatibility. There is an example data file containing a number of historical birthdays and other important dates. The *weekly timetable* display is vertical and therefore does not contain text in each item. Clicking on the box brings up the appointment details.

There is also a 'pattern' system for irregular schedules like those operated by shift workers. Unfortunately it is not 100% compatible with *Schedule*.

The manual is well written and the program works well. I had no difficulty transferring to and from the Pocket Book, although I did manage to crash the program by opening lots of windows. I am not normally a big fan of diary/organiser programs on the Archimedes, as I do not have time between appointments to return to the computer at home just to find out what to do next. That is what makes the Pocket Book so useful. However, the fact that *Event* talks to the diary/organiser that I do use makes it very useful, particularly for printouts. I'm looking forward to *Occasion* which sounds promising.



Event running on an Archimedes

PRODUCT INFO

Product Supplier

Acorn *Schedule*
Acorn Computers Ltd.
Acorn House,
Vision Park,
Histon,
Cambridge CB4 4AE

Price

Tel. 0223 254254
£49.95 inc. VAT

Product Supplier

Event
ExpLAN Software UK Ltd.
St Catherine's House,
20 Plymouth Road,
Tavistock,
Devon PL19 8AY
Tel. 0822 613868
Fax 0822 610868

Price

£24.95 inc. VAT



Adventuring in Education

Mark Sealey reviews two educational adventures from 4Mation and Sherston Software.

INTRODUCTION

Simulations - where the computer allows exploration of a situation or environment that would otherwise be impossible - were amongst the first, and remain some of the most effective, types of educational software.

Darryl the Dragon

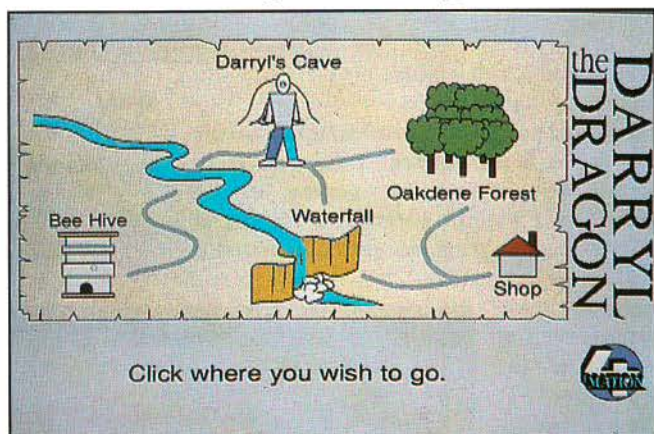


Figure 1.
Darryl the Dragon

This new 'problem solving adventure' from 4Mation has several things in common with ArcVenture (see opposite). In the first place, it builds on the successful format used, for example, in *Noot* (reviewed in RISC User 6:4). It is intended for roughly the same age range (Key Stages 1 and 2, though if anything is more suited to slightly younger users).

Its graphics and animation styles are similar, and it employs a similar graphical (point and click) method of moving through the scenario to other 4Mation products and to ArcVenture

PRODUCT INFO

Product	Darryl the Dragon
Supplier	4Mation 14 Castle Park Road, Barnstaple, Devon EX32 8PA. Tel. 0271-25353, fax 0271-22974
Price	£19.50 inc. VAT and p&hp

III. It should be seriously considered as an addition to your software library if you make heavy use of this type of software, and looked at carefully as an exciting and original departure if, as yet, you do not.

THE 'GAME'

Reading the short story at the front of the well produced teacher's book sets the scene: Darryl is a good dragon, living in the traditional fantasyscape of forests, castles and chasms. But he has lost his fire, handkerchief and matches and has a cold. What could be worse for a dragon? The children's job is to help him regain the objects and thus offset the effects of his cold. To do this they are sent on a series of errands to complete tasks of differing complexity (whose level of difficulty can be simply controlled by the teacher) until - in standard adventure style - all is well again.

There are five main locations (figure 1), and the activities to be carried out at each depend on having successfully found something (typically a coin or can of smoke etc.) at one site before another can be completed. The puzzles are of different types and require a variety of strategies and skills... verbal, mathematical, logical and so on. Some are much easier than others thus ensuring a valid blend of positive feedback and challenge.

CONTROL

The state of the game can be saved at any point, the volume of the sound effects changed to suit circumstances, and the whole program can be run either taking over the whole screen or in a separate window. All of this is accomplished effortlessly and adds to the flexibility of use which can be made from the package.

USE

4Mation has - as usual - provided ample guidance for ways in which *Darryl the Dragon* can be used in most areas of the primary curriculum. There is a set of extra photocopiable activity sheets available to extend this work (price £11.75 inc. VAT). For those floored by this type of adventure there is a partial crib at the back of the teacher's book. Classes engaged on most topics should find a place for Darryl since the aspect of learning which it was designed to stimulate - measured and careful problem-solving - comes into so much good work nowadays.

ArcVenture III - The Vikings

Sherston Software has developed particular expertise in this field, and previously released two titles in the ArcVenture series centred around archaeological digs on Roman and Egyptian sites. These correspond to National Curriculum Core Study Units and are aimed chiefly at pupils at Key Stage 2 (upper primary) but could successfully be used up to the end of Key Stage 3 (lower secondary).

The format of the third in the series - *The Vikings* - is broadly similar to that of the other ArcVentures. The pupils take part in a contemporary excavation: this time the site is tenth century Jorvik (York).

The main educational purpose - and a sound one, too - is to discover as much as possible about the daily life of these Vikings through objects which the pupils discover in the course of their explorations.

There are various options governing the way this happens. You have two weeks to complete your excavation, time being allotted and subsequently used according to the activity... one hour to uncover a level with a spade, two hours with a trowel etc.

SCORING

A record is kept of objects that are found and points are awarded for using tools correctly, solving puzzles about the objects and for answering various questions relating to them. This system is implemented consistently, and provides a useful extra motivation, although the scenario is sufficiently well constructed and illustrated (figure 2) for this not really to be necessary.

ArcVenture III consists of two main phases. During the excavation a total of twenty objects scattered throughout the site are to be found. The computer (situated in the information hut) has details on twelve of these. The other eight objects are placed in different positions each time the simulation is run and are 'unknown' to the computer.

THE EXPEDITION

On finding one of these objects, the expedition phase begins as the pupils are sent back in time - along a time line to Viking Coppergate in Jorvik -

to discover what they can about the artefact for themselves.

In some ways this is the more satisfying - and challenging - portion of the package. Pupils are encouraged to make scrupulous notes of what they uncover at this point although the journal is not accessible during this phase; they can 'talk' to people living there, ask questions to isolate the necessary attributes of what has been found, and think of ways of using them and even reconstruct them.



Figure 2. Viking ArcVenture III - exploring Jorvik

IN CONTEXT

ArcVenture III - The Vikings has been well thought out; just the right amount of information is contained in the simulation; relevant and useful resource material comes as part of the well-priced pack in the form of maps, suggestions for use, curriculum areas covered and related sprite and Draw files for use in other applications... displays and DTP project material, for instance.

The manual is to Sherston's usual high standard. Mention must be made, finally, of the Viking 'film' that can be run from the Desktop as a vivid and compelling introduction to the topic. All in all, ArcVenture III is unhesitatingly recommended - indispensable, even, for anyone tackling this fascinating period with pupils from six or seven to fourteen.

PRODUCT INFO

Product	ArcVenture III - The Vikings
Supplier	Sherston Software Swan Barton, Sherston, Malmesbury, Wiltshire SN16 0LH. Tel. 0666-840433, fax 0666-840048
Price	£37.54 inc. VAT and p&p



All About Outline Fonts (Part 3)

In his concluding article about fonts, Kell Gatherer looks at font design and the use of fonts in publishing.

FONT DESIGN

FCreating an outline font for the Archimedes is a labour-intensive task, and has as much to do with art as computing. There are some applications available which can help however. Acorn's *FontEd* was mentioned in the last article, and remains the only serious piece of available software dedicated to font creation. Regrettably, you can't import Draw files into FontEd, but there's an excellent application called *D2Font* from David Pilling, which converts Draw files to outline fonts. Along with *D2Font* comes an application called *Trace*, which converts sprites to Draw files - you can therefore scan fonts, drag them into Trace and once converted drag them into *D2Font* to create a font. In fact, that process is very time-consuming, and you'll still find a lot of tweaking to be done in FontEd at the end.

Getting used to FontEd can take some time, but it does make extensive use of the interactive help system which can provide quite a few clues to some of the more obscure facilities. It is easy to copy characters from one ASCII position to another, meaning you can create an 'E' from an 'F' for example. A sprite of a scanned character can be dragged into FontEd as a template to assist with the creation of a character. Also, because FontEd allows you to have more than one font loaded at a time, it is possible to 'borrow' characters from an existing font and import them into the one you are creating, by dragging from one window into the other. You can even drag a character from one window to another, alter its design size, and drag it back again - so having created the numerals 1 and 2, you can reduce them and merge them to create the 1/2.

FontEd's path editing capabilities are in fact fairly basic, and *D2Font* allows you to make

proper use of the better facilities in Draw (or even ArtWorks, exporting in Draw format). Really, this has to be seen as the only proper way to get geometric designs such as concentric circles into a font.

A RISC OS 2 font (version 6 or earlier) can have a maximum of 223 characters - ASCII 32 to 126, and 128 to 255 (character codes 0-31 and 127 are not printable). Only characters below 127 and above 139 have specific definitions in the Latin 1 alphabet, and a lot of the characters above 139 are in fact composites - for example the double-dot that appears above a vowel in certain European languages is known as the dieresis, and appears as ASCII 168. Character 246 is o-dieresis (ö), and character 255 is y-dieresis (ÿ). Rather than create a new outline for each of these characters, the font format allows a character to make reference to others that are already defined - in other words the 'o' is taken from the normal 'o' (ASCII 111) and the dieresis from the dieresis (ASCII 168). This is done by Shift-Adjust-dragging characters in FontEd, but the effect is to reduce the overall file size and save a lot of design time. The plus-minus sign † is thus simply and quickly created from the plus and minus signs you've already designed, and you'll probably find yourself using the full-stop time and again in the definitions of other characters.

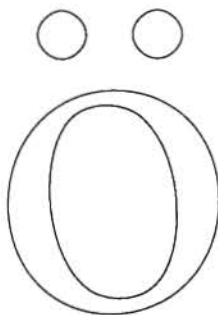


Figure 1.
o-dieresis created by merging an 'o' and a dieresis

The font specifications have been changing over the past few years, and the latest RISC OS 3 fonts are now version 8, which may have many more characters defined. In RISC OS 3, if you load *Homerton.Medium* into FontEd from ROM (click menu on the Apps folder and enter the Fonts directory) you'll see that there are actually 416 characters defined, and that a considerable number of them are not where you would expect them to be. This is because the RISC OS 3 font definitions can make reference to separate encoding files which can alter the positions of characters according to the country of usage.

RISC OS 3 fonts use a considerably more complex file structure than the earlier versions, and we can be thankful that the Font Manager copes with all variants invisibly. RISC OS 3 fonts are now becoming more readily available, although the only discernible difference from their predecessors is in the provision of kerning tables.

At the time of writing, few software applications can display auto-kerning, but one is the RISC OS 3 version of Draw. However, you cannot enter such text directly. On this month's magazine disc is an application called *Kerner* which demonstrates this facility - you may enter a text line in Draw, drag it to the Kerner icon and then back into Draw. The resultant text line will show auto-kerning in action (if indeed there is kerning information for any of the character pairs). *Kerner* works by converting an ordinary text area object (object type 9) into the new RISC OS 3 'transformed text object' (object type 12). Setting bit 0 of the font flags in this object type kerns the text.

Trinity:
 unknerned: AVIATION
 kerned: AVIATION

Figure 2.
 Unknerned and knerned text

ITALICS AND OBLIQUES

Many typefaces have an associated italic version, which is usually an entirely different alphabet in a similar style, and which must be created separately. An oblique version is in fact exactly the same alphabet which has been made to lean to the right - see figure 3. Another excellent application which helps with the creation of an oblique version is the misnamed *Italic* from Design Concept. Having created your font, *Italic* quickly and painlessly creates an oblique version in the same directory.

THE PRODUCTION OF ARTWORK

There is now a profusion of public domain fonts available for the Archimedes, with a wide range of headline and fancy fonts becoming available, and some suitable for body text. In certain applications, however, this is not necessarily an advantage. The *serious* application of DTP has to be seen as the production of camera-ready artwork for printing, via an image-setting

machine at a DTP bureau. The output from an image-setter is of very high quality indeed, normally 1270 dpi, and will appear on a kind of photographic paper called a *bromide*. Such image-setters make use of the PostScript image language, and generally have copies of hundreds of commercial fonts in memory.

Because the font held in the image-setter is a separate entity to the font in your Archimedes, the relationship between the two is crucial. If a PD Archimedes font calls itself Garamond, it is entitled to do so, because the copyright on that particular typeface expired some time ago. But that is not the same as saying that it exactly corresponds with the Garamond font produced by, let's say, Monotype, which may be resident in the PostScript printer. The differences may be practically invisible to the eye, but tiny variations in the widths of individual characters may result in a line of type spilling over the end of the right hand margin, making full justification an impossibility.

Anyone wishing to design fonts for the Archimedes should bear this in mind - you can only claim that a font is PostScript compatible by paying a licence fee to the originators of the font and gaining access to the exact character widths and heights of the original. Even then you have to be aware of the exact typeface in the PostScript device - there will be differences between the Garamond faces produced by different manufacturers.

Roman: The Quick Brown Fox
 Oblique: *The Quick Brown Fox*
 Italic: *The Quick Brown Fox*

Figure 3.
 The difference
 between Italic
 and Oblique

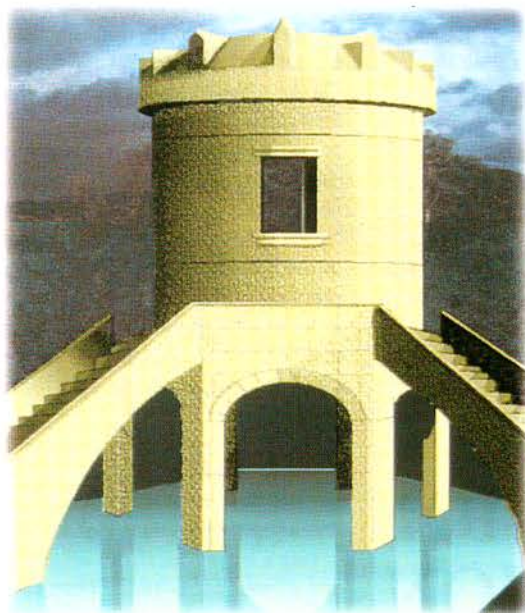
There are two ways round this: stick to typefaces in your documents that you know to have direct PostScript equivalents, or arrange to download the font of your choice to the PostScript device. Downloading a font consists of sending a definition of each and every character to the PostScript printer - the disadvantage being a dramatic increase in file-size. The conventional route to a DTP bureau is via an IBM-compatible floppy disc, so your file-size is normally limited to 720K, not a lot if you are also having to download non-standard fonts as well. Your original Impression

continued on page 62

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This month we take a look at DOS file security on the PC. The most obvious security concern at present - viruses - we're not going to touch on at all. Instead we are going to look at commands within DOS to help us keep our data and files in good order.

VERIFY

If you click your menu button over a RISC OS disc drive icon you will see a menu item *Verify*. Selecting this item scans through every sector on the disc and reports whenever a bad sector is discovered. When you format a disc to an ADFS format, the disc is automatically verified and any bad sectors are mapped out.

As with many things, DOS is not as smart as it might be. The DOS VERIFY command does not check discs for integrity. It merely checks that a file can be read back with no errors, and it does this when that file is being written to disc. It does not scan every sector on a disc like the ADFS equivalent. Typing VERIFY ON will switch the facility on, and obviously VERIFY OFF will turn it off again. If you are not sure whether it's on or off, typing VERIFY alone will tell you. The price, for the peace of mind of knowing that the data has been saved properly, is a longer save time. This might not be noticed for short files but might be a problem for longer ones. This peace of mind, however, is limited since VERIFY does not check that the data can be recovered from the sector it has just been saved to.

Unfortunately, although the ADFS *Verify* command will detect all the bad sectors on a DOS disc, it will not map them out for you. If you really do need a cast iron check on your discs you will have to buy one of the many utility programs which provide full verify and map out facilities (the one I use is an ancient version of *PCTools*).

Although using the VERIFY command will pick up some faulty saves, others may be missed, and in any case, floppy discs do from time to time sprout a bad sector or two spontaneously. So what can you do if you try to read a file and you get the message:

```
Sector not found error reading drive A
Abort, Retry, Ignore, Fail?
```

First - don't panic! All may not be lost. There is always a slight chance that pressing 'R', to try again, will do the trick. If that doesn't work then

The PC Emulator Survival Guide (Part 8)

by Gordon Gilmore

you might press 'I'. The bad block would be ignored, and hopefully the remainder of the file would be read. The result will be an incomplete file but if it contains only text, the recovered portion may be better than nothing. The missing portion could easily be typed in again. A missing block from a binary file, such as a program, is usually fatal and you will have to resort to your backup. (What no backup! - read on.)

The 'F', for 'Fail' response to a bad read operation would allow a succession of commands to continue after ignoring the current command altogether. A useful tip in this context is that it may be better to abort, 'A', rather than fail a faulty read operation. Suppose you are updating a file FILE.EXT on your hard disc by copying from floppy:

```
COPY A:FILE.EXT
```

If the read fails and you abort the command you may find your original copy still intact. 'Failing', the command will delete the original hard disc file on the assumption that it holds invalid data.

RECOVER

Having found a bad sector on a disc it is as well to deal with it as soon as possible, and for this purpose we have the DOS command RECOVER. There are two ways in which you can use this command: on a file-by-file basis, or to recover complete directory data. However, before launching into that it would be a good idea to copy as many of the files

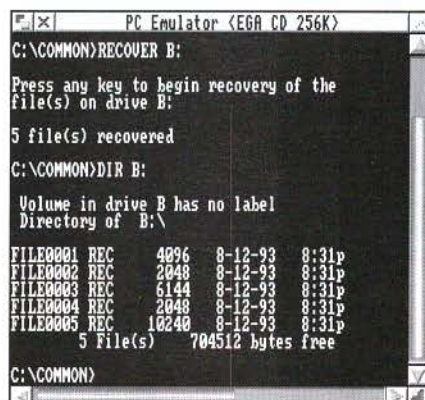


Figure 1. Use of RECOVER to rebuild a disc directory

from the corrupted disc to a new disc before starting the recovery process. For a floppy disc that would be easy; for a hard disc that really means a complete backup to floppies. Whatever else you do, it would be a good idea to make a copy of the disc directory either as hard copy or a copy on file (not on the dodgy disc!) for future reference.

Now let's pretend that I have a file called LOG.TXT on a floppy disc in drive B which I know to have a bad block in it. I recover the file by specifying the filename in the command as in the following dialogue:

```

PC Emulator (EGA CD 256K)
C:\COMMON>CHKDSK B:
Volume 20_20_Thu created Aug 12, 1993 7:22p

Errors found, F parameter not specified.
Corrections will not be written to disk.

B:\LOG.TXT
Allocation error, size adjusted.

730112 bytes total disk space
0 bytes in 1 hidden files
24576 bytes in 5 user files
1024 bytes in bad sectors
704512 bytes available on disk

655360 bytes total memory
599120 bytes free

C:\COMMON>

```

Figure 2.
CHKDSK
used after
RECOVERY
of a file

```
C:\COMMON>RECOVER B:LOG.TXT
```

```
Press any key to begin recovery of the
file(s) on drive B:
```

```
4096 of 5120 bytes recovered
```

```
C:\COMMON>DIR B:
```

```
Volume in drive B is 20_20_Thu
Directory of B:\
```

LOG	TXT	5120	8-09-93	3:48p
PROG	DAT	1678	3-17-87	12:00p
PROG2	EXE	5825	3-17-87	12:00p
PROG	COM	1561	3-17-87	12:00p
PROG2	SRC	9529	3-17-87	12:00p
5 File(s)		704512 bytes free		

```
C:\COMMON>
```

RECOVER has copied as much of LOG.TXT as possible to a new location on the disc and marked the bad sector for future reference. Now, because of the bad sector, there must be chunk of data missing. RECOVER told us that it had recovered 4096 of the 5120 bytes it was expecting but the directory entry still indicates the full 5120 bytes. This means that the directory information and the file allocation table (the

FAT - which is used to keep track of which blocks on the disc belong to which file) no longer match.

We can put this right by using CHKDSK but before we do this we will look at the second use of RECOVER. This is a pretty disruptive operation and should not be undertaken lightly. Normally it would be much quicker and easier to restore the files from your backup copy. This form of the RECOVER command, specifying only the drive letter, is intended to rebuild the whole directory and FAT of the disc, should it become corrupted. Figure 1 shows the command in action, and the result.

Used in this way RECOVER searches the disc and assumes that each group of linked sectors is a file. It has to assume that the data in the directory is invalid and gives each file a new name such as FILE0001.REC etc. Although this will cope with the problem of a bad sector in the directory, RECOVER has not looked for or repaired bad sectors in the bulk of the disc.

There are now two problems: firstly which file is which, and secondly which are the bad files. To find the bad files we must use the file-by-file form of RECOVER we looked at first. Finding the corrupted file is often painstaking, but can be helped by comparing the file lengths in the recovered directory with the original file lengths. However, you must be aware that the new file lengths will be rounded up to whole sector sizes and will not necessarily be in the original order. When you think you have found the file, try TYPEing it to confirm you have the correct file.

CHKDSK

The DOS manual says that CHKDSK checks and repairs errors on discs, which is a little misleading. The only errors CHKDSK repairs are logical errors, and not physical errors such as bad sectors. So, CHKDSK will sort out the problem we had above where the directory entry was inaccurate but will not find, or map out, bad sectors.

Figure 2 shows the dialogue when CHKDSK is used immediately after recovering LOG.TXT which, if you remember, left us with inappropriate information in the directory. You can see that the bad sector is now recognised and the size of LOG.TXT is adjusted, or is it..?

As ever with DOS, things may not be as they seem. CHKDSK will not actually make the corrections to the directory unless you specifically ask it to. The command in this case should have been:

```
CHKDSK B: /F
```

where the /F means 'fix it'.

Ideally CHKDSK should be run from time to time to pick up lost clusters and release them for general use. Lost clusters can arise from files disrupted by bad blocks as we saw above but can also arise if applications are not shut down properly, for example, by a sudden power failure or computers being turned off unexpectedly.

BACKUP

Basic data security can only be maintained by a proper backup schedule. We all know this and we all cheat (at least, until we lose a hard disc full of data.!) The conventional advice for a hard disc would be as follows:

- 1) Do a complete backup to floppies at the same time every month.
- 2) Do an incremental backup (that is only those files which have been changed since the last backup) at the end of the working day onto a second set of discs.
- 3) At the end of the next day do the incremental backup onto a third set of discs.
- 4) Alternate the second and third set of backup discs from day to day.

To do a complete hard disc backup the command is quite simply:

```
BACKUP C:\ A: /S
```

The /S switch makes sure that all sub-directories are backed-up as well. All you have to do now is to insert floppy discs when told to. You will, in all probability, need a large number of floppy discs and the process will take a long time. You can append an /F switch to the backup command to tell the program to format the floppy discs prior to storing the backup files on them. I prefer to pre-format them using the ADFS format because this enables me to reject any with bad sectors. To estimate the number of discs you need, take the total disc capacity for your hard disc, subtract the number of free bytes (given

by DIR), divide by 1000, and then by 720 (for 720 K discs) and then add one or two for good measure.

Incremental backups are performed using the command:

```
BACKUP C:\ A: /M
```

where /M means modified files only. All DOS files have an archive attribute bit which is set whenever a file is written to. BACKUP resets the bit after backing up the file and can tell, therefore, which files have been modified. As with all backup facilities you can also archive only those files modified after a certain date. Another feature I find useful is the backup log. For example:

```
BACKUP C:\ A: /S /D:13-03-93 /L:BACK.LOG
```

will backup all files on the hard disc created on or after the date given, and leave a list of all the files together with the number of the backup disc in a file called BACK.LOG. Afterwards this can be sorted using:

```
SORT /+6 < BACK.LOG > SORTED.LOG
```

In future if you wish to restore a single file you will be able to pick out the appropriate backup disc immediately from the sorted list.

BACKUP does not compress files in any way, and there are obvious attractions to using programs such as PKZIP, a shareware program for creating compressed archives. This will certainly cut the number of floppies needed by almost a factor of two but will take considerably longer because of the time needed for the compression. There is obviously scope for using RISC OS applications to do your backups but space does not allow me to discuss them here.

RESTORE

This DOS command restores backed up files to the appropriate place on disc. For example:

```
RESTORE A: C:\UTILS\PROG.EXE /S
```

would restore PROG.EXE to the UTILS directory. RESTORE will expect to run through the backup discs in order, searching for the file to restore. But if you insert the disc which you know the file to be on you can bully RECOVER into accepting the disc by ignoring the 'diskette out of sequence' warning message. RESTORE has several switches to allow partial restoration, which I must leave you to look up yourself in a DOS manual.



HINTS

&

TIPS

Keep sending in your hints on anything relevant to the Archimedes range. And remember, we pay for every hint we publish.

OBEY FILE ERRORS

Lee Calcraft

If an error box appears on the Desktop which does not specify which task it comes from, it is likely that this is caused by an error in an Obey file, and in particular the !Run file of an application which has just been launched.

It would be very helpful if future versions of the OS could display the name of the file in such cases - Acorn please note!

When such errors occur, the Obey file stops executing at the line in error, and it can be hard to sort out what is going on. For example, you might get:

```
Too long
```

as the entire error message.

One way to track down such errors is to insert the line:

```
ERROR "Program halted"
```

halfway down your Obey file, and run your application. If you see the *Program halted* message in an error box, you know that the Obey file error lies after this line. Then simply move the ERROR line around until you have tracked down the bug.

LOST APPLICATION SPRITES

Graham Crow

Some Applications do not include a line such as:

```
IconSprites <Obey$Dir>!Sprites
```

in their !Run file. The result is that if such applications are dragged onto certain applications, such as *Menon* the popular application launcher, their icon fails to appear on the icon bar. To remedy this, simply add the above line to the !Run file.

WORK AREA IN Edit AND DeskEdit

Lee Calcraft

The *Edit\$Options* code to set the width of the work area in an Edit window is:

```
Ann
```

where *nn* is the number of characters required. Thus to set a window width of 60 characters use:

```
*Set Edit$Options A60
```

All windows opened after that point will have the new maximum work area width.

DeskEdit\$Options works in the same way, and you may like to add the *Ann* command to the *DeskEdit\$Options* setting in DeskEdit's !Run file.

AUTOMATIC HI-RES RESOURCE ICONS

M.J.Ebourne

A little-known feature of RISC OS 3 appears to be that placing copies of both a !Sprites and !Sprites22 file in *Resources:\$Resources.Wimp* using a resource utility such as ResourceFS (RISC User 6:5 magazine disc), you should find that the Wimp will automatically use the correct set of icons (i.e. low or high resolution) for the mode you are in. The same is true for Sprites23 files too.

This should make programs such as !ResoIcons, which performs a *IconSprites every time a mode change occurs (sometimes taking a noticeable amount of time to do so) somewhat redundant. This is why most disc-based applications have all three !Sprites, !Sprites22 and !Sprites23 files inside them. The Filer will then display the correct hi-res or low-res icons for the mode you are in.

RISC User DESKTOP DIARY UPDATE

Mike King

Mike Ironmonger's Diary application (RISC User 2:9) has, with the changes in RISC OS, developed a nasty habit of generating a variety of errors when other applications are installed alongside it on the icon bar. There is a simple solution to this problem. You should change line 3270 of the program from:

```
DIM block% 90,menu% 400
```

to:

```
DIM block% 150,menu% 400
```

This fix should extend the life of this very useful application.

REPLACEMENT FOR VDU 2

Graham Crow

SYS "OS_PrintChar" is a useful call. It sends a character to the printer stream and may be used directly, with no need for VDU 2 or writing to the file *printer*. Here are a couple of procedures which make use of this call:

```
DEF PROCprintstring(str$)
LOCAL J%,c$
FOR J%=1 TO LENstr$
c$=MID$(str$,J%,1)
SYS "OS_PrintChar",ASC c$
NEXT
ENDPROC
:
DEF PROCprintfile(fsp$)
F%=OPENUP(fsp$)
IF F%=0 THEN ERROR 255,"Debug File
not found"
WHILE NOT EOF#F%
b%=BGET#F%
IF b%=&A SYS "OS_PrintChar",&D
SYS "OS_PrintChar",b%
ENDWHILE
CLOSE #F%:F%=0
ENDPROC
```

The first procedure sends a string to the printer and the second spools the same printer output to a file. The call is fully documented in the RISC OS 2 PRM on page 188 and in the RISC OS 3 PRM on 1-521.

HALTING A SOUND SAMPLE

Dave Patten

If you are using sampled sounds which are installed as modules, and which are then played by using the SOUND command, the duration of sound output totally ignores the duration parameter in the command. Thus for example if you have a sample which plays for 30 seconds, it will still play for the full 30 seconds even when called with:

```
SOUND 1,-15,100,1
```

A simple way to stop the sound at will is to assign the sound channel to voice zero - for example:

```
*ChannelVoice 1 0
```

will silence the sound on channel 1.

CREATING EVEN MORE AIM IMAGES USING ChangeFSI

Phillip Coffey

As Peter Schmidt suggested (Hints & Tips RISC User 6:9), using ChangeFSI to convert RISC OS Sprites to the

AIM format for manipulation by the AIM image processing software is not particularly straightforward. You can use the command line format used by Peter Schmidt, or you can use the following method from either the command line or a Task Window, inserting the correct paths at the appropriate points:

```
*DIR <ChangeFSI_Path>
*ChangeFSI -Help
ChangeFSI interactive input (read FSIinfo for
command line details)
Source file: <SourceFileNamePath>
Destination file: <DestinationFileNamePath>
Output mode: AIM
(X)Scale (e.g. 2:1): =
Y Scale: =
Info on picture?
Invert picture colours?
Compute histogram of input?
Apply histogram equalisation?
Expand input dynamic range?
Sharpen picture by (e.g. 12 for harsh, 24 for
soft)
Rotate?
```

In response to the last seven prompts, just press Return in each case. This isn't, alas, the end of the story. When you load the output file into AIM it will report that no header information has been found. To remedy this, use the header file *trui+*, which can be found inside the Images directory inside AIM. You should rename this file to the same name as your output file with a "+" appended. The information inside the header file does not need to be altered, but AIM will now happily accept your image.

TASK WINDOW PROBLEMS

Andrew Brooks

If you have any programs which used to work with RISC OS 2 Task Windows, but do not display carriage returns properly with RISC OS 3, then simply add this alias to the start of their *!Run* files:

```
Set Alias$ShellCLI_Task %TaskWindow
GOS -ctrl-name TaskWindow -wimpslot 256K,
-task &%0-txt &%1
```

Note that this is a single line.

QUICKER PRINTER SETUPS

David Spencer

The RISC OS 3 Printers application has a very handy, but not well documented, short cut for setting up printer configurations. Quite simply, Shift-clicking Select over a particular printer's icon bar icon will open the *configuration* dialog box for that printer, whilst Shift-

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clicking Adjust will open the *connections* dialogue box. This is much easier and quicker than using a menu to bring up the printer control list and then another menu to open the *setup* boxes. Incidentally, always remember to click on OK in the *setup* boxes, rather than just closing them, otherwise any changes will be lost.

FILE OUTPUT USING OS_GBPB

Graham Crow

A useful SYS call often overlooked is SYS "OS_GBPB" with R0=1 or R0=2. This writes bytes to an open file at the specified file pointer (R0=1) or the current one (R0=2). R1 contains the file handle, R2 a buffer to hold the data, and R3 the number of bytes to write. The file is automatically extended if necessary. This can easily be written as a procedure, for example:

```
DIM buffer% &100
fsp$="RAM::RamDisc0$.MyFile":REM or
whatever
F%=OPENOUT(fsp$)
IF F%=0 THEN ERROR 255,"Could not
Open File)
separator$=CHR$(&A):REM linefeed
PROCwritebytes(F%,"The quality of mercy..."
+separator$,buffer%)
CLOSE #F:F%=0
OSCLI("SetType "+fsp$+" &FFF")
END
:
DEFPROCwritebytes(file%,str$,buf%)
REM write bytes to open file,
extending as
necessary
LOCAL len%
len%=LENstr$:$(buf%)=str$
SYS"OS_GBPB",2,file%,buf%,len%
ENDPROC
```

The call is fully documented in the RISC OS 2 PRM on page 872 and in the RISC OS 3 PRM on 2-65.

FASTER FONT CATALOGUING

M.J.Ebourne

An interesting feature of the new Font Manager is buried deep within the RISC OS 3 PRM. It concerns the use of message files. I'm sure many readers have a sizable collection of fonts on their hard discs, as I do. This can be somewhat of a burden, since it can take an annoyingly long time to catalogue them each time your system re-boots. A method of reducing this delay is to include a *Messages1* file inside your !Fonts directory (the 1 is the territory number for the UK, change this for other countries). The message file provides a translation table between physical *font identifiers* and *local font names*.

This message file should contain lines of the form :

```
Font_<fontidentifier>:<localfontname>
```

for example:

```
Font_Trinity.Medium.Italic:Trinity.Medium
Italic
```

I have omitted the full stop between *Medium* and *Italic* in order to make the font list look nicer in the new style font menus (e.g. Edit and Impression). The real upshot of this is that if you provide a messages file, the Font Manager does not scan the fonts directory, thus reducing boot-up time. An added bonus is that if the <localfontname> is followed by an asterisk (i.e. *) it will be taken as the default for that font family if the font is clicked on from the main font list.

FaxPack STATUS DISPLAY

Lee Calcraft

You may not have spotted that the large *Fax setup* window generated by the FPdriver application actually contains a dynamic status display. This gives call progress information, and then details about file transfer - all of which can be very handy, especially if you are getting line errors, or are sending large numbers of files.

Because the window is on the large side, it is a bit cumbersome. If you have FormEd, it is well worth giving it a vertical scroll bar, and reducing its default size so that only the top two lines are normally visible. This makes it take up much less room on the desktop.

RISC OS 3 AUTOMATICALLY OPENING MENUS

Peter Schmidt

Under RISC OS 3.10, the computer can be configured so that leaving the pointer stationary over a menu item for a certain length of time will automatically open its submenu, if there is one.

You may have noticed that the submenu is then opened slightly further to the left than is the case when you travel over the submenu arrow. This effect can be exaggerated if instead you wait over the white space to the left of the item, i.e. the space usually reserved for ticks. Using this method, it is possible to open a deep menu structure without straying too far across the screen.

You can also alter the time it takes to open the submenu automatically by using:

```
*Configure WimpAutoMenuDelay
```

The delay should be given in tenths of seconds.



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Basic Differences	Finds the differences between two versions of a Basic program, the results being saved as an Obey file.
SWI Translator	Converts SWI names within a program to their equivalent numbers and vice versa, or optionally replaces them with variables.
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program Printer	Makes printing of program listings straightforward and easy, including dual column formats if required.
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RISC Developments Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS, tel. 0727 840303, fax 0727 860263.

While colours look excellent for screen displays, good quality colour printers are still relatively expensive, and most users still prefer a mono printer, such as Canon's BJ series. Printing colour images to a mono printer is, of course, perfectly feasible, but the rendering of screen colours in shades of grey often gives indifferent results. While not a universal answer, an alternative 'colouring' technique in such cases is the use of a variety of cross-hatching patterns.

While a few packages for the Archimedes range already provide cross-hatch patterns, *Hatchback* from 4Mation now allows any colour to be replaced by the user's choice of hatching pattern. Clearly this will be most appropriate where there are large areas of a single colour, as in charts and graphs, but its capabilities range much wider. It works with Draw files, compressed Draw files and with Poster files. All objects can be patterned, except single lines of text, text areas and sprites.

Hatchback is supplied on a single disc with a 16 page manual. It is installed on the icon bar, and any suitable file can be dragged to it. The selected objects then appear in *Hatchback*'s main window, with a toolbox to the left (see figure 1). The toolbox determines the choice of pattern (10 of these), the target area (local or global, and inside, outside or overlapping a boxed area), and choice of colour for foreground and background. It also provides a magnifier for precise positioning.

Clicking with the Menu button over any of the ten patterns allows the angle, density and frequency to be varied. Thus vertical lines could be angled at 30°, 45°, 60° or any other angle; relative thickness of line to spacing can be changed; and the pattern can be fine or coarse, or anything inbetween. Thus the number of possible patterns is really enormous, and many interesting visual effects can be obtained.

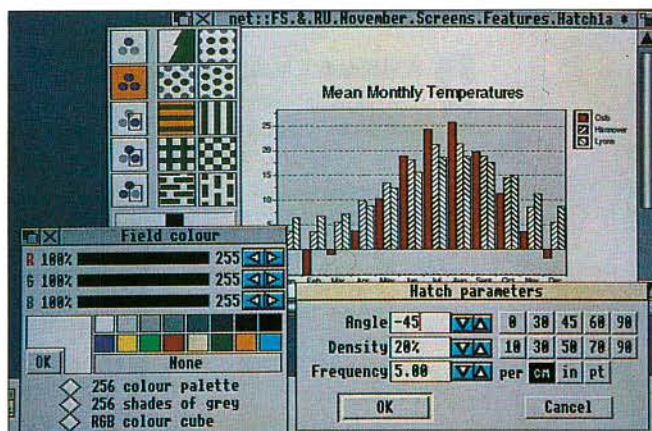
Colour can be selected from a 16 or 256 colour palette, from a 256 grey scale, or from an RGB colour cube. Colour can also be picked up and copied from an object in the main window.

There are a number of other built-in features, including Redo and Undo functions, and a save function (in Draw, compressed Draw or Poster formats).

In use, the package takes little time and effort to master, and there are a number of example files (undocumented) on the disc for playing with. I have one minor quibble, and one rather more significant one: first, the colour editing window uses three radio icons

Hatching a Plot

4Mation's Hatchback reviewed by Mike Williams.



for 256 colours, 256 grey shades, and RGB colour cube. Switching all three off isn't an obvious way to select a 16 colour palette. It could also have easily been changed.

My other criticism concerns positioning. One example file supplied is a map of the British Isles showing counties. Positioning the pointer in one county (and checking the accuracy of this with the Magnifier) resulted in a neighbouring county being shaded in several instances. Apparently this is a function of how Draw handles objects with overlapping boundaries, and can be overcome by selecting a point further from a boundary, but it is disturbing when it happens and, I feel, should have been overcome.

That apart, *Hatchback* is one of those simple and beautiful ideas which you wish someone had thought of years ago. A trifle too expensive at £35 for single users, its ease of use and range of effects fills a useful gap in the market.

Figure 1. Using *Hatchback* to shade in a graph from Chartwell. Note the colour and parameters windows.

PRODUCT INFO	
Product	<i>Hatchback</i>
Supplier	4Mation 14 Castle Park Road, Barnstaple, Devon EX32 8PA. Tel. 0271 25353 fax 0271 22974
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Getting the best from Ovation

Bill Nichols continues where his previous article on Ovation left off, with further hints on book production.

PAMPHLET MODE PRINTING

The starting point this month assumes that you have prepared a booklet along the lines described in RISC User 6:9. That is to say you have saved to disc a booklet with double pages, divided into chapters, including a title page and possibly contents pages as well. Now you want to print this booklet, using the special pamphlet mode within Ovation.

A slight ambiguity appeared in the last article, during editing, which I should like to clarify at this point. I had been stressing the value of splitting a booklet into chapters. The paragraph in the magazine concluded with the

sentence "Indeed you may well find it more convenient to treat each chapter as a separate document". This is fine for normal printing, either for yourself or for sending to an outside printer. However, if you wish to print a booklet using the special A5 pamphlet mode, as described below, it is of course essential that the booklet is kept to one single document with its own internal chapters.

In *Pamphlet Mode* printing, Ovation automatically reduces the size of the pages to A5 from the A4 size you have prepared on screen, and rotates them so that two pages are printed side by side on each face of a sheet of A4 paper. It also computes which page goes where so that when the printing is finished,

the sheets can be assembled and folded into an A5 booklet with the pages in the correct sequence. Hence the need to have all pages and chapters within the one document. For me, this is one of Ovation's most valuable features which I use a great deal.

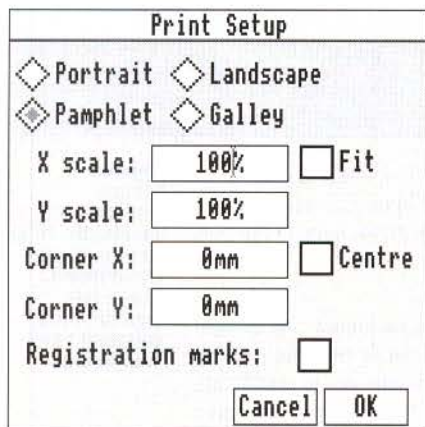


Figure 1. The Print Setup window

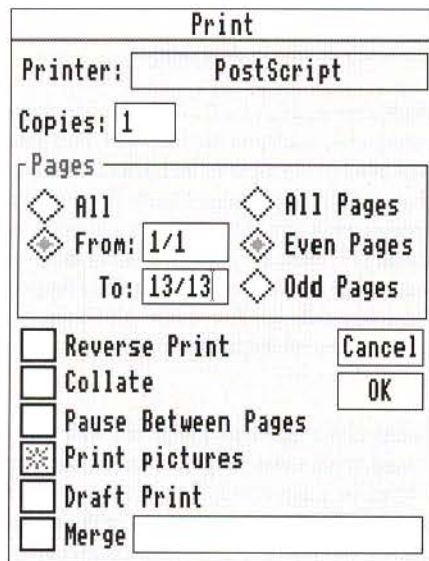


Figure 2. The Print window

Printing is very easy. From the *File* option in the main menu choose *Print Setup* and the dialogue box shown in figure 1 appears.

Select the *Pamphlet* button, and then 'OK'. From the *File* option choose *Print* and in this dialogue box, highlight the *From* icon. You can also observe and check the range of pages which are about to be printed (see figure 2).

The first printing will produce all the odd pages. Turn the pages over keeping them in the same order as when they were first printed, to print the other side. Return to the *Print* dialogue box and highlight the *Even Pages* button, and then print again. This completes the printing of all the pages, and they can be bound or stapled into the finished booklet.

The printing process does of course vary according to the type of printer you possess. The account above is appropriate for a printer with a paper bin or sheet feeder. With some printers it may be best to print one page at a time, in which case you would highlight the *Pause Between Pages* button as well.

A SPECIAL USE OF STYLE SHEETS

If you regularly produce leaflets and booklets, you will probably find that the typefaces and sizes you choose tend to form a fairly consistent set, or perhaps a number of sets - one set for the parish magazine, another for book writing, another for advertising handouts and so on. There is no need to set up these paragraph styles afresh for each document. Make use of Ovation's *Style Sheets*. You may not always wish to utilise their page formats, but they are ideal for holding sets of paragraph styles which can then be loaded into other documents as you design them. Such a library of "text only" style sheets can save much time and effort with your publishing.

For this purpose, assemble a set of text styles within the *Paragraph style* window on a page of your default document. Repeat this for each collection of styles you require, saving each one as a Style Sheet with an appropriate name. These (or at least the one you require) should be accessible from disc when you are preparing your new document. On any page of the latter, move across from *Paragraph Style* in the main menu and choose *Edit Style*, thus opening the *Define Paragraph Style* window. Drag the appropriate Style Sheet icon from its disc directory to this window. A dialogue box will open with the question "Do you want to overwrite styles?" and you have two choices, *Discard* or *Cancel*.

This warning box alerts you to the fact that any styles which already exist in your document, which have the same name as the new ones being loaded in, will be overwritten by the new ones. For example, since *Body Text* is always present it will always be replaced by the one in your Style Sheet. More importantly, if you use a common name such as *Sub Head*, this too would be overwritten. None of this matters provided you are aware of what will occur and allow for it - one way is always to give the text styles in your collections unique names. Select the *Discard* option and the new styles are loaded into the document. Open up the *Define Paragraph Style* window once again to check this. If some are surplus to requirements they can be deleted at this stage.

That brings us to the end of this topic, and I am afraid that this will be my last Ovation column. However, the series will, I am assured, continue with a new author in two months time.

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Into the Arc: More Musings with Paint and Draw

by Mike Williams

The article I wrote last month, illustrating what can be achieved by combining the use of Paint and Draw, prompted me to think further. The two ideas described here are the result, and show again how much more can be achieved when two or more Desktop applications are combined together. This, of course, applies not only to Paint and Draw: there are many other tools around which can achieve together what otherwise seems impossible.



Figure 1.
Starting with
the base
picture

STENCILS

The first effect which I investigated is using a stencil, but in reverse. The object is to overlay a sprite image with a 'stencil' so that the original image shows through the letters of the stencil while the rest is obscured. Draw provides by far the best vehicle for creating the text of the stencil, but we can only turn this into a transparent mask by going into Paint, and then finally positioning a sprite and the stencil as two layers within Draw. Let's see how this works out in practice.

Figure 1 shows the base picture to be overlaid with the stencil. This comes from a scanned image which I have cropped. The car in the picture is an Austin-Healey 'Frogeye' Sprite, so we will use the 'Frogeye' name for the stencil. With the original image in Draw, select a suitable font (I used *Bookmark Demi*) and size (not too important as you can resize the text



Figure 2.
Creating the text and sizing to fit

object in Draw). Now enter the text, and move and resize it over the picture to the final size you want, as shown in figure 2 (text coloured for greater clarity).

Once you have the size and proportions of the text correct, move the text away from the picture to a vacant area of the Draw window. It may help to keep the text object selected (enclosed by a red dashed rectangle) as this helps with sizing in the next step.

Assuming Paint is already loaded, click with the Menu button over Paint's icon bar icon and choose the *Snapshot* facility. Click on the 'OK'



Figure 3.
Selecting the mask option in Paint

button in the resulting dialogue box and then carefully drag out a rectangle to enclose the text

in the Draw window, using the red dashed rectangle as a guide if present.

As soon as you release the Select button, a save box appears: just drag the sprite icon to Paint, and then double-click on the sprite file window to open the sprite window now containing the text. To achieve transparency, Click with the Menu button over this window to obtain the main Paint menu, and then select the *Mask* option from the Edit sub-menu (see figure 3). If not already open, use Paint's menu to reveal the *Colours* and *Tools* windows. Make sure the *Colours* window is open to its fullest extent, showing the 'Mask' colour at bottom left.

Next, select the Mask colour (a 'T' will appear over it), the *Fill* function from the *Tools* window, and click also on the *Global* option which has now appeared. Click over any of the letters in the text, and all the letters will be filled to the Mask colour. You may also like to colour the stencil suitably (see figure 4).



Figure 4.
The 'stencil' complete

To complete our task, simply drag the sprite we have created (using Paint's *Save* option) into the original Draw window. Select and slide this over the original picture to achieve the transparent stencil effect, and select and delete the original text which was left in the same window. The effect is now complete as you can see in figure 5.

I have just shown you one way to achieve the stencil effect, but I am sure that there are many variations on this theme which are possible. If you find the step-by-step description lengthy, I can assure you that it takes far less time to achieve the end result than it does to describe it.

SEMI-TRANSPARENT PANELS

Using the Mask colour as described above gave me another idea. You have probably seen on television instances where text (perhaps subtitles) appears over a panel through which you can still dimly see the picture. I thought it would be interesting to try and create the same effect.

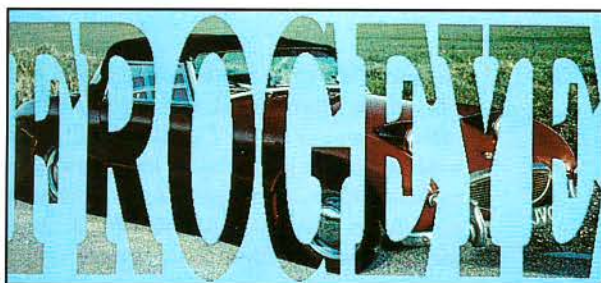


Figure 5.
The final result of using a stencil

Again, the main picture should be imported into Draw, which is where the text should also be generated, but the problem is how to create a coloured panel with 'holes' in it. The method I hit upon was as follows.

With Paint installed, click with Select on its icon bar icon, and then on 'OK' to create a blank sprite window (completely white at this stage) as normal. Now use Paint's *Zoom* option to increase the magnification to 4 (or more), whereupon a grid of lines will appear marking the individual pixel positions within the sprite (this is our embryo grid pattern).

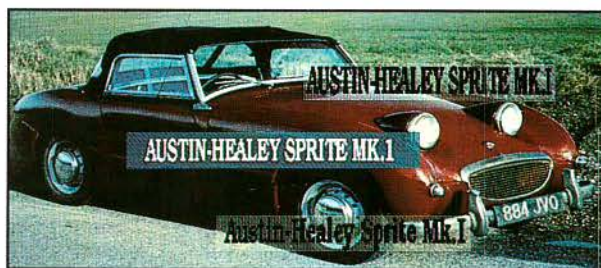


Figure 6.
Examples of semi-transparent text panels

Make sure this sprite window is open to its fullest extent, but with Paint's icon bar icon still visible. Now use the *Snapshot* facility as before to drag out a rectangle enclosing part of this

grid. The proportions of this rectangle should correspond to those required for the panel, and the size should be roughly twice final size, though you may need to repeat this process several times to get the best result. Now save this new image directly into Paint giving a new sprite file window, and double-click on this in turn to open the sprite window showing the grid.

Because of the zoom factor in use, a pixel grid will also be superimposed upon the grid of the sprite. Using Paint's *Colours* and *Tools* windows, colour in the 'holes' in the grid with the Mask colour, and the grid lines in a colour of your choice. Now save this sprite into the Draw window containing the original picture.

At this stage the panel which appears probably looks too coarse to achieve the desired effect. However, if you select this panel (in Draw) and use the *Magnify* option to scale it by a factor of 0.5, a better result emerges. All that now remains

is to create the desired text object, move this over the panel and group the two together. Finally, move the panel with text to the required position over the picture.

I have to admit that considerable experimenting was needed to achieve an acceptable result. It is difficult to judge the size of the grid when using *Snapshot*, and any attempt to resize the panel in Draw by dragging always destroyed the uniformity of the semi-transparent panel - *Magnify* was the only acceptable way to do this. Figure 6 shows some examples of what I achieved.

That's all for this month. If you experiment with Paint and Draw and produce any interesting results then do send them in and tell us how they were done. The best examples will be considered for publication in the magazine, or on the magazine disc as appropriate.

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All About Outline Fonts (continued from page 47)

document may have been only 300K in size, but by the time it has been expanded to PostScript, you may find it larger than can fit on a single floppy.

An alternative and altogether better way to get your artwork done is to make use of a DTP bureau that specifically handles Archimedes output. Your document can be sent to them in its original format (Draw, Impression, or whatever) on a standard ADFS floppy, and they will probably already have a copy of all your fonts anyway. At least one of these bureaus (see below) is equipped with FaxPack, so your document could be faxpacked to them and the bromides sent off to you in the post the same day!

CONCLUSION

The Archimedes is rapidly proving itself as a highly competent and inexpensive route at the forefront of the DTP revolution, and at the heart of its power is the Font Manager.

The Acorn Font Manager is a truly remarkable piece of software, and copes quickly and efficiently - and in a sense invisibly - with the

incredibly complex business of screen display and printing from outline font information. It's also a remarkable fact that other computer systems require a different font management system to be built into each and every piece of application software, whereas in the Acorn RISC OS 3 system it comes "free" in ROM. As such it represents unbeatable value for money!

Sources:

FontEd:

available from various PD libraries

Trace and D2Font:

David Pilling,
P.O. Box 22, Thornton Cleveleys,
Blackpool FY5 1LR.

Italic:

Design Concept,
30 South Oswald Road,
Edinburgh EH9 2HG.

Advice on image-setting direct from Archimedes files can be obtained from:

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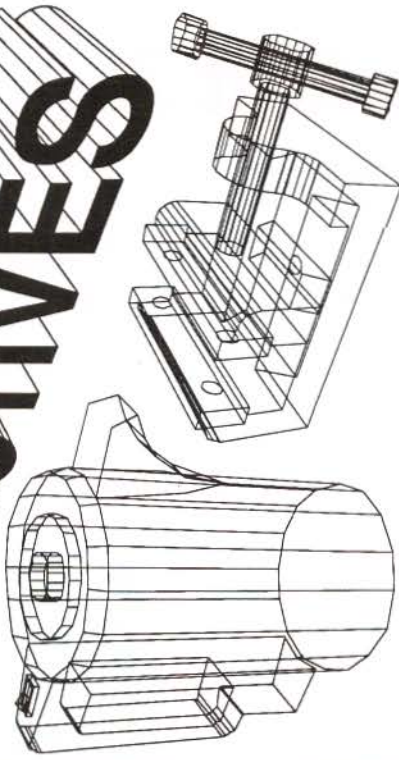
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DeskEdit 2 is an exceptionally powerful desktop editor for Basic programs and C source code - but it is also very easy to use.

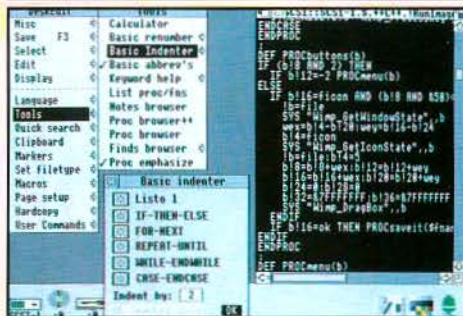
- Just open a window and type in your program. Press F3 to save it at any time. Press Ctrl-Shift-F3 and your Basic program will be saved and run interactively from within the Desktop - and if the name of the program is !RunImage then DeskEdit will run the parent application - Magic!
- If you are using line numbers, these are automatically handled for you.
- All Basic's abbreviations are automatically implemented.
- DeskEdit provides all the search and replace options of Edit plus some very special ones: DeskEdit's QuickSearch can take its target from any marked text (to avoid typing), and you can specify that it will only find matches in PROC and FN definitions.

Archimedes World's feature on programming editors (August 1993) says of DeskEdit 2:

"With so many features this is an excellent choice of editor for anyone who programs. . . . The whole feel of this product is one of utter professionalism."

and its review of DeskEdit 2 (February 1993) awarded a maximum score of 5 out of 5 in all four of its categories - performance, features, value for money, overall.

Harness the Power of Desktop Basic and C with DeskEdit 2



- Special Browsers instantly build up scrollable lists of all defined procedures and functions.
- DeskEdit contains more than 100 special key combinations.
- A fully customisable Basic Indenter will format selected portions of your program.
- An Undo feature lets you Undo and Redo your editing, and this together with all markers and many other features is optionally saved to disc when you save a program.

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Moreover, DeskEdit is just as at-home with text (for editing Obey files, writing letters, or complete books), and with the C language, providing most of the features offered to Basic users (where applicable) with others added - including a syntax checker.

- A customisable Help facility gives syntax Help on all Basic key words. A Caret info feature gives information about the character at the caret; and a file information feature gives you information on any file dragged to DeskEdit's icon when Alt is pressed.
- There are numerous markers and position finder features which make scrolling through your program to find a particular line a thing of the past.
- Plus Backup saves, special delete and tabbing options, a programmer's calculator which can import and export data, a flexible clipboard, powerful printout features, fully customisable user commands, powerful macros etc.

DeskEdit comes with:

- fully illustrated 70 page manual (with index)
- function keypad
- smart quick reference card
- freebies, including a desktop dustbin and Acorn's multi-file Find application.

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Some examples of previous programming work would be very helpful.



Nicola Bradley
 Longman Logotron
 124 Cambridge Science Park
 Milton Road,
 Cambridge CB4 4ZS

The 80 Column

Our occasional round-up of printer-related items, compiled by Alan Wrigley.

In a previous 80 Column (RISC User 6:5) I highlighted some of the problems that had been found with the RISC OS 3 printer drivers, and invited readers to share their feelings and experiences on the matter. A number of readers have written to the magazine, and most have agreed that there are indeed shortcomings in the latest drivers. The good news is that Acorn has someone looking into reported problems, so hopefully we may see some bug fixes available in the near future.

D.M. Wells has been trying to use the new PostScript driver to print to file for subsequent processing by a typesetting bureau. He found that the driver has a number of problems, which include a bug that apparently prevents a full A4 page width being printed in landscape format, and a restriction which allows only two font encodings. He believes that this is not a good advertisement for Acorn when they are trying to promote their computers for professional DTP work. Mr Wells has found a perfect solution to the driver's shortcomings for his own work: he reports that the old RISC OS 2 *PrinterPS* still works perfectly under RISC OS 3, at least when printing to disc.

Brian Jordan uses the *HP LaserJet II* driver, and while he is impressed by the quality of the dithering when printing grey-shaded pictures, he has observed a variation on the extra page feed problem. If several copies of a document are required, they are all printed in perfect register, followed by an equal number of blank sheets. With a multi-page document the process is repeated for each page - n copies of page 1 followed by n blank sheets, and so on. This appears to indicate that the problem is not due to the page length setting.

I have found yet another problem with the RISC OS 3 drivers (it appears on the NEC and Epson drivers and probably the others as well). If you set Control codes to *Standard*, you might reasonably expect that any control codes will be sent straight through to the printer without further ado, as was the case with the RISC OS 2 drivers. But in fact it seems that all codes below 32 are simply ignored by the printer driver. This may be a bug or it may be a deliberate feature, but either way it means there is no way of embedding printer control code sequences directly into text files. Applications such as *1st Word Plus* and *DeskEdit* still work correctly because they make use of the so-called "fancy"

text-printing facility (internal character sequences which the driver recognises as meaning "set italic", "cancel bold" etc.). But these are limited to the usual set of printer features (bold, italic, underline, superscript etc.), and if you want to be more ambitious (double-height, unusual fonts and so on), you can't do it by putting the code sequence directly into your file.

It may seem obvious to seasoned users of RISC OS how to achieve background printing - you simply print first to a file, and if you then drag that file to the driver, it will be printed in the background. Printing to a file is often a lot faster than to a printer (depending of course on what type of printer you have), so for large documents this method is worthwhile if you want to get on with your work while printing. E.F. Kelly has supplied some information which clarifies the process.

Install a second copy of your working driver (giving it a different name such as *LQFile*), and set the destination to File in the Connections window, supplying a pathname for the file. If possible this should be on the RAM disc, since this will speed the printing process up even further. If both drivers are active, you will have two icons on the icon bar. Highlight the file driver and print your document as normal from the application. You can't queue files in this way, because each one will overwrite the previous file of the same name, though you could use the *SmartSave* program (RISC User 6:7) to get around this. Alternatively rename each printout file before sending the next one.

When all the required printout files are completed, just highlight the original driver (the one whose destination is set to the printer) and drag all the printout files to its icon. The whole batch will be queued and printed in the background, leaving the computer free to get on with another job.

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R

WRITE - BACK

A4 TO THE FORE

I have read the letters in Write-Back about the A4, and would like to add my comments on this remarkable machine. My writer son has until recently earned his living with an A440/1 system. Although in other respects it is ideal, for him there are two drawbacks. One is fan noise, which he finds distracting, and the other is the fact that he cannot take it with him on his travels.

*Now all that has changed. With a standard PC2 keyboard and a colour monitor plugged into his A4 he has virtually all the resources of an A5000, as well as more space on his desk and **silence**, plus portability when he needs it.*

This is a machine which surely justifies effort on Acorn's part to develop and promote it, and reduce the price through increased production. Otherwise, putting it on the market and leaving it to find its own level is likely to result in it sinking without trace.

Jack Evans.

THE A4 CHICKEN AND EGG SITUATION

With reference to the recent correspondence on expanding the A4 Notebook, I would like to add one last comment for manufacturers to ponder on. In the PC world most

notebook computers are sold because of the expansion facilities available. My point is this: the reason that there is not enough demand for a particular product could be because that product does not exist in the first place!

The A4 is an A5000 in a box. It is one of the most powerful RISC OS computers you can buy. It can be used professionally for DTP, but you can't plug in a scanner. It could be used as a powerful portable mixer/sequencer/recording studio, but MIDI is not available for it. It is even fast enough to produce Replay files at 25fps, but you can't plug in a digitiser. It is at least possible to plug in and use a fax/modem (and even this is due to an individual - David Pilling - who realised the potential of all the readily available fax/modems in the PC world), but not one of the faster ones because the serial port can't keep up, but there is nowhere else to plug one in.

I don't see why Acorn themselves have not encouraged this as it can only increase A4 sales.

If every product for which there is 'not enough demand' were manufactured, the A4 would become a serious alternative to any other Acorn RISC OS computer (and indeed other PC notebooks and desktops), more sales would be generated (a potential A5000 customer, for example, would seriously consider the A4 instead), and 'demand' would surely materialise.

Yet there is space for a very fast Ethernet card - something doesn't add up. Can anyone tell me that if all the above were readily available, sales of the A4 (and therefore demand for these products) would be as low as they are today?

Jimmy Imossi

A PROGRESS REPORT

May I first of all say that I think the new format of RISC User Magazine is excellent. I have progressed from the BBC computer through the Master 128 to an Archimedes 410/1 which I have enjoyed, particularly with RISC OS 3 fitted. My only disappointment with Acorn is that they didn't give more consideration to providing better PC emulation. OK, it isn't a PC; I accept that, but most of us have to use them at work, and it would be great to have the best of both worlds. I know that they have been supported by third party companies, but at a price, and even with version 1.8 of Acorn's PC Emulator, it's not a lot of help as I can't read 1.44Mb discs.

J.S.Almey

One should, perhaps, applaud the fact that the Archimedes is as capable of behaving like a PC to the considerable extent that it is. I wonder if an Apple Macintosh could do as well, but then there is little criticism that Apple's obviously incompatible machine can't emulate a PC: it is judged for itself. As far as 1.44Mb discs are concerned, this is a limitation of the hardware used in earlier machines in the Archimedes range; more recent systems, the

A5000, the A3010, A3020 etc. can certainly cope (and RISC Developments will a 1.44Mb drive available for Acorn World).

THE POCKET BOOK

*The Psion Series 3 (or Pocket Book) is an immensely useful addition to the Acorn stable. The A-Link software works faultlessly, but how about some info regarding the replacement of **Abacus** on the menu with something more useful for all Series 3 users? It is possible to change the window, but I haven't managed to do it using the rather skimpy manual provided with the software.*

I use the Series 3 linked to a US Robotics Palmtop Fax Modem, and along with Fax3 software, this provides a very portable fax machine which you can use from your hotel room worldwide. You also need to buy a small lead (from Psion) which connects to the modem (total cost for the package around £120).

Dave Martin

EDUCATION AND TRAINING

*I would like to comment on the editorial in RISC User 6:9. I live in an area where the LEA has dictated policy in the past, and in Birmingham this has meant the RML Nimbus. As a parent helper I am considered an 'expert' because I have time to read the manual, and know how to click a mouse. I would hope that now more schools control their own budget, then more schools will turn to Acorn machines. I certainly do my best to sell the idea. Having typed out some of the school magazine at home for some of the teachers so that an acceptable printout for photocopying could be obtained, it was claimed in the magazine that it had been produced on the school's own computers, a task for which the 8086-based machines were totally unsuitable. The only DTP we can use is **Windows Write**, with four fonts, and a quite noticeable delay in screen updating each time a character is typed in. This is alright for the children who take two hours to type in ten lines, but just think what they could achieve with an Acorn machine. I get far better output from my Electron.*

Elaine Kemp

MORE EXPERIENCES WITH CANON BUBBLE-JET PRINTERS

Hedley Hunnisett's letter in Write-Back, RISC User 6:9, commented on his Canon BJ200: firstly he cannot use line-feeds to cause printing to commence lower down a page; secondly he cannot print on paper longer than 14". The editorial comment was that "the Canon BJ200 (and similar models from Canon....) are effectively page printers and that is the price we pay for excellent quality".

I believe this could be misleading to those considering buying an ink-jet printer. I do not experience these problems with the combination of a BJ300 printer and the Acorn Printer Manager configured for Bubble-Jet (and I can easily print four-page family trees). I assume that this is because the BJ300 and BJ330 provide a tractor feed for continuous stationery, as well as single-sheet operation, and therefore differ from the BJ200; they provide the excellent quality without the tiresome snags.

David Cawsey

We have included a review of Acorn's latest software release for the Pocket Book in this issue of RISC User. More feedback from readers using a Pocket Book (or Psion Series 3) in conjunction with an Archimedes would be most welcome. Readers may be interested to know that Psion has released the Psion Series 3a with an enlarged screen display - will Acorn adopt this as well? We must wait and see.

Do other readers have relevant experiences to relate on the choice of 'PC' or Archimedes in relation to the issue of education versus training?

Our thanks to David Cawsey for clarifying the position regarding Canon bubble-jet printers.

uR

Points Arising . . .

JUST A PAGE (RISC User 6:9 Page 33)

Graham Crow has contacted us to point out that one line of his PROCdI procedure can be simplified, and avoid occasional errors. The sequence:

```
EVAL (STR$~+EVALsss$)
```

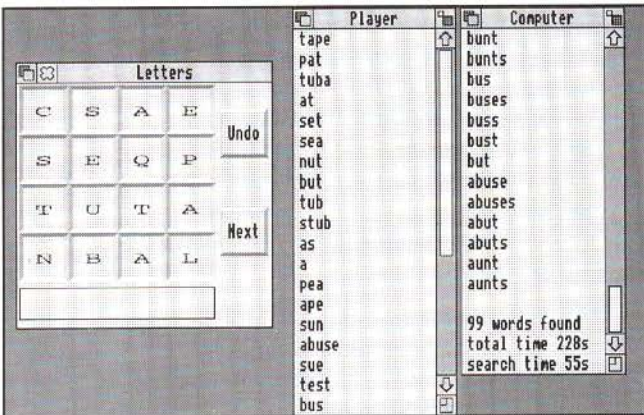
can be simplified to:

```
EVAL (STR$~(sss$))
```

uR

Gobble - The Word Game

by Terry Over



For reasons of space, both applications described here are supplied only on this month's magazine disc.

Gobble is a challenging word game that will provide you with hours of entertainment. The object of *Gobble* is very simple - create as many words as possible from a grid of sixteen random letters. There are only two rules that you must obey. Firstly, no word may contain the same letter more than once, unless that letter is repeated in the grid, and secondly, every letter that you select must be adjacent to the previous one, either vertically, horizontally or diagonally.

However, if that was all there was to *Gobble*, it wouldn't be very challenging. Thus there is an extra dimension to the game - time. While you are searching for words, *Gobble* scans its own dictionary, attempting to find all the words it can. As soon as it has completed its search, the game is over, and you are presented with a list of all the words that *Gobble* has found in the grid. You then have the opportunity to compare word lists, and discover whether you have managed to beat *Gobble* by finding a word that it hasn't found.

A quick tip - remember to use the letter S if it's provided, and one letter words are perfectly acceptable.



TableDraw - Table Generator

by Andrew Benson

ARTIST	ALBUM	CODE
Elton John	Caribou	A4
Elton John	Don't Shoot Me I'm Only The Piano Player	A5
Debbie Harry	Rockbird	B54
Stevie Wonder	Motown Legends	C4
Linda Ronstadt	Greatest Hits	D3
David Bowie	Aladdin Sane	A14
The Beatles	Sgt Pepper's Lonely Hearts Club Band	D2
David Bowie	Space Oddity	Q1
Tina Turner	Break Every Rule	Z1
Joan Armatrading	Track Record	Z2
Kate Bush	The Whole Story	P12
Suzanne Vega	Solitude Standing	K8
Led Zeppelin	Led Zeppelin IV	B3
Elvis Costello	Armed Forces	L2
Aretha Franklin	Aretha	L11
Cat Stevens	Teaser and The Firecat	C6
Billy Joel	52nd Street	D9
Bangles	Different Light	H7
Mike Oldfield	Tubular Bells	J8

Impressive results with TableDraw and a little imagination

So you're sitting in front of your computer wondering how to turn the information in your spreadsheet into an attractive table that you can drop into your word processor or DTP package. Draw is a very useful CAD program, and it's fairly simple to create the grid lines for a table with it, but how do you then get all the information from the spreadsheet into the table? With great difficulty!

TableDraw provides a simple solution to this problem. It will turn any CSV file into a table complete with grid lines, and the information in the font of your choice. You can also specify whether or not the vertical lines are uniformly spaced, and to which decimal place numbers are rounded.

Once the table has been created, you can load it into *Draw*, *ArtWorks*, *Vector*, or any other CAD program that you use, where you can add colour to it, highlight specific rows or columns, rotate and distort it, etc. The example on the left was created by saving a CSV file from *PipeDream* into *TableDraw*, and then using the perspective facility in *ArtWorks* to create the box with the table on the top and side.



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

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charts incorporating your

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interface, and to make it easy to share

data between

word processor,

database

and

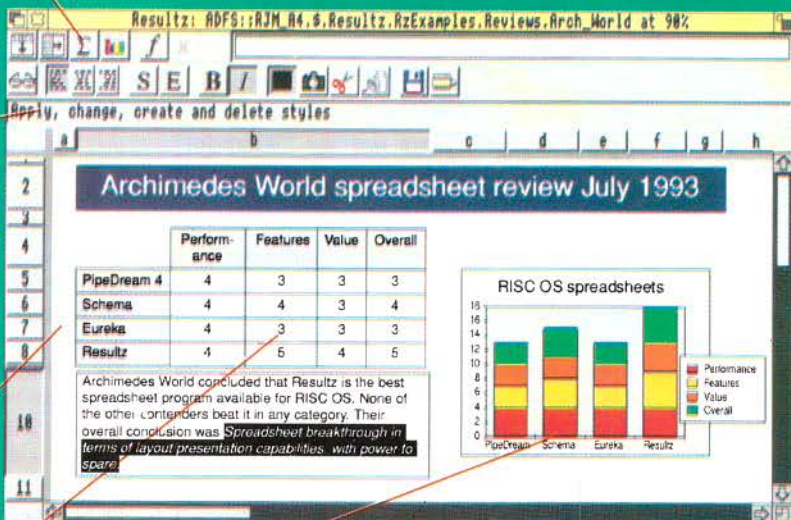
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? TECHNICAL QUERIES

Alan Wrigley answers your queries on Wimpslots, extending memory blocks, retrieving pointer information, and sending text files to Edit from your own programs.

Q *Dear Sir*
As a newcomer to computing I am very confused by some of the jargon. The manual for a piece of software I acquired recently tells me it needs a Wimp slot of 128K in order to run. What is a Wimp slot, and how do I provide one?

E.S. Morris

A The term "Wimp slot" or "Wimpslot" simply means "a chunk of memory allocated to the task within which it can run in the Wimp environment". All multi-tasking programs need such an allocation of memory, but normally the user doesn't need to worry about this, since it is all done automatically when the program is run. There is an operating system command, WimpSlot, which allocates the requested amount of memory to the task concerned, and this command is usually issued from the application's !Run file. In the absence of any such command, the contents of the Task Manager's Next slot, or the total available free memory, whichever is the smaller, will be allocated. You can see the contents of the Next slot, and also the slots of all currently running applications, by clicking on the Task Manager's icon in RISC OS 3 or choosing its "Task display" menu option in RISC OS 2.

The manual you mention is confusing because it seems to imply that you must somehow provide a Wimp slot for the program yourself. If the program has been correctly written, it will automatically request its own slot when run, and the manual is simply trying to warn you that at least 128K must be free in the machine before the program will run. If the requested amount of memory is not available, an error will be generated telling you that the application needs at least nK to run (in this case 128K). You will then have to find the required memory by quitting other applications or reducing the memory allocated to certain areas, as described

in the User Guide under the section *Optimising memory usage*.

There is certainly no excuse for using jargon such as this in a manual. Software manuals should assume that users know nothing about the workings of the computer; in this particular case, a sentence such as "You must ensure that at least 128K of memory is free before running this program" would have been far better.

Q *Dear Sir*
In Technical Queries (RISC User 5:4) you described various methods of claiming extra memory in order to process documents etc. What is the best way of dealing with a situation where editing the document would cause it to overrun the end of the extra memory?

John Winwick

A The methods described in 5:4 were firstly to use the keyword DIM to dimension a block of memory within the program's workspace; secondly to claim a chunk of memory from the RMA; and thirdly to increase the Wimp slot by calling SWI "Wimp_SlotSize".

The first method is not really suitable if you are likely to extend the document beyond the memory originally dimensioned. You cannot increase a dimensioned area directly - you can only dimension another block, which is unlikely to be contiguous with the first. If you use this second block as an extension to the first, you will have to keep pointers so that the program knows how many blocks you have, and where to make the transition from one to the next. If you abandon the first block completely and move the whole document to the second, you cannot free the memory and so it is effectively wasted.

If you are using either of the other methods, however, the extra memory can readily be extended in a seamless fashion (provided that there is sufficient memory available in the computer). A block of memory claimed from the RMA (using OS_Module 6 as in the example given in 5:4) is under the control of the Heap Manager, and can be extended by using SWI "OS_Heap" with the following parameters:

R0 = 4 (reason code)
R1 = pointer to heap
R2 = pointer to block
R3 = size change relative to original

Reason code 4 indicates that you want to extend a heap block. The "heap" in this context is the RMA, so first you have to find where it starts by using "OS_ReadDynamicArea". The pointer to the block is the pointer that was returned by OS_Module when you claimed it in the first place, while the size change in R3 is relative to the original size (i.e. a positive increment to expand it, or a negative decrement to shrink it). If the heap manager cannot extend the block in its current position, it will move it and copy the contents. The new block pointer is returned in R2, so you must read this and use it in place of the original value. This implies that all access to the memory block in your program should be relative to the pointer, and this is in any case advisable as you should not normally refer to explicit addresses.

So to expand a block pointed to by extra% from 1000 bytes to 1200 bytes, you would execute the following code:

```
SYS "OS_ReadDynamicArea",1 TO rma%
SYS "OS_Heap",4,rma%,extra%,200 TO
,,extra%
```

If you have used "Wimp_SlotSize" to claim extra memory, all you need to do to extend it is to use the call again in exactly the same way as before, but this time requesting a larger slot. Provided the memory is allocated, the operating system will map the extended area so that it appears to your task to be contiguous with the original memory allocation. In other words, whatever slot size your program currently has, the application workspace will always start at &8000 and extend in one block the size of the complete slot.

Q Dear Sir

I am trying to write a program which moves the pointer across the screen and then reads the window and icon handles underneath it using "Wimp_GetPointer Info". The problem is that the pointer position returned by the call is always the position before it was moved, irrespective of where the call is made from. Can you help?

Stuart Porter

A Unfortunately the PRM in its description of "Wimp_GetPointerInfo" doesn't make it sufficiently clear that the data returned by the call relates to the moment at which your program last regained control through Wimp_Poll. In other words, the information is only updated when a Wimp poll event is returned, and any subsequent movements of the pointer will not be taken into account until you call Wimp_Poll again (when the data at that

point will be available to the next task which is paged in).

The solution to the problem is to claim null events while you are carrying out the task in question. Having moved the pointer, you can then read its new position at the next null event, and carry out whatever actions are needed at that point.

Q Dear Sir

*When a multi-tasking Basic program needs to display a text file, it can issue the command *Run <pathname> to load the file into Edit. However if another text file is to be displayed, a second copy of Edit is installed. Is there a better method which uses the same copy of Edit, and can the Basic program close the first text window?*

Keith Vernon

A When a Run command is issued for any file, RISC OS performs the run action for that filetype (as specified by the Alias\$@RunType variable). In the case of text files, the default action is to load a text editor such as Edit. Any text editor that might already be installed is unaware that this is happening, and so cannot load the file itself. The solution to this problem under RISC OS 2 is to broadcast a DataOpen message (action code 5) for the file, which simulates a double click on the file's icon in a directory viewer. The existing editor will pick this up and load the file itself.

However, RISC OS 3 has a new command, Filer_Run, which does exactly that. Applications which are already installed therefore have the opportunity to load the file if they recognise the filetype, and prevent the default run action from being performed. It is used very simply in place of the Run command:

```
Filer_Run <pathname>
```

The article PipeFS and Filer_Run (RISC User 6:8) gave more details on the command, and also described how to use the PipeFS filing system to transfer text from your own program to Edit.

An Edit window which has the input focus can be closed by pressing Ctrl-F2, so all you need to do to close it from your program is to put the appropriate key code (in this case &1A2) into the keyboard buffer:

```
SYS "Wimp_ProcessKey",&1A2
```

You must be sure that your window still has the input focus, of course.

uR

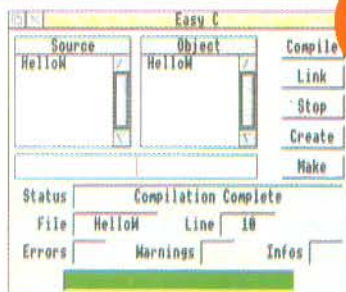
Easy C

Easy C is a full development system designed for programmers wishing to learn or develop their skills in C.

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- FreeWare WIMP library DeskLib supplied

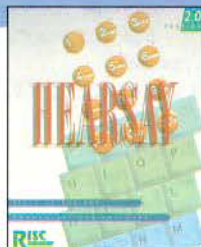
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Hard Drive Upgrades - New Lower Prices and Higher Capacities

The Benefits Of A Hard Drive

Adding a hard drive to your computer is one of the most useful upgrades that you can perform. It will transform the way in which you use your computer as you will be able to run all of your programs which will load many times faster. Hard drives are also available to use as floppy drives, with a new icon appearing on your icon bar.

IDE From RISC Developments

These kits have been designed specifically for the Acorn range, and are extremely reliable. We are constantly improving our range and are now pleased to offer higher capacities at lowest ever prices. They are ideal for home or educational use and have been successfully installed by several thousand Acorn users without problem.

Simple To Install

All our drives are supplied complete and most can be fitted in minutes with no previous experience or special tools. You will not invalidate your warranty by buying one of our drives. The drive will be supplied fully tested and formatted ready for immediate use. We offer full technical advice and support by phone should you be unsure of anything.

2000 Internal Hard Drives
These units consist of a 2.5" drive mounted on a custom interface card. The unit fits into a mini expansion slot. Available with an optional User Port to make use of devices such as Concept Keyboards.

2000 External Hard Drives
This hard drive is supplied in a matching metal case and connects to a metal case interface that fits externally to the A3000 expansion slot.

2010 Internal Hard Drives
A range of integral drive kits that fit into the mini expansion slot on the A310. These units use the RISC OS 3.1 FS filing system.

2020 and A4 Internal Hard Drives

These drives are upgrades for systems that were purchased without the standard hard drive. Unfortunately these are after market only and you will need to return your computer for upgrading.

Archimedes (A300 and A400 series) Internal Hard Drives

The drive is fitted in the hard drive slot provided, and the IDE interface is fitted into the podule backplane and can also control a second external hard drive if required.

Archimedes (A300 and A400 series) External Hard Drives

As above except that the drive is supplied in a matching external case.

Archimedes Hard Cards

These drives are mounted on the IDE interface card and will fit in any podule slot on the A300/A400/A540/A5000 series.

A5000 Second Drives

A range of drives that may be used as a replacement to your existing hard drive or as a second internal hard drive.

(Please note: In accordance with the industry convention, all drive capacities are quoted on the basis that 1Mb is equivalent to one million bytes.)

RAM and Processor expansion

RISC Developments produce a full range of RAM upgrades for all machines, including ARM3 boards. Also available is an ARM3 processor upgrade for the A310, A400 series and A3000. The A310 4Mb RAM card also allows RISC OS 3.1 to be fitted without a separate hardware upgrade. All of these items are user fittable except for the A5000 ARM3 RAM cards and the ARM3 for an A3000. In these cases, you must return your computer to us for fitting. If you have an A5000 upgraded from 2 to 4Mb, and you wish to upgrade it to 8Mb, you must remove the existing upgrade and purchase the 8Mb card. If your existing upgrade is a RISC Developments or Acorn model, then we can offer a £60 trade-in on it.



Code	Description	Price (ex VAT & p&tp)	Code	Description	Price (ex VAT & p&tp)
0133c	A3000 1Mb RAM	£31	5275g	A3000 Internal IDE 210Mb	£539
0130c	A3000 1Mb RAM (Ugdable)	£59	5240g	A3010 Internal IDE 20Mb	£179
0131e	A3000 4Mb RAM	£139	5242g	A3010 Internal IDE 80Mb	£289
0144c	A3010 1Mb RAM	£29	5243g	A3010 Internal IDE 120Mb	£379
0146e	A3010 4Mbyte RAM	£129	5245g	A3010 Internal IDE 210Mb	£529
0145c	A3020/A4000/A4 2Mb RAM	£89	5230g	A3020 & A4 IDE 20Mb	£125
0125e	A310 4Mb RAM	£269	5232g	A3020 & A4 IDE 80Mb	£229
0278c	A400/1 Series 1Mb RAM	£27	5233g	A3020 & A4 IDE 120Mb	£299
0141e	A410/1 8Mb RAM Card	£569	5235g	A3020 & A4 IDE 210Mb	£479
0142e	A420/1 8Mb RAM Card	£509	5296g	A5000 162Mb 2nd Drive	£219
0143e	A440 & A440/1 8Mb RAM	£479	5294g	A5000 260Mb 2nd Drive	£319
0147g	A5000 2->8Mbyte RAM	£499	5238g	A5000 450Mb 2nd Drive	£519
0124c	A5000 External IDE 260Mb	£99	5263g	Arch External IDE 162Mb	£359
0148g	A5000 4->8Mbyte RAM	£429	5265g	Arch External IDE 260Mb	£479
9981g	ARM 3 A3000 Fitting	£30	5266g	Arch External IDE 450Mb	£679
0134e	ARM 3 Upgrade	£165	5290g	Arch IDE 20Mb Hard Card	£199
5297b	User Port Power Supply	£17	5292g	Arch IDE 80Mb Hard Card	£299
5283g	A3000 External IDE 162Mb	£369	5293g	Arch IDE 120Mb Hard Card	£379
5285g	A3000 External IDE 260Mb	£489	5295g	Arch IDE 210Mb Hard Card	£529
5286g	A3000 External IDE 450Mb	£689	5253g	Arch Internal IDE 162Mb	£259
5270g	A3000 Internal IDE 20Mb	£199	5255g	Arch Internal IDE 260Mb	£379
5272g	A3000 Internal IDE 80Mb	£299	5256g	Arch Internal IDE 450Mb	£579
5273g	A3000 Internal IDE 120Mb	£389			

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RISC User is available only on subscription at the rates shown below.

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Elsewhere	£39.50	£41.00

Please note that new subscription rates are £1.50 more than renewals. All subscriptions, including overseas, should be in pounds sterling. We also accept payment by Connect, Access, Visa, Switch and official UK orders are welcome.

Magazine Disc

The programs from each issue of RISC User, together with a number of substantial additional items, are included on a monthly 3.5" disc. This is available to order, or you may take out a subscription to ensure that the disc arrives at the same time as the magazine.

Disc Subscription Rates	UK	Overseas
Six months subscription	£25.50	£30.00
Twelve months subscription	£50.00	£56.00

Disc subscriptions include postage, but you should add the appropriate rate (see below)

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Last month's special offers on back issue discs and magazines are being maintained. All issues are currently still in stock except Volume 1 Issues 4&5 magazines. All subject to availability. Please include postage when ordering.

Magazine Disc Post & Packing	Volume 1	Volume 2	Volume 3	Volume 4	Volume 5
	£1.00 each £2.00 each	£1.20 each £4.00 each	£1.60 each £4.00 each	£1.90 each £4.75 each	£1.90 each £4.75 each
	Code	UK, BFPO, Ch.Is	Europe Eire	Americas, Africa Mid East	Elsewhere
	a	£1.00	£1.60	£2.40	£2.60
	b	£2.00	£3.00	£5.00	£5.50
	c	£3.10	£6.50	£10.50	£11.50
* Please use stock code 'a' when ordering magazines and discs					

Please add the cost of p&cp when ordering. When ordering several items use the highest price code, plus half the price of each subsequent code.

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PAOMa ArcOmnibus Games Disc	12.68	8.47	0108c Ovation	99.00	84.15
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RISC Developments Ltd., 117 Hatfield Road, St. Albans, Herts AL1 4JS
Telephone 0727 840303 Fax 0727 860263

- RISC User magazine volume No.1 to current issue, all in new clean condition, sensible offers only. Tel. Kent 0322 664761 eves only.

- Programmers for Archimedes/RISC educational software wanted, part-time home based. Tel. Lincolnshire 0775 725717 eves.

- 2Mb Centronics PP8 laser printer, 8ppm, 300dpi, less than 1500 pages printed since new, spare toner kit, parallel interface, various emulations including HP Laserjet Plus £450 inc. VAT. Tel. Reading 0734 500408.

- A310 4Mb RAM, ARM3, Vide Enhancer, RISC OS 3.1, Taxan 770LR multiscan, 5.25" DD interface plus twin drives in plinth, hand scanner and extensive software inc. Impression II (all originals), all manuals and hardware in boxes £800. Tel. York 0904 796295.

- Bargain job lot - ArcWorld magazines Jan 91-Jul 93, RISC User magazines vols 2,3,4,5 complete, RISC OS 2 ROMs and Acorn 2Mb RAM upgrade for A3000 all fully serviceable - £25 the lot - no offers. Tel. Middlesex 0923 829205.

- Games: Galactic Dan £10, would usually cost around £20, excellent condition and hardly used. ArcOmnibus games disc £6, good condition and would usually cost £12.68 save £1 and buy them both for only £15. Tel. Derbyshire 0602 327112 after 6pm.

- Acorn MIDI board (AKA16) for A3000/400/5000 machines £50 (unregistered), Easiword 2 wordprocessor £35, Graphic Write wordprocessor £5, Paradroid 2000 £10, Dropship £5, RISC OS 2 programmers reference manuals £25 (minus index cover) Tel. Gloucester 0452 525976 after 6pm.

- Archimedes software: Easiword £25, GBA, GODS, Blowpipe plus many more £10 each, Panasonic KX-P1180 + spare ribbon, includes original manual, boxes etc. in excellent condition, gives good quality print - only £75, old magazines for sale, prices from 10-75p, also

Classifieds

Members may advertise their unwanted computer hardware and software through the personal ads column free of charge. However, we are unable to guarantee in which issue your advertisement will appear.

Archimedes contacts wanted, especially with interests in DTP and Graphics, all prices are exclusive of p&p, to reply to any of the above ads please write to: Jon Aylwin, "Oak Villa", 4 St Margarets Close, Hollingarth Way, Hemyock, Cullompton, Devon EX15 3XJ.

- Minerva Home Accounts £25, Genesis £10, Alpha Base £15, PC Emulator v1.8 £80 o.n.o. Tel. Weston-s-Mare 0934 823071.

- Archimedes A310 with 4Mb RAM, 20Mb hard disc, RISC OS 3.1, Backplane, some software £650 o.n.o. Tel. Inverness 0463 231241 eves.

- A440/1 with 4Mb RAM, 52Mb disc fitted with RISC OS 3, Wordz £50, ArtWorks £60, PC Emulator £50, Pipedream 3 £30, Schema £50, 1st Word Plus £40. Write to; 34 The Old Yews, Longfield, Kent DA3 7JS.

- Trade in your A3000/3010/3020 plus cash difference for my 10 month old A5000 LC, it has 2Mb RAM, 40Mb HD, RISC 3.1, M/Scan monitor, PC Emulator etc. plus free Epson FX80 printer. Tel. Birmingham 021-455 0795 to discuss.

- Star LC24-200 colour printer £135 or exchange for software or hardware to that value, only one ribbon used. Tel. Gloucester 0242 673854 almost anytime but evenings probably best.

- A420/1 with 40Mb HD, 4Mb RAM, Learning Curve, RISC OS 3, manuals etc. Philips colour monitor, only light home use, in original boxes £700. Sony colour Dataviewer and keyboard £70. Tel. 0235 835357.

- Olivetti Prodest PC1, 2 x 3.5" disc drives, MS-DOS version 3.20 included (original disc) £150 (offers considered). Tel. Essex 081-500 6878.

- A440 4Mb RAM, 20Mb HD, RISC OS 2, Taxan 770 MS monitor, SparkFS, RISC OS 2 PRM, £850 o.n.o. also BBC Master 128 with twin DD/DS 40/80 disc drives and mono monitor. Offers? Tel. Bedfordshire 0525 237625.

- A310 4Mb, ARM3, RISC OS 3.1, Oak 45Mb SCSI hard disc, colour monitor, Pipedream 4.13, Wordz 1.03, PC Emulator and other useful original software £590, also complete sets of RISC User and Archive. Tel. Devon 0769 60289.

- Pipedream 4 £20, Impression Junior £20, 1st Word Plus v2 £10, (all software with manuals), A3000 1Mb upgrade (expandable) £15. Tel. Buckinghamshire 0844 344633 day/eves.

- 2Mb RAM board for A3000 £15. Tel. Cambridge 0223 426881.

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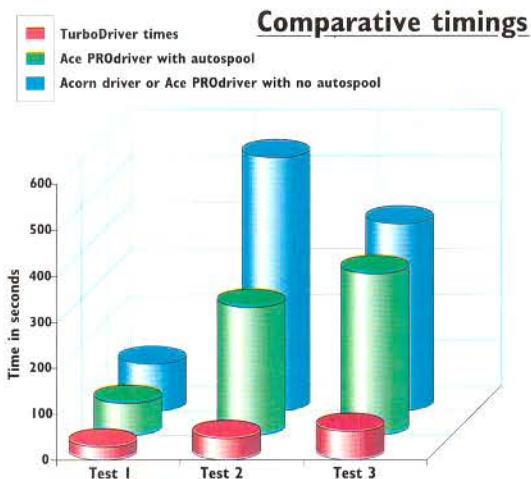
The range of TurboDrivers has expanded to include versions for the Hewlett-Packard DeskJet and LaserJet range of printers, as well as the Canon bubblejet range. The latest release 3 versions are now fully RISC OS 3.1 compliant, offer new advanced features and are faster than ever before.

The bottom line is that if you value your time, the TurboDrivers are for you - they can render pages and give control back typically at between three and ten times faster than Acorn printer drivers or Ace PRODrivers. Indeed once the image has been rendered then the printing continues entirely in the background - as fast as the printer will go. This makes a large difference for just one page and an enormous difference if you are printing more than one copy of each page.

F E A T U R E S

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- **By far the fastest printer drivers available for Acorn 32-bit computers - see chart.**

TURBO DRIVERS



Test1 - A single DTP page of text and scanned graphic images

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Test3 - A complex full page of graphics from ArtWorks.

The timings indicate the time in seconds to get control back. All tests performed on HP DeskJet 500 printer using a 4Mbyte A440 with an ARM3 fitted. Other machine combinations show similar performance gains.

 Computer Concepts Ltd



Illustrated are a selection of printers supported by TurboDrivers. There is constant development in driver support so please contact Computer Concepts for details of latest printers.

Canon TurboDrivers £49 + VAT (£57.57 incl.)
 (supports all BJ-10, BJ-200, BJ-230, BJ-300 and BJC-800 printers)

HP TurboDrivers £49 + VAT (£57.57 incl.)
 (Supports all monochrome and colour DeskJet and LaserJet printers)

Please specify printer type when ordering. The BJ-230 and all HP TurboDrivers are only suitable for RISC OS 3.1 machines. 2 MBytes required.

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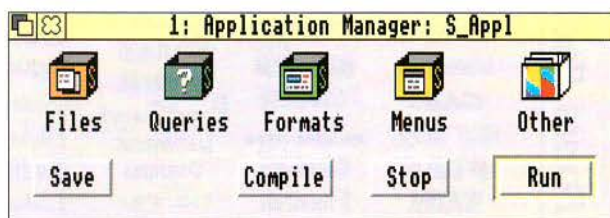
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Also new in S-Base 2:

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