NOVEMBER 1992 Vol.10 No.9 £2.95

NEW

Acorn COMPUTING

Formerly THE MICRO USER

Ace Art

Arc outdraws its Mac & PC rivals

Colour Output

What's the best money can buy?

First steps

Vital hints & tips for beginners

Wonder Wimp!

Learn to program and save cash too

No coverdisk?
ask your newsagent

FREE BBC PROGRAMS

Exchange the MegaDisk for exclusive software.....See inside

- Manipulating 8-bit graphics

PLUS Hot games reviews • Exclusive discounts • Step by step tutorials

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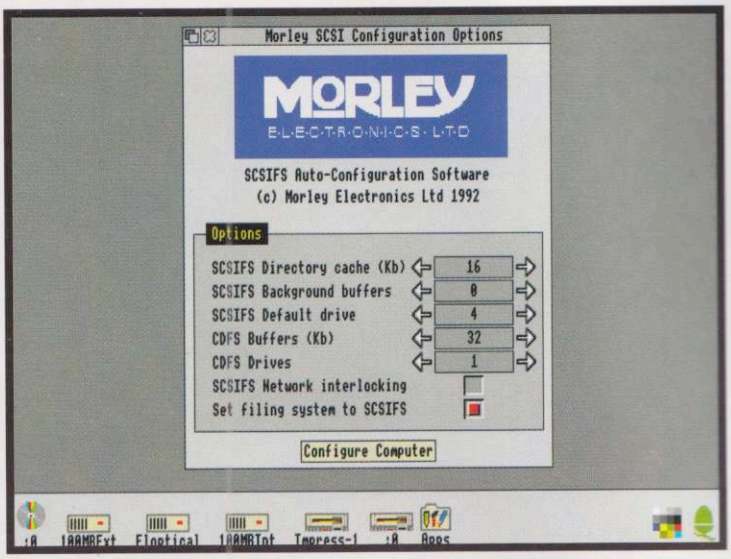
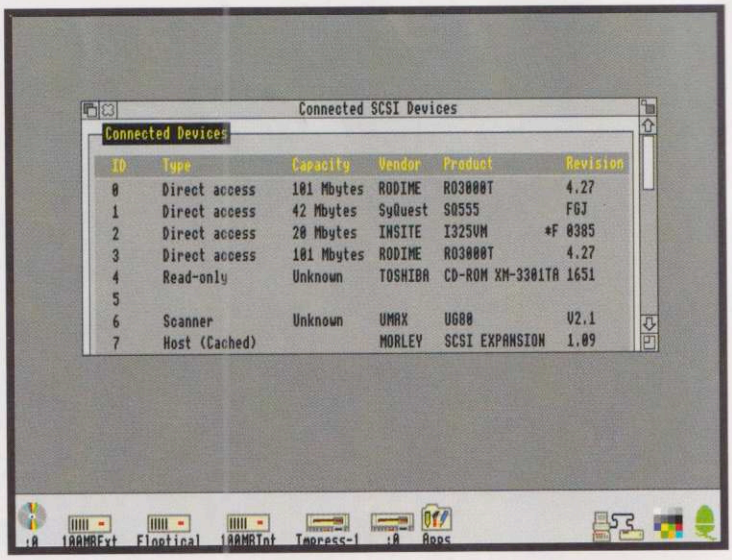


The SCSI configuration software



The SCSI investigation software

Our SCSI card can work with any ANSI compliant SCSI device some types of which are listed below.

- *CD-ROM drives* ❑
- *Hard disc drives* ❑
- *Flat bed scanners* ❑
- *Floptical drives* ❑
- *Tape Streamers* ❑
- *DAT tape systems* ❑
- *WORM drives* ❑
- *Removable cartridge drives* ❑

As a dedicated Acorn computer user you will understand better than anyone the restrictions you have faced in the past when trying to upgrade your machine.

We sympathise wholeheartedly and at the same time offer you a solution. Its name is SCSI, in full 'Small Computer Systems Interface'. Nothing new in that you might say, but you would be wrong. Our interface, instead of just being able to connect to a few well chosen devices, is capable of controlling any seven individual SCSI devices all at the same time. As long as they are ANSI (American National Standards Institute) compliant devices we guarantee that they will work with our card.

We designed our interface and engineered our software, to be fully compliant with ANSI standard X3,131-1986. This is the definitive standard by which all SCSI hardware and software must be measured. So if you are thinking of buying a SCSI setup ask whether it meets the above criteria. You will probably find very few manufacturers who will give you a straight answer.

The interface card can be used on any RISC-OS based machine fitted with a standard expansion slot. This means that when you upgrade your machine your SCSI setup can go with you.

*Our installation software makes setting up your system a piece of cake. Instead of messing around with *commands once your interface card and device are connected you simply run a single piece of software, give a quick Ctrl-Reset and off you go. We also include one or two rather useful utilities which give detailed information about the devices attached to your system and the speed at which they operate, together with a very comprehensive manual.*

It all adds up to a complete system that has the future built into it. You can buy our interface and devices either directly from ourselves or ask for it by name from any good Acorn dealer.

Minimum system requirements

- ❑ *Acorn ARM based computer*
- ❑ *Acorn RISC OS 2 or 3*
- ❑ *1MB RAM*
- ❑ *Standard Acorn expansion slot*

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**A300 series machines must have a backplane fitted to use these.*
***A300 series machines must have a backplane and preferably a MEMC1A upgrade. † Currently available but excluding A4*

and this is where to find it ...

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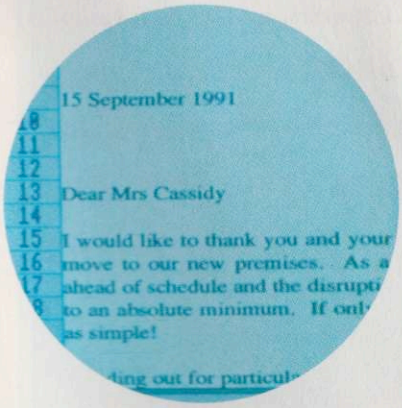

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Imagine a flexible word processor in which you can use fonts and pictures to give stunning presentation to your letters and reports. And a 93,000 word spelling checker and user dictionaries for letter-perfect writing.

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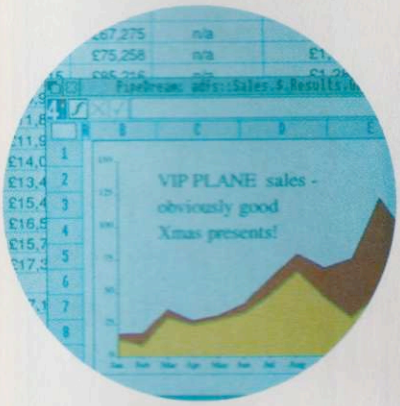
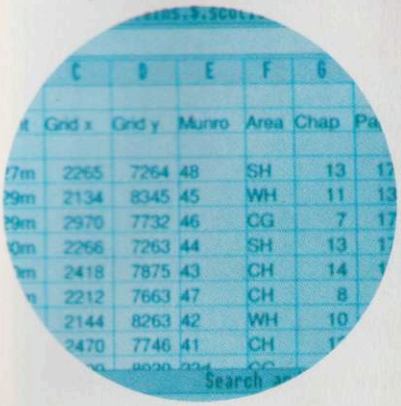


RRP £196+VAT. Call for education prices and site licences. PipeDream 4 is ideal for any Archimedes, A3000 or A5000 with 2MB RAM or more.



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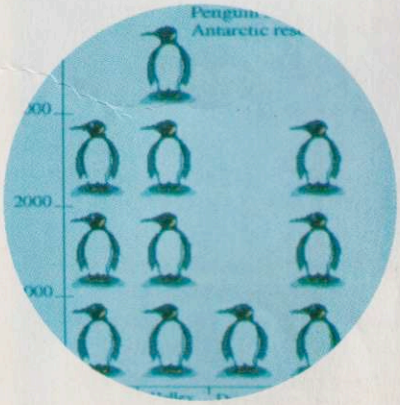
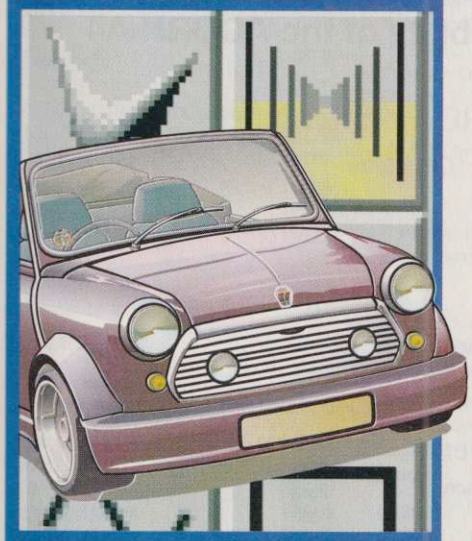


COVER FEATURE



Ace Art

ArtWorks from Computer Concepts has finally arrived and we enlist the help of experts from the worlds of the Apple Macintosh and PC-compatibles to see whether it lives up to expectations. Check it out on Page 25.

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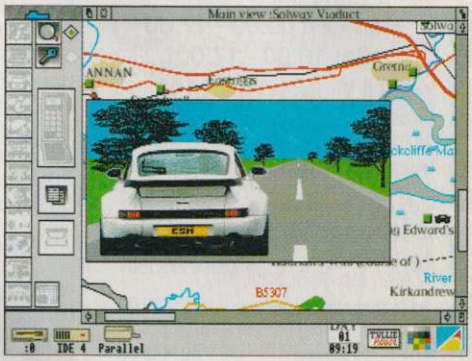
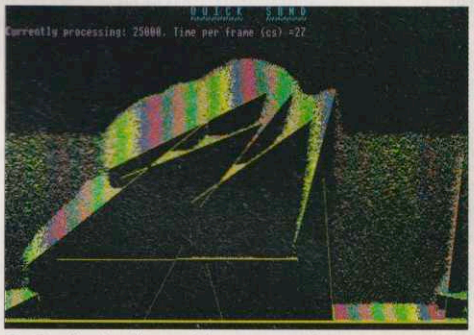
* This symbol indicates that the feature contains at least one full length listing for you to key in on your micro. All programs for your machine are on the subscribers disk.

Get it right! All the major listings in this magazine are accompanied by checksums to help you key them in correctly.

For full details of how to use them see the article on Page 86 of the February 1992 issue



● *Try out this fun treasure trail from the cover disk*



● *Get in the flow with an amazing demonstration of 32-bit power*

November subscription disk

This month's *Acorn Computing* disks are crammed with excellent software. The one for 8-bit BBC Micros contains a Roulette simulation, a game with lots of levels, a quiz scoreboard and a remarkable image distortion program. The 32-bit disk features:

- Easy system font changer
- Quicksand demo
- Treatment monitor
- plus tons of PD software.

If you own an 8-bit machine, subscribing will save you the trouble of returning the 3.5in MegaDisk to swap it for the 5.25in disk (see Page 34).

Subscribers get the disk of their choice automatically. You can subscribe for as little as £25.95 – turn to Page 43 for full details.

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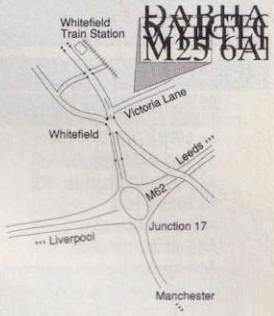

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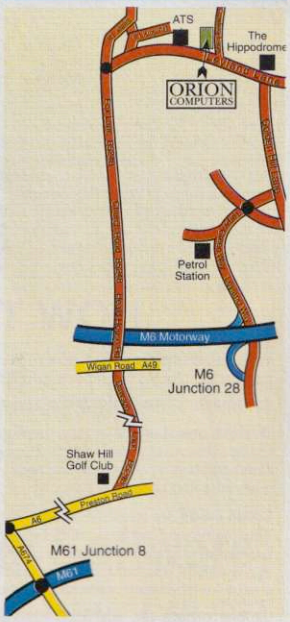

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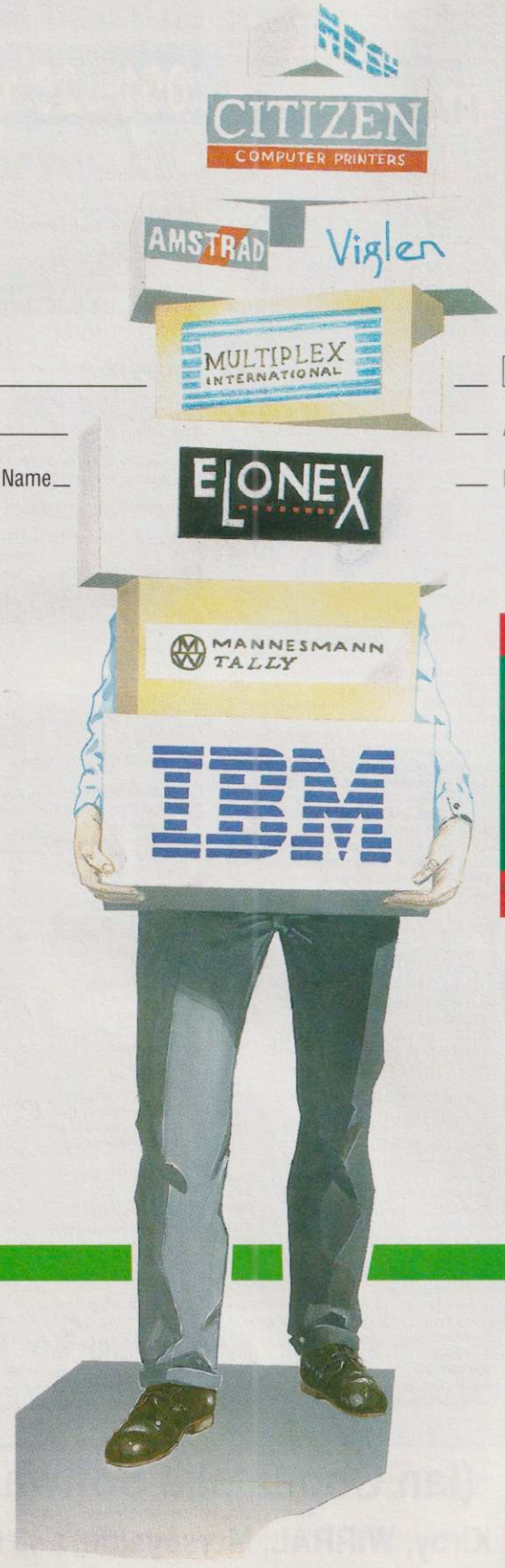

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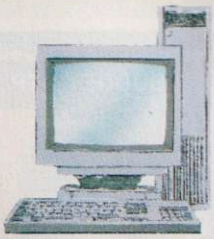

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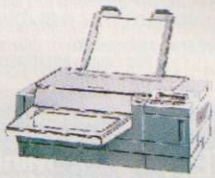

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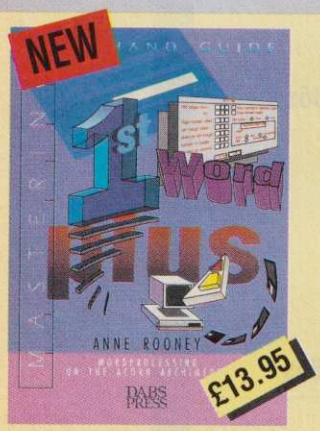

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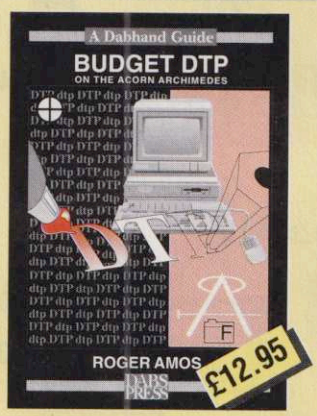

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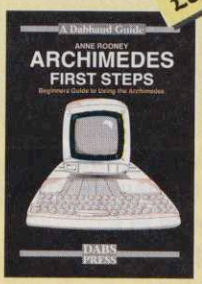
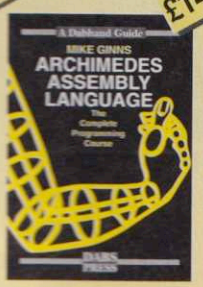
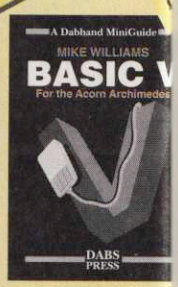


Introductory book for the Arc, covering the basic operations and use of !Edit, !Draw, etc.

Useful summary of OS information with detailed examples. (£21.95) with disc.



The only tutorial and reference on ARM assembler on the market, with many RISC OS examples. (£21.95 with disc.)



A practical guide to programming in BASIC V o the Acorn Archimedes, wit wealth of easy-to-follow examples.

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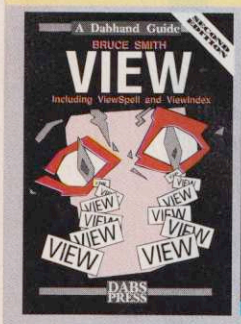

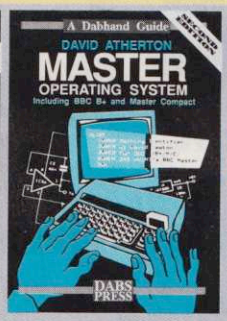

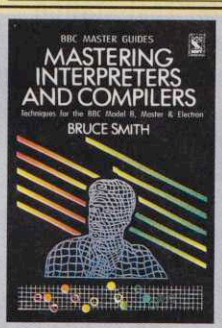

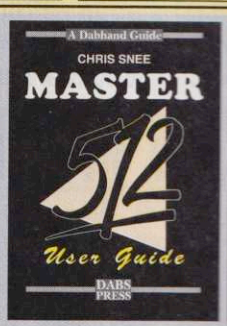

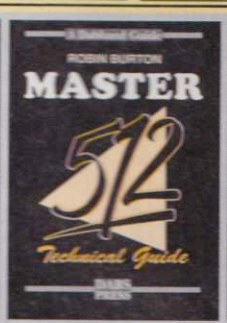

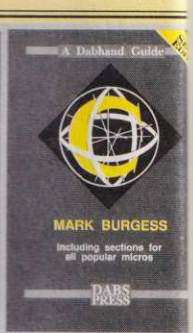

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Minidriver As HyperDriver but for Mini Office II. Includes Viewdata terminal. £24.95 ROM. SRAM version £19.95.

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Master Operating System David Atherton's definitive reference work including the famous 'differences between all eight-bit models' section used by countless programmers to ensure compatibility across the full eight-bit range. £12.95 or £17.95 with disc.

Mini Office II Guide Detailed tutorial by Bruce Smith and Robin Burton for the BBC/Master versions of the software. Price £9.95 or £14.95 with disc.

Mastering Interpreters and Compilers Fascinating Bruce Smith title on creating high level languages. £14.95 with free disc.

MASTER 512

Master 512 Shareware Collections Two collections of PC shareware, all tried and tested on the 512. Includes WP's, spreadsheets, databases, games etc. Five full 800k discs in each. Each collection normally £29.95, special offer £25 for both.

Master 512 User Guide Full instruction for using the 512 and DOS Plus, with tips on soft-ware compatibility. £9.95 or £14.95 with disc

Master 512 Technical Guide The companion guide with full 512 programming information and hardware expansion projects. Price £14.95 or £19.95 with disc.

ARCHIMEDES SOFTWARE

Instigator Utility system providing disc sector editor, memory editor, disassembler, command line archiving, and much more. Price £49.95

Arc PC Emulator Shareware Similar to Master 512 Shareware but for the Arc PC Emulator. Two collections of five discs each. Normal Price £34.95. Now on special offer, both collections for £25.

ARCDFS Very popular program to provide full DFS facilities on desktop or !65Host /!65Tube. *(Not A5000 compatible).* Price £29.95

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C: A Dabhand Guide Massive 512-page complete guide to C programming. No previous experience required. Arc & BBC sections £14.95 or £21.95 with disc.

OTHER BOOKS

Z88: A Dabhand Guide Introduction to t Z88, by the designers of the machines ow software. £14.95

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Oak delve deep into the past

SOFTWARE packages allowing children to explore the past for themselves are becoming more prevalent with the Landmarks series from Longman Logotron as well as the Arcventure scenarios from Sherston Software. Oak Solutions (0274 620423) are now launching four products of their own.

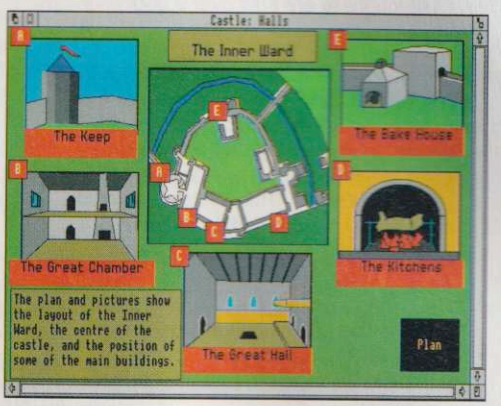
Ancient Egypt and Saxon Life are both aimed at Key Stage 2 with Castle Life more appropriate for Key Stage 3 and all cost £50.

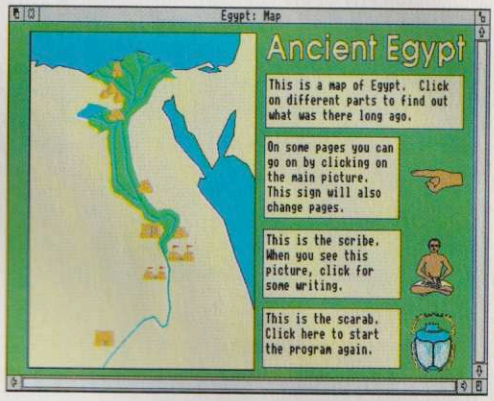
The Battle of the Somme covers both Key Stages 3 and 4 and is priced at £95 or £100 if you opt for the Somme Videodisk.

Ancient Egypt, as you might expect, places children among the Pharaohs letting them explore the buildings, beliefs and so on using maps, picture and animation as well as detailed text. A nice option for younger children is that the software is supplied in two versions with an easier text version for younger children.

Moving forward in time to Saxon Life the format is similar although this time dealing with the story of the Saxon invasion and settlement of Britain from AD400 to 1066.

Children are encouraged to follow their own path through the *hot-linked* routeways. A census database is supplied which can be used to build up a model of the population of a Saxon town.





In addition the problems and games section contains a Saxon board game and three simulations. These encourage group work in solving the problems of finding places to live, establishing towns and uniting a single kingdom.

Moving forward in time to Castle Life, children are introduced to the medieval castle.

Using plans and views they can visit each area of the fortification seeing how it was used and altered over the years. As with the Saxons, children follow their own routes discovering the defences, defenders, craftsmen and their families. All the illustrations are based in Barnard Castle in County Durham.

Finally, comes the Battle of the Somme which is a multimedia presentation focusing on the events that occurred around 1 July 1916.

As well as laservision there is text, sound, graphics, photographs, databases, maps and movie sequences. The information includes a Roll of Honour, music popular at the time, digitised key photographs and sections of letters.

Spider models

JIM Cameron's Arachne Software are developing a molecular modelling package. The specifications include entry, editing and animation of molecules with a variety of viewing styles.

You can also export molecules in draw file format to DTP packages and the like. In addition molecule structures can be optimised to predict the best shapes following chemical and physical theory.

The finished package will retail for around £50 and include a selection of example molecules and plans are in hand to release supplementary disks containing structures of general and specific interest for around £10 each.

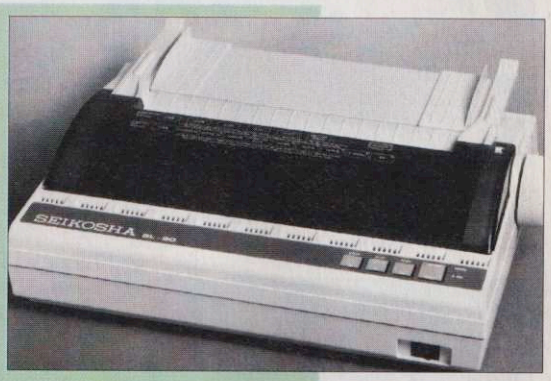
Demonstration disks are available for £5 which will be discounted from the price of the complete package. For more information contact Arachne Software at Orchard Cottage, East Morden, Wareham, Dorset BH20 7DL.

24-pin printing

SEIKOSHA (0753 685873) have launched a fast economical 24-pin dot matrix printer, the SL-90, priced at £239 combining a speedy 240cps with 24-pin quality.

The SL-90 is compact and space-saving giving a graphics resolution of 360x360 dpi. Emulating the Epson LQ850 means that it is compatible with the Archimedes standard printer drivers and there is a useful 20k buffer.

The usual paper-handling features are included such as push tractor, semi-automatic cut-sheet feeder and paper parking. You can opt for a fully automatic sheet feeder for £98.



Education compilation

NEW from HS Software (0792 204519) for £22.95 is a compilation of three educational games: Weatherman, Kevin's Quiz and Gnomework.

Making the most of the Archimedes sound and graphics each game has full colour Mode 15 graphics, animations digitised from live video, sampled speech and easy-to-use controls.

Weatherman lets you create your own weather maps just like on TV while Kevin's Quiz features some characters taking part in a live mental arithmetic contest. In Gnomework a TV gardener relaxes letting his Gnome friend find various items and put them away.

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Beebug are one of Acorn's largest dealers. We have a large showroom in St. Albans (close to the M25 and M1) and an efficient mail-order service specialising in sending Acorn Computer equipment to homes throughout the country. Additionally, we have an excellent technical support team to provide any advice and help that you may need. Beebug are not here today and gone tomorrow. You can trust us, we have been working with Acorn for over 10 years now!
Our sister company, RISC Developments, is also well known for producing quality software and hardware add ons for the Acorn range, as well as the RISC User magazine.

The New Line Up

We now have great pleasure in offering the new and exciting line up of computers from Acorn. All of these systems feature RISC OS 3.1, the new multi-tasking operating system and are supplied with a mouse, stereo sound, 2Mb (unformatted) floppy drive, serial and printer ports. Additionally, they will all run any of the standard Archimedes software titles, of which there are now over 2,000.

0151g A3020 FD Colour £749.00
0152g A3020 FD Multi-scan £799.00
0155g A3020 HD60 Colour £899.00
0156g A3020 HD60 Multi-scan £949.00

A3010

This system represents an incredible breakthrough for Acorn. For only £499 INC VAT you can now have the full power of an Acorn RISC OS computer. This system is based around the new ARM 250 processor, which typically offers a 50% speed increase on ARM 2 systems (A3000/A310/A400). 1Mb RAM (upgradable to 2Mb), 2 joystick ports and TV modulator are all built in to the A3010. It is supplied with EasiWord word processor, Audio Training Tape and Quest for Gold Game in a pack called The Family Solution. Alternatively, the A3010 is available in The Learning Curve package. This also includes a RAM Upgrade to 2 Mb, Colour Monitor, PC Emulator, Guide to the National Curriculum and Genesis Collection.

0172g A3010 Family Solution £424.68
0182g Colour Monitor for A3010 £220.00
0173g A3010 Learning Curve £680.00

A3020

This system is targeted towards the schools. Along with the ARM250 it offers 2Mb RAM (upgradable to 4Mb), colour monitor (or multi-scan) and optional 60Mb internal hard drive.

0211g A5000 2Mb HD80 Multi-scan £1399.00
0206g A5000 4Mb HD120 Multi-scan £1599.00
0213g A5000 Learning Curve £1445.96

A4000

This system is supplied in a slimline version of the A5000 metal casing. It has a separate PC style keyboard, the ARM250 processor, 2Mb RAM (Upgradable to 4Mb), colour monitor (or multi-scan) and an 80Mb hard drive. It is also available in a Home Office pack which includes Easiwriter wordprocessor, Audio Training Tape and Desktop Database.

0227g A4000 Colour £949.00
0234g A4000 Multi-scan £999.00
0209g A4000 Home Office Colour £999.00
0215g A4000 H. Office Multi-scan £1049.00

A5000

This now represents even better value for money. The A5000 features the ARM3 processor, 2Mb RAM (upgradable to 4Mb), an 80 Mb hard drive and multi-scan monitor. It is available in a Learning Curve bundle which also includes Acorn DTP, 1st Word Plus wordprocessor, Pacmania Game, PC Emulator and Genesis Plus. A separate version of the A5000 is also available (but not in the Learning Curve), which includes 4Mb RAM and 120 MB hard drive as standard.

A4 Portable

This is effectively an A5000 in a notebook format. An excellent machine with ARM3, 2Mb RAM (upgradable to 4Mb) and optional 60Mb internal hard drive. (Free PC Emulator with 60Mb version until Christmas.)

0317g A4 2Mb FD £1399.00
0316g A4 4Mb HD 60 £1699.00

0390g Acorn Pocket Book £212.72

Acorn Pocket Book

This is the surprise addition to the range. It is not RISC OS based and has none of the features shared by the rest of the systems. It has built-in applications of wordprocessor, spreadsheet and database with 256K RAM and optional 4Mb Solid State Disc. An optional link kit enables it to transfer data to any Acorn RISC OS computer.

RISC OS 3 Upgrades

Upgrades to the new version of RISC OS are now available. This will certainly become the new standard for all Archimedes machines. A3000, A540, A400/1 series computers need only code 0888d. A305, A310, A440 systems will also need a Hardware Upgrade Kit (dealer fit) code 0887b. A5000 owners need a ROM only kit, code 0889b. If you are unhappy about fitting RISC OS 3 yourself, we are pleased to offer a free fitting service to customers. Please phone to arrange this.

0888d RISC OS 3 Complete £41.70
0889b RISC OS 3 (For A5000) £16.17
0887b Hardware Upgrade Kit £25.53

Educational establishments, please phone or write for quotation.

BEEBUG Ltd. 117 Hatfield Rd. St.Albans. Herts AL1 4JS Tel. 0727 40303 Fax 0727 860263

For More Information

Please write or phone for more information or an Acorn brochure. Additionally we would be pleased to send you a complimentary copy of our 52 page full colour catalogue on just about everything for the Archimedes computer.

Ordering Details

These are all new products so please call to check stock availability. Orders received will be dealt with in strict rotation and cheques not cashed or credit cards debited until your system is actually sent.

Prices are shown exclusive of VAT.
Carriage: RISC OS please add £3.00, computers please add £9.00.

Wheel of joy

IF you feel tempted to buy a joystick with the advent of the new A3010, take a look at Spectra Video's FreeWheel. The Nigel Mansell FreeWheel gives the playing of car racing games a whole new feel and costs £29.95. For further details contact Spectra Video on 081-902 2211.

Minding labels

PRODUCING text for labels from a database can sometimes be rather tricky. Some databases produce CSV files but can't output their records in the usual text format.

A solution comes from Nicholas Day – the actor who plays Sergeant Morley in Minder – who has written a commercial utility which addresses this problem.

Called LabelText it allows you to convert CSV files to text files. Fields appear in any order and two or more can be joined on one line. In fact you can include any text you choose, even Impression formatting commands. For more details contact LabelText on 081-317 0797.

Sounds good

AN enhanced version of the Oak Recorder software is now available from Oak Solutions (0274 620423) for an upgrade price of £14.95. Called SoundLab it contains many new features.

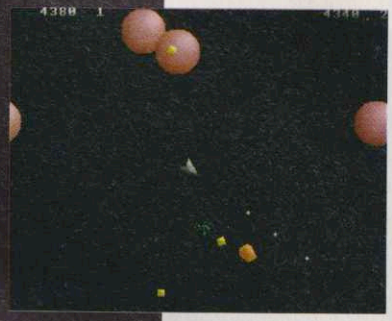
By allowing samples to be turned into relocatable modules you can provide voices for such applications as Maestro.

You can even replace your Archimedes' internal voices changing the beep to a scream for instance.

In addition SoundLab provides a real-time display with a spectrum analyser and a simple oscilloscope. These are ideal for investigating waveforms and for simple experiments while the sampling and playback rates can be altered to create special effects.

Chaos rules

MATT Black (0733 315439) are about to release their first game, Chaos. Priced at £25 this space shoot-'em-up introduces you to a universe where man's constant interference in the ecology has led to an experiment to punch a hole in the fabric of space.



Programmed by Iain McLeod, Chaos allows up to four people to play simultaneously and the final version promises stereo sound effects, various types of enemy ships and collectable power-ups to boost firepower.

New and improved

OREGAN Developments are continuing development on Archivist – an easy-to-use database designed in accordance to local education authority guidelines. Updates are free to all registered users but Archivist II is due any day.

This new version is still priced at £24.95 but now includes the ability to include Draw, Sprite, Euclid, Maestro, Tracker, Samples and Symphony files on cards. A simple label printing option has been added for mail shots and you can merge two existing Archivist files.

The cards are also now displayed on screen using outline fonts with enhanced colour presentation. Oregan have also added hotlinks to various related software as well as the in-built ability to import files from other computer systems such as Lotus 1-2-3 on the IBM PC.

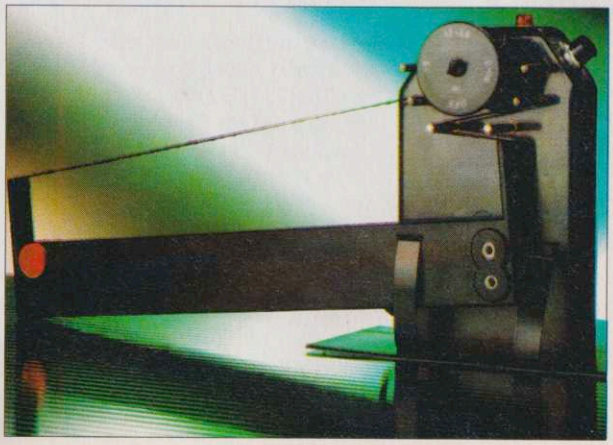
There is also more news on Digital Symphony which is a fully multi-tasking sound track editor for £49.95. Included in the specification is a sophisticated play routine which can play sequences created by Symphony's editor as well as tracks imported from other software on the Archimedes and Amiga such as Med and OctoMed.

You can also use midi-instruments to enter and play music in real-time and all or parts of a pattern can be cut, dragged and pasted. Music can be saved in Symphony, Compacted Symphony, ProTrack, Amiga SoundTrack, Tracker or relocatable code forms. For further details contact Oregan at 36 Grosvenor Avenue, Streetly, Sutton Coldfield B74 3PE.

Saving ribbons

THEMIS (0883 623366) now have three machines capable of re-inking all types of printer ribbon regardless of length, width or colour, with the Basic Inker ideal for the home user or businesses with one printer.

Themis machines can re-ink a ribbon on average 20 times. The process is very simple and automated taking about 20 minutes. The ink is oil-based and has the additional function of cooling and lubricating the printheads so extending their life span.



Egyptian adventure

FOLLOWING the success of Arcventure – The Romans, Sherston Software (0666 840433) are about to release Arcventure II – The Egyptians.

Aimed at second and third year juniors it has been designed using the popular format used in Arcventure with added features.

Children are given the opportunity of joining an archaeological dig at Giza in Egypt to see what they can find hidden under the sand.

The computer holds the information they will need, giving them information about their finds and even shows them how they would have appeared in that time.

Some items are not known by the computer and it is up to the children to travel back in time to discover what they are. Once they are back in the past they can talk to people and ask questions about what they have found.

Sherston have enhanced the package by the number of draw and sprite files which can be used in other applications. The cost of Arcventure II is £29.95.

More noshing on the Arc

HOT on the heels of Nosher, Nosher 2 is about to make its debut on the Archimedes next month. Costing £10 it will feature more advanced and varied graphics than the original with multi-directional horizontal and vertical scrolling screens.

Nosher 2 also comes with a screen designer to allow you to design your own fiendishly difficult levels for Nosher to navigate. For further details contact State of the Arc at 29 West Lea Drive, Tingley, Wakefield WF3 1DH.

UPS and downs

ANYONE who has ever been at the receiving end of a spike – a glitch in the electricity supply – would wish for an UPS (Uninterruptable Power Supply) especially useful if you are using your machines on location.

Chloride Power Electronics (0703 610311) have developed the EDP20 to cover the 800 to 1400 VA power range. It has an unusual built-in bypass switch which automatically transfers the computer load to the mains power supply should the UPS fail.

In case of a mains power failure the EDP20 gives you 10 minutes in which to power down, save and so on. If your applications would need longer to shut down extra batteries are available in matching battery cubicles.

Oops

THE gremlins crawled into two prices in the September and October issues.

To put the record straight, LogIt from DCP Microdevelopments (0480 830997) costs £185 while Populous from Krisalis (0709 372290) retails for £29.99.

Self-help

SOLINET – The BBC Micro User Group – are now in their seventh year. A self-help group for BBC B and Master users they also produce a bi-monthly disk-based magazine.

For further information send an SAE to Ron Marshall at Solinet, 41 Westbrook Drive, Rainworth, Mansfield NG21 0FB.

Network knowhow

A NEW network solution for the A3020 and A4000 has been released by i^3 (0223 413717) called EtherLan 200. The system directly supports the Cheapernet and Twisted pair versions of Ethernet while an optional adapter will connect to Thick Ethernet.

EtherLan 200 supplies the Acorn Universal Networking software – AUN – in *flash rom* so that future upgrades can be installed without the need to open the computer.

Not to be outdone ACS (0582 20604) are providing an alternative to the Econet system called ARCNet. With a provisional price of £69 it needs no additional software and the unit replaces the Econet module.

A special version to fit the new A4 is also on the books and is promised soon. The software which accompanies the unit lets the network run at between 2.5Mbits and 5Mbits per second – between 8 and 16 times faster than Econet and up to half the speed of the more expensive Ethernet.

To install the new network all you need to do is replace the boards. The existing station numbers still apply and existing software can be used to provide fileserving capabilities.

Also entering the fray are Digital Services (0705 210600) who have now launched their economical and simple network option which takes advantage of the number of schools who already have Econet.

They have approached the slow load times of Econet from a different angle to ACS with applications loaded at the speed of a local hard disk. Ten stations will set you back £200 with every additional 10-station pack costing £100.

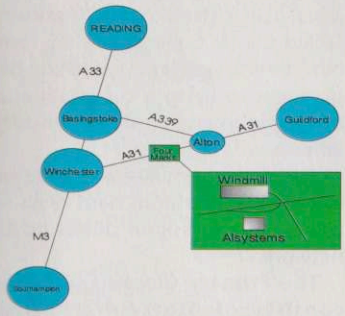
Authorised Education Dealers

47 Winchester Road, Four Marks, Alton, GU34 5HG, Hampshire

0420 561111 Alsystems

EDUCATION AND TRAINING MICROCOMPUTER SYSTEMS

IBM Canon SJ RESEARCH



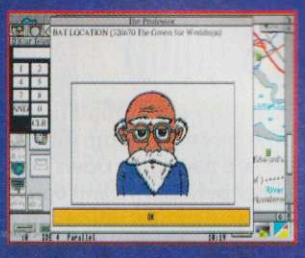
Acorn Open Day
Saturday November 14th
10 am until 4 pm

Why not come along and see the latest machines from Acorn and have a chat to some of our guests. The venue is The Windmill Inn, Four Marks, opposite our showroom.

Acorn Premier Dealer - UNIX - Network Specialists - Repairs and Maintenance

FRONTIER 2000

Probably the most complete education package to date... £95 exc P&P & VAT



- ★ Hadrian's Wall
- ★ Roman Times
- ★ Mary Queen of Scots
- ★ The Solway Firth
- ★ Bonnie Prince Charlie
- ★ The Civil War
- ★ Victorian Britain
- ★ Railways
- ★ Timeline from 43 A.D. to May 1991
- ★ The Border Reivers
- ★ Map Reading
- ★ Decision Making
- ★ Genealogy
- ★ Poetry and Language
- ★ Music
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- ★ Posters and Postcards
- ★ Piece of Roman Timber
- ★ Tourist Information
- ★ Reivers Car Trail Guide
- ★ Magazines
- ★ Pictorial History Guide

"Frontier 2000 is a superb pack, the trails are entertaining and informative, whether used at home or at school" ***Roger Frost, The Micro User, June 1992***

FRONTIER 2000

Cambridgeshire Software House, 7 Free Church Passage,
St. Ives, Cambridgeshire PE 17 4AY
Tel: 0480 67945 Fax: 0480 496442

Risc OS, 2Mb Min Req.

CD Rom (Risc OS) version available Please contact us for information

The right image

TWO new products from Palette Studio (0733 344245) are due for release soon: Imagery and Visionary. Imagery is a new multi-tasking image creator based around the Paint user-interface and costs £89.95.

It provides 256 colour painting and image processing while supporting outline fonts, Risc OS printer drivers and inter-application data transfer.

A wide range of tools is provided to allow you to create artwork from scratch. In addition you can customise the software to your way of working. A picture management system is one of the features which lets you retain the same picture in different versions.

Visionary is described as a high-end graphics retouching and processing package and gives support for 24-bit colour. Features similar to those found in Adobe PhotoShop on the Apple Mac are promised. Watch this space for further details.

Cornish open

THIS month sees MicroTest running their own Acorn Open Day in St Austell. Hosted at the Ocean Suite at Cornish Leisure World in Carlyon Bay in St Austell, Cornwall, it is open from 10am to 7pm on Sunday 8 November.

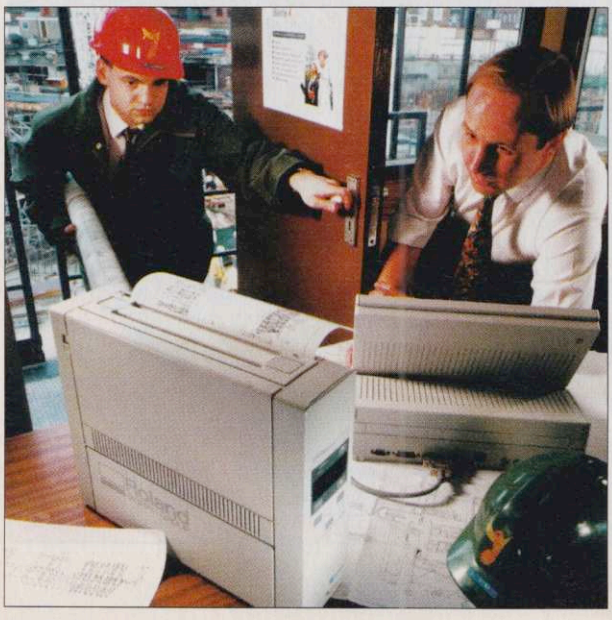
Acorn will be on hand to show their new range of machines and MicroTest promise something for everyone whether you are a home, business, education or non-Acorn user.

A number of educational presentations have been organised and more details can be obtained directly from MicroTest on 0208 73171.

Portable plotting

CAD users with an Acorn A4 can now have a complete portable CAD system. Roland (0252 816181) have launched their first portable plotters. These direct thermal plotters provide A3 drawing of a professional quality, quickly and with the minimum of supervision and maintenance.

Built in a brief-case design they are easy to carry and double as a printer as well as a plotter – useful if you want to product text documents to support drawings.



Two models are available: The LTX 2121 giving 200dpi resolution and the LTX 2141 with 400dpi. Complex plots can be produced in three and a half minutes which includes the time needed to convert plot data from vector to raster using the new risc-based VCR in the plotter.

In addition the plotters accept durable over-coated thermal paper, matte film and transparent film as well as the more economical non-coated thermal paper.

The plotters can receive A0, A1 and A2-size CAD data files and can also convert them to A3 or A4 output. Both machines have a full-frame memory system – 1Mb in the LTX-2121 or 4Mb in the LTX-2141 – and use the Hewlett-Packard LJII drivers.

New oaks

OAK Solutions (0274 620423) are about to release a series of packages using their new ClassRom. Called Classic Collections they combine several well known Archimedes packages to bring a compilation to both primary and secondary schools.

The collections are available on standalone ClassRom hard disks or as part of a ClassRom cluster or full network.

The Primary Classic Collection consists of StartWrite, Junior Database, Genesis Plus and DataSweet. This gives a quality wordprocessor, database, multimedia authoring, spreadsheet and graphics all in one.

For the older age range the Secondary Classic Collection hold a similar combination: EasiWriter, PipeDream4, Desktop Database, WorraCad and Genesis II.

All the software chosen had to be easy to use and be able to share information. For instance, data created in spreadsheets or databases can be viewed graphically and imported into the wordprocessors or Genesis.

The prices of these collections are £95 for the single user version of the Primary Collection, £145 for the Secondary with Cluster licences – for up to four computers – being £261.25 and £398.75 respectively.

Irish support

THE Acorn Support Group in Ireland have now been running over five years and are having an Open Day on 7 November between 12 and 6pm.

As well as demonstrations of the full Acorn range, there will be seminars on Risc OS, DTP, communications and so on. A video capture demonstration is promised as is sound sampling.

For further information contact Aidan Nolan at the ASG, c/o Good Shepherd NS, Whitehall Road, Churchtown, Dublin 14.

Withdrawn

UNFORTUNATELY the authors of Cascade – Richard Norman and Milo Shaffer – have decided to withdraw the game from the market due to similarities with another Archimedes product.

RISC User

now offers 15% off Software and 5% off Hardware to subscribers

RISC User is a high quality magazine devoted totally to the Archimedes range of computers. RISC User is produced by a dedicated and enthusiastic professional team which benefits from over 10 years of experience in computing and writing. RISC User can also call upon RISC Development's considerable expertise as a major software and hardware developer for the Archimedes range.

Every RISC User issue contains a wealth of articles and programs with professionally written reviews, lively news, help and advice for beginners and experienced users, and of course the usual game or item of home entertainment. Altogether RISC User has established a reputation for accurate, objective and informed articles, and at the same time friendly and approachable style.

RISC User is also famous for its professionally compiled disc, which in addition to the programs from the magazine, is crammed with useful applications, utilities and entertaining items, all carefully selected and tested.

As a RISC User subscriber you will not only enjoy a highly popular and informative magazine, but you will benefit from all the help and support a professional organisation can provide.

In addition you will receive at least 15% off any RISC Development's software and 5% off RISC Developments' hardware, and this list of products is constantly growing.

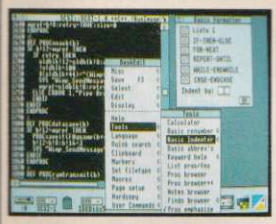
A year's subscription to RISC User is £19.90 (for overseas, please phone).

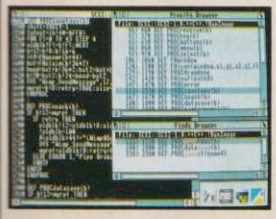
THE BEST PROGRAM AND TEXT EDITOR FOR THE ARC HAS JUST GOT A LOT BETTER

NEW

DeskEdit2

A major new release of the popular and powerful editor DeskEdit brings a whole toolkit of features that will assist all programmers, whether novice or experienced, and whether using Basic or C - and all within Acorn's powerful multi-tasking RISC OS Desktop. There is a lot for text users too.





All this of course is in addition to the features that have made DeskEdit so popular among users of Acorn machines, and which resulted in glowing reviews when it was first launched a year ago. IN FACT DESKEDIT IS SO GOOD THAT IT IS USED WITHIN ACORN ITSELF!

New features include:

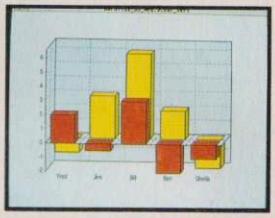
- **Basic program Renumber** - including partial renumber and marked sections.
- **Basic Program Indenter** - indents Basic programs after IF THEN, REPEAT, FOR etc.
- **Basic Abbreviations** - all Basic V's several hundred abbreviations are implemented).
- **Programmer's Calculator** - a powerful calculator especially designed for handling bits and bytes.
- **Multi-purpose Browsers** - an easy to use browser window containing a list of finds. Clicking on any one of these will take you to the corresponding place in your file.
- **Throwback** is fully implemented so DeskEdit can respond to messages from C compilers etc.
- **!FIND** - DeskEdit comes with a powerful stand-alone Acorn application called *Find*, which can find text strings in a whole group of files, just given a wildcarded filename.
- **Extended Saves** - DeskEdit 2 can save a special data file with the position of the caret, wordwrap correctly set and markers

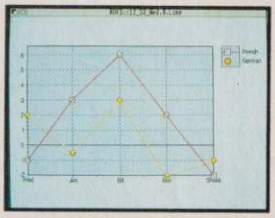
DeskEdit 2 (disc, new manual, keystrl and quick reference card) PDE2b £31.95 inc + £2 p&p
DeskEdit 2 Upgrade Code PDEXa £9.95 inc + £2

NEW

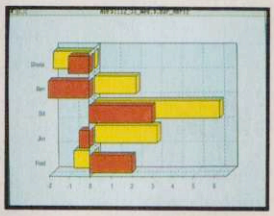
ChartWell Version 1.1

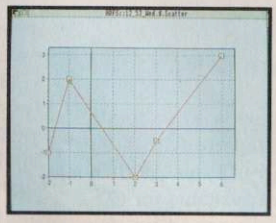
A sophisticated Graph and Chart Package which now offers new features.





Full handling of ***negative values*** in bar charts (both vertical and horizontal), line graphs and scatter graphs. Where negative values are used, the user will be able to choose whether axis labelling appears on the axis itself or at the left and/or bottom edges of the graph display. Bar charts using negative values will have the option of a solid or transparent 'zero platform' for 3D displays.



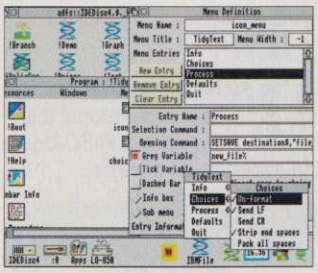


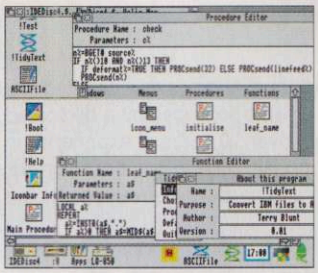
More ***flexible handling of data*** limits, allowing the user to configure ChartWell for handling more data points than the current fixed limit. Users will now be able to allocate as much of the available memory in their system as they wish for this purpose.

A number of improvements to positioning of labels, titles and values have been incorporated to avoid potential clashes and overlaps which occurred in some circumstances.

Chartwell and manual
Price **£29.95 inc** + £2 p&p Code **PCHWa**
Version 1.1 of ChartWell is available free of charge to existing users (send the original disc and a SAE marked **ChartWell Upgrade**).

RISC Developments Ltd. 117 Hatfield Road, St Albans, Herts AL1 4JS. Tel. 0727 40303 Fax 0727 860263





Basic changes

PDK Technologies (0525 403541) are now marketing HelixBasic which was previously being sold by Craddock Computer Systems. PDK will be continuing full support of all HelixBasic owners and continuing CCS's upgrade policy.

An armful of memory

SIMTEC Electronics' (0772 812863) new ARM3 board – like the A5000 and newer A540 models – includes a socket for ARM Ltd's forthcoming Floating Point Accelerator chip (FPA) which is priced at £175.

This chip makes maths operations much faster. According to Simtec the combination of FPA and ARM3 on the same board is probably the only way of fitting both to older machines.

With ram prices falling Simtec have decided to reduce the costs of their ram upgrades: 4Mb for the A3000 costs £106, for the A5000, £79 and for the A305/310, £129.

Survival adventure

LYNSOFT (0287 624843) have launched their first adventure game for the Archimedes using the ALPS adventure generation system from Alpine Software.

Priced at £9.99 The Survivor is set in a future society where an elite few have managed to live through the breakdown of society. But when you wake from a deep sleep you remember nothing and are alone in a devastated hi-tech bunker.

Lynsoft are a new company who are turning their attentions to producing economical educational resources for Primary schools. They are keen to hear from anyone involved in education who might have ideas to share, in particular related to History and Genesis in the Primary School.

Meet the team

ACORN are promoting their new range of machines right up to Christmas. These are open to everyone and take place all over the country usually supported by and promoted through local dealers. For further information contact Acorn on 0223 245200.

This is also your chance to meet the *Acorn Computing* editorial team who will be at the shows highlighted below:

Stoke on Trent	Sun 1 Nov	North Stafford Hotel
York	Sat 7 Nov	Abbey Park Resort Hotel
Northampton	Sun 8 Nov	Swallow Hotel
Hull	Sun 15 Nov	Royal Hotel
Derby	Sat 28 Nov	Aston Court Hotel
London	Sun 29 Nov	Forte Crest, S Mimms
Brighton	Sat 5 Dec	The Old Ship Hotel
Crawley	Sun 6 Dec	Scandik Crown Hotel
Bradford	Sat 12 Dec	Novotel
Leicester	Sun 13 Dec	Leicester Moat House

Happy font families

DESIGN Concepts (031-668 4518) have launched three new families of fonts to add to their range of outline fonts. Each has been designed to work on Risc OS 2 and 3 machines running under Font Manager 2.42 and later.

As they are all completely compatible they run under Impression, Ovation, Acorn DTP, EasiWriter and the like and can be printed using the standard Risc OS drivers. If you use a Risc OS 3 machine they can be downloaded to local PostScript printers too.

The first font in each family costs £4 with a charge of £3 for each subsequent member. For example a family of four would cost £13 – site licences are free. Look out for special discounts on certain combinations too.

THIS IS MATRIX 35
THIS IS MAIRO OPEN
This is Foundation
this is celtic.bold

The first new family is Mairo, a classic serif font, available in Open format which gives a glossy, raised look or Closed format without the gaps. The family is soon to be extended to include other weights.

The Jordanhill Teacher Training College in Glasgow designed the next font – Foundation. This has been created to help young children learn to write more easily. The Foundation family includes Medium and Oblique with Bold and Bold Oblique promised soon.

Next comes Matrix35. The is very similar to the basic 5x7 LED displays common is shops. It is monospaced which means it is ideal for applications that need each line of text aligned with others. It comes in Medium and Medium Oblique.

Please note

Prices in *Acorn Computing* are recommended retail prices and are correct at the time of going to press. They do not include VAT or postage and packing unless otherwise stated.

Compact winner

IN the June issue of *The Micro User* we offered you the chance to win your own CD-Rom system to enhance your Archimedes. First correct entry with a unique tie-breaker was Rebecca Smith from Enfield.

On route to her is Cumana's CAA432 CD-Rom complete with SCSI interface, CDFS and utilities. With a host of new software available for CD-Rom systems being launched on the Acorn market she'll be spoilt for choice.

Acorn COMPUTING

NEWSAGENTS ORDER

Please reserve a copy of Acorn Computing magazine every month until further notice

☐ I will collect
☐ I would like it delivered to my home

Name .....

Address .....

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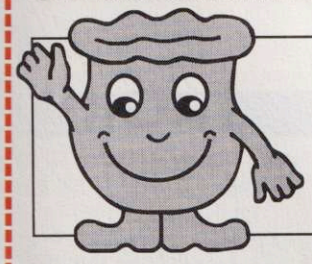
Note to Newsagent: Acorn Computing should be available from your local wholesaler. If not contact the Circulation Manager, David Wren on 0625 878888.

FREE Information Pack

on Educational software/resources



Learn about Pip's Adventure programs for Key Stage 1

Other programs and resources available to support the National Curriculum include:
Pigeonhole
Roamer Maths
All about Me
Funfair
etc.

NORICC

Northern Micromedia

NORICC
Resources Centre • Coach Lane Campus
University of Northumbria
Coach Lane • Newcastle upon Tyne
NE7 7XA
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'MICRO-TRADER' BUSINESS SYSTEM

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ACORN's 32-bit machines are the most powerful home computers on the market but unfortunately hardware is less than half the story – without software any computer is just a large doorstop.

Computer Concepts have been designing easy-to-use packages for Acorn's machines for years and when they turned their attention to a graphics illustration package you could be sure that something special was on the way.

And ArtWorks *is* special. Computer Concepts took a long look at similar software available on the Apple Macintosh (Adobe Illustrator 3 and Aldus Freehand) and on the PC (CorelDraw). Then they decided what was needed, what could be thrown out and finally designed the user-interface to be as intuitive as possible.

And they succeeded. To break into a professional market dominated by the Apple Mac – there are considerably fewer PCs in the Art and Design world – it takes a machine with more power per pound and software that makes design unbelievably easy.

An Acorn 32-bit micro with ArtWorks is up to the job.

I HAVE been using DrawPlus for a few years now and while it – and its successor, Vector – are excellent programs, ArtWorks seems to promise a great deal more.

So exactly what is ArtWorks? Well, it's described as a modular, object-oriented illustration program, which seems reasonable enough. Computer Concepts point out that it's not an Art program as such, as it's firmly in the object-drawing camp, but that's not to say that it can't be used for painting.

Drawn and text elements are stored as graphic objects and as such their characteristics can be changed in terms of outline colour, fill and orientation with the additional advantage that text remains fully editable even after rotation, perspective, envelope and fill options have been applied.

The display is fully controllable in respect of the amount of detail you want to see and there are palettes which can be applied to the image to give you a clearer idea of what the image will look like when printed out, which as you know is generally nothing like the screen image.

There are options which you would expect as standard such as multiple views, layers, graduated fills, outline fonts and comprehensive printing facilities. There is full 24 bit colour support which will be familiar to Impression 2 users and there is an envelope tool allowing drawings to be stretched and distorted.

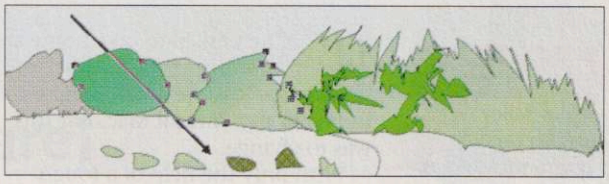
The freehand drawing, dynamic blending and the anti-aliased display seem to be the most powerful and most useful elements of the package. The first of these three elements is the one which will feature most as I explore some of the possibilities of ArtWorks

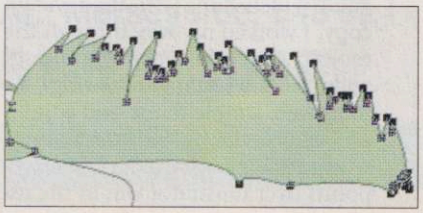
But it is the anti-aliased display which makes working much easier as it reduces the jaggedness of curved or angled lines as represented on screen giving the appearance of a higher resolution display than that which you'd normally expect from your monitor.

The package is straightforward to operate. I was able to sort out most of the features without the manual which arrived a day after the package. The main problems I had were in trying to close irregular lines to produced enclosed shapes, but having read the manual that was soon sorted out.

For the first stage of my landscape I drew rough guidelines for the lake shore and put some of the background bushes in place. Colours are the standard 16 colour palette whatever mode you use but these can be edited or new colours mixed.

Colours can be spot, process or tint format and mixed using RGB, CMYK or HSV systems producing a ➤





● *The same graduated fill applied to many objects*

● *A converted freehand bush*

colour list which is a bit ungainly as a single continuous column – I would have liked a few predefined palettes.

Graduated and radial fills use two process colours, tints of the same spot colour or a spot colour and white. At this stage I'm not sure what the different systems are used for other than colour reproduction so I just stuck to Process colours mixed using the CMYK system though the RGB system is the one most used on previous colour paint and drawing systems.

The bushes were drawn freehand and looked reasonably detailed – while there are many complicated twists and turns, ArtWorks turns it effortlessly into a series of control points.

What I wanted to do was to produce a whole row of bushes and undergrowth but grouped so that I could treat the line thicknesses in one go or change them all to the fill colour. Drawing the bushes and trees was no problem.

Moving the objects around is simplicity itself. Just click on the object with the select arrow at the top left of the toolbox, the control points appear and a four way compass icon appears and allows you to move the object in outline form to a new position.

Using the rotate and rescale icons which centre on a cross-hair cursor allow you to manipulate the object again in outline format so that you can see exactly the shape you're going to end up with.

To apply shading to an object or objects, click Select on the first object and Adjust for subsequent objects, switch to the fill colour option and select a colour.

Alternatively switch to the graduated or radial fill option, select the two colours you require use and drag a control arrow across them in the direction of the fill. Once the fill has been applied then you can experiment with the colours making up the fill and experiment on their effect with the picture.

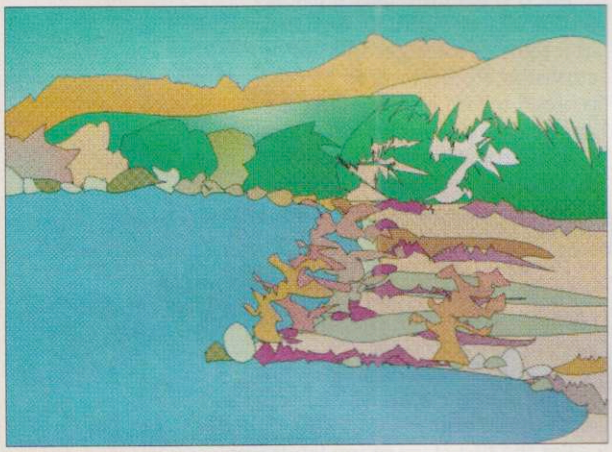
One of the few difficulties I had with drawing the objects was in producing acute bends or right angles. This is best dealt with by double selecting a control point and moving the additional bezier control lines into the position required. This can be a bit fiddly but not difficult.

Now that the sky is in place and the lake is roughed in, there remains the matter of rocks at the edge of the lake and the windswept trees at the right of the picture. The rocks were easy enough to draw individually though they could be distorted and copied to save time.

The trees were drawn in their final positions to complete the landscape although they could have been drawn elsewhere on screen and moved into position when tidied up. The landscape could be a lot more detailed with more time but an important factor to take into account is how the image is to be viewed and what it will be used for.

You may want to spend more time on it if it's to be sent to a colour laser printer or photographed on screen or rather less time if it's to be printed on a dot matrix.

● *The finished landscape*



Conclusion

This is an excellent package with a very good feel to it. Although I've only worked with a few of the features for only a very short while I would be happy to use this in preference to a paint package for a lot of the work I do as it gives a completely different kind of image to a pixel based system with its own, but different, visual qualities.

I know I keep saying this in reviews but you can't afford to miss this package. ArtWorks is a superb companion to Impression as well as being a state of the art in graphic illustration packages. Miss it at your peril.

Steve Bruntlett

Professional graphics

Mike Bailey leaves his Apple Mac to slum it for a while and Roger Shezall takes a break from the PC

Profile

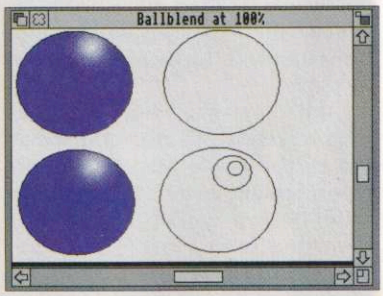
Mike Bailey served an apprenticeship as a compositor and typesetter. He now uses QuarkXPress, Adobe Illustrator and Adobe Photoshop on a daily basis.

WHEN first asked to take home an A3000 and ArtWorks I was, to say the least, just a little biased in favour my faithful Mac. But this was to change.

With only the help of a rough guide which came with the review copy, I worked my way through the toolbox. The line, rectangle, ellipses and rounded rectangle drawing tools were simple to use and edit, and very similar to Illustrator. But where ArtWorks started to score points over Illustrator was in the use of blends within shapes and typefaces.

Even the simple task of drawing a ball with a highlight was made even simpler. Normally I would have had to draw three separate circles blending the two inner ones to create the lighter spot at the top, but in ArtWorks this was created with just one circle.

And when it came blending the more complicated shapes and colours, this too was no problem, as



● *Creating a highlighted ball needs less circles in ArtWorks (top) when compared to illustrator (bottom)*

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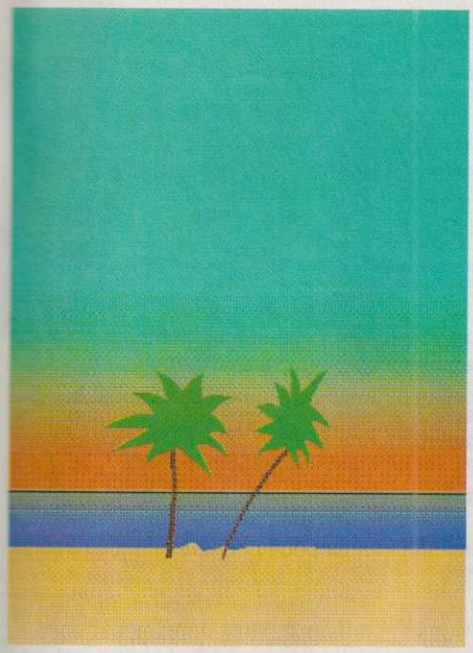


● *Colour effects using blends and fills*

● *Blending to produce odd shaped highlights is easy too*

➤

can be seen in the drawing of Rom – or is it Ram?

It was with colours that my setup of a box standard monitor let me down. It was only the fact that I knew what colours I actually wanted and how to achieve them using the CMYK colour system, that I got by. I would certainly recommend a high resolution monitor to get the best out of ArtWorks.

Text is typed directly on to the page and can be centred, made ragged right or left automatically using the alignment facility. You can then rotate it or give it an outline colour – the inside can be filled with a solid colour or a graduated shade, but it still remains editable with the text tool.

Being able to fill the text with a graduated blend is a great plus. In Illustrator the text has to be made outline, a blend created, then a separate shape the same colour as the text, then the whole group compounded together. With ArtWorks just a couple of clicks does the trick.

Text can also be stretched into perspective – this is one feature I have been waiting patiently for many years for Adobe to put into Illustrator.

It was a joy to use, and *Acorn Computing*'s Editor is going to have to share his A5000 with myself and one or two other art editors in future. The same can be said for the envelope tool. What makes these two features even more attractive is ArtWork's ability to save out in Illustrator format.

Even working on the lowest specification Acorn, the speed was impressive. I didn't have to sit there waiting for the machine to catch up every time I changed the view on screen or altered the drawing in any way.

The Undo feature was something that I particularly liked – all edit operations are recorded, so they can all be undone. The undo record can also be saved with the drawing, so could become an aid to tuition if used properly.

Conclusion

I found the program easy to use, with the need for only the odd glance at the rough manual supplied. There were one or two bugs that need fixing but as this was only a test copy that was to be expected.

I for one would have no hesitation in recommending ArtWorks to anyone, to use either on a professional basis or for pleasure.

Mike Bailey

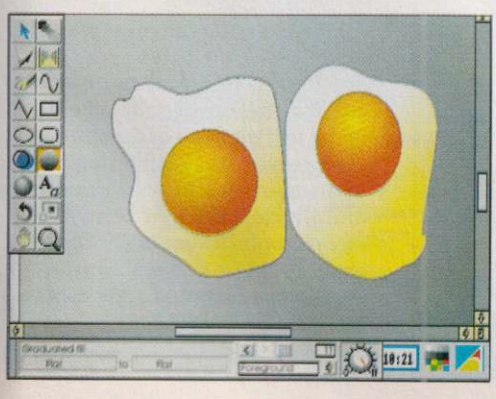
"ARTWORKS is designed to provide the same type of capabilities as CorelDraw on MSdos-based machines, but we believe, in a fashion that is easier to understand and more productive."

So reads ArtWorks' accompanying documentation. That's quite a bold claim to make and so, as a CorelDraw user since version 1 – they're up to version 3 now – I was keen to put ArtWorks to the test.

Once loaded up the program reveals a working area which contains a rectangle representing your chosen paper size. You move around the paper either by using the scroll bars or the zoom tool.

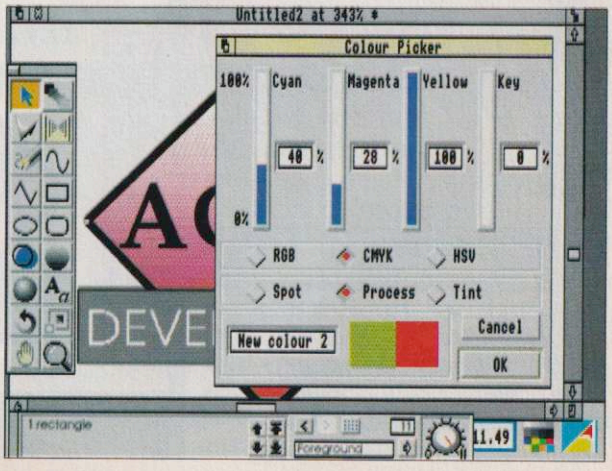
Down the left is a floating, customise-able tool palette, while running across the base of the screen is a status or information bar. So far it certainly has a similar look to CorelDraw But what's this large knob, rather like a tuning dial on the info bar?

This is the wysiwyg screen controller. A wonderful piece of innovation with which you vary the look of the on-screen image. Set it to low and your work appears in outline-only mode,

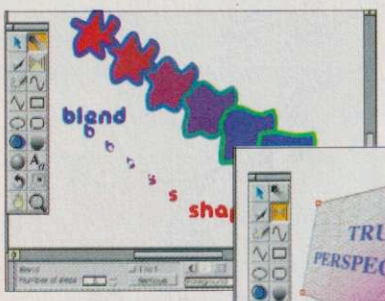


● *This fried breakfast shows the effects of the radial and linear gradient fills*

➤

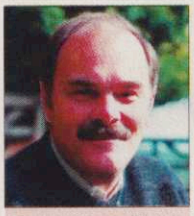


● *Creating a new custom colour in the Colour Picker*



● *Change one shape into another with the Blend Tool*

● *The perspective tool gives you accurate projections*



Roger Shezall runs a consultancy producing advertising, brochures, newsletters and other printed matter. His studio is equipped with PCs running CorelDraw for graphics and illustration and Ventura for page layouts.

➤

giving extremely fast re-draw times. Turn it higher and you'll see everything in glorious colour, complete with blends and graduated fills.

But at its highest setting ArtWorks anti-aliases your drawings, removing on-screen jaggedness and giving the impression of a very high resolution display. The trade-off is a slightly slower redraw rate, but since ArtWorks seems to redraw its screens at an astonishing speed anyway, it's negligible.

Surprisingly, the main screen does not appear to have rulers or any facilities for dragging out guidelines. For the purposes of drawing accuracy these are major omissions and mean the only ways of positioning objects and text on the page are by the switchable dot grid, or purely by the judgement of your eye.

For drawing shapes there are three basic tools. One draws straight lines, one draws curves, while the third is a freehand drawing tool and the nearest thing to using a pen or pencil.

For drawing basic shapes there are separate tools for ellipse, rectangle and rounded rectangle.

There are plenty of features for editing lines and curves. They are not as comprehensive as those in CorelDraw but they are easy to operate and, I'm sure, would be more than enough for most users.

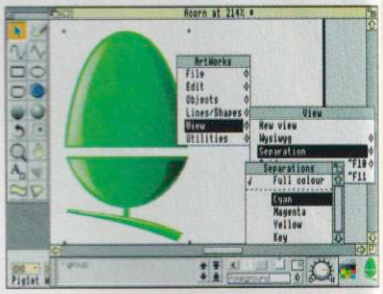
Filling objects with solid colour is pretty straightforward, but two functions which I really like for their no-nonsense method of operation are the graduated and radial fill tools. You simply select the object to be filled, click the appropriate tool then drag a line through the object.

This line determines the direction of the colour gradient plus its start and finish points. You can move it, rotate it or stretch it and after each movement the gradient of your chosen colours is redrawn in an instant.

This is one of the most efficient and simplest gradient fill tools I have ever encountered and it is matched by ArtWork's blend tool which shares the same properties of speed and ease of use.

Generally the tools for manipulating text and objects are very good. There's a nice Perspective Tool which will give genuine perspective to drawn objects, and an Envelope Tool allows object distortion any way your fancy takes.

Neither is as extensive as the Corel equivalents but, since these are not functions you use every day, that probably doesn't matter. The package also has good colour handling and can output your work as colour separated artwork ready for your printer. But my favourite feature was not one of the drawing facilities.



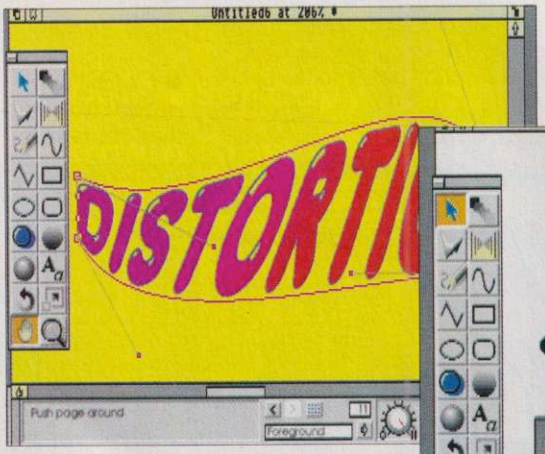
● *All viewpoints are catered for even down to the individual seperations*

Nobody gets a drawing or a piece of text dead right first time so ArtWorks' Undo/Redo function is brilliant. Most drawing packages, including CorelDraw, offer just one level of undo/redo, but in Artworks it seems to be unlimited.

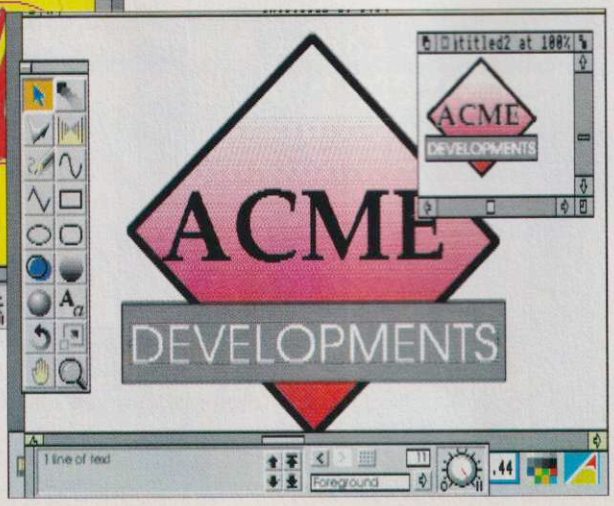
Just click on the button and you can go back to any stage in your work – even right back to the beginning. What's more you can save the Undo record with the file for your next session. Why don't all programs have this?

Text, on the other hand, was something of a let-down. The package includes 220 outline fonts which can be entered straight on to the screen without the need for a text editor. And although they can be scaled up or down and stretched horizontally, there appeared to be no facility for adjusting letter or line spacing.

If you're happy with the default settings, that's fine but most commercial users want much better control, plus the ability to easily modify individual characters in a text string.



● *Distort images any way you like with the Envelope tool*



● *Working in close on a logo design while a second window gives the overall picture*

Conclusion

ArtWorks has a great deal going for it. But in my view it doesn't really come up to the latest version of CorelDraw – it certainly doesn't appear to have anything like the fine typographic control or the breadth of functions.

However, for anyone wanting Corel-like facilities on their Archimedes this must be the package for them especially when it is under half the price of CorelDraw.

Moreover, its breathtaking speed and superb features like multiple undo/redo, wysiwyg control and ultra-simple-to-use blending and shading make it a real option for anyone considering a fairly sophisticated drawing package.

Roger Shezall

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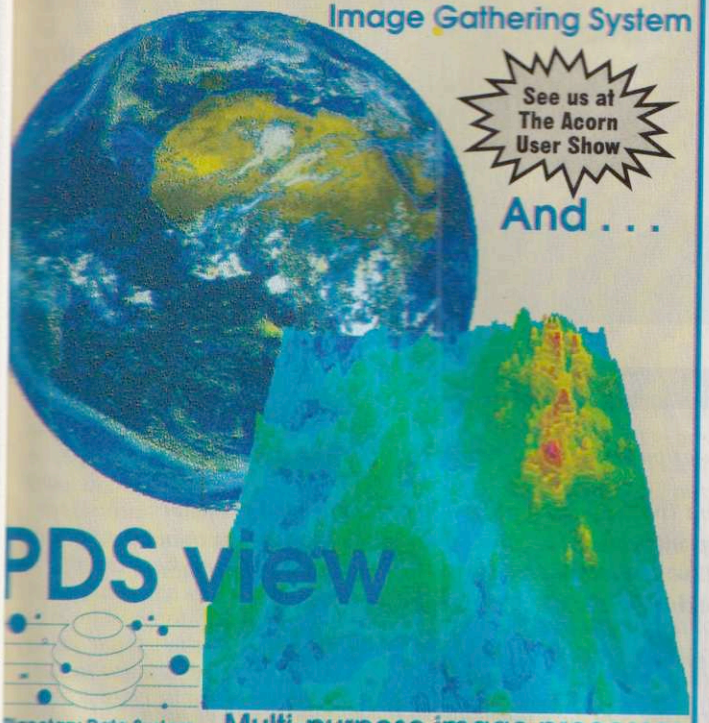

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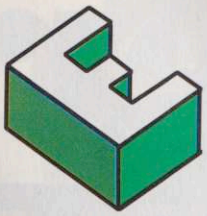

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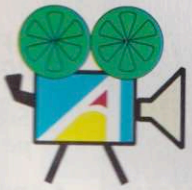

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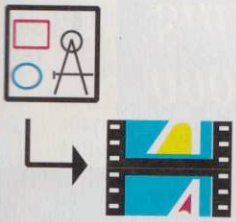

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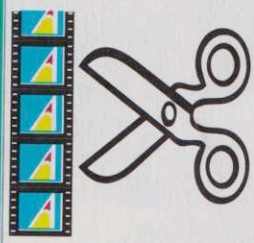

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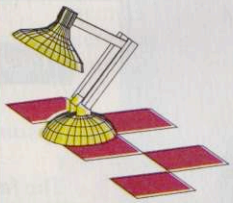

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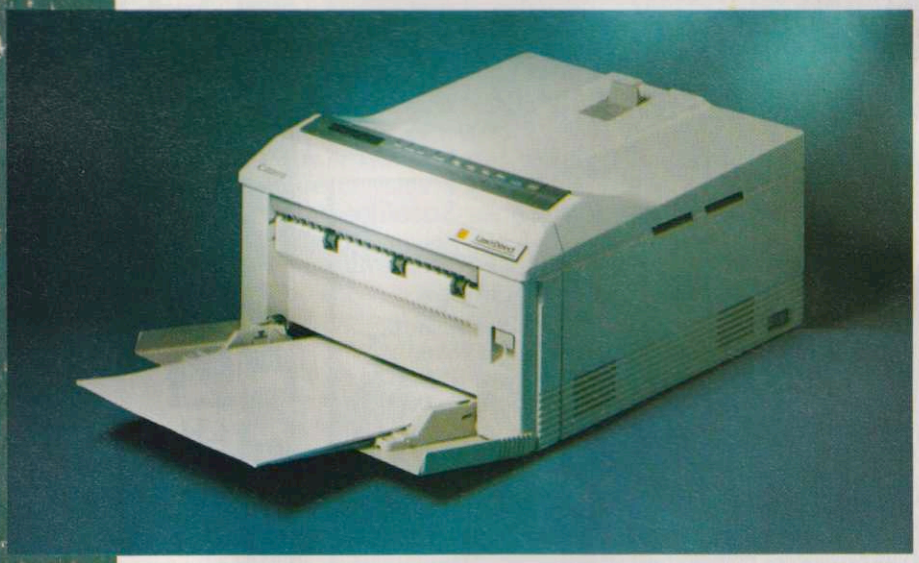

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MegaDisk

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Getting started

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

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

Switch on your Acorn micro, put the disk in the drive and click the drive icon. The software that unpacks the programs, ArcFS 2, loads automatically ready for use.

Double-click the Acorn Computing icon, the screen switches to the Acorn Computing logo and then, after a few seconds, back to the Desktop but now there's another window available.You can treat this new window just like any other one for viewing disk contents, you can run programs and open directories just by double-clicking them.

We recommend that you always read the !ReadMe files or access the help information via the Filer menu. See your Risc OS manuals for details.

Faulty disk

The cover disks are thoroughly tested at every stage of production, but inevitably when such a large batch of disks are duplicated, one or two bad ones will slip through, If you recieve a faulty disk it will be replaced free of charge. Send it with your name and address to:

TIB
36 – 50 Adelaide Street,
Bradford, BD5 0EA

If you damage the disk yourself, send it to the same address, but include a cheque or postal order for £1 (5.25in disk) or £1.50 (3.5in disk). If the disk has been damaged in transit, please return it to:

Europress Direct, Freepost, Ellesmere Port,
South Wirral L65 3EB.

Frontier 2000

THIS excellent education package – an enhanced version of which is now available on CD-Rom – has been specially written for readers of *Acorn Computing*.

Frontier 2000 is a simulation package based on an area around Carlisle – the name relates to the central part Hadrian's Wall has played in this area – although the contents have been carefully chosen so that the package appeals to everyone irrespective of where they live.

To give you a feel of the package, and its potential, the cover disk contains one of the 11 full trails – a sort of historical treasure hunt where you explore taking your facts from experts in history, the environment, theology and so on – driving around in your Porsche.

Cambridgeshire Software House have put together a second special version of Frontier 2000 with all 11 of the trails, but without the resources pack, for £24.95. The complete set of trails has many more pictures and covers a wide variety of subjects and times, but you need 2Mb to run it.

The other trails include Hadrian's Wall, Roman Military, the Environment, Railways, Mary Queen of Scots, Religious Beliefs, English Civil War and Bonnie Prince Charlie. The whole pack was sponsored by Tullie House museum in Carlisle.

In addition, if you send your cover disk to CSH they will give you £25 off the price of the full package which includes all the resource materials. See page 119 for further details.

The full version of Frontier 2000 had resources pack, a 25,000 word timeline, and facilities for grabbing the pictures and maps. It is also accompanied by a second disk packed with teacher's resources, in the form of !Draw, !Edit and !Maestro files.

These include role-plays, worksheets, topic webs and more information about the area. Plus leaflets, books, VHS video, audio tape and an authentic piece of Roman timber.

Double-click on the Frontier 2000 icon. If you get an obscure *template* error message it means you haven't got the Tabloid.Medium font.

Find your !Font directory, either on your hard disk or on the same disk as !System, and drag the !Fonts folder on the cover disk on to your !Fonts folder.

Double-click on !Fonts to register the new addition. You can now load Frontier 2000 in the usual way. The program will sit on the iconbar. Click on the icon to open the Title and Options pages.

On this special version you can only play the Reivers Trail but you can put your name in and not use the car option. You'll still have to click on the car key to go from place to place but you just won't see the car in action.

After pressing OK the Professor will give you your first clue and the map and toolbox will open. This is fully multi-tasking so you can have other applications on the desktop at the same time – memory permitting.

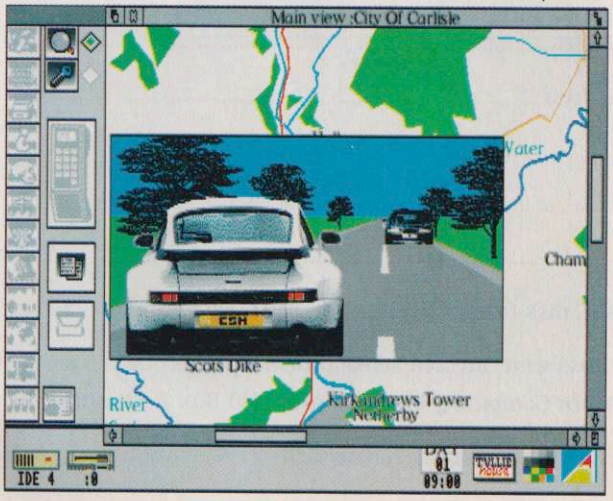
Find the right place and the envelope opens with a question and some of your 12 experts will be able to give you the information you need using text and scanned images from a variety of sources.

When you think you know the answer phone the Prof using the car phone – most combinations of three digits followed by SND will contact him. He'll then tell you the next clue.

Titler

In a nutshell Titler by Clares lets you produce interesting screens while Sequencer lets you display them in unusual ways for presentations, demonstrations or even TV titles – the package being ➤

● *Driving in style is optional*



5.25in and 3.5in disk offer for BBC Micro users

We are making a special offer available to readers of *Acorn Computing* with a BBC Micro.

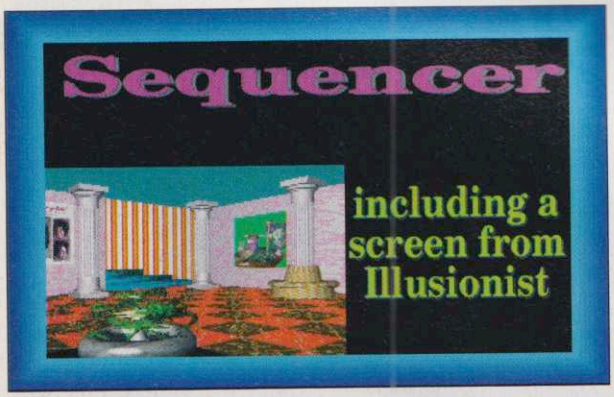
We will be happy to replace this month's *Acorn Computing* coverdisk with either a 5.25in or 3.5in BBC Micro disk. All you have to do is detatch the disk in its bag and return it, together with the form below, enclosing a 50p coin to cover part of the cost of post and packing.

Important: Please note that the replacement disk you receive will not include Frontier 2000, Titler or Sequencer as these programs are not available for the 8 bit BBC Micro.

● *Offer available only within the United Kingdom*

● *Text enhancement is easy*

● *Add graphics to the text*



originally designed in New Zealand for just that purpose.

If you are using a floppy disk system we recommend you run Frontier 2000 first as Titler needs to have seen some outline fonts to work and one is supplied with Frontier 2000.

To try out these powerful programs load them in the usual way. Some demo files for Titler are included on the disk so when you load it a TFiles folder will also load on to the iconbar.

You can explore the packages on their own as well as how they interact. A manual is included on the disk which will take you through their facilities.

For instance, once you have loaded Titler you can experiment with the fonts, colours, special effects and tools on the demos provided – or create your own.

The work screen is called a Script and your tools are a pencil-shaped pointer and a caret. Creating a block of text is simply done by typing the letters you want in the colour, font type, size, width and so on you specified on the menu screen.

Sequencer

This version of Sequencer won't let you add screens or tunes and the lack of space prevents the inclusion of the in-built programming language. A sequence has been programmed which you can edit using the Sequencer window.

For each screen loaded, a horizontal bar divided into three parts appears in the program window showing In Effect, Screen Name and Out Effect.

The **In Effect** is the way the screen will appear on the monitor, while the **Out Effect** is how it disappears. It is possible for a screen to have no Out Effect, in which case the next screen appears on top of the current one.

Each screen in the sequence has two Pauses attached to it. The In Pause comes into effect whenever the In Effect has finished. This is best described as how long the screen remains fully visible.

By experimenting with the different effects and pauses you'll see just how easy-to-use but powerful and flexible this program can be.

1Mb machines

We had to use a shoehorn to get all the programs on to this month's cover disk – there's just 1k free. Because of the compression routines used to achieve this, owners of 1Mb machines may have difficulty initially reading the disk.

If this is the case press Control +Break – this ensures that you completely empty the module area.

Next you need to free as much memory as possible by removing any applications that may load automatically.

In addition access the Task Manager and reduce the sprite and font sizes to zero. Using the Palette, change to Mode 0 and format two new disks in the usual way.

Open up the *Acorn Computing* disk as usual and drag the individual programs on to the fresh disks – this will involve disk swapping. You can then run the programs in their unpacked versions.

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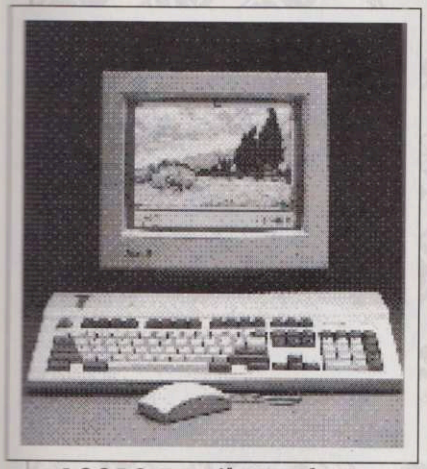

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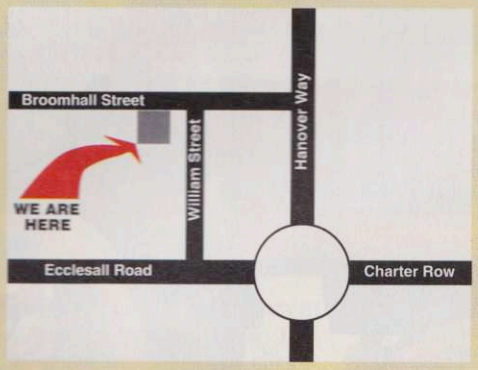

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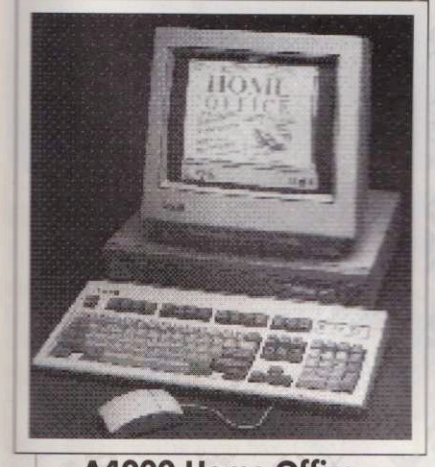

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NEW

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Quicksand... at the oasis

QUICKSAND is a simple demonstration of the speed of the Acorn 32-bit machine and its processor – as its name suggests, it simulates sand.

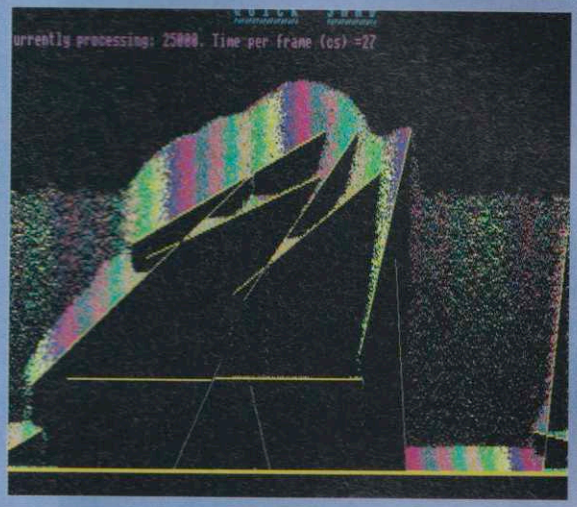
Double-click on the sandcastle icon to see 5,000 particles of multi-coloured sand flow between a collection of random lines. The number of particles is variable from 1 to 25,000 and can be altered by pressing X and responding to the prompt. Type zero to exit the program – or press Escape.

A new screen is generated by pressing either Space or Return – the latter doesn't reset the particles to the top so might be more entertaining. Notice that the intersections of the lines are leaky – I used GCOL 3,x for Exclusive-Or mode – to stop the particles being trapped easily.

If you want to pause the display, press the Scroll lock key or hold down Control and Shift. By pressing * or f12 you can issue a star command.

The display will not be reset unless the command generates text. Funtion key f1 has been set up to save the screen – hit f1 and type a filename. However, this will take up 160k of disk space so don't use a crowded disk for risk of losing the picture.

The final option is cyclic mode. This is normally off,



and is toggled by pressing C. When it is on, particles are automatically teleported to the top again – without changing horizontal position – when they reach the bottom. This gives a display which lasts longer

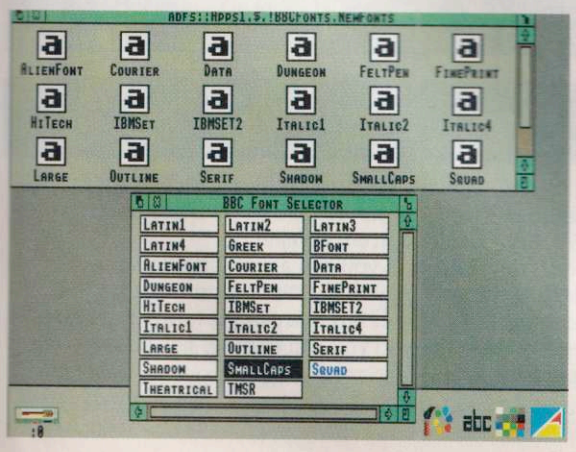
Paul Carpenter

BBC Fonts... a new style of type

THE purpose of the program is to allow easy management of the large number of alternative character sets – BBC Fonts – available for the Acorn 32-bit machines.

Having loaded !BBCFonts its icon will appear on the icon bar. Click on this with Select and a list of fonts in a resizable window will appear. To load the desired font, simply click with Select over the name of that font.

To add new fonts to the list – to a maximum of 50 – drag the font file icon from a directory viewer to the !BBCFonts window. If a font of the same name does not already exist in the list, it will be added.



Note that the font must come from the !BBCFonts directory or one of its subdirectories. This is because if you decide to copy the application to another disk, all the fonts will be copied too. To remove a font from the list, click with Menu over the name of the font and select the Remove option.

The other option offered by !BBCFonts is a default font facility. This means that whenever you run !BBCFonts, this font will be chosen automatically. To make a particular font the default, click with menu over the font in question and select the Default option from the menu. This font name will now be displayed in blue to indicate that it is the default.

Note that if you make any changes – adding or removing fonts, or changing the default – you should make these changes permanent by selecting the Save option from the application's menu. Settings are saved in a file called Config in the application directory.

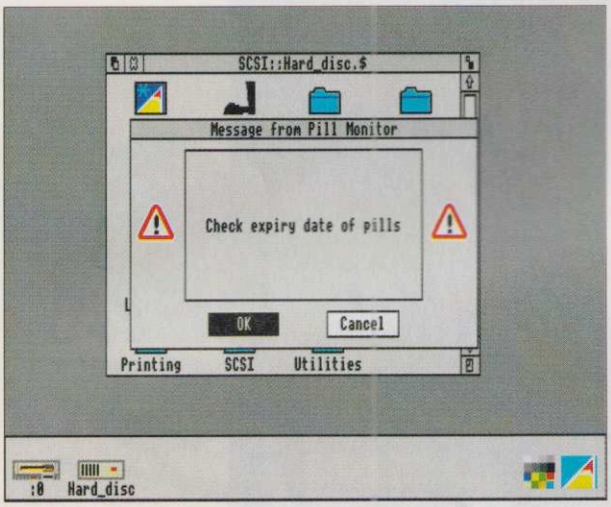
More detailed information is available in the !BBCFonts help file.

Richard Blythe

Pill poppers... written in tablets

IT can be a problem having a medical condition which means taking a number of different pills each day. They always seem to run out at different times and keeping track of them all can be a real nuisance.

This application lets you monitor them, or any other item that you use on a daily basis and replenish from time to time.



Using data stored in a file within the application directory, it will tell you how many of each item you should have, the number of days' supply remaining and when it should run out. If you have less than eight days left, the information is shown with a red background.

There's also a special feature which automatically prompts you to run the main application if any item is getting low. When you start the application, its icon will appear on the icon bar and if you click Select on this, a window will open, showing all the details.

The version supplied on the magazine disk contains three items. You can use the menu options to increase or decrease this number and enter their correct names and the number of each you have in stock, together with the daily dosage.

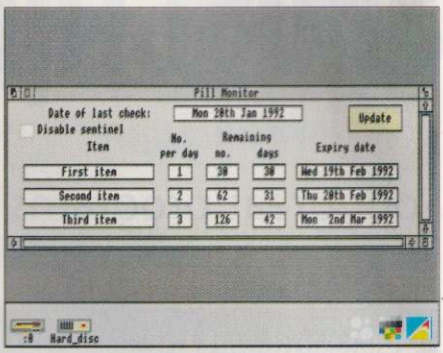
Further menu options permit you to change these details and add to or update the number that you have.

When you have changed the details, click on the Save box to resave the file. The application has a !boot file, which is run when its parent directory window is first opened. This file runs a special program, called !Sentinel, which opens the data file and checks the first item.

If it is within seven days of expiry, a message box prompts you to run the application, and clicking on the OK icon starts it up. Otherwise, you will not even know it has run.

If you have started up the application in this manner, you will see an icon in the window header, called *Disable Sentinel*, which at other times is turned grey so that you cannot use it.

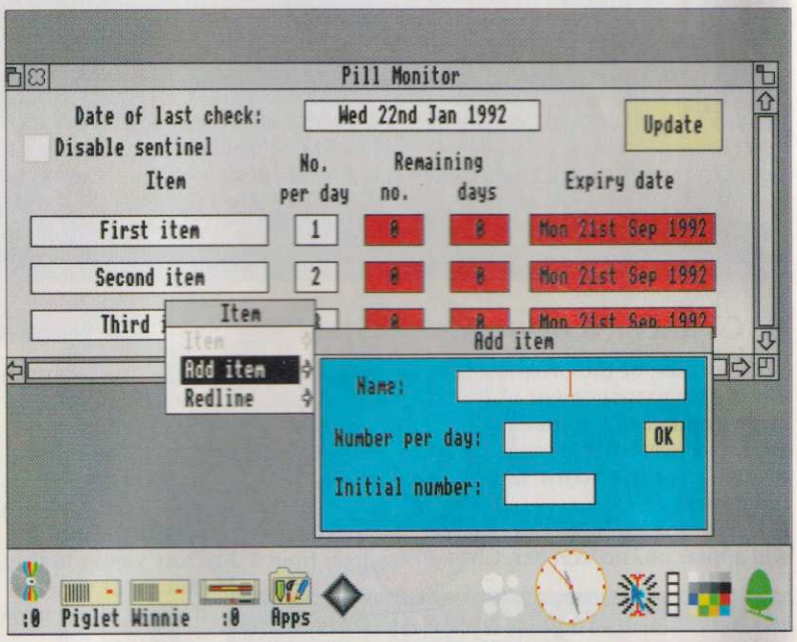
If you click on this icon and save the data file again, you will not be troubled by further prompts until either you save the data again or the first item gets to within one day of expiry. You can use this facility to save yourself aggravation during the period between putting in your request for a repeat prescription and amending the file when you actually get your new pills. But you can only use it after you have been prompted by the Sentinel.



Because the data in the file will be out of date by the time you receive the magazine disk, it will arrive with this feature disabled. To enable it, see the application's !help file.

You can change the degree of notice that this feature gives you by editing the !Sentinel Basic program and altering the value of the variable *redline%* near the beginning.

Martyn Fox



32-bit reviews index... all the best

FROM this issue of *Acorn Computing*, the subscription disk will contain an up-to-date list of all the products for the Acorn 32-bit micros that have been reviewed in *The Micro User* and *Acorn Computing*.

The Reviews Index is a text file and you can approach it in various ways. Using the Search facilities available in Edit you can look for a specific product, a company, or a date. But more importantly the index has been split into subject headings so you can choose, say, business and see what products are available.

Stephen Wade

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SG002 FLAGS

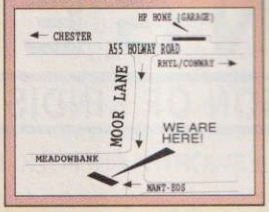
The original Arthur operating system came with a diary application; unfortunately Risc-OS lost that very useful little utility. !Diary offers you all that the original program had and more: you can browse and search through your diary, customise it to remember family anniversaries, and create diaries and print out planners for next year long before they are available in the shops. You can also print out your appointments for any given month or the whole year. You can now use any Font, mark dates set alarms to remind you that you have an appointment. etc,etc

!Condense £8 +vat!

!Condense is a Spritefile Compression utility, it will allow you to store more files on disc or in memory. Unlike most routines unpacking is not done on loading, but as and when you are ready to display or use the Sprite(s) in the spritearea. This means that a large number of sprites can be loaded into memory, unpacked to the same 'User Sprite Area' and plotted using normal Acorn Sprite Calls. An example of this is in a demo file (!Condemo2) on the disc and can be seen running. This loads in approximately "THREE MEGABYTES" of sprites but uses just over 400 Kilobytes of disc space or computer memory. Ideal for use within your own programs for really fast sprite and screen manipulation.

Where to find us

From Chester follow old A55 past Holywell until you see Moor Lane on your right, turn down Moor Lane, we are at the bottom (Big White Farm Gate). From Rhyl (As Above) but turn left into Moor Lane before Holywell



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Roulette: The wheel of misfortune

ADRENALIN pumping, heart pounding, just waiting for the winning combination. Whatever your sport, horse racing, roulette, a fruit machine, the thrill is just the same – gambling is an obsession shared by many.

Few can claim to have made a profit from gambling. Which isn't surprising as all *games of chance* are designed to net the organiser the money. That's not to say winning is impossible, it's just extremely unlikely. Still, in most competitions someone must win and that someone might be you.

In this roulette simulator you can get all the fun of Monte Carlo or Las Vegas without the disadvantage of losing money – although winning doesn't involve money either. Some would say that without the financial aspect all the fun is gone but as all good sportsmen know the important thing is taking part.

On running the program, it asks for the number of players, their names and the initial number of chips. Next, the betting screen is displayed which consists of status information on the left and the roulette cloth on the right.

At the top of the status are the players' names and the number of chips each has. The currently selected player is shown by inverting that player's status.

Below the player status is a box showing the name and odds of the currently selected item from the roulette cloth. The adjoining box shows how many chips have been bet on that item by the current player. At the bottom are simple instructions showing which keys are applicable.

On the betting screen the function keys are active: f0 full spin, f1 fast spin, f2-f5 select player 1-4, f6 join new player, f7 player leave, f8 edit player chips and f9 quit.

The cloth consists of a number of squares. The purpose of those containing numbers is to allow betting on certain combinations of one to six squares. Pressing the cursor keys moves and changes the size of the selection box.

The three empty squares at the bottom refer to the columns of numbers above them. You can select either one or two of these with a single bet.

On either side, the boxes labelled P 12, M 12, and D 12, mean the numbers 1 to 12, 13 to 24, and 25 to 36 respectively.

The *Even* chance boxes refer to various combinations of the numbers: *Passe* 17 to 36, *Manque* 1 to 18, *Pair* even numbers, *Impair* odd numbers and the red or black diamonds, the numbers of those colours.

If two of these are combined, the odds aren't simply 1 to 2, as stated. It's rewarded only if both win. If only one wins, the stake is returned (0 to 1) and if neither wins, the stake is lost. If zero is spun all stakes are lost except those actually on the zero square.

The limit on a single bet is a million chips. The bank becomes broken as soon as a hundred million is reached, and at this point bets are not allowed to the Broken player. The solution is to edit the number of chips possessed with f8. That's it for my version of Roulette. I can now return to the task of perfecting my own secret betting system.

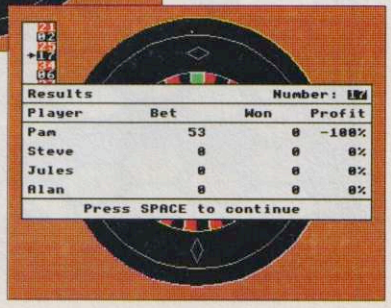
I am not giving details, but I will say that my lucky horse shoe plays a large part.

Andrew Bennett

● *Let's all play Roulette*

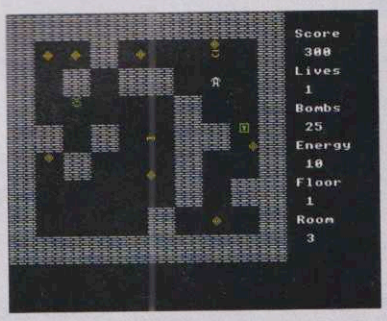
● *Make your bets*

● *Round and round the little ball goes*

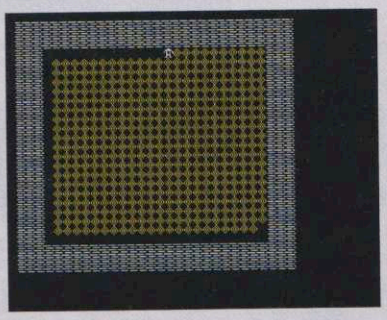


● *Lost my shirt again*

Castle of Fear: Escape from death



● *It's quite easy on the first floor*



● *Loads of lovely crystals*

● *It's fairly hard to stay at the top*

AS a prince of the fair land of Miranda it fell to you to take on the Beast of Grantor that had been ravaging the realm. Unfortunately your attempt to dispose of it failed with the result that you've been taken by that evil monster and are now a guest in his castle.

You must escape and return back to your own people – hopefully to revenge the destruction, and the indignity of failure. Luckily the Wizard Allorean has been helping you, and although he cannot get you out, he is able to transport various objects randomly into the castle to help in your escape.

He has also informed you that if you can recover and assemble the eight pieces that make up the Statue of the Elf-Queen Imella they will nullify the magic of the castle and you'll be able to escape. And with the magic destroyed the beast will be easy to dispose of.

But there's still the castle to contend with. An evil moss grows here and its touch brings about instant death – though Allorean gave you a Talisman of Life many years ago that will prevent permanent death three more times.

And on the higher levels of the castle the evil magic within the walls themselves will bring about your permanent demise.

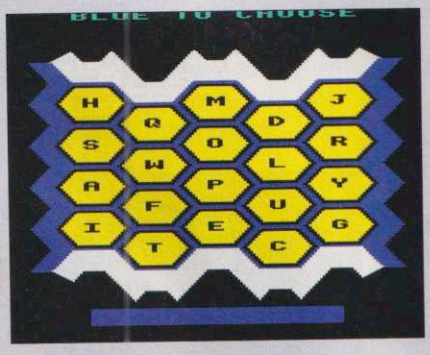
Beware too the skulls of other poor souls that have been trapped within these walls, as their tortured spirits will attack and overwhelm you if you come into contact with them.

Good luck, you'll be needing it.

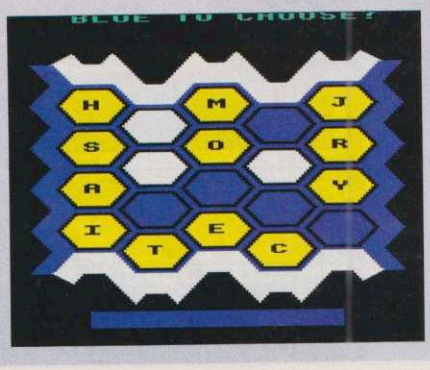
Nigel Tustin

Control	Action
Z	Move left
X	Move right
:	Move up
/	Move down
Q	Sound off
S	Sound on
Return	Bomb right
Shift	Bomb left
Space	Blow bomb

Blockbuster: I'll have an X please, Bob.



● *Getting started*



● *Looks like Blue's going to make it*

PERHAPS the most popular quiz game on TV is Blockbusters. It's also pretty strange – since when was two against one fair? Still it's been going a long time and you can even get books with quiz questions in it.

But let's face it, the real star of the show isn't Bob, it's the scoreboard. What a brilliant idea: Original, sexy and very difficult to duplicate in a book. And that's where my little program **BlockIt** comes in.

What you get is a screen display reminiscent of that great game board, and all you do is type in the letter for the question. Then dig the question out of your book – or a list you prepared earlier – and ask the contestants.

Then enter whether or not the answer you were given was correct and the board is updated as required. The blue player is working from left to right while the white needs to connect from top to bottom.

If the answer was correct the same player gets another go but a wrong answer switches to the other player. Once the two sides are linked up – top-bottom or left-right – the program declares the winner and flashes the screen a lot.

And that's all there is to it.

Mike Goldberg

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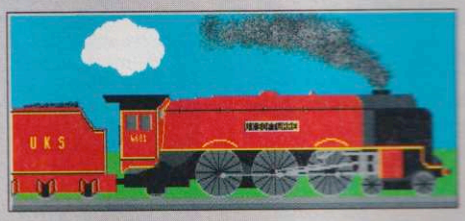

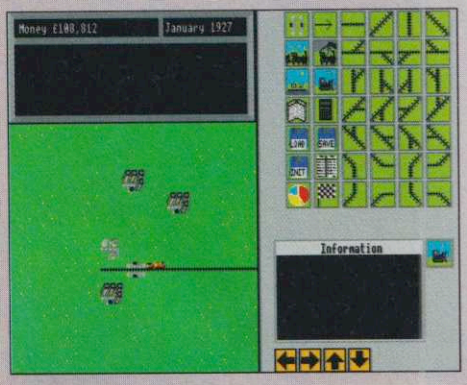

Small beginnings...

'Be warned, though, I found it very addictive' 88% - The Micro User 9/92

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Exploring Honeypot Lane

TWO new products from Resource (0302 340331) are due out this month. The first is Number 62 Honeypot Lane which is an ideal starting point for work on Myself, Where I Live, The Family, Time, Weather, Changes and much more.

Number 62 Honeypot Lane is open for you to explore any time, day and month. You simply select the time and go through the front door. You can discover Elizabeth and John's rooms, find out when the baby was born, what happened to the budgie and how the mice get to the kitchen.

With the seasons the weather changes and so do the flowers and trees. Birthdays, Christmas, shopping, ironing and bathing the baby all come and go. Number 62 Honeypot Lane is priced at £29.95.

Also from Resource comes BookMaker. This package sells for £49.95 and lets you create story books using your own or the provided pictures. Just pick a background and add your characters and props.

BookMaker is a rather special junior DTP package which lets you add text anywhere you want on the page in a box, columns, or even in speech or thought bubbles.

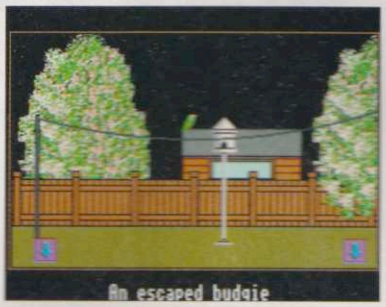
Archie gets Noddy

THE Jumping Bean Company (0602 792838) are planning an Archimedes version of Noddy's Playtime soon to be released on the ST, Amiga and PC. The 32-bit version will follow in December or January to coincide with Noddy's 40th birthday and a new animated series on BBC TV.

Provisionally priced at £29.95, Noddy's Playtime is aimed at the 3-7 year old at home. Each activity in Toyland has three levels of ability and has been designed to stretch and capture the imagination.

Jumping Bean have taken care to give parents what they want as well as being concerned that the educational aspect isn't lost. To this end attention is paid to ability levels for numbers, easy and hard letters, word association and much more.

The scene is Toytown which you explore in Noddy's car visiting friends. A degree of interaction has been built in with the characters reacting to you as you wave and toot the horn. This exploring aspect



● *Visit No 62...*

encourages the concepts of left, right, up, down, fast and slow as well as developing mapping skills.

There are eight locations to stop at and at each you can take part in picture colouring, electronic fuzzy felt, freehand drawing in a built-in junior art package as well as a variety of eight different games from musical fun, to letter

Speaking in tongues

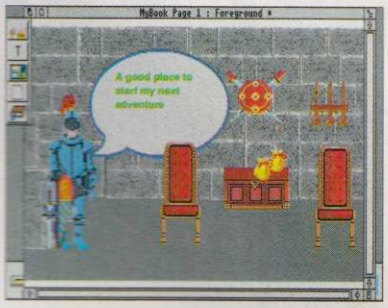
SEPTEMBER saw the implementation of the National Curriculum for Modern Languages in Year 7 with IT as an important part. To coincide with it, a series of modern language programs have been developed by a group of experienced teachers and marketed by L'Ensouleiado Software (06973 42224).

Allons! is suitable for beginners of all abilities while the Salut! programs are aimed at less able beginners and children with special needs. First year French students would probably find Allons! the more appropriate as a starting point although it works well as a follow-up to Salut!.

It consists of three disks with 11 games on each. Disk 1 covers finding the way, transport, animals and colours. Disk 2 goes on to cover time in five minute blocks, dates and seasons. Finally Disk 3 deals with shopping, including numbers with objects, money and weights.

German, Spanish, Italian and English versions will follow shortly for the BBC B as well as the Archimedes. The price is £18 for each disk or £48 for the set of three and includes a site and network licence.

Ciai! is the new Italian version of Salut! and costs £55 for the set of four disks covering colours, numbers, weather, times and vocabulary topics. The screens are colourful and



...or create a story

the tasks simple but fun.

Pupils are limited to the spacebar and Return keys and teachers can set one of several levels or tasks and different numbers of questions with the computer keeping the records of the level and child.

Another new program from L'Ensouleiado is the German version of Verb Practice and Revision, again for the BBC B and Archimedes machines.

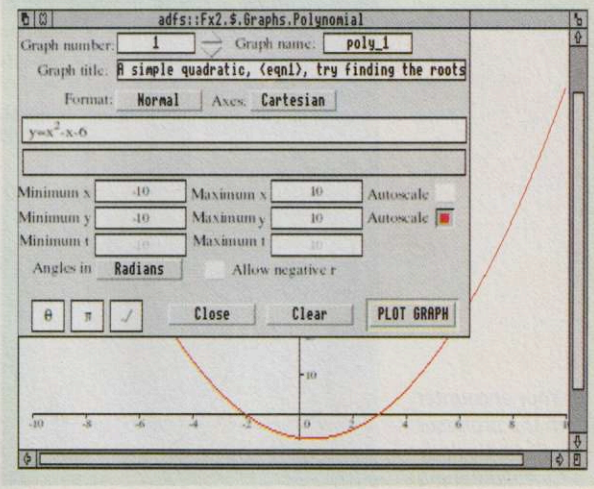
Priced at £18 the program is available in French and Spanish too. Used to practise and perfect language at the individual's pace, they are applicable from the earliest stage to GCSE A-level and beyond.

Special FX

SILICA Software Systems (0227 700279) have released Fx2, a maths graphic package. This updated version of Fx has been completely re-coded in C and is fully Risc OS compliant as well as containing a number of new features.

There is now full support for drawfile output and Risc OS printer drivers and it's suitable for use with pupils studying A-level mathematics, further maths and into higher education.

Graphing is supplied for almost any function, as are a broad range of problem solving facilities. Fx2 is priced at £59.95 including site licence.



Part of our dinosaur is mi

Marshal Anderson goes on an archaeological hunt

PRODUCT SPOTLIGHT

Product: The Missing Dinosaur Bone
Price: £25
Supplier: Angelsoft, 35 Heol Nant, Swiss Valley, Llanelli, Dyfed SA14 8EN.
Tel: 0554 776845

THE introduction of 32-bit machines into schools has had, along with the National Curriculum, a marked effect on the type of educational software being produced. There is a lack of content-based packages while everyone falls over themselves to produce yet another art application, or whatever.

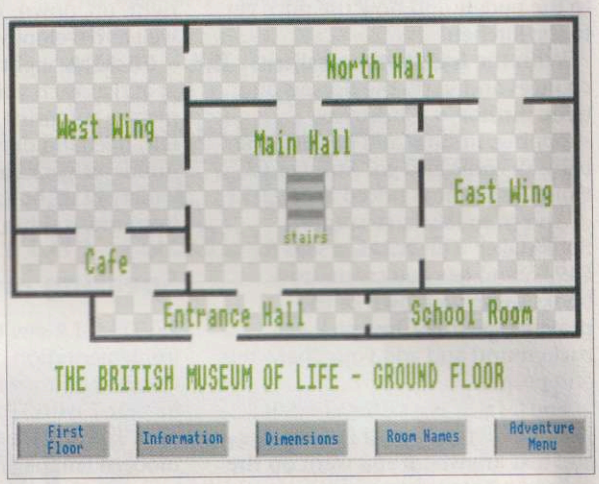
So, it was a nice surprise to receive a package that aims to capture the cross-disciplinary approach that was so popular in the 8-bit days.

The Missing Dinosaur Bone is the latest program from Angelsoft Educational and it comes with several programs and a resource disk.

The adventure takes place in the British Museum of Life from which a dinosaur bone has been stolen.

Professor Powell-Thompson is the curator. He's off down the pub and expects the bone and thief found by the time he gets back. A note on the floor tells you that the bone will be found locked in a puzzle box, the key to which is in another puzzle box.

Now we move on to see a plan of the museum. The screen instructions and the teacher's notes tell you to make a scale drawing of both floors before you start – on to the search.



● *Nice map – but what's it for?*

The museum is represented by a grid containing the names of the rooms – use the map as a guide. Now this is rather puzzling. I thought I'd need the map to navigate round the building. For instance I expected only to be able to start in the Entrance Hall and only move from there to adjoining rooms according to the map. Not so, you just click any room of the grid and there you are, so what actually is the point of the map?

The rooms contain three boxes, each of which contains an activity loosely based on the contents of the room. So the Mammal room has coded, anagram and reversed mammal names to deal with. You also need to know a little about mammals.

There's a fair old range in the activities through maths, language and science all pitched around the top of key stage two, top junior.

So, off you go, opening boxes and noting which are locked, until you find the key. Then you go back – or on – opening the locked boxes until you find the bone.

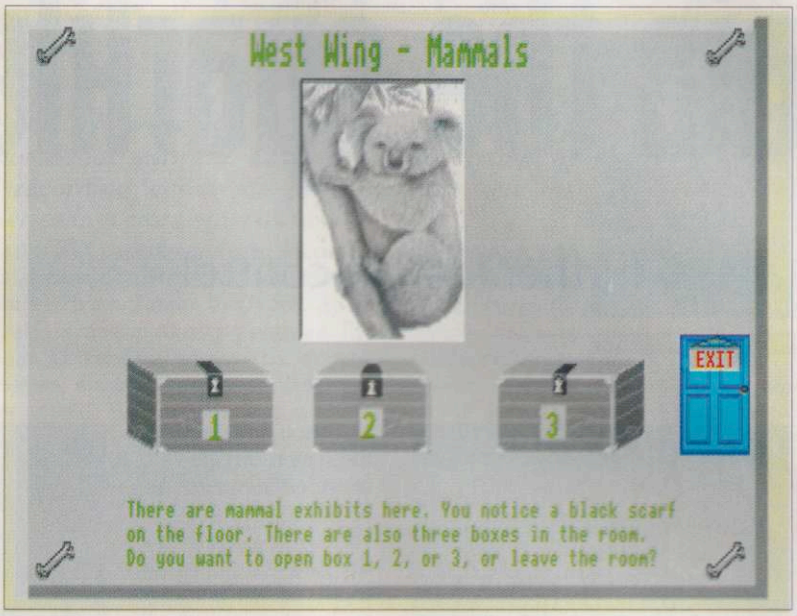
As the positions are randomised it is possible to do this quite quickly, or very slowly, depending on where things are in relation to your starting point. But, you still have to explore thoroughly if you are going to catch the thief as half a dozen clues are scattered about the place, and you will need to note these.

On finding the bone you leave the museum – you've no choice here so make sure you look for the

> There's a fair old range in the activities through maths, language and science all pitched around the top of key stage two, top junior

● *Your encounter with the professor isn't particularly enlightening*

ssing



● *Cuddly Koala, clues and puzzles*

clues first – and get a 50p voucher to spend in the museum shop. Whatever happened to doing good for its own sake?

You can also visit the Cafeteria choosing a three course meal and a drink – each part of your meal has some nutritional information attached to it and the Shop has a range of books, postcards and so on. There's not really much to this and the suggested use of calculators seems redundant as the computer does the maths.

All these programs can be used without doing the adventure and once outside the museum you can look at the criminal records. This is a simple database which aims to identify the perpetrator.

The accompanying Animals and Habitats disk contains something over 100 sprite files. The directories are arranged so you might go through Animals, Vertebrates and Mammals to reach Fox. The sprites themselves are rather small and lack detail but they're just right for DTP applications.

Along with the manual is a short guide to the National Curriculum, perhaps not as detailed as teachers might wish but certainly enough for parents. There is also a huge bundle of worksheets some of which are very imaginative and useful, though others are a bit vague.

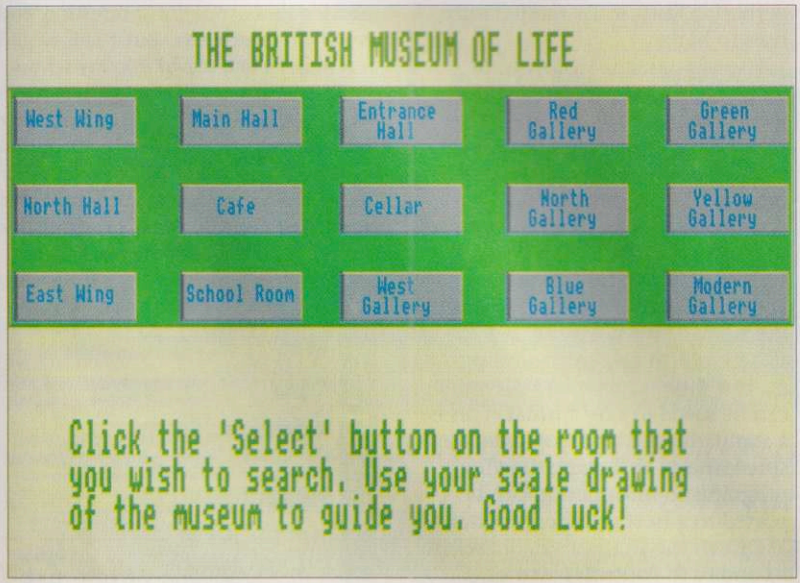
The adventure itself is fine, if a little dull. Each room is basically the same and the references to the map seem pointless. The implementation is a little clumsy with no consistency in the way answers are entered – sometimes the name of an item, sometimes its number.

Once in an activity you can't get out until the puzzle is solved and if you accidentally click on a box you have already solved you still have to do it again.

Beyond that, many of the activities are worthwhile practice but the randomisation makes the program unpredictable. This is not helpful in the classroom as teachers need to know exactly what a child has done.

At home this is not such a problem though it's still impossible to say how many times children might repeat one exercise before they had covered them all.

Further, the scatter-gun approach to the National Curriculum – maths, language and science – might make this difficult to integrate into a scheme of work. Having said that, the support materials are very useful and the package as a whole would probably keep a child interested for some time.

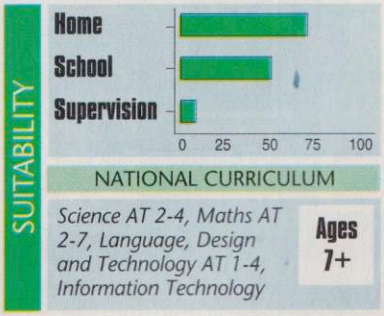


● *Is this what the map is for? Perhaps not*

Summing up

Home is perhaps the best place for this package. It costs about as much as a game and will probably hold the right kind of child's interest longer and more profitably.

The adventure needs little adult involvement while it is running though the worksheets might need some support. In the classroom it make would make a nice end of scheme activity for work on dinosaurs or the animal world and would certainly make a change from all that wordprocessing.



Marshal Anderson gained an Honours Degree in Education at Matlock College in 1979 and in 1982 he moved to a school in Milton Keynes and wrote an adventure based on Stig of the Dump which was later marketed by Sherston Software. As well as continuing to write software he teaches part time as well as running freelance INSET days.

Regain the sparkle

Rog Frost takes a further look at control

Rog Frost has taught in Wiltshire comprehensive schools for more than 20 years. His present post is Information Technology Co-ordinator, in a school for pupils aged 11-16.

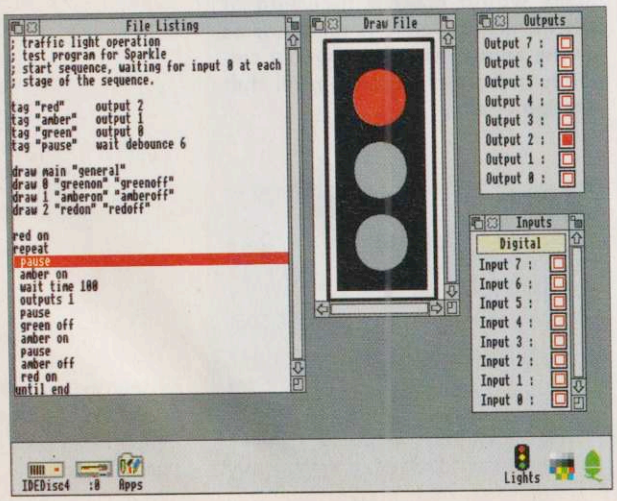
PRODUCT SPOTLIGHT

Product: Sparkle
Price: £59
Supplier: Morley Electronics, Morley House, West Chirton, North Shields, Tyne and Wear NE29 7TY.
Tel: 091-257 6355

I FIRST looked at Sparkle in the August issue and it has now been possible for me to test it in depth with 14 year olds at school – even on a Friday afternoon. It takes time for youngsters to learn what is expected of them from a new program and most of my group did find it quite difficult at first.

As I had expected, the need to run more than one program was seen by them as a problem – they just couldn't fathom out why they needed to run two. Perhaps Morley would like to look at this when they update the manual. A simple programming editor could surely be incorporated as a menu option.

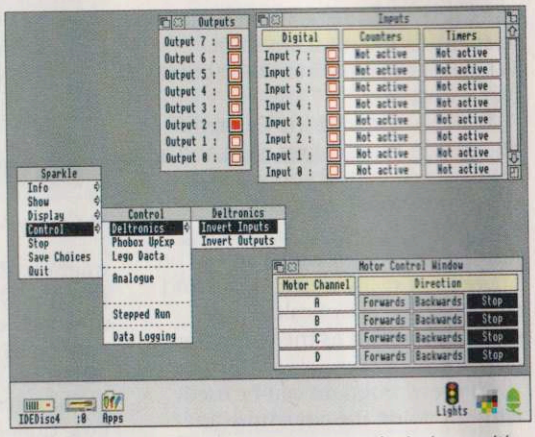
The programming language is relatively straightforward, and very thorough, but my group of youngsters wanted the on-screen reminders offered by their normal control program. It is possible, though, for all commands to be renamed and if you don't like the command *Debounce* it could be renamed *on/off* for example.



● *The input and output windows with the control listing and the !Draw file animation being controlled*

Although I feel that the screen can get cluttered, room should be found for three windows which show the state of the digital inputs and outputs and the motor – paired – outputs. These are vital to an understanding of what is going on and it is a great help that the outputs can be changed by a click of the mouse.

For on-screen simulation work the inputs can be switched on or off by mouse clicking as well. Another window which can appear is the on-screen prompt. This looks like a standard Risc OS error window but contains a message as to what you should do next. Such messages are created by the writer of the control sequence.



● *Main input, output and motor control windows with menu options shown for control of the Deltronics box*

The program is well equipped with possible inputs. Sparkle can accept up to four analogue signals which might allow it to measure light levels, temperature, position and so on. These analogue inputs can be used to switch on a device – perhaps a fan – if the temperature rises to high.

Use of analogue signals is, of course, a crucial part of control technology. Although control is seen as a design and technology area, the use of analogue sensing is more a part of science.

Sparkle has a lot of scope here because it can act as data-logging software, able to take measurements at intervals set by the user and store them.

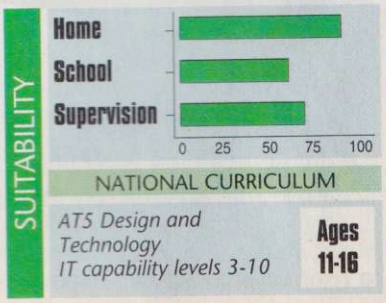
A graphical display of reading against time is given and the values can be saved in CSV format. This is a standard used by many databases, spreadsheets and graph drawing programs so information can be ported to a host of other programs.

One of the strengths of Sparkle is its ability to control screen or computer-based events as well as external devices. Apart from Tracker tunes, the program can also handle Armadeus sound samples. It might be fair to call Sparkle a multi-media program because of its capability of handling sound, graphics and movement.

Summing up

After a more thorough test I can still say that I think Sparkle is first rate for enthusiasts. The possibilities the program offers are enormous and it can provide real scope for interesting and worthwhile projects. But I still would not make much use of it in my school.

This is partly because we have already established the use of another product but also because the program is quite complex to use. On the other hand its many and varied features make Sparkle the ideal program for stretching the more able pupil.



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John : Achievement Record 10/10 Mathematics (Number - AT2)

SUBJECT	Carnival	Cover Up	Big Bang	Grab It!	Silicon	Cheers
Addition	2a.1	4a.4	3a.3	4a.6		2b.1
Subtraction		3a.4	2a.2	4a.5	2b.2	
Multiplication	4a.2	3b.1	5a.3	3b.2	7b.3	4a.14
Division	3c.2	4a.10	5a.4	7a.2	4d.4	
Fractions		6a.4			5b.1	8b.2
Decimals	6a.5		6a.9			
Percents	5b.2	6a.10	6a.8			
Estimation	8c.1			6b.1		3d.2
Units				3e.1	3e.3	5d.1
Powers					8a.1	5d.4

AT2 Level 4a.2 (i) Multiplication facts up to 10 x 10

*The achievement record shows the subjects covered together with the child's progress: Red: Help needed, Yellow: Practice needed, Green: **10 out of 10**!*

10 out of 10 MATHS (Number)

The Mathematics National Curriculum is split into five Attainment Targets. The Maths (Number) ***10 out of 10*** suite of programs is aimed to cover some essential parts of the Levels set out in Attainment Target 2. The package covers many topics from all Key Stages but the ten specific areas built into the design are listed below:

- Addition
- Subtraction
- Multiplication
- Division
- Fractions
- Decimals
- Percentages
- Estimation
- Units
- Powers

Carnival: A great shoot-'em-up that checks number skills along with fire power. Various speeds challenge novice to arcade expert.

Grab It: Find and grab answers quickly in this fast-action game. It's a great way to practice number skills from tables to estimation.

The Big Bang: Keep cool and answer quick for high scores – an exercise in scale reading as well as arithmetic.

Cover Up: A challenging game to really get children thinking. It's a real game of strategy – especially in the multi-player modes.

Silicon Brain: A fun calculator practice game with key presses displayed on-screen to let you look back if answers are incorrect.

Cheers: A unique quiz game that will keep everyone on their toes. Use any of the six graded sets of questions or compile your own.

10 out of 10 ENGLISH

10 out of 10 English is designed around the National Curriculum for English and aims to reinforce the traditional values of the language. With its unique automatic assessment system the package covers many topics from all key stages but particular emphasis is placed on the following ten critical topics:

- Spelling
- Words
- Nouns
- Verbs
- Adjectives
- Language use
- Punctuation
- Pairs
- Sound patterns
- Figures of speech

Sniper: A chance for children to prove they know – or learn – some common sayings as they shoot the target words.

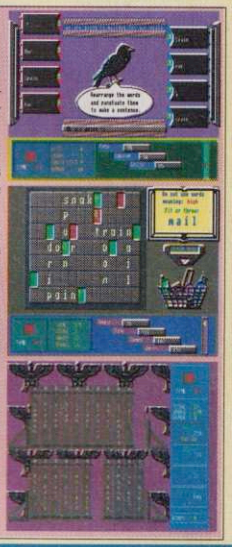
Cover Up: Vocabulary and spelling are just two of the skills exercised in this challenging game of strategy.

WordFit: Crosswords, board games and word power combine as children fit the correct words in to the grid.

Grab It: Spelling, punctuation and many other important skills are practised and learnt in this fast-action game.

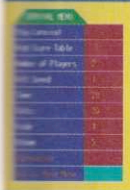
Librarian: Move the mouse fast and re-arrange the books! There's plenty of sorting and matching in this novel new game.

Cheers: The quiz game that children – and the rest of the family – can learn from as they move up and down the board.



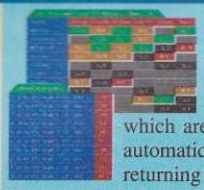
FULL MARKS FOR TOP OF THE CLASS SOFTWARE

Extensive in-game Options



Not only can the educational level of the games be chosen, speed of play, game length and many other options can be set to tailor the programs to your child's skill level at the game. This means the games can be set to suit anyone from novice to arcade expert – it keeps interest longer and increases personal challenge.

Dual Scoring System



High percentages change the colours of the achievement chart while good gameplay – combined with high marks – give scores which are recorded on the high score tables. Both are automatically saved on disc so that children can keep returning to the package to improve on previous results.

Certificate Printing

Children with high marks can print a certificate of achievement. Text or graphic options are given to suit any printer and *Triple R Education* will print you a special one for a nominal charge.

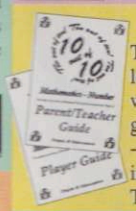
Three Sets of Graphics

All the games have three sets of graphics to appeal to any age. These are automatically selected depending on grade – a parent/teacher override is provided so that you can select the pictures most suited to your child.

Unparalleled Quality and Attention to Detail

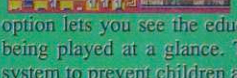
This package is the result of months of work by experienced programmers, educational designers, game designers, teachers, parents and children.

Two Guides



The player guide lets learning start quickly while the parent/teacher guide gives more details – including how to interpret the Attainment Target numbers.

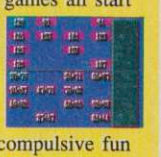
Parent/Teacher Flexibility



Many of the automatic features of ***10 out of 10*** can be customised by parents or teachers – including sound off/on, the starting grade and the graphics to be used. A *Reveal* option lets you see the educational objective of the game being played at a glance. There's even an optional code system to prevent children altering stored information.

Ideal for ALL Ages: Junior to GCSE

The fully flexible games all start with very simple ideas but develop to cover the more advanced topics. Adults will find the higher levels compulsive fun and a challenge too!



SIX Top Games

The games are designed with education of paramount importance but the fun and challenge elements ensure that children will want to strive for better results each time.

Designed for the National Curriculum with Traditional Educational Values in Mind

While ensuring that items like tables and spelling are well covered the package deals with many important subjects in the order recommended in the National Curriculum.

*The **10 out of 10** Series is produced by **Triple R Education** 0742 780370*

***10 out of 10* Maths (Number) and *10 out of 10* English are both available NOW for only £25.95 each.**

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"***10 out of 10*** is unique ... a good resource for parents as well as good educational fun for children." – *The Micro User*

"I have total confidence in this suite of programs, coupled into it is the experience of parents and teachers alike." – *Micro Computer Mart.*

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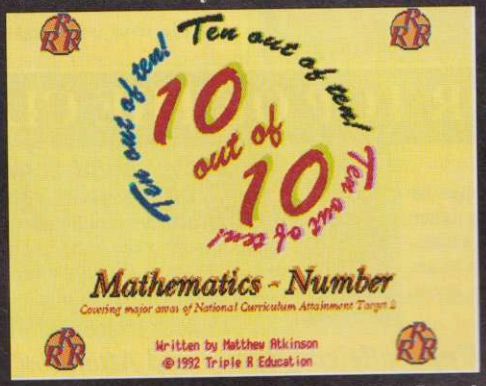

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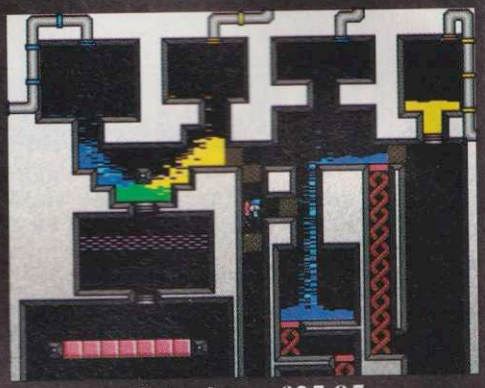

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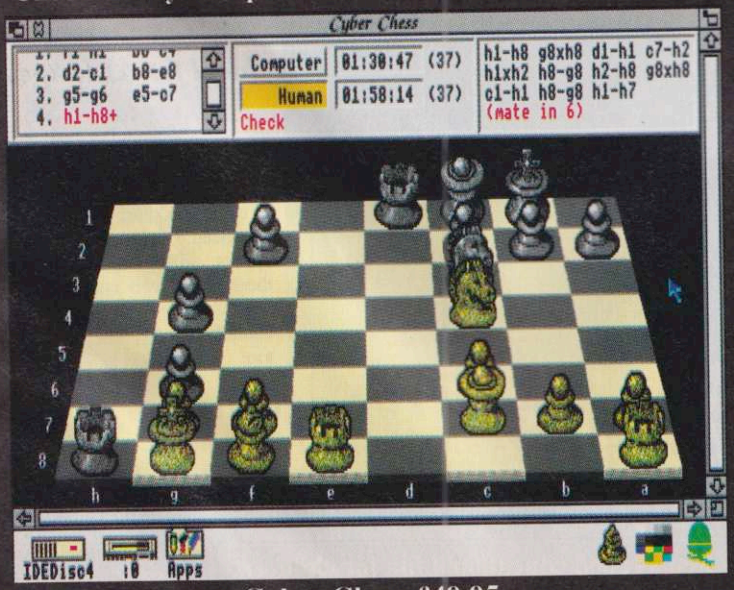

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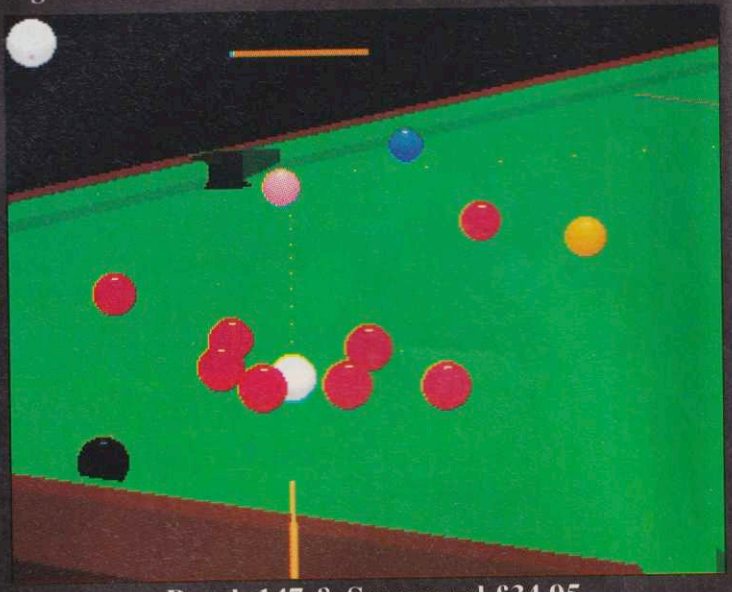

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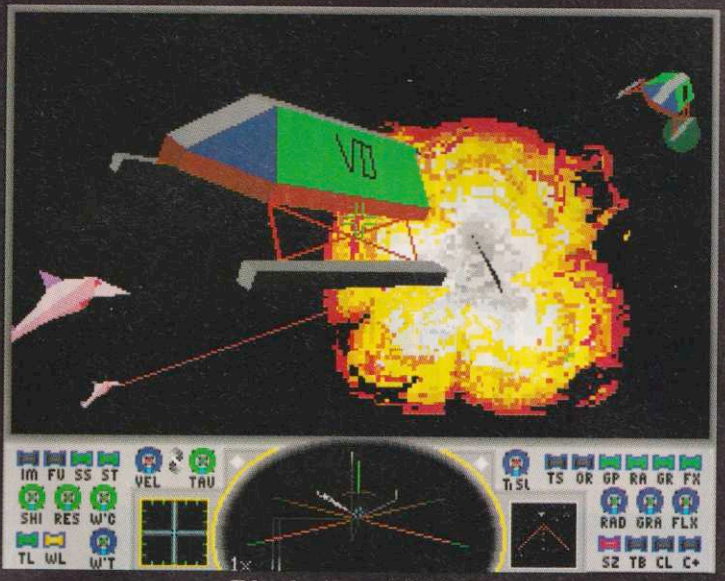

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** Game titles followed by these symbols require 2Mb minimum with RISC OS 3. (This is due to the applications in-built into this new operating system).

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A sledge hammer to crack a nut?

Frank Jukes looks at an aid to maths

Frank Jukes took his physics and geology qualifications into teaching science in secondary schools but after two years changed to the primary sector.

He is has been deputy head for 12 years and is the Information Technology and Science Coordinator responsible for budgetary control using SIMS.

PRODUCT SPOTLIGHT

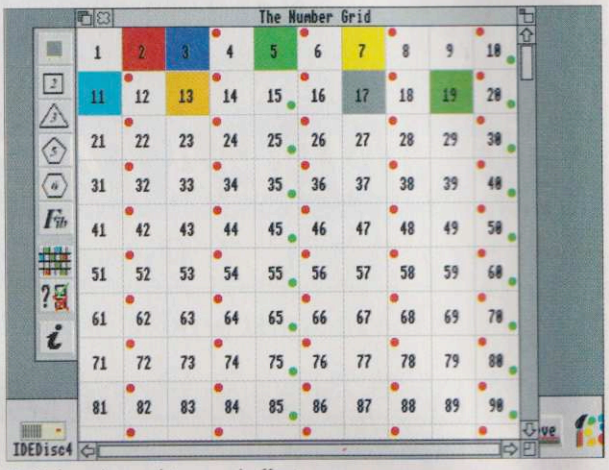
Product: Maths Sieve
Price: £19.95
Supplier: Computer Tutorial Services, 4 Mill Hill Road, Cowes, Isle of Wight PO31 7EA.
Tel: 0983 294333

MATHS Sieve from Computer Tutorial Services is, in some respects, quite surprising. Described as *a whole number database following the structure of the Eratosthenes' Sieve for prime numbers* it allows pupils – and it is aimed very firmly at the school rather than home market – to *build up and test their knowledge of multiplication tables, number properties and sequences.*

For use by 8-year-olds up to those working at GCSE level, the program will interest the mathematically inquisitive. It has three levels of difficulty and will display square, triangular, pentagonal, hexagonal and Fibonacci numbers as well as lowest common numbers and highest common factors for chosen numbers.

In addition, information on any whole number up to 1000 may be obtained. Multiplication tables may be tested directly or as part of a game, as may the pupil's knowledge of the various number sequences.

Most of Maths Sieve's displays involve the use of a number grid which is 10 squares wide and 10 squares deep. Numbers up to 1000 are available by dragging the scroll bar.



● *Colour is used to good effect*

Colours are used to pick out the first eight prime numbers on the basic screen and by clicking on any of these a suitably coloured dot is placed in all that particular number's multiples throughout the grid.

Alongside the number grid is a toolbox window similar to that of Draw. By clicking in this the various number sequences such as those of square and triangular numbers are shown on the grid. The toolbox also provides access to the test elements of the program and to information on any of the numbers.

Probably the most useful part of the program is the game. This involves throwing an on-screen die and then placing a counter on a multiple of the number displayed on the die.

Occasionally a number is not displayed but the letter P instead. When this happens the player must place his or her counter on a prime number.

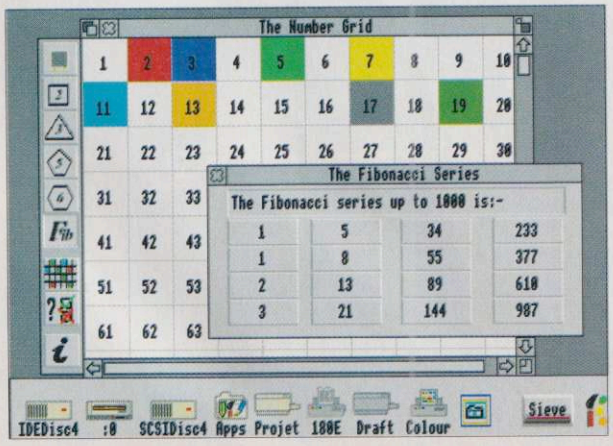
The object is to achieve a row of four counters in a straight line either horizontally, vertically or diagonally.

The screens are neatly and clearly laid out with the information capable of being easily absorbed by the pupil though some of the programming is a little uneven.

A minor niggle is the lack of a way to change the level of difficulty without exiting the program and then starting again.

For anyone who needs to have access to lists of, and information about, so-called figurate numbers Maths Sieve can provide that access.

Similarly, for anyone who needs to test knowledge of those numbers and of multiplication tables, it can provide access to that too. However, the use of a computer to provide that access is difficult to justify.



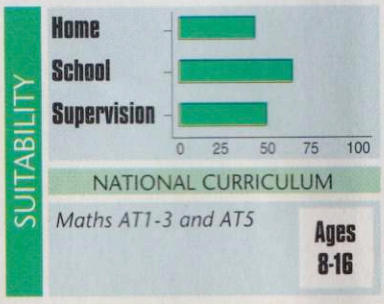
● *Data presentation is very clear*

Summing up

The program comes with comprehensive notes including preparatory and follow-up activities designed to complement work with the program on the computer.

With the addition of these notes and activities – and with occasional use of the game – it may be that the program could form a useful classroom resource.

Its priority, however, would probably be low when computer time was being allocated.



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Putting pen to paper

Phil Tayler accesses the latest version of PenDown

Phil Tayler has been a primary school teacher since 1971. He is now a headmaster of a primary school bordering Essex and Suffolk. Married to a care assistant, he has three children all at high school.

His interest in educational computing first began in 1983 with the arrival of the BBC B. As well as an interest in the Acorn and IBM PC ranges he has written educational programs himself.

PRODUCT SPOTLIGHT

Product: PenDown Plus
Price: £79 (£39 for upgrade from Pendown)
Supplier: Longman Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS.
Tel: 0223 425558

I WAS an enthusiastic user of PenDown as a rom on the BBC B and Master and was delighted to see PenDown Plus on the Archimedes.

Existing users will be relieved to find the same clear screen display with a couple of additions, while newcomers will find a superb fully-featured wordprocessor, mailmerging, a table editor and an address list manager – all clearly explained in a comprehensive booklet.

The initial window has a menu bar at the top giving access to a number of facilities which can be disabled or enabled according to the way you configure the program.

Word wrapping is implemented normally and movement around the screen is controlled by the mouse or cursor keys.

In schools the biggest single problem when using a wordprocessor to write is that the creative process does not flow because of unfamiliarity with the keyboard. A child using such a program as PenDown Plus at home starts off with an advantage.

Eventually your child will want to alter the colour, size or typeface. Only two fonts are included in the package – Corpus and Trinity – but others can be added easily. You can then add virtually any combination of typeface, height, width, weight, style and colour.

One of the program's biggest strengths is its ability to import graphics. Sprite files and drawfiles can be added and scaled allowing you to add graphics, charts as well as illustrations from a whole host of sources at will.

Other available options, common to fully-featured business-style wordprocessors, include leading, rulers to set margins and tabs and multiple rulers so that a single paragraph can be different to the rest of the text. You can also set master pages and so on, though you are limited to one document on screen at once.

Another ability changes all the text written in a particular combination of typeface, weight, height and style into a different selection. There is a useful Hold option too which allows the height and width to be altered while keeping the same typeface and so on.

Unusual in a wordprocessor at this price is a spellchecker. Suggestions are made or a child can browse and you can add words to the dictionary to make it more relevant to the individual child or the work being undertaken.

Completing the package is a mailmerge program and a little utility to create tables.

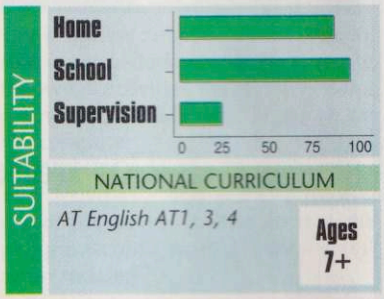
To mailmerge all you need to do is mark the variables when writing the initial letter, then print the results merging the letter with a file of names and details.

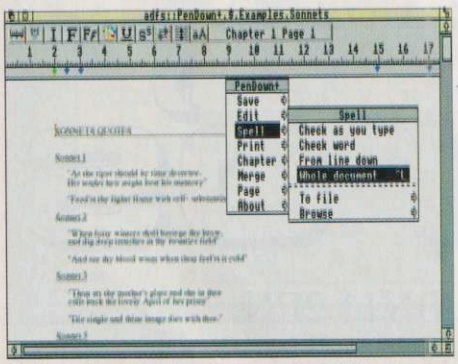
The table utility lets you create tables of information – in a similar way to a spreadsheet – although the facilities offered are limited. You can save the tables as drawfiles or in CSV format for importing into a spreadsheet or database.

Summing up

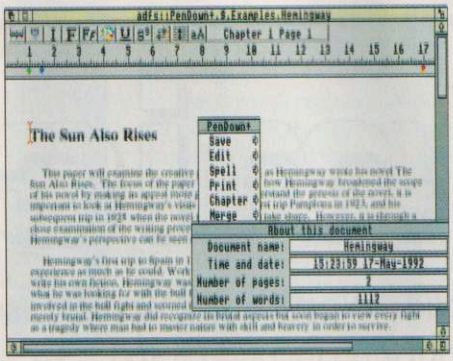
PenDown Plus is recommended for those Archimedes owners who want a good wordprocessor – whether child or adult.

I would like to see the screen re-drawing faster and smoother as with multiple typefaces and sizes on screen at once you'll need at least a font cache of 512k. However, stylistically it is best to limit the number and sizes of fonts so the imposed discipline is useful.

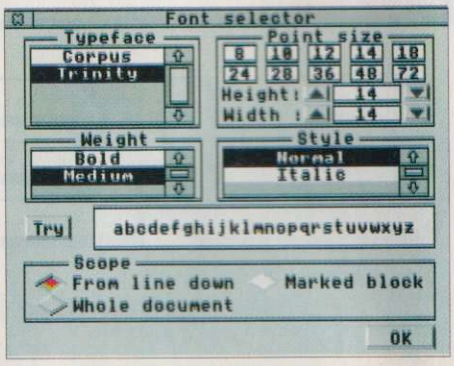




● *A spelling checker is unusual at this price*



● *Full information is available*



● *The standard Acorn font selector*

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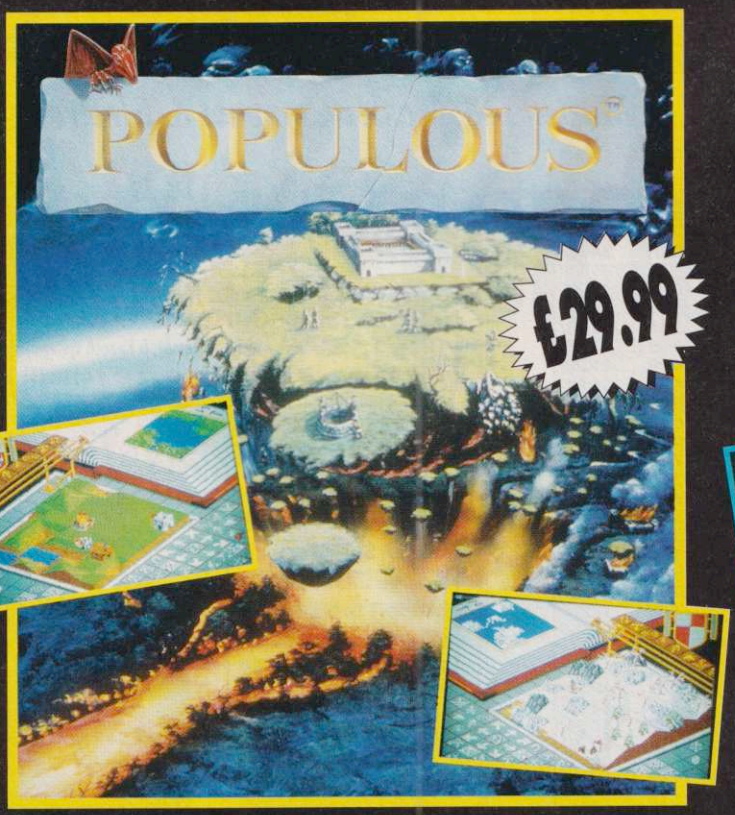
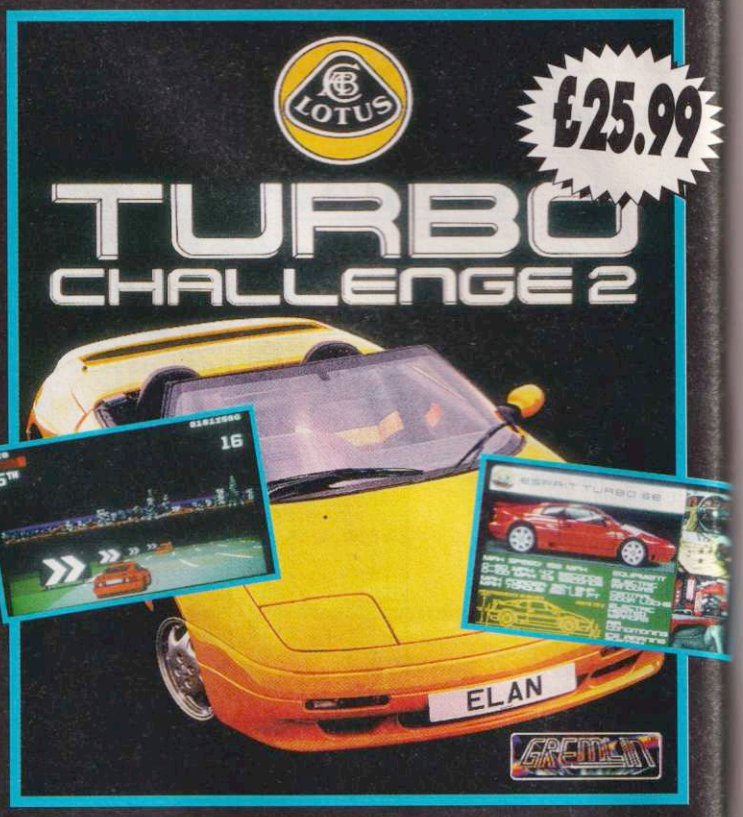


As a Divine Being you have a group of followers from whom you derive your power. The more followers you have and the greater their achievements, the more power you wield. Unfortunately, there is another group of people who follow a different deity. Since there's barely enough room in the world for your own magnificence, two won't do. You must rid the world of the opposition. To do this, you will use your great power to move the earth and your devout followers to crush the misguided.



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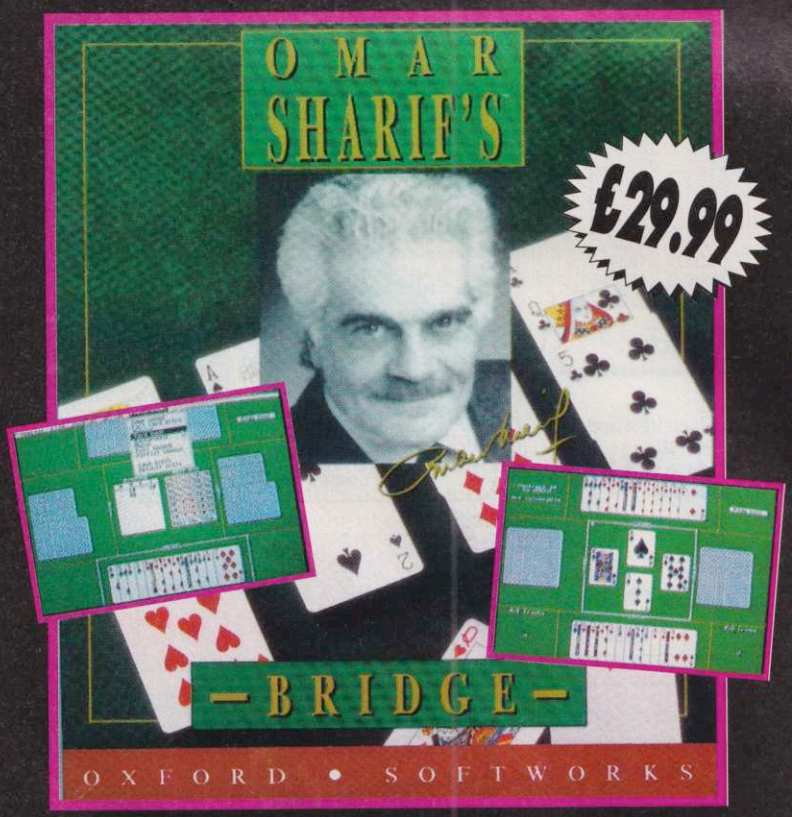

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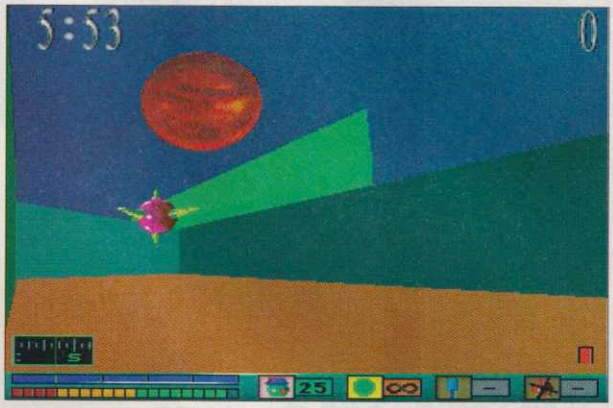
Galactic Dan

...interplanetary rescue



HAVING had great fun with the 3D Construction Kit I became quite addicted to solid 3D vector graphic mazes, so I booted up Ian Holmes' new game with high hopes.

This is Earth but the year is 643 AU – After Unification. Peace has reigned supreme since the exile of the Vorians, the once dominant force in galactic politics. But Vorians don't take defeat easily and have attacked several small planetary systems on the fringe of the galaxy and are holding the native inhabitants – reminiscent of the ray-traced clown from certain demos – as hostages.

Guess what? You are special agent Dan Quicksmart and having graduated for the United Planets Bureau of Investigation you are beamed to the sectors where the hostages have been traced. With a plasma rifle, protection suit, weapons computer and your wits, off you go.

The introduction and title screens are polished and informative and the demo made me feel inadequate. But as they always say practice makes perfect – I just wish I didn't keep bumping into quite so many walls.

Reading the manual helps and it turns out that by holding down the Control key before you start to move you can regulate your speed and have finer control over movement.

Pressing Select on the mouse fires your current weapon, Menu makes you jump and Adjust makes you walk – using both you can take a running jump. I found the mouse controls very easy to get used to and was soon moving around effectively.

The levels of difficulty are pitched just right so you have time to get used to the controls and environment before the Vorian's spiders and wandering eyeballs decide to take pot shots at you.

Having played the first few levels by the seat of my pants, I started to run into more intelligent and tricky opponents. To get my men out of there I had to be more economical with the time using the sights to shoot rather than random blasting.

I took more time climbing stairs and jumping on to lifts and platforms because falling and running into walls at full speed causes damage.

The keyboard gives you control of the combat computer with access to normal bullets, plasma disrupters and neutron shells. If it all gets too much you can always commit suicide.

You can often see the hostages bouncing up and down from behind walls – it's getting to them that's the problem. It's important to learn the layout of each level and especially where the exit is. There are usually more hostages being held than you have been told about – rescue them too and you score more highly.

You may find items to help you such as Vorian shielding and weapons and luckily your computer can handle these. One nice feature is that the enemies' weapons don't just hurt you – it is possible for Vorians to shoot each other, and hostages as well, unfortunately.

Random shooting is not too smart a move at higher levels because hostages die too – disappearing skywards complete with halo. Strange creatures these Poloids, but always polite and they thank you when you rescue them.

The sample speech and the sounds effects are limited but are used to good effect. It is quite eerie when all you can hear is your own footsteps.

James Davidson has made good used of Clare's Render Bender and the graphics may not be detailed but they are effective. Take a look at the moon – it's a nice graphic and a good point of reference too when used with the on-board compass.

Enjoyable, easy to play with smooth gameplay and a lot of style.

Jo Giles

> Random shooting is not too smart a move at higher levels because hostages die too

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Play it Again Sam 1 — Archimedes

● *Don't shoot the hostages*

COMPILATIONS are popular because of their value for money – as Superior's Sam series for the BBC Micro proved. Superior are now moving to the Archimedes and bringing some early quality 32-bit games to people who might never have seen them.

No Excuses – written by Arcana but never released – was previewed in the July issue. If you missed it here's a quick summary of the game – which also has an editor so you can create your own puzzles.

It's a blast-'em-up with tactics as you try to rid your mind of aliens by meeting them on a 3D isometric grid. Each of the 50 levels has a different grid. There are no passwords so you can start on any level though I'd recommend starting at the beginning as these are graded to give you a gentle introduction.

Conqueror is a game of much higher calibre. Written by Jonathan Griffiths using the graphics routines written by Dave Braben – author of the original Elite – it is a tank simulator using a 3D landscape.

● *Not so quiet on the Russian front*

You use one or more tanks from a selection of German, Russian, American and British models on offer, full details of which are given in the manual.

If you opt for the Arcade scenario you and your tank must defend yourself against the waves of enemies that your otherwise friendly computer sends at you.

The Attrition game is a mixture of arcade and strategy and is my favourite option. You find yourself in control of a selection of light, medium and heavily armoured metal monsters.

You start with the upper hand but insidiously the computer builds up his forces until it is you that is outnumbered.

Hostages was one of the first games to launch Infogrames as a company who could produce original, well-presented and above all very successful games. The Archimedes implementation keeps all these qualities.

At the base level you play the role of the Lieutenant who if successful can make his way up the levels to Captain and Commander. As the levels and your rank increase so does the number and speed of the terrorists while the time you've got decreases.

There are five missions in all: Training, Target, Ultimatum, Rescue and Jupiter. At the first level you command Delta, Echo and Mike and these three snipers must be posi tioned to keep an eye on the building but avoiding the search light which will turn them – prematurely – into angels.

Their movement is controlled from the keyboard or mouse – though I found the keyboard options easier – and there is an excellent range of movements with the on-screen implementation of crawling, hiding and rolling being quite superb.

Here you must position your three men who have been dropped by helicopter on to the roof. The map lets you see the position of Hotel, Tango and Bravo as well as the earlier three men who are in position on the adjoining buildings.

Now you must indulge in a spot of abseiling plus breaking and – hopefully – entering as the men on the building come down the wall and enter through the windows.

As the situation is really beginning to hot up your marksmen must shoot at the Embassy to eliminate the opposition.

Once inside you need to shoot accurately as well as guide the terrified hostages and your man to the safety of a third floor room. A classic game which is four years old now but still enjoyable and fresh.

Last of all comes *Rotor* which was again programmed by Arcana. A fun space game for anyone missing a good game of Thrust, but gone is the tow-line – your craft just gets heavier.

As a rookie pilot your first mission is to learn the job so you are put on the manoeuvrability and combat simulators before progressing to the missions after you have proved yourself.

The ultimate accolade you can receive is one of Rotor Ace. To do this you'll need to complete all the class six missions which will gain you a medal and a pension from a grateful government. The getting there is the only problem.

A friendly on-board computer leads you through the missions and levels. Control is by keyboard, or mouse but I preferred using a joystick and was an awful lot better at controlling this beast than I was with Thrust.

Your job is always basically the same, liberate as many mines as possible while destroying as many members of the opposition as you can.

Refuelling can be tricky as you'll need to collect enough sun-simulator crystals first. Collecting an item is not a simple procedure either as you need spot-on manoeuvring and good positioning of the tractor beam. Then all you have to do is keep an eye on your coordinates to get home.

Pam Turnbull

> Compilations are popular because of their value for money

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Oh No! More Lemmings

... infectious mayhem

> Some of the screens are simple, others are complex requiring pixel perfect precision

Oh no!

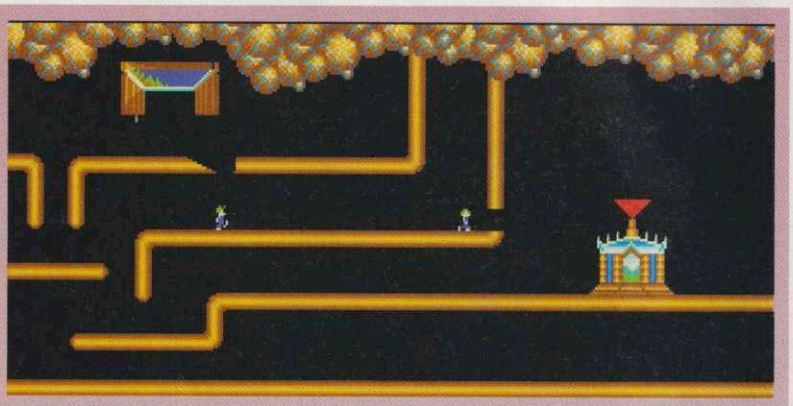
Gremlins got at last month's screenshots for *Oh no! More Lemmings*, so here are some more pictures with the correct colours.

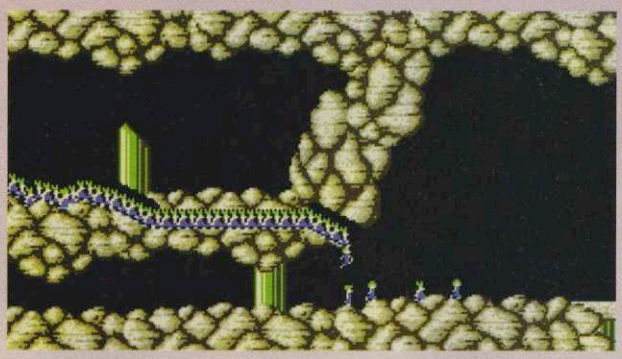
YES it's here, the code has winged its way from DMA Design to Psygnosis and on to Krisalis whose programmers spared no energies in getting this new dose of infectious mayhem to your screens.

Being one of those poor blighted souls who needed the passwords to finish the original game I was pleased to see that you could start with the Tame levels and then progress on to the Crazy, Wild, Wicked and Havoc levels or start straightaway on the first screen of any level.

Some of the screens are easier than the original and Tame screens don't take you through the learning curve of the original but given you 20 of everything so you can practice your techniques and hone your timing – you need both on later screens.

The interface is identical to the original with puns naming each screen and other plays on words to password them. The music and sound effects are really superb with zany renderings of Kempton Races, Three Blind Mice, Greensleeves and the occasional rave tune – F1 and F2 could save your sanity here.



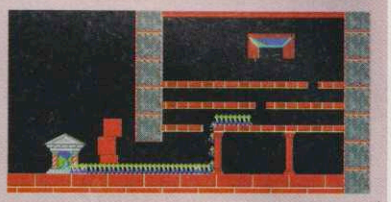


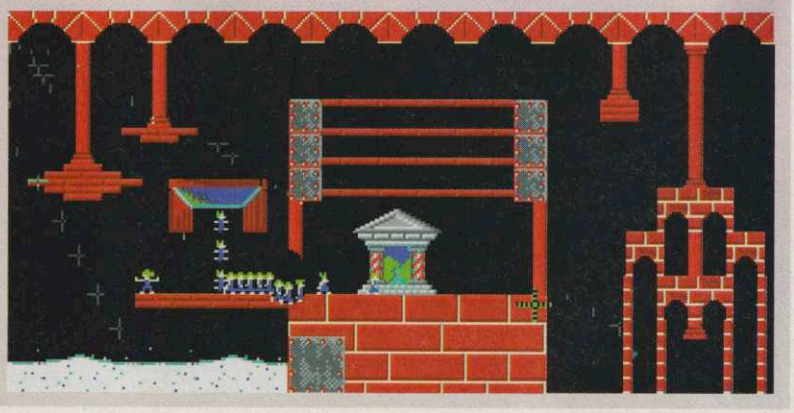
All your old green tousled favourites are here: Climbers, blockers, floaters, bombers, miners, bashers, builders and diggers as well as the infamous nuke'em icon.

Some of the screens are simple, others are complex requiring pixel perfect precision and to the second timing – especially when it comes to Super Lemming who not only moves as if he is supercharged but he can do everything and you've only got him to save. Good luck, you'll need it.

The animation is brilliant, the graphics detailed and full of character the puzzles taxing. Beautifully put to together, it is an absolute must.

Geoff Brown





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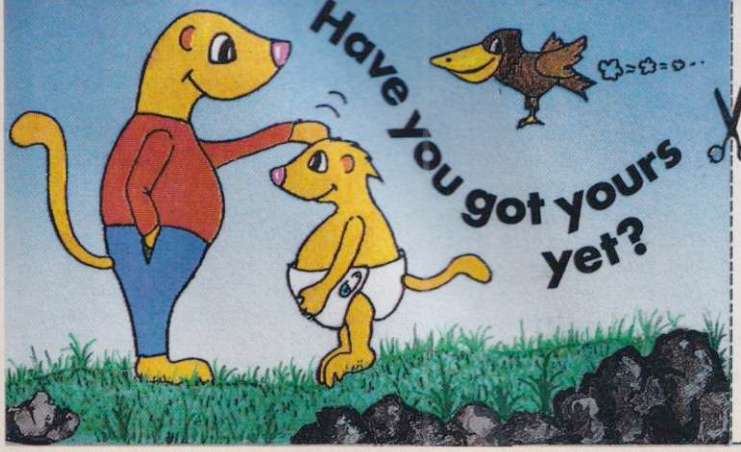

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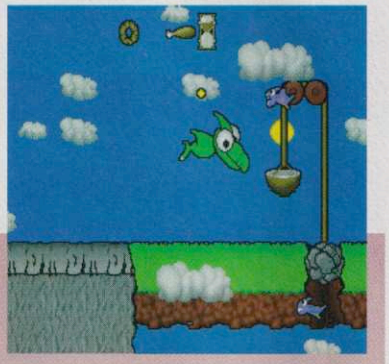

TERRANCE Pterodactyl is a star and, with a little help from you, he will carry out various missions until normality has been reached – this game is most definitely weird and wacky.

Terrence can only move by flapping upwards, or left and right using a set of redefinable keys. With only a small amount of energy and a time limit you begin.

On the first level it's just a simple matter of flying around learning to pick up objects – such as rocks – using your claws, strategically dropping them on to the nasty creatures that inhabit the land, such as the small caveman who turns and throws sticks.

You may find it hard going at first to complete the first level without losing all your energy, but practice definitely makes perfect.

You are assigned tasks along the way, and logical thinking helps. The elephant certainly doesn't like small animals, so you can pass it providing you have picked up and dropped the correct object.

As you fly through the strange lands, you will encounter more and more nasties. I wanted an on-board weapon rather than dropping objects on to things, as it was difficult to judge how quickly an object will fall.

When I did manage to kill a bird, its feathers shot off in all directions, and after having picked up the bonus left behind, a sampled *lovely* voice was heard. Not a great deal of sound, but certainly adequate.

The instructions could have been a lot better because I spent a long time flying around pointlessly before I realised that I should be heading for the *IN* signs.

This game excels with its very smooth parallax scrolling and password options so that you can jump from one set of levels to another.

This game does represent good value for money in a time when software is getting increasingly more expensive, and is certainly an extremely original title.

Brett Colley

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Gribbly's Day Out

...hop to it

AFTER Pesky Muskrats, Coin-Age have now come up with Gribbly's Day Out – on the Arc. They added *on the Arc* because the game was first seen on the Commodore 64. This new version has been enhanced with the original designer's recommendations.

So what's a gribbly? Something with an oversized brain and a single foot that bounces along. Alternatively it can fly through use of levitation. Gribbly Grobbly is the hero and it's up to him to collect the little gribblets that are playing among the woods and rocks.

A gribbly is a creature of psi-power, he lives on it – it can be gained from the psi-grubs that live on the surface of the planet.

Before going on his mission, Gribbly Grobbly powers up from a special psi-bank. After a level is completed if Gribbly has more power than he needs the extra is returned to the bank.

But there's always a worm in paradise, in this case the seed pods and the winged things. The seed pods float down from the sky and when they land transform into Topsies which are green and wander back and forth.

If they find a gribblet they flip the poor little fellow over on to its back, rendering it helpless.

In this state a gribblet is prey to the winged things which swoop down and fly off with them. Meanwhile the Topsies eventually go into a chrysalis form for a while and from this develops a three-legged stomper.

There's a web of psi-power around the planet and in this web lives Seon, a once-great genius but now totally mad. He cannot escape the web.

But after a while the web deactivates and Seon is free to roam, when he will attack poor Gribbly Grobbly and drain his psi-power.

Gribbly Grobbly can switch on and off sections of the web so he can create pathways through, but don't release Seon by accident.

Gribbly Grobbly is not helpless against foes, he can send out psi-bubbles which dispose of winged things, seed pods, topsies and chrysalises (chrysali?). Stompers are impervious to bubbles while Seon is stunned for only a moment.

So you move around picking up the gribblets – one at a time – and carrying them back to a cave. When flying it's essential to avoid bumping into anything as it drains your power.

Keep at the collection until the psi-web goes down then bubble the flying things so they drop the gribblets – but you must catch them otherwise they die when they hit the ground.

The graphics are cute and professional, the gameplay is quite hard but there's a definite *just one more go* addictiveness that keeps you trying to rescue that last gribblet.

Steve Turnbull

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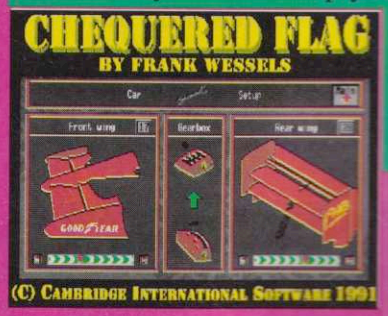

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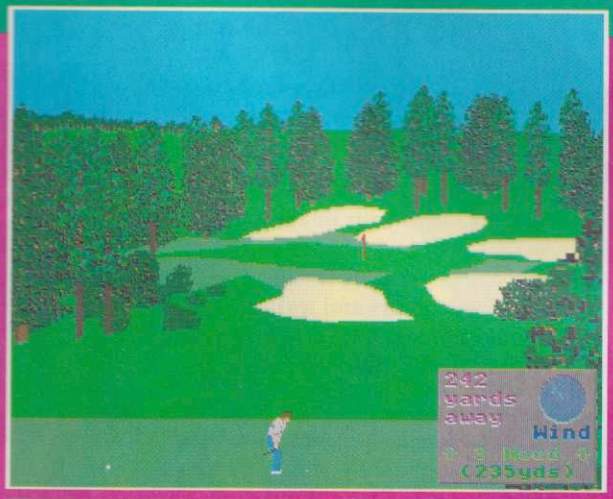

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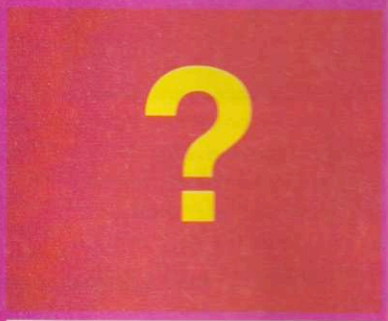

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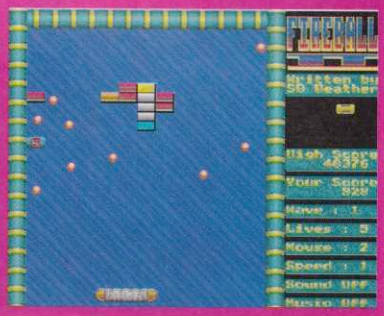

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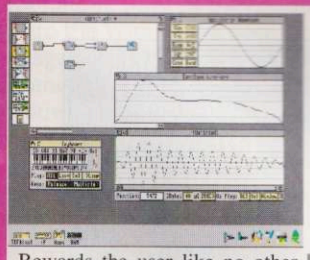

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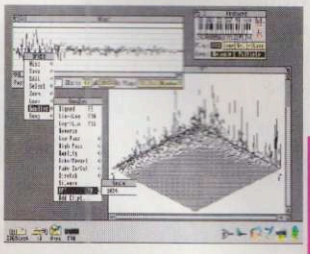

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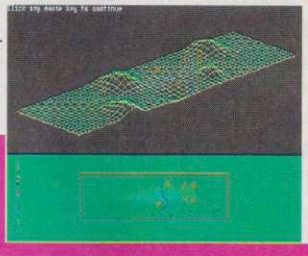

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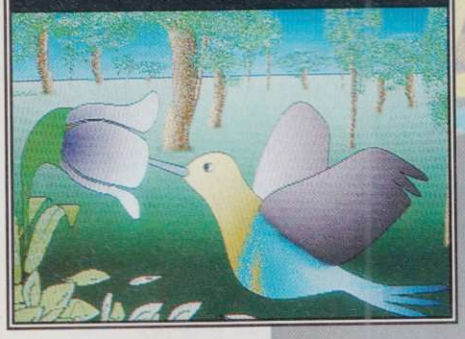
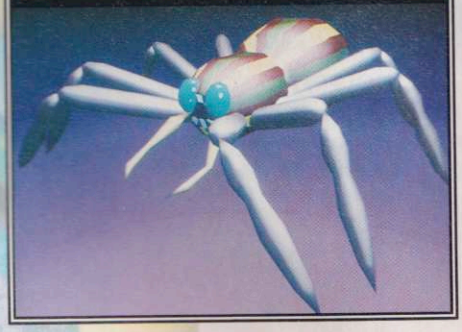


First there was the *Artisan* and *ProArtisan* series – still the most widely used art packages in education today. They feature an intuitive icon based menu system that has proved usable by children as young as three years old. Yet they are powerful enough to be used by serious artists.

Artisan is in its second generation *(Artisan II)* and provides many useful and unique features. This is the one for younger children and anyone interested in textile design. ProArtisan is a more sophisticated package but retains the familiar interface of Artisan II – an easy upgrade path.

Illusionist £99.95



No, this isn't a bird eating spider and no *Illusionist* doesn't replace *ProArtisan*. *Illusionist* is a graphics package for those who don't have the skills or inclination for free format painting.

With *Illusionist* you create a wire frame outline of your image using pre defined shapes. In addition you can define your own shapes or distort any existing shapes. This makes it very easy to generate images even if you can't draw a straight line. You can assign colours and textures to your objects. You can even give them texture maps. A texture map is any Mode 12 or 13 screen. So you can use a scanned or digitised image, a painting – literally anything!

Render Bender II £99.95

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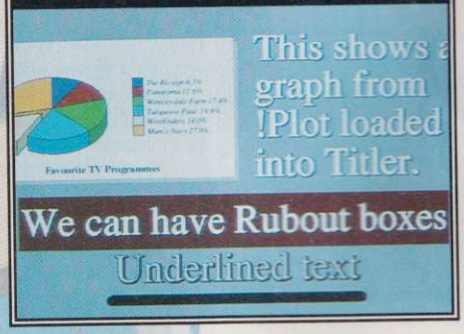
Render Bender II is another top rated graphics package from Clares. Images are created in a similar way to *Illusionist* by defining objects using pre defined shapes. You then add colour, texture, lighting etc. *Render Bender* images can include glass and mirror objects as well as shadowing. *Render Bender* actually calculates the path of light from its source to the imaginary eye at the viewing position. This path takes account of any reflections and refractions.

In addition *Render Bender* can create animated sequences very easily. You can either give objects a formula to control their movement or you can give start and end positions and ask the program to 'in between' the other frames. The result is a stand alone animation that can be passed to friends or even sold.

Titler £149.95



Finally we have *Titler*. This is a video titling and sequencing package. The *Titler* program uses outline fonts enabling you to create text screens, credits etc. You can have any colour text, background, drop shadow, underline or rub out boxes. You can also include sprites and Draw files in your screen.

The *Titler* screens can be used in the *Sequencer* program along with screens from *Artisan, ProArtisan, Illusionist* and *Render Bender*, as well as lots of other formats. You can also include *Render Bender* or *Euclid* animations, *Tracker* tunes, *Armadeus* samples or Archimedes samples in your sequence. *Sequencer* gives you total control over the display of the screens and provides many effects to switch from one screen to the other. As well as being a tool for video titling this package can be used purely as a presentational tool for preparing and showing lecture notes, demonstrations etc. In fact all of Clares demos are now created using *Titler* and *Sequencer*. *Please request a demo disc that will illustrate the potential of these packages.*

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A walk through Helix

Terry Blunt starts a new series on programming your 32-bits

MANY programmers – familiar with the 8-bit BBC Micro – fell by the wayside when confronted with complexity of effective programming on the newer 32-bit Acorn machines. Quite a few potential new ones have been lost too, unwilling to face the uncertainty of success even with very considerable effort.

However, there is now a solution. This new series shows how you can use the HelixBasic system to develop useful, professional multi-tasking applications.

Superficially HelixBasic may appear to be like Acorn Basic V, but there are significant differences. Acorn Basic is essentially a single-tasking language, that has to be coaxed into cooperative multi-tasking with the Wimp. HelixBasic, on the other hand, is designed to work with the Desktop.

It works in short bursts, constantly checking whether the Wimp has any more instructions or information. Most of the common calls to the Wimp have been neatly packaged to make them easier to use, and things like updating window contents is largely automated.

Developing a program in the Desktop in Acorn Basic is possible, but not easy. The HelixBasic editor is specifically designed to work this way and allows you look at many parts of your program at the same time.

Those of you already familiar with Acorn Basic, will need to keep reminding yourself, that HelixBasic insists on full keyword names – N. for NEXT is not acceptable. Also there are some differences in control structure – IF - THEN must have the THEN part.

With Acorn Basic you could write:

```
IF A%=5 PROCthing
```

HelixBasic needs:

```
IF A%=5 THEN PROCthing
```

Another difference is the fact that HelixBasic doesn't support multi-statement lines separated with colons. In practice this shouldn't make any difference.

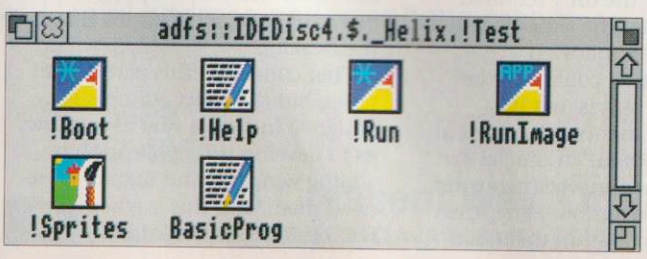
Many commands simply don't exist in Acorn Basic. These are all described in Chapter 3 of the reference manual and it is well worth browsing through this to get an idea of what is available.

When HelixBasic loads a program to run, it tokenises it – removing the clutter of unwanted spaces, blank lines, REMs and the like. Even variable names are compacted. This means that you can lay out your programs for the absolute maximum clarity without any risk of slowing them down.

Although it is possible to work directly with HelixBasic to create your applications, it is very much easier if you work through the editor. Much of the mundane work is done for you and procedures and functions are presented tidily.

Inside

By default completed Helix applications all have the same minimal internal structure – shown in Figure I. The files !Boot and !Run are the normal start-up files and for many applications you won't need to alter these.



● *Figure 1: Minimal internal structure*

!Help is the file that your users will see if they choose the Help option from the filer menu and you will need to enter whatever information you think relevant here.

!RunImage is an essential linking program between your application and the language itself. !Sprites, is the usual icon file and the editor creates a default sprite. But when you have everything as you want it you can simply replace this with the icon you really want.

Finally, BasicProg is your HelixBasic program saved as a text file. This is loaded in and tokenised by the language at run-time for improved speed. BasicProg can be modified in !Edit if you want to, but if you do this you won't be able to use the Helix editor without destroying your changes.

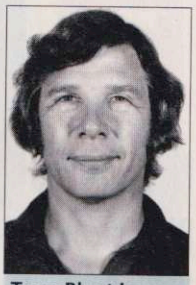
With this in mind, you need to decide early whether you want to work entirely within the editor, or whether you want to use !Edit instead.

There may be other files and directories but they are mainly associated with the working of the editor and most of them don't concern the final application. As an example, the Helix editor uses a datafile file called HelixInfo to generate BasicProg. This is why you shouldn't try to edit BasicProg directly if you want to continue to use the editor.

First steps

So where do we go from here? Well the first thing to do is to get the editor on the iconbar. This is done in the normal way by double-clicking on the !HelixEdit icon. You should bear in mind that the editor – and your applications – also require the !HelixSys application to have been seen by the Filer.

Clicking Select on the iconbar icon will open a window on a new ➤



Terry Blunt is trained in electronic testing and design. He has been writing for computer magazines since 1983 and his book *The Archimedes Game Maker's Manual* was recently published by Sigma Press.

application with column headings: Resources, Windows, Menus, Procedures and Functions.

These columns will all be empty apart from the default entries shown on the left hand side. This isn't a running application yet, but will require surprisingly little in order to get it to at least sit on the iconbar.

Before doing anything else, I suggest you save this application shell to your work disk – or directory if you have a hard drive. Click Menu over the open window and follow the Save Program arrow.

Through this series we will build up an application called !ScrapPad, so you may as well start by changing the application name to this. Remember it is important to include the pling ! in the application name.

With the Helix icon dragged to your Filer window you will be able to make further updates without bothering with the name any more.

We can now create our absolute minimum application. One of the icons visible on the lefthand side of the ScrapPad window is marked *Iconbar Info*. Double-click on this to display the editing window.

This defines a number of start-up conditions including what will happen when you click on the iconbar icon of your new application. For the moment we want to do very little, so fill in the entries so that you have the same display as Figure II.

Much of this information is simply concerned with the display in the application's info box and you can change what you put here to suit yourself.

However, it is again important that you put the pling on the front of the application name and this you can't change without also changing the name you save the application under, as otherwise you'll have an invisible icon on the iconbar.

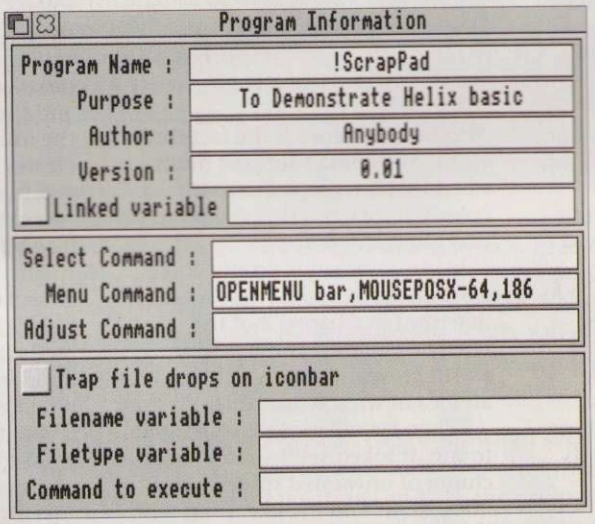
With this setup, the only command that actually does anything is the *Menu Command*. The entry we have put in here tells Helix that when the user clicks Menu over the icon of ScrapPad we want a menu called *bar* to be opened up 64 graphic units to the left of the mouse pointer with its top at vertical position 186 graphic units.

As we don't need the program info window any more you can close it in the standard way to keep the desktop uncluttered.

Icon menu

We now have to create the menu called *bar*. To do this, click menu over the ScrapPad window. Follow the arrow alongside *Create* and select *New Menu*. You will now have a new icon in the menus column of the ScrapPad window called *Untitled1*. You will also be presented with an editing window on to this.

Change the menu name to *bar*, then the title to *ScrapPad*. The menu name is the name that the program will recognise, while the title is what will actually be displayed at the top of the menu. Menu width can stay at -1 for now. This means that Risc OS will automatically adjust the width of the menu to the size of the longest line of text.



● *Figure II: The result of the first steps*

The top item in the iconbar menu list should always be the info box. We've already defined this, as it is one of the objects that Helix creates for us, using the text we put in the iconbar Info window. Now all we need to do is actually call for it.

Click Menu in the *Entry Name* field and change *Untitled* to *Info*. Next select the *Info Box* button at the bottom of the window. This tells Helix that the only required action is to open the window when the Info arrow is followed.

Our application could now be saved and run as it is, but it is extremely bad manners to create an application without an official exit point, so we need another menu item.

Click Select over *New Entry*, then over the lowest item in the menu entries list. You'll notice that the top one now changes to its correct title and the lower part of the editing window is cleared ready for the commands that the new entry will require. Although that's a bit disconcerting at first, in time you'll get used to this paging action.

Click over the *Selection Command* field and type in *END*. This very accurately describes what will happen when Select is clicked over Quit in the final application.

Re-select the *Info* field in the item list. This ensures that the *Quit* entry has been properly updated. These paged entries are only updated when you swap from one item to another in the menu list, a point that you need to keep in mind. Finally, close the menu window. This will have the effect of updating the menu name in the ScrapPad window.

Time for a run

Now it's time to make our first test. Click Menu over the main ScrapPad window and choose *Save and Run*. You can see why I suggested saving the application in advance.

You will soon become used to using Save and Run quite automatically as you develop your programs. Working this way also means that you don't need to keep the Filer window open, which saves clutter on the Desktop.

You should now have a new blue Helix icon sitting proudly on your iconbar. It doesn't do much of course. It only responds to Menu clicks, but is complete and correct.

The program

As a matter of interest you may like to look at the actual Basic program you've just created. To do this, double click on the !ScrapPad application while holding down the Shift key.

From the Filer window that opens load the text file BasicProg into !Edit – you will probably be surprised at how little there is compared with ordinary Basic applications that use the Desktop.

That concludes this part of the series, but the Helix editor is designed in such a way as to allow us to develop this application by adding windows and menus as we need them, and this is what we will be doing in the future.

> Although it is possible to work directly with HelixBasic to create your applications, it is very much easier if you work through the editor

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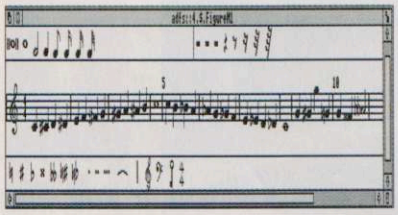
Sampling notation

Ian Waugh continues his role as music teacher

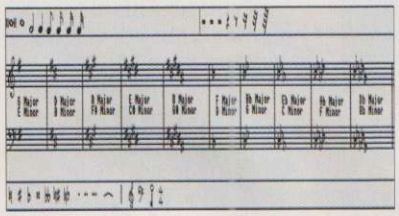
WE saw, in the September issue, how the pitch of a note is indicated by its position on the stave. If you played Figure I from that article on the piano, you would be playing an ascending scale of C on all the white notes.



● *Figure I: An ascending semitone scale followed by a descending one*

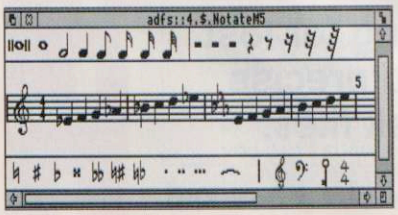
The inbetween notes – the black ones – are shown by sharpening (raising) or flattening (lowering) the notes on the lines or staves by a semitone using special sharp and flat signs.

An octave actually contains 13 notes – counting from the lowest note to the higher one with the same name, for example, from C to C. Figure I shows an ascending semitone scale followed by a descending one. It contains every single note in the octave from C to C.



● *Figure II: The same key signature is used for both major and minor keys*

It has several notes with the same name but these have been modified by a sharp or flat sign. For example, the first bar contains the notes C, C#, D, D#, while the second to last bar contains E, E♭, D, D♭.



● *Figure III: The difference between writing a scale using accidentals and using a key signature*

From this example you can see that the same pitch can be represented in more than one way. C#, for example, has exactly the same pitch as D♭.

If you alter a note with a sharp or flat and then want to play its original pitch, you can cancel the change using a natural sign.

These symbols are known as *accidentals*. They only change notes at the pitch they are applied to, not notes an octave higher or lower, and their effect only lasts for the duration of the bar. The four Gs in bar nine in Figure I are G natural, G#, G natural – an octave higher – and G natural.

Double sharp and double flat signs are used to raise or lower the pitch by two semitones (a tone). Bar 10 in Figure I contains three notes written differently but they all play the same pitch. You'll be pleased to hear that double sharps and flats are relatively uncommon.

Key signatures

Altering the pitch of a note each time it appears is rather unwieldy so to simplify matters we use *key signatures*. These spell out the notes which will be sharpened or flattened at the beginning of the stave.

Figure II shows some common key signatures although the most common ones, C major and A minor, are not shown as they have no sharps or flats.

In the key of G, for example, the key signature tells us that *every* F is sharpened. In the key of E♭ every B, E and A is flattened. If you need to use an unflattened B or E you simply use a natural sign.

This saves a lot of time when writing music and makes it easier for musicians to read. Figure III shows the difference between writing a scale using accidentals and using a key signature.

Major and Minor keys

When you select a key signature, Maestro first gives you a choice of Major or Minor keys – but it's important to realise that there is no such thing as Major or Minor key signatures.

The difference between major and minor keys lies simply in the notes which make up the tune. Tunes in Major keys tend to sound bright and happy while tunes in Minor keys have a more sad or downbeat feeling. You can see from Figure II that the same key signature is used for both.

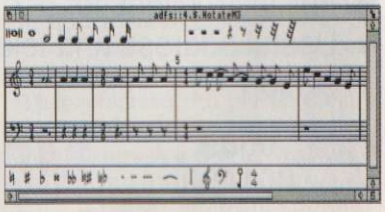
All the Maestro Major/Minor option does is offset the list. The reason for this lies in the way the keys relate to each other. However, we're straying from music notation and entering the realms of music theory. The *How To Read Music* book explains the difference in more detail.

Rhythm – dots and ties

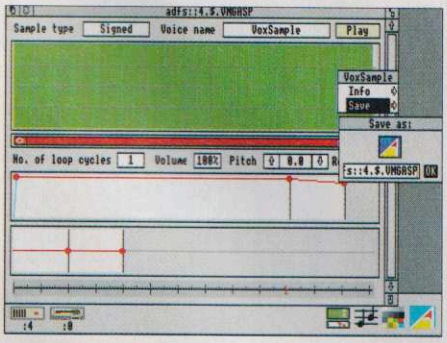
Continuing with basic note durations, you can increase the duration of a note by half its original value by placing a dot after it. The first two bars of Figure IV have the same duration and the value of bars three and four are equal, too.

If you place two dots after a note, it increases it value by half as much again. A double-dotted half note, for example, would last for a half note plus a quarter note plus an eighth note. However, the double dot is not often used. A triple dot is rare almost to the point of extinction and not worth worrying about.

A *tie* is used to join notes of the same pitch and makes them sound for the total duration of the tied notes without a break. Ties are most commonly used to join notes across bar lines or across beats where the pulse of the music would be lost if the duration was written as a single note.

Look at the ties in bar five of Figure IV. This bar plays exactly the same as bar six. The ties in Maestro are a fixed size and do not always appear as neatly as they do on printed music.

● *Figure IV: The value of bars three and four are equal*

● *EMR's WFS lists the sounds loaded in the Archimedes*



● *Vox Sample can process samples and save them as Relocatable Modules*

Time signatures

In order to give the music a beat or a pulse, notes are organised into rhythmic groups. The *time signature* tells you what grouping is used and is written as a fraction. The lower value specifies the value or duration of the beat. The upper value tells you how many beats there are in a bar. The lower must be a multiple of a note value – 2, 4, 8 or 16.

Some time signatures are shown in Figure V along with their rhythmic pulse. Note that while 3/8 is similar to 3/4 in feel, 6/8 actually has a two-beat feel, each beat containing three sub-beats. The same applies to 6/16 which is very rare.

Such time signatures are know as Compound Time and you can tell a Compound time signature because the upper figure is divisible by three – 6, 9 or 12. Don't worry too much about these for the moment.

Music notation organises notes into groups by joining their stems together with beams. However, Maestro doesn't support beams – unlike Rhapsody which we'll look at later in the series – so you don't get this help. But however the notes are grouped, they still sound the same.

Sound advice

Entering a piece of music into Maestro, Rhapsody or any other music program is only part of the job. To get the best out of any piece of music you have to select suitable sounds for the various music lines.

This is easy in Maestro and was covered in part one of this series. However, the StringLib sounds and WaveSynth-Beep supplied as standard are rather limited. Fortunately, the Arc's open-ended architecture lets you load new sounds very easily.

Press F12 to access the command line. Enter *VOICES and press Return. If you have been playing the Maestro version of Fauré's Pavane you will see something like the

```
*VOICES
          Voice       Name
              1   WaveSynth-Beep
12 45         2   StringLib-Soft
     678      3   StringLib-Pluck
              4   StringLib-Steel
  3           5   StringLib-Hard
              6   Percussion-Soft
              7   Percussion-Medium
              8   Percussion-Snare
              9   Percussion-Noise
........ Channel allocation map
*
```

● *Figure VI: *VOICES shows the current sounds and to which channels they have been allocated*

display in Figure VI, depending on what sounds you have assigned to the staves.

To load new sounds they must be in the form of a Relocatable Module. These can be loaded simply by double-clicking on them or, for the hackers, with the *RMLoad command. For example:

```
*RMLoad MySounds
```

They will then appear in the list after performing *VOICES and you will be able to scroll through them in the Instrument section of Maestro.

You can remove modules with the *RMKill command. Switching your computer off will remove Module voices, too. Refer to your Archimedes User Guide for more information about using Relocatable Modules.

A single module can hold several voices and this is a very convenient way to store them as you can create individual modules for each tune.

You can also create different modules for similar types of sounds such as basses, strings, or percussion. This is particularly useful when initially setting up a piece of music. However, modules take up ram and it's probably a good idea to remove unused voices before saving the final version.

Where do you get sounds and modules from? There are many in the Public Domain and any good PD library will suggest a number of disks you can start experimenting with.

There are also several commercial programs which let you make sounds of your own. Voice Builder from MJD Software, for example, lets you create sounds by selecting waveforms and envelopes in a way similar to analogue synthesis techniques. The sounds can be stored in libraries and saved as modules.

Clares' Vox Box is another interesting package which includes Vox Synth and Vox Sample programs which can also create Relocatable Modules. CIS's SFXM (Sound Effects Maker) is another.

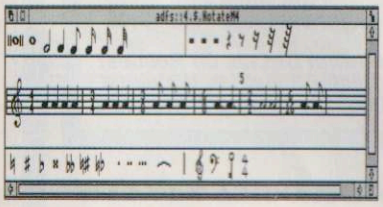
Many sound creation programs use samples – digital recordings of real sounds. To make your own, of course, you need a sampler such as Clares' Armadeus, Armadillo's A448 Sampler or EMR's Sampler 8.

However, with a sound manipulation program such as Vox Sample you can edit and manipulate samples from a variety of sources including PD disks. But note, you can't load a raw sample directly into the Archimedes – it has to be converted into a module first.

EMR's Creations Sample Disc Library is a range of off-the-shelf samples. EMR programs tend to use a system of their own called WFS (Waveform Filing System) which is the format of the Creations disks.

However, EMR also have a WFS to Module Converter and, for completeness, a program to convert SoundTracker files to WFS waveforms.

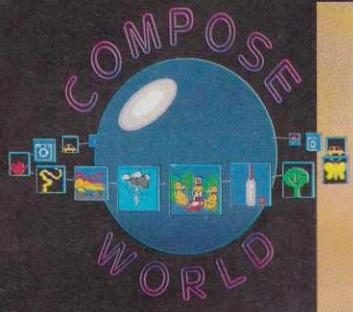
● *Next month we'll be taking a closer look at samples.*



● *Figure V: Time signatures with their rhythmic pulse*

Expressive Software Projects

Music Programs For Acorn's Archimedes Range Of Computers



In Compose World short phrases of music are represented as pictures or words and these musical building blocks can be used in any combination, and in any order, to compose a tune of up to eight parts.

Phrases can be created and edited in the built-in musical grid editor which features extensive facilities such as :- transpose, change volume, stretch, invert, reverse as well as the standard cut and paste facilities.
Pictures can be drawn with the simple built-in painting editor.
Full support for Archimedes Sprite files, MIDI files and Maestro files provides easy links to other art and music programs.
Simple cartoons can be created by linking phrases to larger Sprites which are displayed while the sequence is being played.
The effect of chosing different sounds can be explored either through the Archimedes' own sound system or by using a MIDI keyboard.

Compose World: £48.00 + VAT (£56.40 inc VAT)

Rhythm Maker provides exciting opportunities to explore an create rhythm patterns. These rhythms are edited using a tim grid with full control over volume and stereo position. Th patterns can be different lengths using a variety of tim signatures and a wide range of grid resolutions.
The range of instruments used to create the rhythms can b chosen from a large selection of Archimedes internal and MID sounds.
The rhythm patterns can be sequenced in any order an combination to make a complete rhythm track.
This program is a powerful compositional tool and is designe encourage exploration of the effect of different rhythm variations.

Rhythm Maker: £34.00 + VAT (£39.95 inc VAT)

COMPOSE WORLD Files 1

Compose World Files 1 is a collection of twenty-eight extra files for use with Compose World. The disc contains files which cover a wide variety of different musical styles and structures as well as files which make use of the picture display facility of Compose World.
Some of the files also make use of the sounds provided with VoicePack1.

Compose World Files 1: £12.00 + VAT (£14.10 inc VAT)

VOICE PACK 1

VoicePack1 contains fifty-four sound modules for use with Archimedes music programs like Compose World and Rhythm Maker. An application called !ClickVox is provided with the disc which enables you to load or remove sounds from the sound system and save the settings to make it easy to configure the system for your own needs.

VoicePack1: £15.00 + VAT (£17.63 inc VAT)

Flexisynth provides facilities to explore and create new soun on an Archimedes.
Using analogue style synthesiser techniques sounds can created from waveforms, volume envelopes and pitch envelop with control over modulation, tremelo and vibrato. With the lar bank of waveforms provided and the extensive control facilities vast range of different sound timbres can be explored.

The program is designed to be easy to use with the opportun to configure the screen and available options to make program accessible over a wide range of ages and abilitities.
The sounds created can be saved as Archimedes sou modules and used with any Archimedes music program.

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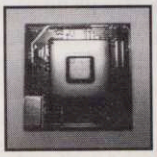

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Painting the basics

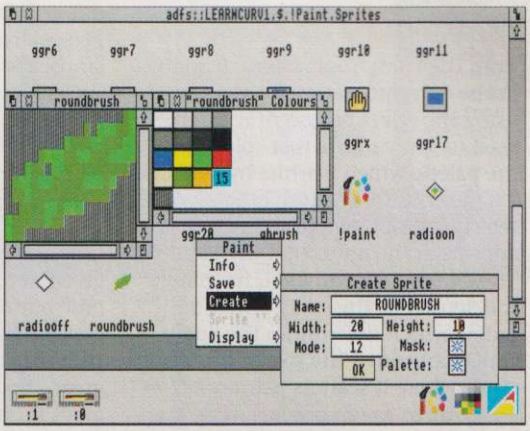
Steve Bruntlett continues his series on creating graphics using pixels

IN the last issue I looked at some of Paint's basic drawing tools including the *Use sprite as a brush* tool to provide the standard brush shape as well as the *Replace colour* tool which allows you to fill enclosed areas of a picture.

What I intend to do this month is to look at the use of the ***Set/Clear pixels*** tool which acts as a pencil, the ***Spray can*** tool which can spray in a chosen colour or clear pixels to the first colour in the palette, and changing the palette itself.

With these additional basic tools you should be able to continue the landscape you started last time but its stage-by-stage construction will be delayed until next time as I'd like to show you how to design your own brushes to make painting a bit more flexible.

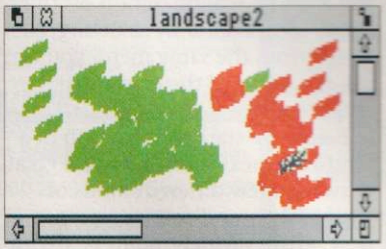
We'll also look at some elementary considerations of landscape painting which may apply to what you're trying to produce on the computer.



● *Making a leaf-shaped brush*

Steve Bruntlett has taught art, 3D design, graphics and photography for 14 years at secondary school level. With an MA in Art and Design Edu-cation he has developed a primer for Artisan and held master classes in CAAD.

He is now senior lecturer at De Montfort University, Leicester, on PGCE and MA Art and Design Education courses.



● *Making a leaf-shaped brush*

In the background

When starting to paint landscapes you need to develop skills of observation and analysis – looking at a scene or object and seeing how it can be broken down into basic shapes. For example with trees you need to be able to see how structure has developed and how the foliage is related.

Landscape painting is not only about trees but about grass, scrub, bushes, flowers, sky, buildings and so on. Try to identify what makes a landscape successful by looking at reproductions of paintings or good photographs.

It doesn't have to be photographically realistic to be good but it does need to show an understanding of the separate elements and how they fit into a balanced composition to produce a good result.

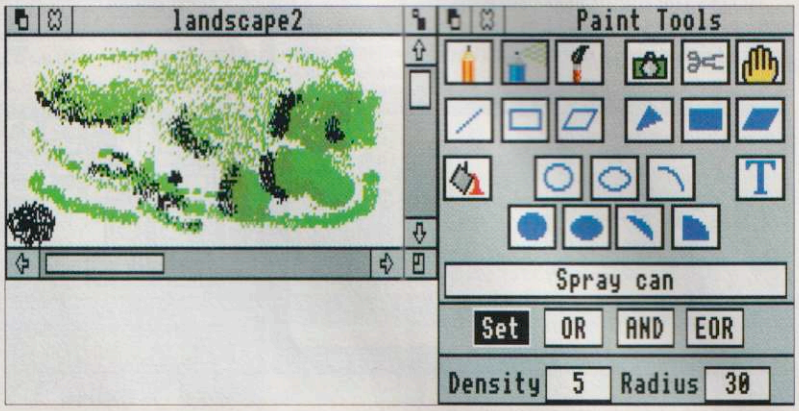
Start by practising drawing different kinds of trees in a single colour before you start on a full landscape. Move your computer to a window – if you have a reasonable view or a few trees in your garden – and draw what you see.

Or borrow a reference book. Observe the construction, the branch formation and the way the roots develop as seen from the surface. It's easier to draw the tree structure first and then put in the foliage.

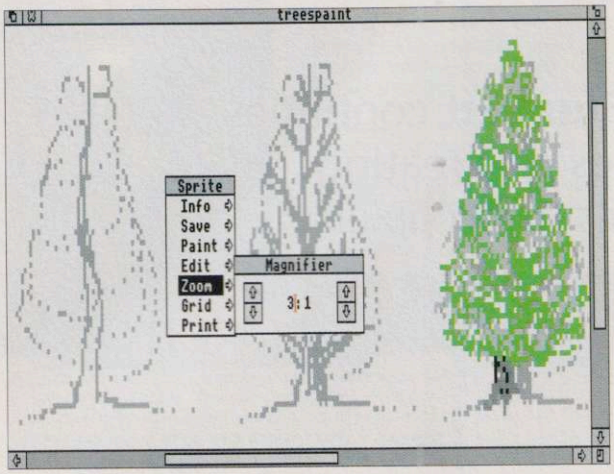
Save your *bare* trees on disk so you can experiment with different effects. My examples were were produced with the Set/Clear pixels and Spray can tools in a couple of colours for clarity.

You could also use the brush set at something like 1:8 to give a slightly thicker effect. The Spray can tool was used at a setting of 5 for radius and density in two colours.

The Spray can tool is selected ➤



● *Changing the spray can radius and density*



● *The zoom option is very useful*

➤

from the Paint Tools menu. It sprays in the currently selected colour by using the select button or it can be used to spray in the first colour in the palette which is white by default.

Once the Spray can has been selected a supplementary section appears at the bottom of the Paint Tools menu allowing you to change the density of the spray and the radius which determines the Spray can's footprint – the size of the circle where it scatters paint dots.

My three rough poplars were created with the aid of the Copy Block tool which allows you to make multiple copies of anything on screen by banding a rectangle round the object or part of the painting.

Press Select at one corner of the rectangle you want to copy and keeping it pressed move the arrow cursor to the diagonally opposite corner which will trail a light blue banded box behind it.

Save the trees

Once this box outlines the area you want to copy, press Select again and you will have two light blue boxes the same size. Move the arrow cursor with the box attached to the new position and press Select to fix it in position. You rarely get trees exactly the same size and shape and the result could look artificial.

The best use for the Copy Block tool is in developing trees. Start with an outline, copy the drawing and work on the branch structure, copy the next stage drawing and work on the foliage. That way if you make a mess of either the branch or foliage you can go back one stage without having to redraw the tree.

When you start to draw trees you'll find that you initially only have the default palette to work with. If using Mode 12 you'll only have eight colours and eight grey shades. You could use Mode 15 and have access to 256 colours.

> When you start to draw trees you'll find that you initially only have the default palette to work with

Changing the palette is dealt with in the Welcome Guide so I won't explain it here. Try changing the grey shades to colours you think are more suitable for landscapes but perhaps leave white and black as they are.

You could usefully mix a couple more greens and produce a range of browns. If you get hopelessly lost just select the default option from the palette menu and the screen will be restored to its original state.

The second reason for wanting different colours is that of aerial perspective. If you look across a landscape you should notice that the colours seem to become greyer in the distance. So if you intend to give the effect of distance in your painting you'll need to reproduce this effect.

I suggest a suitable palette might keep the white, black, yellow, light green, red, buff, olive green and sky blue but change some of the six greys to browns, the dark blue to a pale blue and the orange to a pale green. You may need some of the greys for hills so don't change them all.

Different brush strokes

The problem with using the existing brush is that it's an odd shape. A round brush would be useful and so might a leaf-shaped or rock-shaped brush. A leaf-shaped brush for example could be used for placing individual leaves on trees but could also be used to give a texture for foliage.

If you look inside the !Paint directory, by double-clicking on it while holding down the Shift key, you'll see several files. Load the Sprites file – not the !Sprites file – and open the window to full size.

Access the menu and bring up a Create Sprite window. Call the new sprite Leaf, enter a width of 20 and a height of 10 staying in Mode 12.

Switch on the palette and mask option – palette determines whether the sprite has its own palette or not and mask whether the background of the sprite is transparent. It's important that the brush has a transparent background otherwise it will obscure the result as you draw with it.

Once you have entered the information and pressed Return, the new sprite will appear on the sprite list in alphabetical order. Click on this and draw your new brush shape in the colours you require using the pencil and zoom to see what you are doing.

Accessing the colours window you'll notice an extra shaded grey square which you need to select to paint the background transparent.

Once you have designed your brush, close the sprite editing window and click Menu over the sprites list window as you want to save the modified sprite file and not the brush sprite on its own.

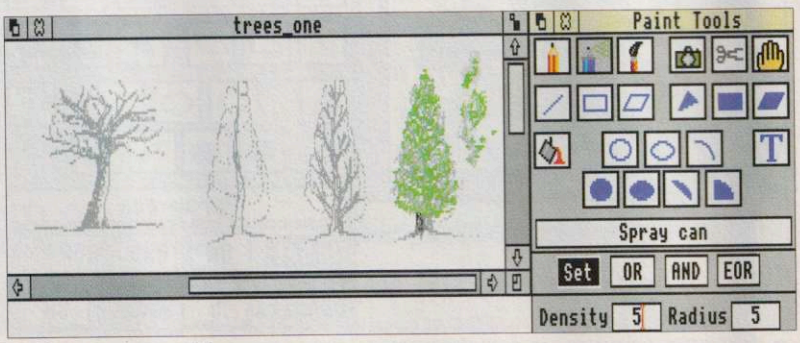
This will save the new version of Sprites which is loaded every time you run !Paint, so make sure you save it on your back up copy only.

Now Quit from !Paint and run it again. You can now use one of your new brushes by selecting the Paint Tools option, selecting the paintbrush option and typing in the name of your brush. It's a small price to pay for the flexibility of using your own brushes.

You can use the brushes at any size and in any proportion by using the X and Y scaling option on the Paint Tools menu. By selecting Shape from the same menu you can use the shape of the brush in a single colour.

Before we start construction of a landscape next month, have a go at drawing a few different kinds of trees and try and produce a range of new brushes which might be useful in your proposed landscape and don't forget to keep backing up your work.

Happy landscaping!



● *Create a range of trees*

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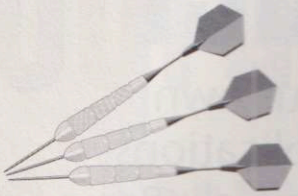

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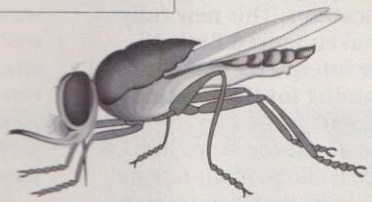

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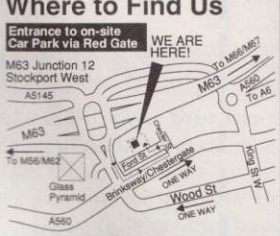

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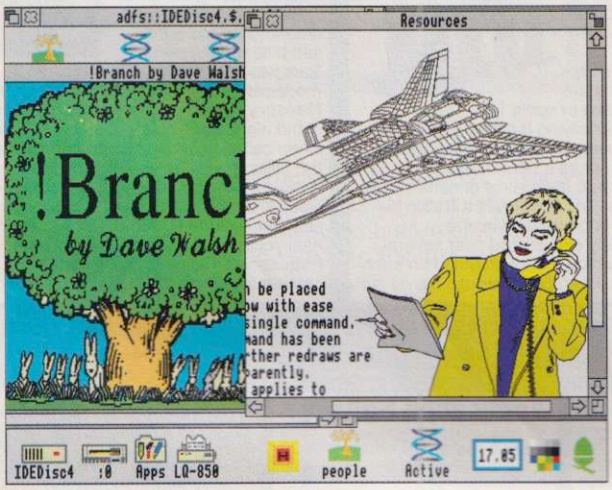
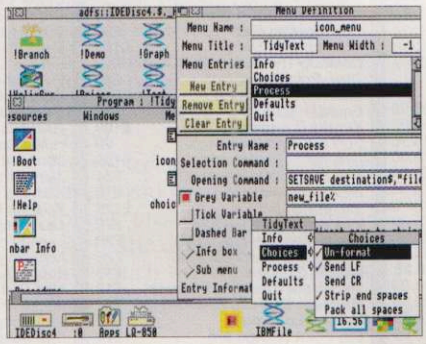
NOV 92

Windows under control

Create your own Wimp applications easily with HelixBasic



● *Window handling is automatic*



● *Creating menus becomes a doddle*

HELIXBasic is an alternative way to program Wimp applications. This new fully functional enhanced Basic V language interpreter makes programming for the Desktop environment really easy.

Only available for Acorn Risc OS machines, it allows multi-tasking programs to be developed with a minimal knowledge of Basic.

For instance, to start a new application you click on the Helix icon and the essential !Run, !Boot and !Help files are automatically created with their minimum necessary contents. From then on you simply create windows, menus, procedures and functions – a specially written editor – as you need them.

The program editor lets you set up windows and menus particularly easily. Suddenly you have a complete reversal – the hardest part of designing Wimp applications becomes the easiest.

Windows can be attached to other windows to create toolboxes and if the windows are designed with horizontal or vertical scroll bars then these are automatically dealt with by HelixBasic. As windows are also automatically maintained, no redrawing is needed in your own applications.

Menus can be defined with procedures, sub-menus, sub-windows, save and info boxes as well as having colour selector boxes attached to them. You can attach variables menu items so if that variable is true the entry is either greyed or a tick appears in the standard Risc OS way.

Taking the variable principle one step further you can have *linked variables* – a feature new to HelixBasic. A variable can be attached to a specific screen item like a button or some displayed text. If the item is altered on screen the change is reflected in the linked variable and when a variable is changed the screen is updated with the new information.

For anyone wanting to delve into programming it's a great starting point and because of this we are starting a series giving you step-by-step help. You can read the first part on Page 65 of this issue of *Acorn Computing*.

Whether you want to follow the tutorial series or want to take advantage of the unique price and save nearly £25, this special offer is an opportunity not to be missed.

HelixBasic normally retails for £99.95 but here at *Acorn Computing* we are offering you the complete package for £75.

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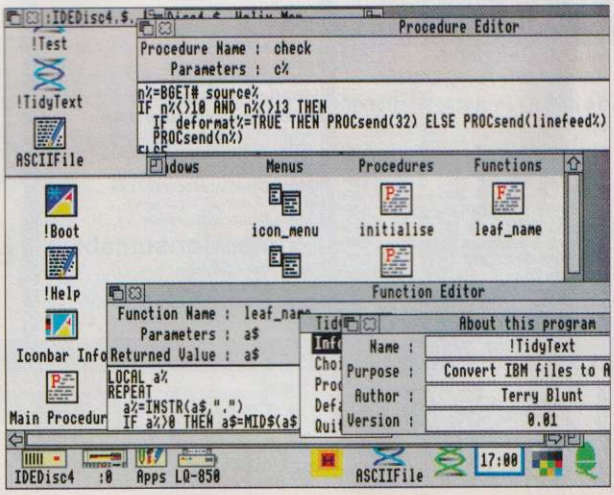


● *You can use the HelixBasic editor to make Wimp programming easy*

Programming for fun

Terry Blunt rediscovers the satisfaction of rolling your own

PRODUCT SPOTLIGHT

Product: HelixBasic
Price: £99.95
Supplier: PDK Technologies, 4 Meadow Way, Ampthill, Bedfordshire MK45 2QZ
Tel: 0525 403541

HELIXBasic – an alternative way to develop Wimp applications – was reviewed by Steve Turnbull in the March 1992 issue of *The Micro User*. Since then PDK Technologies have developed the system further.

The editor is now far more stable, and the release version should have the remaining bugs sorted out. This is very important as the editor is a key feature of the system allowing you to create a significant application without using any window commands at all.

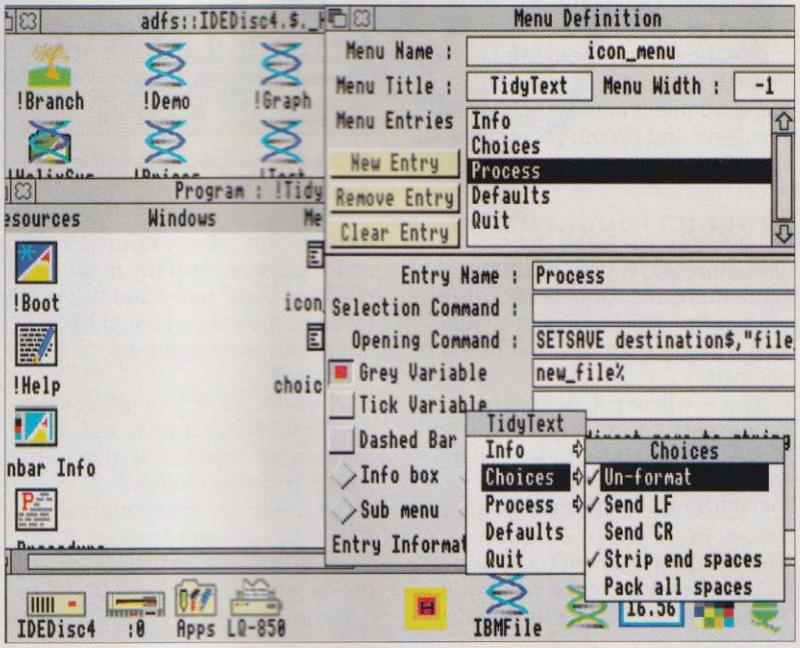
Starting a new application is done simply by clicking on the Helix icon on the icon bar. The essential !Run, !Boot and !Help files are automatically created with their minimum necessary contents.

Run time

The !RunImage is packaged with these when the application is first saved, along with a default !Sprites file. From then on you simply create windows, menus, procedures and functions as you need them. All of these can be readily altered later.

As you create these objects, they appear in the main editing window. Double-click on one and you immediately have an editing window. This includes the minimum files mentioned above – everything is editable.

Windows and menus are particularly easy to set up in HelixBasic – suddenly you have a complete reversal, the hardest part of designing Wimp applications becomes the easiest.



● *Creating a menu item with HelixBasic*

The window editor presents you with a clear, uncluttered display, starting with the name, or handle by which you want to identify the window and its minimum and maximum X and Y coordinates.

You then have four buttons for scroll bars, title bar and size icons. This is followed by the actual displayed window title. A couple of radio buttons determine whether this is actual text or indirected to a string variable.

Any help text you want to have is next, followed by the window colour. Finally you have built-in ➤

The Helix system

HelixBasic is quite a bit slower than Acorn Basic but this doesn't significantly slow other applications using the Desktop. This is because HelixBasic only takes control from the Desktop in time slices, so a very laborious operation doesn't freeze the whole micro, it just works in lots of very short bursts. PDK are currently working to improve execution speed.

The reduced speed is understandable when you consider how much work HelixBasic does for you. It keeps a record of everything you put in the windows, taking care of all redraws quite transparently. It then allows you to delete any object from the display without corrupting the rest.

Given just the variable names you defined and very few commands, all the links between menus windows and control routines are created, modified and removed as they are needed without any intervention on your part.

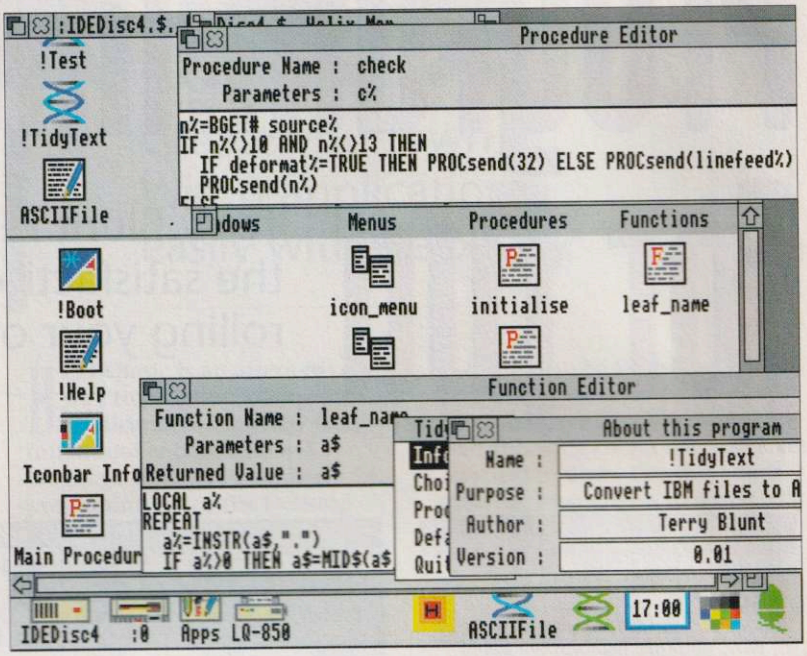
actions to be taken for each of the mouse buttons if they are clicked with the pointer over the window.

Editing menus

Menus are equally easy to edit. Again you have the name, the title and, this time, the menu width. Below these is the list of menu entries you want, each of which has buttons for such things as greying out, tick and dashed bar.

You can enter commands to be obeyed if an entry is clicked on, or if the mouse passes along a right hand arrow. This means that daisy-chains of windows and menus are very easy to set up.

PDK have been thoughtful enough to supply some useful standard menu entries such as Info box, Save and Colour picker on a set of radio icons.



● *Quick non-mulitasking utilities can now work on the desktop*

> You can have justified text in any colour from any font available

Program routines

Procedure and function editing is more mundane. Double-clicking on a procedure icon will open a two-part window with the caret in the top part.

This is where you define the procedure title and any parameters that are passed into the procedure. You don't need the normal DEFPROC and ENDPROC as these are put in for you by the editor. This results in a much tidier display.

The lower part of the window is where you enter the body of your routine. This follows normal text editor practice, with the usual marking, copy, move and delete features. Although, I could have done with two views on a procedure.

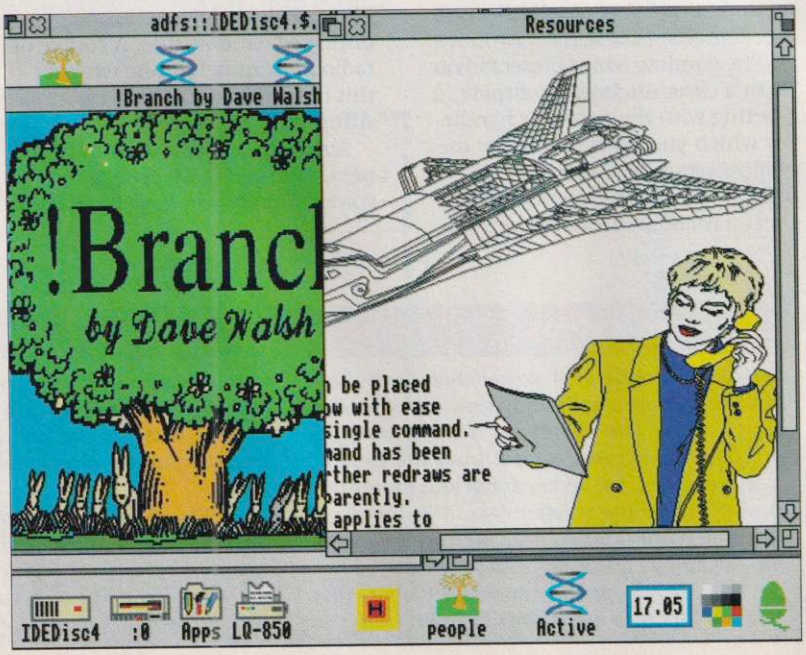
Once you have your application developed sufficiently to test, you'll find the save and run feature in the editor. If syntax errors are encountered the application is halted and an error message given. The editor displays the line where the fault is too.

I would like to see full support for message files, so that the system can be readily internationalised. This isn't currently available but may be in a later release. Having said that, it isn't too much of an imposition to change the text for different languages with the editor.

Fancy fonts

Acorn fonts are also completely taken care of. Once you have told Helix which font you want to use and at what scale, you can have justified text in any colour from any font available. Doing this for yourself is normally a real headache.

PDK hope to have support for the Impulse message passing system soon, but admit there are problems providing a simplified interface to such a complex piece of software.



● *On the surface the applications work flawlessly*

Summing up

Although there are still a few problem – particularly with the editor – I can recommend HelixBasic for the vast majority of tasks, and over a wide range of user skills. Only where time is really critical are you likely to have significant problems.

For people wanting to delve into programming it is a great starting point.

So in this issue on page 65 we are starting a series giving you step-by-step help to programming in HelixBasic.

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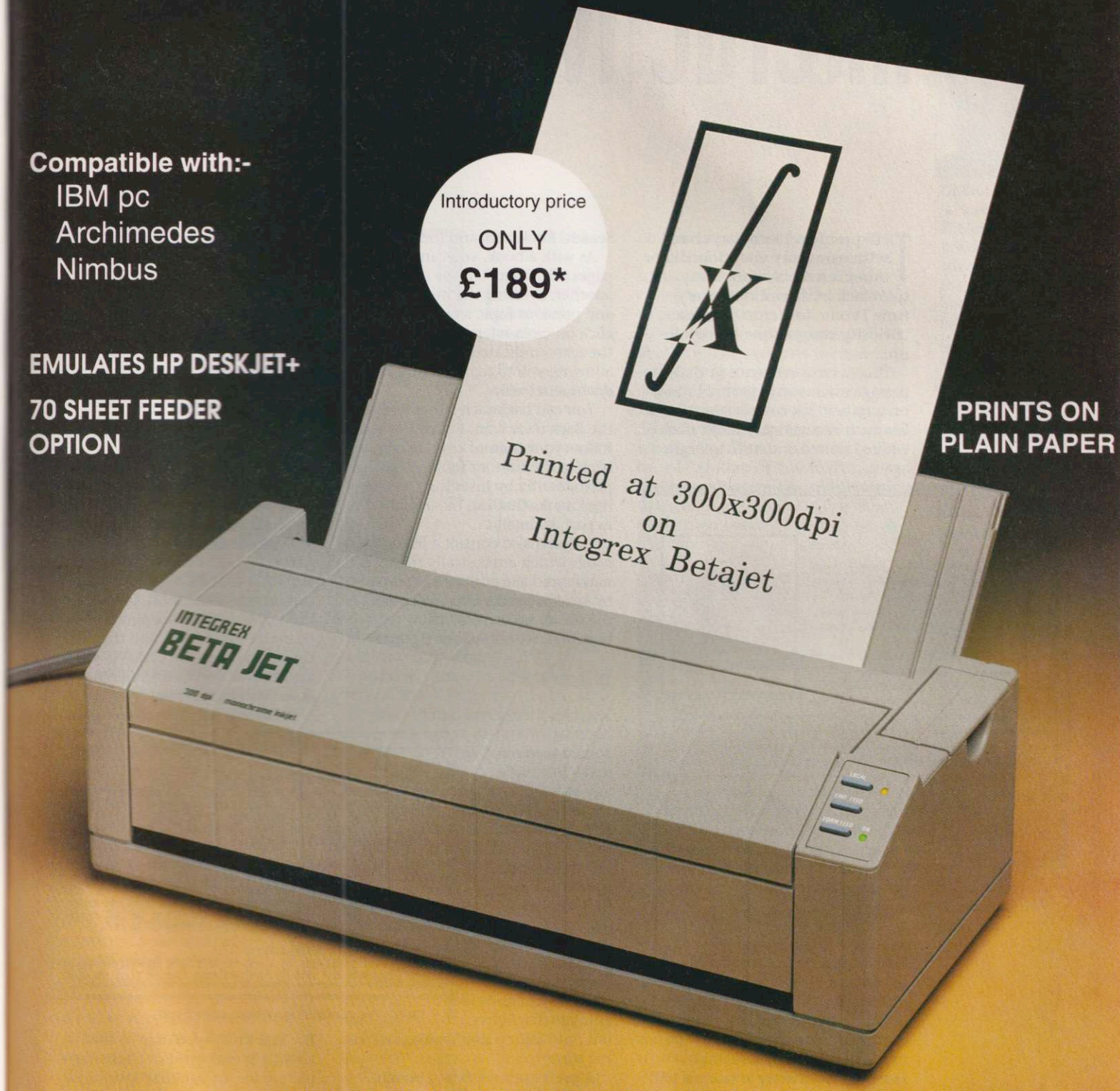

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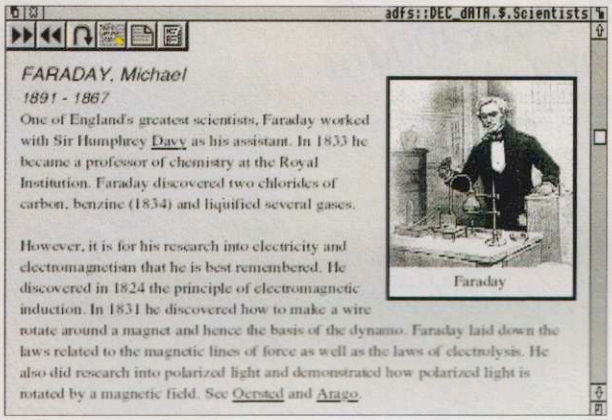
Interactive information

THE problem I've always had with using any encyclopedia or other reference work is my total lack of discipline – every time I come to a cross-reference, curiosity compels me to look it up.

Then a cross-reference in that passage catches my eye and I'm off on another tack completely. After a few such excursions I've lost track of where I started and have to begin again.



● *A typical ClearView entry in the Scientists and Inventors file*

While such an approach is a marvellous way of turning the acquisition of knowledge into a voyage of discovery, books are a clumsy medium for it unless you are armed with copious bookmarks or have about 20 fingers.

And that's where ClearView comes in, offering in hypertext form an electronic means of accessing information in as structured or as unstructured a way as you please.

The application is self-documenting – it has only a minimal printed manual, but loading the software as normal and clicking on its icon causes the Help file to be displayed in ClearView format, so you are quickly immersed in the simple processes involved.

At the top of the window are the six toolbox icons: Next topic, Previous topic, Back trace, Search, Bookmark and Index.

As with a book, you can read the pages of a ClearView file one after another, by using the next topic and previous topic icons, or you can click on cross-referenced words in the text – indicated by underlining – allowing you to roam around the document freely.

You can backtrack either by using the Back trace icon, which lets you follow your train of cross-references back to the start, or more permanently by inserting bookmarks that can be saved to disk as part of the file.

You can also consult a list of *index points* which are basically the topic names and the positions pointed to by cross-references. At the end of the file an index lists major headings, with brief descriptions.

Illustrations

The files themselves don't necessarily consist solely of text – just like any self-respecting reference book they can be illustrated with sprites or Draw files, either displayed outside the text or as part of it. Unlike a book, the software can also animate Ace films but only if they aren't embedded in the text.

A print option lets you obtain hard copy of the current topic or of the whole document. Naturally a printed copy is linear rather than interactive, but it's handy for checking layout when you're building your own document and is likely to be useful for school projects.

The ClearView application comes in three versions – Evaluation, Standard and Advanced – with progressively more functions.

The evaluation version is PD and is effectively read-only in that you can't save or print a document although you can use bookmarks during a session.

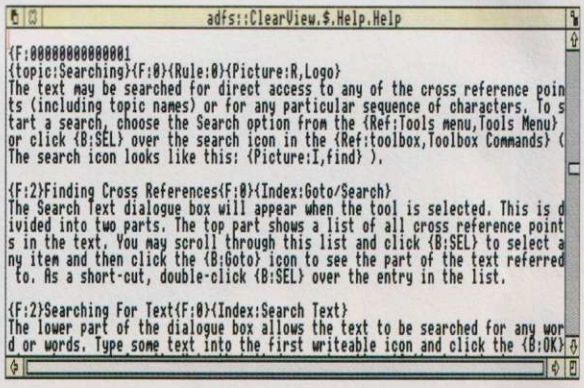
The standard version gives you both these options, and the advanced one also lets you create your own hypertext files.

Making your own

Building a ClearView document with the advanced version is very much like creating text area objects in Draw, and about as convenient.

You first use Edit or another text processor to write a text containing commands about fonts, layout, topics, pictures, index points, cross-references and so on, and then drag the saved file to the ClearView application icon to compile the document and display it on screen.

Inevitably something isn't right the first time – you may be told about a syntax error or a missing picture file, or you may just find a layout problem – and so you return to the source text file, re-edit it and recompile a revised document.



● *A source file containing various commands*

Inevitably something isn't right the first time – you may be told about a syntax error or a missing picture file, or you may just find a layout problem – and so you return to the source text file, re-edit it and recompile a revised document.

There may well be potential users who have the time, the skill, the organisational abilities and the motive to keep at it but I suspect that most will want their documents off the peg.

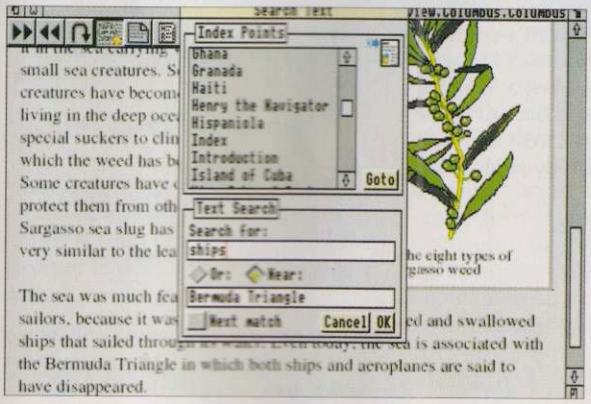
At the time of writing, three educational hypertext files are

PRODUCT SPOTLIGHT

Product: Clearview
Price: £11.75 (Standard), £58.75 (Advanced) (site licences available)
Supplier: DEC dATA, P.O. Box 97 Exeter EX4 4YA
Tel: 0392 221702
Requirements: Risc OS (1Mb or more)

Bruce Goatly turns some hypertext pages and leaves a few bookmarks

Dr. Bruce Goatly is Head of Publishing at Britain's leading scientific society. In the 15 years he has worked there he has seen typesetting technology move from hot metal to desktop publishing and has introduced DTP processes to his office.



● *Using the Search Text dialogue box to look for ships near the Bermuda Triangle*

already available from DEC_dATA – Columbus's first voyage, EuroFactfile and Scientists and inventors – and more are in preparation.

The volatile political situation in Eastern Europe suggests that the EuroFactfile is going to need almost continuous updating, and DEC_dATA welcome suggestions for corrections and updates to their files, rewarding them with a free update.

Mainly for copyright reasons, there's no way of decompiling a document to obtain the original text and illustration file. This may frustrate pupils who would want to extract pictures from compiled documents to use in other computer-based projects.

I understand that DEC_dATA have plans to develop the software as a way of supplying their clip art in extractable form. ClearView is already used on their catalogue disk to display a brochure.

In use, reading a ClearView file is pleasant and straightforward. A nice touch is that the text reformats itself when you change the window width, at least down to a minimum defined mainly by the illustrations.

I liked the text search facility – you can search by index tags or for words within the text. This was particularly useful in the *dictionary* type of file such as the one on scientists and inventors, because I could look for subjects rather than people.

I do have one slight worry with the reading aspect of ClearView, though there is no safety net. If you have the standard or advanced versions and alter the file – for example by adding bookmarks – you might expect to be asked whether you want to save it on quitting the application but no such warning occurs.

As far as using the advanced version to create a new hypertext file goes, the process isn't complicated, but manually inserting the cross-references can take a lot of time.

The editing process is non-interactive, and ClearView won't accept a document saved direct from Edit – it must be saved to disk first as a plain text file.

Overwrite danger

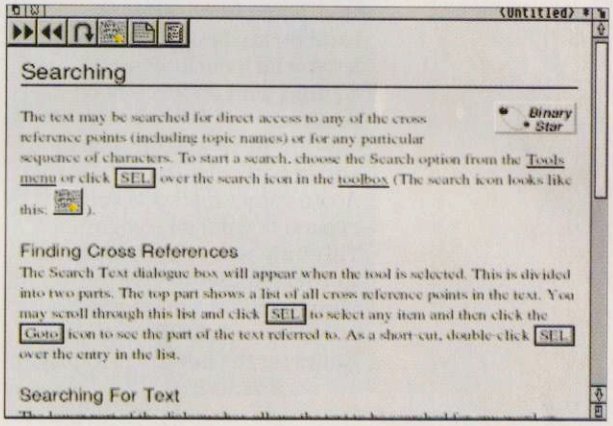
If you do any document creation, you should save the compiled document with a different name from the source text – the version I used gave no overwrite warning, and losing your source text is irreversible because the software will not decompile your document.

In writing quite a small experimental document I found generating the index entries long-winded, as it has to be done by hand.

Although the index tags for topics are generated automatically, neither they nor the index tags inserted manually are compiled into even a skeleton index. This is a pity in view of the fact that you are obliged to call the last topic Index.

The information files were a bit sparse, doubtless this has a lot to do with the fact that the file size is restricted by the 800k limit of common floppy disks, which therefore also prevents the use of sound samples or integration with Acorn's Replay system as these are voracious consumers of disc space.

I hear that once this is overcome, whether by file compression or the use of CD-Rom or 1.6Mb disks, there are plans for the addition of video clips and sound. ClearView could then become much more of a multimedia application.



● *Typical ClearView document*

Summing up

ClearView is a low-cost hypermedia-type application allowing you to read specially created files in an interactive way. Using a ClearView document is really easy – you just point and click – and just about anyone could pick it up in 10 seconds flat.

The advanced version isn't particularly writer-friendly for creating files and will probably appeal only to those of a programming bent who enjoy a challenge.

I expect most users will settle for using the simple but effective standard version with off-the-shelf documents, and provided these become available in large enough variety ClearView should prove popular in schools as well as more generally.

Any key to play

GREETINGS, game fiends! What could be more appropriate in the new look magazine than a new games column? I am settling myself nicely into the vacuum left by HacMan and intend to reflect the changing nature of the Acorn world by moving this column firmly into the 32-bit domain. I will still welcome and print hints for 8-bit games, but will be concentrating far more on the 32-bit stuff.

So, all you 32-bit games players get writing and send me those much needed cheats, tips, comments and other advice that I know you have been stockpiling for just this occasion. I will do my best to answer any letter which encloses an SAE, and all disks with an SAE will be returned.

With the new Acorn machine, and in particular the A3010, the Acorn games market is about to expand beyond all recognition. This truly is the opportunity for software houses to take the plunge and start developing not only conversions but also new games for the new users to play.

Infinite lives

Liam Corner wrote in with a veritable hoard of infinite lives cheats for older Arc games and here's just a sampler: On Top Banana make a backup of the game disk using *BACKUP and edit the !Run file of the newly made copy. Replace the line:

```
banana
```

with:

```
Load Banana 8000
MemoryA A3CC 0
Go 8000
```

On Mad Professor Mariarti make a backup using *BACKUP again, and edit the !Run file of the copy, removing the line:

```
Run ProfProg
```

and replacing it with:

```
Load ProfProg 8000
MemoryA a96b4 0
Go 8000
```

Likewise, on Moon Dash from Minerva, make a backup using *BACKUP. Type the following program into Basic and run it – it only needs to be run once.

```
10 REM >adfs::0.$.MoonCheat
20 file%= OPENOUT"adfs::0.$.!Moon
Dash.Score"
30 FOR loop%=1 TO 10
40   PRINT#file,loop%*1000,"Mr Cheat"
50 NEXT
60 FOR loop%=0 TO 15
70   PRINT#file,loop*1000,999
80 NEXT
90 CLOSE#file
100 END
```

This gives you 999 energy and allows you to use any of the passwords which are:

SCREEN ONE
DELTOID
SPEAKER
BLANCHE
AGADOO
HOOLIGAN
PEACH
HELPLESS
BOOGIE
GNOME
GRUBBY
JINGLE
DUNCE
CRIPES
MANUAL
SILVEDRON

Fast and furious

Daniel Hanlon from Hale in Cheshire wrote in with a couple of useful hints for two Arc games. On Nevryon you can avoid the password mechanism. Set the level selector on the options screen, and then choose the *Redefine controls* option.

Answer N at the prompt asking you whether you really want to change the controls and this will return you to the main options screen. You can then start the game in the usual way, but you are free of the need for passwords.

On E-Type for the Arc, a bell rings as you go past the time bonus sign, incrementing your time. However if you approach very slowly and stop as soon as the bell rings, the bell will carry on ringing every second or so, incrementing your time by five seconds each time – but don't take too much otherwise the program crashes.

Also if, on any level of Ghouls for the Beeb, you go to the side of the screen and jump continuously against the red vertical line while holding down the jump and left or right keys, your score will increase. But watch out for the ghosts which keep moving towards you. Cheers, Daniel.

Hitchcock hint

Many thanks to keen-eyed Maureen Bruce (15) who has brought to my attention an error in HacMan's May column. She rightly points out that the password for screen 8 of level 3 in Superior's **Vertigo** is actually PSYCHO and not HUBBUB.

Enter the cheat

Paul Louth has spotted a cheat for **Enter the Realm** from the Fourth Dimension. When you see the screen in which you are asked to press fire to start, press and hold Shift+Control, then press fire while still holding those two keys until it

A newcomer starts his fresh-look hints and cheats column for Acorn games

asks you to press fire again. Now let go of the keys, press fire and whap: Infinite lives. Thanks, Paul.

Exiled

I would really appreciate it if someone could send in the complete solution for **Exile** on the Beeb – although it's a bit long in the tooth it's still one of the best games around and I know of many people who have not yet managed to complete it, so get writing.

Good Karma

Ian Robinson writes to say that users of pre-June versions of **Karma** – 1.05 and earlier – will encounter difficulties on mission stage 36, to find the Hopper. The star you are looking for is actually in the Spiral Arm, in keeping with the clue: *Find a Main Yellow not in the Outer Galactic Field.*

The problem is that the sensors will incorrectly tell you that the star you are looking for *is* in the Outer Galactic Field. Don't trust this. The star is clearly in the Spiral Arm and, as there are not many there, it should not prove too difficult to find.

Now read the book

Sigma Press have recently published a book aimed at novice Arc games programmers. The *Archimedes Game Maker's Manual* has over 250 pages of useful information about the technical side of programming games on the Arc range of machines. There are chapters on graphics, sound, and ARM techniques and the book is liberally sprinkled with Basic listings that demonstrate the effects.

A programs disk is available to avoid the need for all that tedious typing. Although not a formal manual per se, this book provides much useful information and is very down to earth. The style is friendly and the technical hints and tips are well explained. Most of the techniques described are complete with examples, and readers are given strong pointers toward their real-life application.

Some knowledge of the machines and of Basic is assumed, and at only £14.95, this book represents great value for money.

Don't expect it to replace the more formal works – the RISC OS Reference manuals, ARM code programming manual, and the BBC Basic manual – but it's a good complement to them.

Totally blitzed

Robert Steed of Hebden Bridge, West Yorks, has come up with all the passwords for **Blitz** from Arxe:

SEIRRA
MOUSE
HERBERT
COMPACT
FERRARI
GELESBY
PLANE
DESKJET
EARNEST

The first password is spelt wrong – it should be SIERRA – but I haven't been able to check whether it's Robert that got it wrong, or the actual password is misspelt. It won't take you a moment to check.

So did Robert play through the whole of Blitz to get the passwords? No he didn't. In fact he used a fairly simple cheat method which anyone can try – even on the 8-bit machines although it's not quite so simple.

First he played through to get the first password, then loaded up the files of the program into !Edit and did a search for the named password. Once he found it, lo and behold there were the rest of them.

Robert tells that he's used this technique successfully on Drop Ship, Rotor, Nevryon, Bug Hunter, Moondash and Bug Hunter in Space.

A further refinement on this technique is to try the passwords spelt backwards if you don't find them the first time. But, of course, there's no reason to think you'll find them in all cases because a programmer can easily encode the password so that it's completely unrecognisable.

Boxing clever

Courtesy of David Thomas from Marlow, Bucks, here are the passwords for the **Big KO:**

START
SWITCH
POSTER
GUNSTAR
LOGICAL
SPIKE
JOHNBOY
WINDOW

To beat the boxers from number three onwards the best method is to force them back as far as they'll go so they can't dodge your punches.

Problems with Risc OS 3.10?

While fixing the bugs – sorry, I mean *enhancing the features* – in Risc OS 3.00 Acorn, in their infinite wisdom, have changed some of the operating system calls – unbelievable but true. This means that many games that worked fine on Risc OS 2 and Risc OS 3, won't work with the new version 3.10.

All the software houses affected have been working around the clock sorting out their programs but if you upgrade your machine to Risc OS 3.10 you may find that some programs – games in particular – won't work.

Although the manufacturers would probably like to give free upgrades – and some may do so – it would cost too much for most of them, so you may have to pay if you need that upgrade of your favourite game.

Older games that don't work, where the manufacturers are no longer with us, may not get any upgrades at all.

THE DRIVING FORCE

Winner of the Best Printer in the recent Computer Shopper awards, the Canon BJ10ex printer has revolutionised the small printer market. It offers 360 dpi , near laser printer quality, on plain A4 paper, in an incredibly compact and lightweight housing. Unfortunately the existing RISC OS printer drivers, based on the standard Acorn Drivers, have definitely been in the slow lane, locking your computer up for the entire print process, often up to ten minutes per page.

Computer Concepts have now created a set of RISC OS printer drivers, called TurboDrivers, that are optimised for the Canon BJ10ex printer. The result is the perfect combination of budget printer and RISC OS printerdriver, able to print full 360 dpi high resolution pages at a quality superior to that available from any dot matrix printer.

The TurboDrivers not only print the pages faster, but give the control back sooner - up to ten times quicker. The table below shows the time taken to print and the time the computer is occupied for some typical example pages.

Shows optional sheet feeder attached to printer

The TurboDrivers print faster on an ARM2 machine than traditional drivers on an ARM3 machine. In addition they can send the print data to disc and then print from disc in the background, so the computer and almost all memory remains free for other uses, while the printer gets on with the printing.

	Standard Driver	TurboDriver	
	Time to complete	Time to complete	Time to get control back
A complex page of text & graphics	521 seconds	199 seconds	70 seconds
2 pages text in different fonts	753 seconds	283 seconds	64 seconds
One complex page from !Draw	643 seconds	261 seconds	187 seconds

All times in seconds from a standard ARM2 Archimedes with 4MBytes RAM and hard disc. Times would be faster for an ARM3 based machine.

RISC OS Turbo DRIVERS

NEW LOW PRICE

BJ10ex printer & drivers £229.00+£10.00 carriage+VAT (£280.82) Optional 30 sheet feeder £48.00+VAT (£56.40)

TurboDriver software & printer cable £49.00+VAT (£57.57)

Compatible with all applications that use the RISC OS printer drivers and all Archimedes models.

Computer Concepts Ltd

Gaddesden Place Hemel Hempstead Herts HP2 6EX 0442 63933

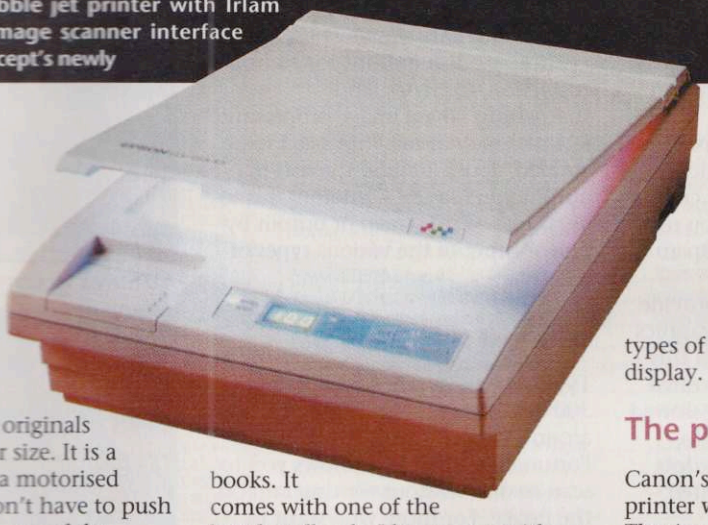
Image to image

Clem Vogler takes you on a tour of colour scanning and printing

TAKE a high-quality flatbed colour scanner worth £1,000 and connect to an Acorn 32-bit micro. Print the resulting images on a bubble-jet colour printer worth £2,000. How good are the results? Will your home-made £20 notes deceive the bank or your DIY passports satisfy the immigration officer?

To find out how well colour images can be rendered by the Archimedes, I looked for the best colour scanner and printer at prices consistent with the cost of an Archimedes. Naturally, I restricted myself to hardware which has Archimedes software interfaces available for it.

The combination I put together for this test was the Epson GT6000 flatbed scanner and the Canon BJC800 bubble jet printer with Irlam Instruments' ProImage scanner interface and Computer Concept's newly



PRODUCT SPOTLIGHT

Product: Epson GT6000 Scanner and ProImage
Price: £999
Product: Interface Card
Price: £98.50
Supplier: Irlam Instruments, Brunel Institute for Bioengineering, Brunel University, Uxbridge, Middlesex UB8 3PH.
Tel: 0895 811401
Product: Canon BJC-800 Bubble Jet printer
Price: £1,895
Product: Turbo Printer Drivers BJC-800
Price: £99
Supplier: Computer Concepts, Gaddesden Place, Hemel Hempstead, Herts HP2 6EX.
Tel: 0442 63933

The scanner

EPSON'S GT-6000 scanner can handle originals up to A4 or US letter size. It is a flatbed model with a motorised scanhead, so you don't have to push it by hand as with some of the cheaper alternatives and scanning for all three primary colours is done in a single pass.

Connection to the Arc is via a bi-directional Centronics parallel port. The A5000 and A4 micros have such a port and can be connected directly.

All other Arcs will need a half-width interface board fitted to a vacant slot at the back. An optional SCSI port is available at extra cost but Irlam's software does not currently support this mode of connection.

Scanning can be performed at up to 600 dots per inch (dpi) and the scanner is robust with a hinged lid to accept books. It comes with one of the best handbooks I have seen, with an outstandingly good section on relating scanner settings to the types of material being scanned and the types of output device to be used for display.

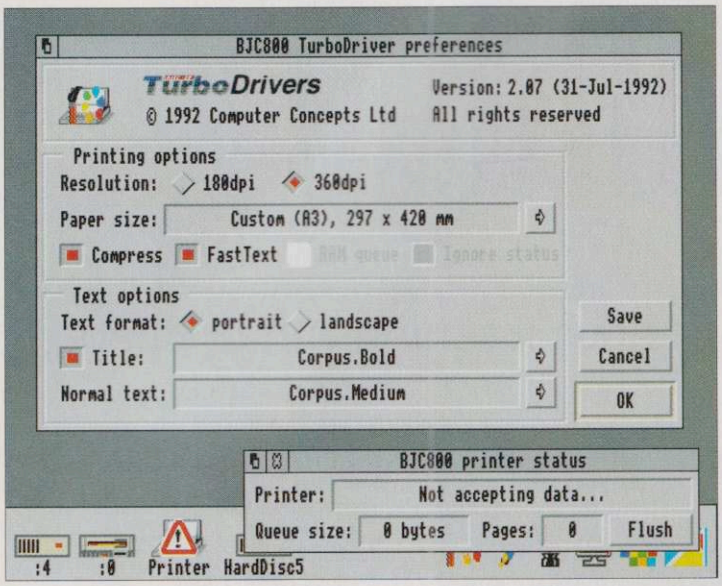
The printer

Canon's BJC800 colour bubble jet printer will take paper up to A3 size. The 4 x 64 nozzle print head can produce 360 dpi – horizontal and vertical – graphics. Rapid – 600 character per second – text mode printing uses a choice of the printer's internal fonts, Roman, Sans Serif, Courier, composed from an 18 x 48 dot matrix. You can have even higher quality, 36 x 48 dot matrix if you settle for a slower 300cps.

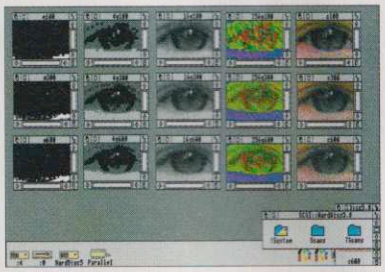
It features a 100-sheet automatic feeder and can also print on envelopes and transparencies. Connection to the Arc is via an 8-bit parallel Centronics port. A more expensive model, the BJC 820, offers SCSI ports as well, but these are not supported by currently available software. The printer is well made and reasonably quiet in operation, though noisier than a laser. I thought the quality of the text printing, in both text and graphics ➤

Clem Vogler has taught physics, electronics and computing at a number of schools and colleges.

His industry pedigree comes from working as a standards physicist for Marconi and as a test engineer working on spectrum analysers and scanning electron microscopes.

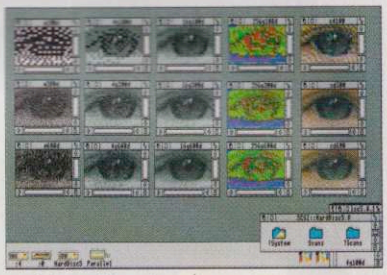


● *Printer driver preferences and status*

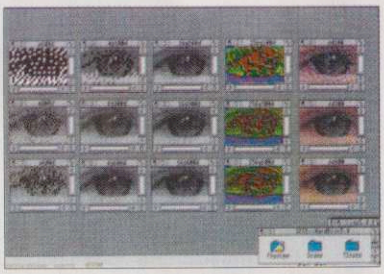


A series of scans of the same object at graded image depths and resolutions on screen...

...and on paper



A dithered version on screen...



...and on paper

➤

modes, was as good as with a laser, though slower. The big advantage – apart from colour – is that you can handle A3 paper.

Text printing is very successful on ordinary paper though graphics images with merging areas of colour suffer from ink runs unless you use clay-glazed paper – costing 13p an A4 sheet.

As a compromise, Canon provide a slow mode for improving graphics printing on ordinary paper. In this mode the amount of ink deposited is reduced and the print time slowed to 10 minutes for an A4 page to allow better drying of the ink dots before the next drop is deposited.

The software

ProImage from Irlam Instruments is a Risc OS compliant, multi-tasking software interface for connecting the Archimedes to a range of Epson scanners. Being multi-tasking is important as large, high-definition colour scans involve a lot of thumb twiddling during which you may want to get down to some serious alien zapping.

In use, you do a quick, low definition pre-scan to size the image. You then scan your selected area at a chosen dpi resolution, magnification and tone scale. Tone scales range from monochrome to 256 grey level or colour, in normal, multisync or VGA modes.

You see the image build up line by line on the screen. A wide range of output file types are provided, of which Acorn's 8-bit sprite format and the 24-bit industry standard TIFF and JPEG formats are the most useful.

There are also options for gamma correction, dithering and sharpening. These image processing facilities may or may not need to be applied, depending on the sort of output you require – whether it is to be displayed on screen or output by one or other of the various types of printer.

Scan to disk

Typically, an A4 sized 8-bit colour 300 dpi uncompressed scan will use around 9Mb of memory. Fortunately, ProImage allows you to scan to disk without wasting ram on the image. For those who want to modify the scan images further, a version of Acorn's ChangeFSI image processing software is included.

The BJC-800 Turbo printer driver comes from from Computer Concepts. This long-awaited and much enquired-after colour driver arrived with a plaintive note saying: *We apologise for the delays ... we have had more than our fair share of unforeseen problems with the product.*

This conjured up images of Computer Concepts' programmers sweating blood in their effort to get decent colour graphics rendering from the Archimedes primitive video capabilities.

This is a 24-bit colour driver, so – where Acorn's standards allow – you can handle a practically continuous range of colours. The Turbo driver occupies the icon bar like the familiar Risc OS drivers but you can't have Risc OS drivers present at the same time.

Clicking on the Turbo icon

➤

In-depth scanning

You can scan in monochrome, grey-scale or colour. The scanner treats the target image as a series of pixels or points, arranged – like stitches in knitting – in raster lines, which are scanned in succession.

A monochrome image is one bit deep – every pixel scanned is taken as either black or white and can be represented by a single binary bit: Zero or one.

Grey-scale scanning measures the intensity of the pixel scanned, so 4-bits per pixel can record any of 2^4 or 16 different grey-scale levels and with 8-bit image depth this increases to 2^8 or 256.

Colour scanning is more complicated. The scanner records three intensities for each pixel – red, green and blue.

The software then looks up the resulting colour in a table, called a colour map, which allocates a value.

Again, the number of values available depends on the image depth. With 3-bits per pixel per colour the scan can record $2^3 \times 2^3 \times 2^3$ or 512 levels. Whether these can be usefully displayed is another matter.

The Archimedes can display a maximum of 256 screen colours in specific modes while most printers can only display one bit/pixel/colour images, that is two grey levels (black and white) or eight colours

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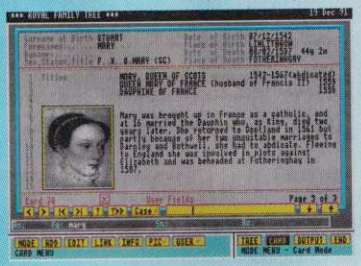

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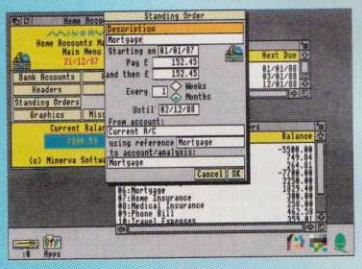

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PrimeArt is a 256 colour art package with on-line help designed for use with Primary and Special Needs Children. Menus can be tailored to suit a particular class or individual child. Sprites can be imported and saved in a viewing window and can be used to paint, produce stunning tiling effects, be placed anywhere on screen and even rotated and resized. This allows children to build up pictures from the sprite library. eg. a farmyard scene by placing sprites of animals onto a background picture. Poster size prints available.

GAMES

Send for our separate games sheet which lists 17 games for the Archimedes range of computers. Priced at £9.99 and £12.99 they represent great value for money.

All prices ex. VAT

MINERVA SOFTWARE

MINERVA HOUSE, BARING CRESCENT, EXETER, EX1 1TL

Tel. (0392) 437756 Fax. (0392) 421762

LEISURE

● *An optimised colour scan on screen...*

...a typical sprite reproduction – not photographic quality, but usable

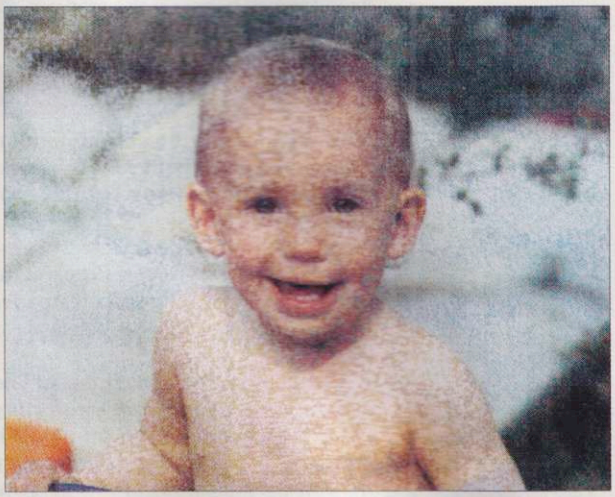
➤
presents a menu with the usual options for setting paper size and orientation and also an option for selecting outline fonts for text mode printing.

I occasionally had problems in trying to flush the print buffer after terminating a printout in mid run. This shouldn't happen as the software allegedly provides for buffer flushing.

I got round it by switching everything off and re-booting, which wastes ink, as the printer goes through a cleaning routine at start-up involving ink usage.

An advantage over standard Risc OS drivers is that you can print second and subsequent copies in the background. To protect the software from piracy, Computer Concepts supply a non-standard wired Centronics lead which means that you will have to swap leads if you want to dump files to the printer directly, without using the Turbo Driver.

You might want to do this to take advantage of the speed of using the printer's resident fonts instead of the Archimedes' outline fonts.



● *Miriam from a dithered scan. Note how the scanner and printer dither patterns interfere*

The scans

As I expected, the scanner coped well with text and line drawings, I was quite interested to see how well it managed with colour photographs. To this end I ran a series of scans of a fragment of a colour photo using the scanning software's full range of settings for resolution and image depth.

I also repeated the exercise with the dithering option turned on. The false colours when scanning at 256 grey scales result from the Archimedes' inability to display more than 16 grey levels.

As expected, the highest quality image results from dithered colour scanning at the highest – 600 dpi – resolution. Though not of photographic quality, this image is quite acceptable and is significantly better than, for example, a television picture.

However, the scan has been conducted at an image depth of 8 bits/pixel/colour producing a 24-bit TIFF file capable of coding nearly 17 million colour tones.

The only way the Arc can display the image is as a sprite file using Acorn's obsolete 8-bit format which renders a maximum of 256 colour tones.

Like the angler's fish that got away, the picture you see is a miserable thing compared to the one you originally hooked.

The best image, in this case, is that produced with the high resolution – 600 dpi – scan. This is because the original has been enlarged. If we had settled for a normal image, the high resolution would have been superfluous, since 600 dpi far exceeds the graphics resolution of the computer monitor.

The memory requirements are significant too. A full screen display on a 14in monitor uses about 300k. The sprite file which generates this may be much larger, depending on the scanning resolution used.

If 600 dpi were used the sprite file could occupy 36Mb. The TIFF files – which you can't display on an Arc, but can store and process – occupy about three times as much memory. JPEG files are more easily handled ➤

> The highest quality image results from dithered scanning at the highest resolution

because this format invokes powerful compression routines.

The printer produces laser quality text and line drawings on ordinary paper. Using the expensive clay glazed paper you can get excellent results with filled drawings containing blocks of colour. With half-toning you get nice colour graduation.

More sophisticated

The BJC-800 is a more sophisticated printer than colour dot matrix models and is 24-bit in the sense that you can program it to display from a palette of 16.8 million colours. However, it will only manage this by dithering.

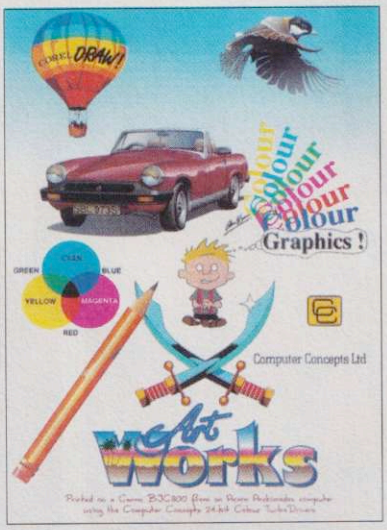
Like almost all dot matrix or inkjet printers it is a one bit/pixel per colour machine and each primary colour is either on or off at a given pixel.

The improved performance over colour dot matrix printers comes from the higher 340 dpi resolution which permits finer dither patterns and the inherently superior colour blending achieved using true subtractive primaries – cyan, magenta, yellow, together with black.

By contrast, the display monitor has an inferior resolution, but because it takes an analogue input, it displays a full spectrum of colour but limited on the Archimedes by Acorn's sprite format to 256 shades.

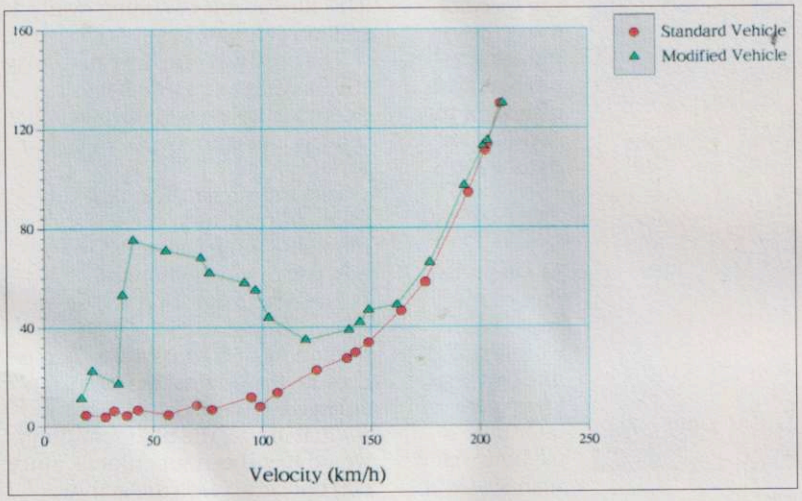
If you are interested in printing sprite files, a couple of points are worth noting:

- There is a bug in !Paint which can cause a very washed out image to appear, so try loading the sprite into !Draw and printing from there.
- If you are scanning originals, you may want the dithering option turned off as dithered images look better on screen, but may appear worse when printed due to interference between the scanner and the printer dither patterns.



Colour graphics on special paper...

... and on ordinary paper – the ink run on Corel Draw is clear



● *Graph with text – an ideal application for this printer*

Summing up

The scanner can be recommended unreservedly and both software packages support their respective pieces of hardware admirably.

The printer can also be recommended provided you are prepared to accept the need for expensive paper to give good results with dense areas of colour.

I emphasise that your text and line graphics will be perfectly satisfactory on ordinary paper. The printer will not produce photographic quality continuous tones but produces quite refined halftones.

The most frustrating limitation arises from the Archimedes' limited colour graphics capability. I am tempted to advise you to connect the scanner directly to the printer, but the logical development from this is to use neither device, but invest in a colour photocopier instead.

The Canon CLC10 costs about £4,000, provides 400 dpi scanning and printing and has a SCSI port to enable a computer to control it without actually receiving the data stream. I'd better not get too carried away – there isn't any Arc software to run it!

Industry standards

The printing industry has always been restricted in the number of colours available. Nearly a century ago it invented half-tones to solve the problem of printing photographs using only black ink on white paper.

What appeared to the reader as shades of grey were produced by varying the frequency and spacing of black and white dots. A similar technique called *dithering* is used in colour printing with mixtures of dots of the available solid colours give the appearance of intermediate shades. These techniques have been adopted for scanning so that the image produced can be printed with available technology: Monochrome laser printers and colour printers, which typically use four base inks – cyan, magenta, yellow and black.

Through the use of half-tones and dithering, the monochrome printer can be made to appear to produce several grey-scales and the colour printer appears to produce huge numbers of colours.

Autumn gold

Teri Paul takes a walk on the fun side of public domain

AFTER last month's international offering we are definitely staying at home with the influx of excellent PD from a host of sources which has found its way to us recently – too much to cover in one month.

Let's start with Digital Illusions who have sent me several disks as well as a copy of their disk-based newsletter which is very professionally put together.

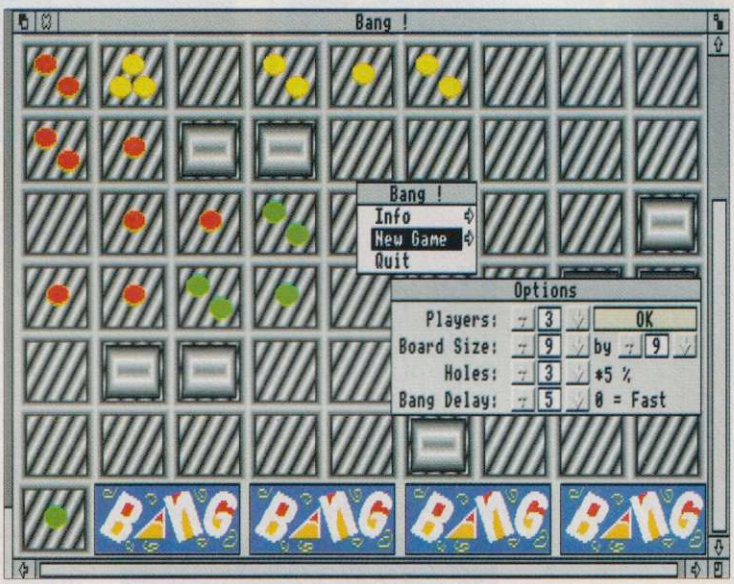
On the program side there's Bang by Oliver Clover of Doggysoft – I love the logo. Different versions of this game are around in PD and shareware forms for a variety of machines. A game of tactics and strategy, this version though lets you play with up to four others and you can change the board layout and add obstacles.

What's it about? Well, each square can take a specific mass before it blows up. The aim is to obliterate the other players completely, so that the only counters on the board are yours.

You can place a counter on any square, as long as it does not contain a hole or an opponent's counter. When the number of counters on a square equals the number of horizontally and vertically adjacent squares it blows up.

Now a counter from the square on which the explosion occurred goes to join those on each of the adjacent squares. Any others that were on that square change their colour to that of the counter that exploded on to their square.

As another counter has been added to a new square, these squares might now have enough pieces to explode leading to a chain reaction. Did you understand that? No me neither – but it's easy to play and a lot of fun.



● *Who will reach critical mass first?*

Swap shop

Oliver Holmes wrote to me recently about setting up the Demon Swap Shop PD Library. The idea is that people would send their items of PD to Oliver who would then send some them some of his utilities, games and so on.

The only cost would be the stamps. If you are interested why not contact Oliver Holmes at 3 Marshall Close, Fishtoft, Boston, Lincs PE21 0RX.

➤

Overtures and beginners

Tony Haines from Cheap 'N' Arsty Software sent me a line and a couple of disks. On the floppies were several products which fall into the categories of sillies and games.

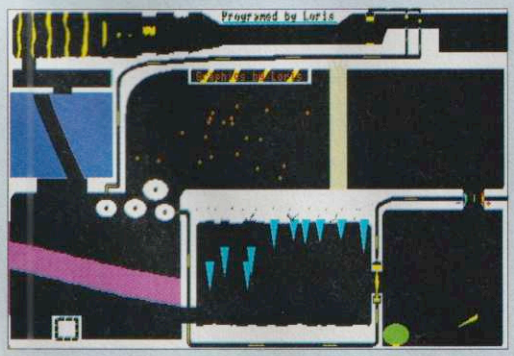
Shootout is technically a game. Testing just how quick you are off the draw you must out-face a gunslinger making sure you shoot first but draw second – draw first and shoot second you'll find yourself in Boot Hill but draw and shoot first and you'll find yourself behind bars charged with murder. Are you still game? Quite entertaining especially for younger readers.

Aargh is aptly named. You are presented with a maze-type screen where everything is deadly and only your mouse can save you from disaster. A clever, complicated and infuriatingly addictive way to spend several hours. A word of warning: Watch the windows and cactus.

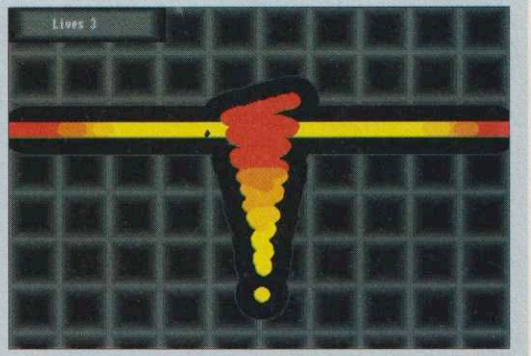
Wire is ideal for fund-raising events. Do you remember – or still go to – school fairs where you have to manipulate a wire hoop along a wavy metal construction and where contact between the two meant instant disqualification?

Well, Wire does it all for you on screen and you'll need a very steady mouse hand to cope. After several failures I read the instructions to find that by pressing the Select or Adjust buttons I could rotate my two contacts. However, success means that you face a more vicious challenge.

If you are the type of person who likes changing the mouse pointer from time to time, The Face will be a welcome change. A smiley face appears, but he sticks out his tongue and pulls faces when you press the mouse. He really cracks up when you quit...

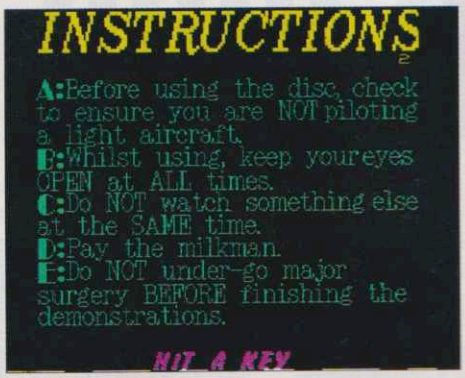


● *Can you find your way out of this Aargh maze?*

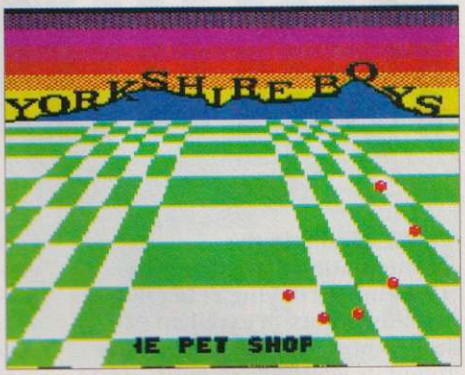


● *Success is easier than it looks in Wire*

● *This is Retribution...*



...an offering from the Yorkshire boys...



...with lots of style

➤

8-bit info

Henley of the Yorkshire Boys is in charge of reviving their PD side and most of their recent work can be obtained directly from their Sheffield home.

Most recent and heralded of all is **Retribution**. It indulges demos such as Vectorball where you can change the colours, alter the axis speed and change the spaces between balls, the function keys will give you pre-programmed patterns. You can also change the waveforms and number of vectorballs. Very impressive. A lot of work has gone into it and your BBC Micro may never be the same again.

● *Don't forget to shout "Uno!"*

For a £5 registration fee it comes more under the heading of shareware rather than PD but it does contain 19 demos. It is now available for BBC B and B+ owners – the Master version has run into a few obstacles but is promised.

BBC PD have been burning the midnight oil too. **Tertriz** – as the name suggests – is a rework of that Russian blockbuster Tetris. And very nice it is too. Actually it is two versions and Duncan Lilly and Steve Newton have done a good job.

Text adventures are few and far between on the commercial side for the BBC Micro these days, but I'm glad to say that the PD adventure market is booming. For the more adventurous, comes **The Mirror of Khoronz**, a sequel to Gateway to Karos. An absolute must and more than a bargain.

HeadFirst PD – who have Archimedes as well as BBC and Electron PD – have a variety of products for the 8-bit side, focusing mainly on entertainment. I'll be taking a closer look at utilities in particular next month, but there is an intuitive screen designer for anyone who has a copy of Superior's Hyperball.

A must for all Patience addicts – yes I am one too– are two types of solo card game plus a version of the **Uno** which is a must for people who like games with a nobble-factor. And last, but not least, is a rather snazzy demo which works on BBC and Electron alike, **Invader.**

The Invader Demo as well as having the compulsory scrolling message indulges in three-layer parallax scrolling – and there's a starfield too – and has a game of space invaders to while away the time. A nice bit of programming gentlemen.

Good news for owners of the 32016 range of Acorn processors is that Daniel Shimmin of 8-bit Software is about to launch 24-bit Software just for you. He plans to distribute software on the same basis as with his 8-bit range and for further information send an SAE to the address below.

Datastream and Telstar PD have amalgamated and are at present reorganising their database of titles and ordering procedures. In addition they are starting a pick 'n' mix disk service.

PD LIBRARIES

8-bit houses

8-bit Software, 1 Oakwood Drive, Heaton, Bolton BL1 5EE.
BBC PD,18 Carlton Close, Blackrod, Bolton BL6 5DL.
Datastream PD, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Different Ideas PD, Eyton House, Eyton, Leominster, Herts HR6 0AG.
Different Ideas PD, Archway Cottages, The Mount, Headley, Nr Borden, Hampshire GU35 8AG.
Elk PD, 5 Edward Street, Clifton, Brighouse, Yorkshire HG6 1QR.
Frisky Clams, 37 Cassiobury Drive, Watford, Herts WD1 3AA.
GLM PD, 2 Pierrefondes Avenue, Farnborough, Hampshire GU14 8NF.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollberry Close, Wingates Green, Redditch, Worcester B98 0QT.
Mad Rabbit PD, 174 Duke Street, Southport, Merseyside PR8 5EL.
MasterDisc, 2 Seaview, Hoylake L47 2DD.
Re-Run, 1 Northholme Close, Grays, Essex RM16 2NX.
ScreenTeach, 21 Highlands Road, Rochdale, Lancashire.
The Wizard - BBC, Ryburn, Thorpe Lane, Cawood, Selby, North Yorkshire YO8 0SQ.
Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF6 8EE.
The Yorkshire Boys, 40 Spotswood Place, Gleadless, Sheffield S14 1LE.

32-bit houses

Abyss Software, 35 Grantley Crescent, Kingswinford, Valley Fields, West Mids DY6 9EH.
Arcaynia, PO BOX 1927, Sutton Coldfield B74 3YZ.
ArchAngel, 9 Chancel Court, Chancel Lane, Pinhoe, Exeter EX4 8QE.
Arch PD, 109 Ferry Road, Hullbridge, Hockley, Essex SS5 6EL.
ARMistic, 136 Wellesley Road, Ilford, Essex IG1 4LJ.
Busy Bee Computers, PO Box 25, Ormskirk, Lancashire L39 3QR.
RE Clark PD Library, Westbourne House, 34 Bradley Street, Wooton-under-Edge GL12 7AR.
Cream PD, 38 Baunton, Cirencester, Gloscester GL7 7BB.
Datafile PD, 22 Duxford Drive, Aldergrove, County Antrim, Northern Ireland BT29 4BG.
Diamond PD, 86 Meadowbank, Moor Lane, Holway, Holywell, Clwyd CH8 7EF.
DataStream, 32 Hollinwell Avenue, Wollaton, Nottingham NG8 1JZ.
Digital Illusions, 20 College Road, Wembley, Middlesex HA9 8RL.
Digital Phenomena, 104 Manners Road, Southsea, Hants PO4 0BG.
DigiTech PD, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
Equinox PD, 27 Station Road, Earls Barton, Northampton NN6 0NT.
Genesis PD, 19 The Greenway, Hillfields, Bristol BS16 4HB.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
Low Cost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Mad Rabbit PD, 174 Duke Street, Southport, Merseyside PR8 5EL.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Ozone-Friendly PD, 180 Cumnor Hill, Oxford OX2 9PJ.
Power to the Programmers, 1st Floor, 23 Cooper Street, Nelson, Lancashire BB9 7XW.
Moonlight Graphs – Shareware, PO Box 3569, Cape Town 8000, South Africa.
Risc PD, Potteries House, Rannoch School, By Pitlochry, Perthshire PH17 2QQ.
RML PD, 24 Penryn Close, Norwich NR4 7LY.
Skyfall, PO Box 2220, Birmingham B43 5R2.
Soft Rock Software, 124 Marissal Road, Henbury, Bristol BS10 7NP.
Spidersoft PD, 218 Saville Park Road, Halifax, West Yorkshire HX1 2XS.
Matthew White, The Pines, 7 Peasehome, Hessle, North Humberside HU13 0HY.

Auto booting

Mike Cook takes another delve into his postbag

I OWN an Electron with an Acorn Plus 1 and an Advanced Plus 4 with a Cumana disk drive. In the disk drive manual is says that on the BBC Micro you can invert the auto-boot option by joining link 5.

Could you tell me if it is possible to do this on the Electron and which link it is? Also does anyone still sell the Electron Advanced User Guide? – **Peter Wilcox, Bridlington, North Humberside.**

● *As far as I know there are no option links on the Electron like there are on the BBC Micro. The Electron was designed to be a low-cost computer, so Acorn took out everything they thought was little used.*

I believe the Electron Advanced User Guide is now out of print but you could try a wanted advert in the small ads page.

Owl-like

LOOKING through an old copy of *The Micro User*, I came across the program to draw the BBC Owl – Volume 2, Number 2, April 1984 – and thought I would try it.

All went well until I ran it. I would suspect you would have had this problem before, but it stopped at line 160:

```
160 DRAW xc%+maj%*T(inc%/5,1),yc%+
maj%*T(inc%/5,2)
```

I have tried this with all sorts of variations, but I still get the same message:

```
Subscript at line 160
```

Can you help me please? I would dearly love to know where I have gone wrong and I don't want to wipe the owl if I can help it. – **W.S. Jones, Kenilworth.**

● *I wonder how many other readers have back issues from that long ago. I dug it out of my archives and had a look. The thing you must remember about error messages is that they are given at the point when the computer is finally confused, this is not necessarily where the error is.*

Your problem is a case in point as there is nothing obviously wrong with the line so you have to do a little detective work to find out what is wrong.

Run the program and get the error message which tells us of a faulty subscript. This means that the subscript of the array variable T *is wrong.*

First of all let's see if the computer is expecting a two dimensional variable for T*, we can do this by typing:*

```
PRINT T(1,1)
```

If this throws up an error the variable T *has not been dimensioned correctly and there was probably a mistake in line 10.*

However if this is all right the number in the variable inc% *is probably wrong. You can test this by typing:*

```
PRINT inc%/5
```

This should be less than 72 which has been declared as the maximum subscript value in line 10. This is probably where the error lies. This value is read from a data statement and one too many or too few numbers in the preceding DATA statements will throw the program off course and it will be trying to use the wrong number.

Therefore what you have to do is to check that the correct number of numbers are in the data statements starting at line 250. Best of luck spotting it.

DIY Eproms

I STILL have – and use quite regularly – my BBC B and have an application for an Eprom blower.

I recall in the dim and distant past, an article and schematic for such a device and would welcome your knowledge as to whether I could obtain these particular articles.

I certainly do not wish to buy a commercial item just for the sake of blowing one or two Eproms and would therefore welcome the necessary copies. – **Roy McAllan, Gloucester.**

● *This rumour crops up every now and then – unfortunately there has never been an Eprom blower project in* The Micro User.

However, you are not the first to think there has been.

You may have seen one in the long since defunct Electronics and Computing. *However, you might try* Elector *as it is the sort of project that they would have done.*

The other alternative is to pop down to your local library and look at the back issues of Wireless World. *Several have appeared over the years but I am not sure if they have been Acorn-specific.*

Finally, electronic component suppliers often offer an Eprom-blowing service, and if you only want a few it might be worth contacting them.

AGENDA

- Adding write-protection
- Electron auto-boot
- Blowing Eproms
- Bugged owl

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

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

Protection for sideways Ram module

IS it possible to add a write-protect switch to my Brainsoft Sideways Ram module simply by cutting the write line and soldering a switch in?

Also, is there a printer dump available for the BBC B which will allow colour screen dumps on to a Star LC200 printer? – **Tim Dawe, Canton, Cardiff.**

● *Yes, you can write-protect any memory like this. However it is not a good idea to just leave the connections to the memory floating. Therefore I would advise you to put a pull-up resistor on the memory side of your switch. About 3K to 5 volts should do the trick.*

When the switch is closed this resistor will have to be driven by the normal drive circuits but that should be no problem. If this gives you trouble use a double-pole switch to connect the pull-up resistor when you write protect the memory.

Acorn COMPUTING Readers Offers

Archimedes

Rhapsody II

A score writing program which has been designed to allow you to create and edit your own musical scores. You can enter your music by hand one note at a time, drag the notes on to the stave or you can even use a Midi instrument to capture music in real or step time.

If you have a Midi instrument attached to your Archimedes you can play a part and then transcribe it on to a stave. This can be repeated and each part entered via the Midi keyboard and transcibed on to the appropriate stave. And of course you can play your score back through the Midi Keyboard.

The package features automatic beaming, up to 24 staves, changes of tempo and volume, ties, triplets, user defined trills and so on. When your masterpiece is complete you could print the whole score or individual parts in the usual way.

MIDI Expansion Card

Recommended for use with our music notation package Rhapsody II. By simply plugging in the midi interface it allows the user to connect a MIDI keyboard to the computer. You can then play a tune direct from the keyboard and capture the musical notes in Rhapsody. The music can then be transcribed ready for editing, replaying etc. With your score in memory you can replay it via MIDI, assigning the data to the MIDI channels available on your keyboard. Allowing the user to replay their masterpiece in full!

Price £45.00 (for A3000 machines) £65.00 (for 300/400 machines)

SPECIAL OFFER
Buy Rhapsody II & Midi Expansion Card for £90.00 (A3000 machines) or £110.00 (for 300/400 machines)

Toolkit +

Toolkit + is an improved version of the original Toolkit. Enhanced features include:

- 10 Fast memory and disc editors
- 8 Fast memory and disc searchers
- Fast scrolling disassembler
- Memory shift, swap and compuare plus AGET & APUT disc sectors
- FASTLOAD & FASTSAVE of screens
- A Series of commands to investigate SWI calls filetypes, files between specific dates or a combination of these parameters.
- Archiving so that you can back-up on your Hard Disc onto floppies, matching specific criteria.

It handles files larger files larger than 800k and is designed to cope with disc faults on both Hard Discs and floppies. Even if you lose one of your back-up discs you can still restore everything else, and of course the archived files can be restored at a later date.

£39.95

DESKTOP OFFICE for the Archimedes

New Version II with NEW version of Minerva's EasiWordWord Processor as an extra enhancement

At last – a fully integrated suite of database, word processor, spread-sheet, charts and communications for the Archimedes. The database is simple to set up with a flexible card layout enabling you to design cards to suit your data. Video style controls make it easy to browse through the records. With instant search on a key field, sort routines and reports available on any combination of fields, DTOBase gives you true power and flexibility while remaining simple to use.

Elite

Good games come and go, and great ones last much longer, but only one can claim to be ELITE. Generations have played it some have even beaten it, but none have tired of it. Now, the original award-winning formula of space exploration, trading and combat has been enhanced and extended as never before, using the power of the Archimedes to present the ultimate computer game experience and, once again, the time-honoured challenge - have you got what it takes to become one of the Elite?

Render Bender II

Render Bender II is another top rated graphics package from Clares. It is a powerful ray tracing package which consists of four applications:

Illuminator - a graphical front end to Render Bender which enables you to create Render Bender files using a graphics program similar to Draw.

Render Bender - the Ray Tracing part of the package. It takes a file from Illuminator and generates a ray traced image.

Animator - takes a sequence of screens and delta compresses them to produce an animated sequence.

Converter - converts compressed screens into sprite files and enables you to extract individual screens from an animation file.

Archimedes Game Maker's Manual

Now you can find out how to use your Archimedes and Basic 5 to build high quality games whether for education or for recreation. Ideal for the experienced or novice Basic programmer, Terry Blunt takes you through the seven major aspects to writing a successful and professional product: Planning a game; Critical games stages; Graphics and animation; Arcade games; Role playing games; Strategy games; Professional tips and tricks. You can see the principles laid out in fully tested listings. This book is sure to become an essential reference written in an informative and easy to read style. If you want to know how to use the Arc's graphics capabilities and sprites to full advantage and make better games, buy this book now. It's the only one you'll ever need - quote from *Micro User August issue.*

TO ORDER ANY OF THE ITEMS ON THESE PAGES

BBC Acorn COMPUTING Readers Offers

Hybrid Music 5000 (BBC Only)

The Music 5000 is a powerful stereo digital synthesiser which allows you to take a piece of music all the way from a sheet score, or an idea, or even one of the supplied examples through entry, arrangement, replay and mixing to give a finished performance complete with realistic instruments and studio effects.

The system is capable of a vast range of high quality instrumental; percussion and effect sounds, including natural-sounding synthesiser-types as well as the abstract up to-eight at a time. You can choose a predefined sound from the library, a variation or a completely new sound created from hundreds of alternative waveforms, envelopes and modulations.

The software is based on the AMPLE music language which is powerful, versatile and easy to use. It has built-in computer music notation as well as supporting a music keyboard, sound expander and Midi.

The Music 5000 will turn your BBC Micro into a computerised music production studio. The manual is written for the beginner to computer music and the Tutorial section takes you through each of the processes set by set entering, editing, arranging, mixing, performing, selecting, modifying and designing the musical instruments that you see.

£55.00

Special Offer Price: £55.00 (normally £149.00)

Music Albums Compendium for Hybrid Music 5000

Contents include:

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Take a step into the world of professional publishing with

DTP

This is an easy-to-use and flexible page design system for producing high-quality printouts through your Epson compatible printer. It comes with four of its own fonts to get you started plus a Font Designer to keep you going.

- Independent control of bold, italic, 'thin' and underline characteristics of the system font
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- No special disc format
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- Font Designer supplied
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- Import text or type direct
- Can import cut-outs
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Europress Publications' DTP

5.25in DFS 40/80 track disc (only) £14.95

Due to the complexity of the program the fill routines will not function correctly with the B+, Master or Compact – all other features are compatible

Music Publisher

Music Publisher is a powerful new software package that lets anyone create and print high-quality musical scores using a BBC Micro and low-cost printer. It does for printed music what the word processor does for text, allowing music to be entered, edited, stored and printed out in a variety of formats. But it doesn't stop there, because unlike previous programs, Music Publisher handles the complex process of score layout entirely automatically, applying the rules of notation to produce perfectly composed pages without user effort.

Music Publisher is also very easy to use. The user enters the score in text form using simple codes for the musical symbols and the program instantly lays out the current section of the staff, visible in a window about the text. Full layout and justification takes place automatically when the score is previewed or printed, and is very fast - about 2 seconds per line of music.

£60.00

CLASSIC GAMES COMPENDIUM

We've brought together some of the most popular compilations ever to have appeared in *The Micro User* for this special offer. For a limited period, we are offering them on four BBC 5.25"discs for the give-away price of £14.95!

WHAT YOU GET:

- ★ 9 Classic Card and Board Games Volume 1
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Packed full of some of the best educational games available for the BBC Micro, the new Test of the Best Educational Games is the ideal way for your children to learn about maths, spelling, anagrams, telling the time, general knowledge, and even the rudiments of running a business!

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Give your children hours of fun, and help them learn the easy way by ordering your copy today

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THE PERFECT PAIR

The best-selling, award-winning BBC software is now joined by THE definitive guide

The Program

Mini Office II is the highly-acclaimed suite of integrated programs which turn your computer into a versatile business machine.

It's the perfect package to increase your personal productivity – with more than 400,000 satisfied users across the complete Mini Office range.

The Book

The Dabhand Guide to Mini Office II is a brand new book to help you get the most out of the software. It not only contains the facts, but also the kinds of hints and tips that can only be built up through years of computer use.

More than a manual, the guide assumes nothing. Beginning with the first sentences typed into the editor, you are led through all aspects of using the system, up to the most advanced techniques.

All the examples are also on an accompanying disc which even includes a very useful routine to print out large spreadsheets sideways.

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PLEASE USE THE ORDER FORM ON PAGE 132

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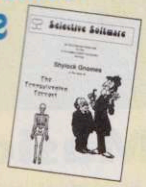
For the BBC and Archimedes range of computers



Prices

Little Red Riding Hood		Shylock Gnomes	
BBC	£10.95	BBC	£17.99
Archimedes	£15.95	Archimedes	£19.95

NEW!!

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Repton	Knitwear Designer	Loopz
Nursery Rhymes	Cheat It Again Joe 3	Money Matters

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10 Best Graphic Utils	Fun School 1 Over 8 yrs	Orbital
Nursery Rhymes	10 Basic Utilities	10 Best Ram & Disc Utils

BBC 5.25" 80T Discs

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Nursery Rhymes	Orbital	10 Best Ram & Disc Utils

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Oribtal	UIM	Fun School 1 Over 8 yrs
White Magic	Nursery Rhymes	Arcade Soccer

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RAM 0610	AMITEK - 1Mb Populated - A600	£45.00	£45.00
RAM 0501	CBM - 512k Board - A500	£99.99	£49.99
RAM 0505	AMITEK 512k Brd - No Clock - A500	£18.95	£18.95
RAM 0510	AMITEK 512k Brd - Inc Clock - A500	£23.99	£23.95

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PRI 3700	CBM MPS 1270 Ink Jet Printer	£149.99	£129.00
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AMIGA CDTV INTERACTIVE MULTIMEDIA

AMIGA 600

AMIGA 600 COMPUTER WITH FREE! LEMMINGS & DELUXE PAINT III
PLUS! FREE GIFTS FROM SILICA
SEE PANEL TO LEFT

The new Amiga 600 uses state-of-the-art surface mount technology, for maximum reliability and features a 3½" floppy drive, mouse, TV modulator and smart card slot all as standard. The innovative smart card slot accepts games, ROM or RAM cards (from 1Mb up to 4Mb) and will take advantage of many future new developments. The very latest version of the operating system, Kickstart/Workbench v2.05 is used in the Amiga 600 and its enhanced chip set facilities include improved graphics resolution, increased genlock support and the facility for up to 2Mb of chip memory. The Amiga 600 is fully compatible with the A670 CD-ROM Drive and interface which will give it access to a full range of CDTV titles and audio CDs. The Amiga 600 is available from Silica in several configurations including a special 2Mb RAM upgrade optional extra - see the chart below.

A600 + "LEMMINGS PACK"
£299
INC VAT - Ref: AMC 0666

NEW! A600 PACK £349

WILD, WEIRD & WICKED

The Wild, The Weird and The Wicked (WWW) is the title of Commodore's new Amiga 600 games pack. Priced at £349, it comes complete with Amiga 600 computer and mouse, plus a range of high quality entertainment software. For pack contents, plus a list of the FREE gifts from Silica with every Amiga 600, see the chart below.

NEW! A600HD PACK £499

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For the more serious user, the £499 Epic Language Pack is based around the A600HD, the A600 with 20Mb hard drive. It includes challenging adventure games and software for the linguistically minded! Details are shown below along with a list of the FREE gifts you will receive from Silica with every Amiga 600 purchased.

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1Mb AMIGA 600 + MOUSE, 3½" Disk Drive, TV Modulator, Smart Card Slot	£299.99	£299.99	£299.99
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Before you decide when to buy your new Amiga computer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Amiga, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for almost 14 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest FREE literature and begin to experience the "Silica Systems Service".

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PINEAPPLE SOFTWARE

The Pineapple Colour Video Digitiser Big Price Reductions!!!

Since we originally introduced the Pineapple Video Digitiser almost two years ago we have not needed to modify the design of the hardware in any respects. However, the software has been continually improved to the point where the quality and quantity of software supplied is second to none.

Now, because of the large number of sales, we are able to offer a big price reduction which makes colour digitising available to everybody. Also, because we are so confident that you will find the Pineapple Digitiser superior to anything else available, we are happy to offer our Digitisers on 7 days free approval so that you can see for yourself the power of our software.

Some of the features of the Pineapple Digitiser, many of which are still exclusive are as follows:-

- ☆ 16 bit true R G B storage in 256k ram.
- ☆ Sequences of frames of a moving picture can be grabbed and stored in memory. Up to 30 frames in a 1 mb computer, 200-300 frames in larger computers!!
- ☆ Full screen area normally viewed on a TV set is grabbed in full.
- ☆ Images may be processed using our own high speed software routines or Acorn's ChangeFSI software.
- ☆ Quite simply the most powerful and easily used zooming and cropping routines available with any processing package.
- ☆ Two independent multitasking applications supplied. Non-multitasking software allows digitising without windows for adding still images to videos.
- ☆ Our hardware does not use interrupts so other applications run at full speed.
- ☆ Latest software includes built in print routines. (Existing owners please contact us for a free update).
- ☆ Hard locking synchronising circuits for best results from video recordings.
- ☆ Available in a stand alone box for use with A3000. In this mode it can also be used with 300/400/500 series computers only occupying one expansion slot.
- ☆ Free seven day trial.

A300/400/500	£199.00
A3000/Boxed	£235.00

new Virus Protection Scheme new

Viruses are unfortunately now becoming a serious problem on Archimedes computers and at the present time at least seventeen families of virus have been isolated and each family has different variant strains. The effects of the viruses vary from being fairly innocuous messages to potential loss of data and program files. Network systems can be most seriously affected , but some viruses can easily spread even on floppy disc based systems.

The virus protection software -!KILLER- developed by Acorn Computers, from the basis of Pineapple's virus protection scheme. The software will be continually updated as new viruses are discovered and all registered customers will receive updated versions on a regular basis.

Don't wait until you discover that your Archimedes has caught a virus!!

The cost of the virus protection scheme is just £24.00 + vat for one years protection. Low cost School and County site licences are also available.

Pineapple PAL Coder

The Pineapple PAL Coder is a stand alone unit which provides a coded video signal which can be recorded onto a VHS recorder or fed to a monitor with coded input.

The unit is inserted in the lead to the R G B monitor and provides an R G B output for the monitor together with a full specification PAL coded output. A second version provides a standard coded output but also provides an S-VHS output for improved quality recordings on S-VHS recorders.

Standard Version	£69.00
S-VHS Version	£79.00

BBC PCB Designer

The full auto-route facilities are available even on an un-expanded model 'B' computer. An Archimedes version is available as a free upgrade to existing BBC owners or at a similar price to the BBC version.

'PCB Auto-route is remarkable. No similar software comes near the price.'
Acorn User - August 88

Manual track routing	£55.00
Auto track routing	£85.00
Plotter Driver	£35.00

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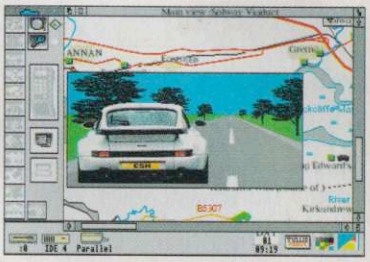
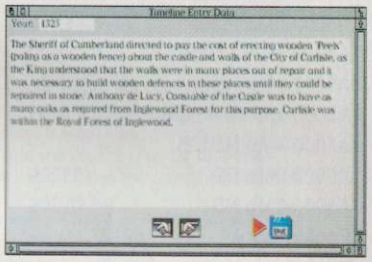
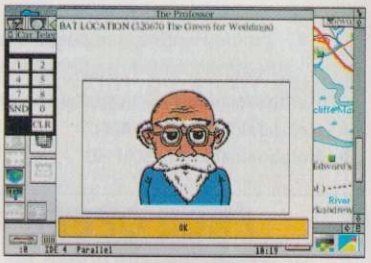
Access

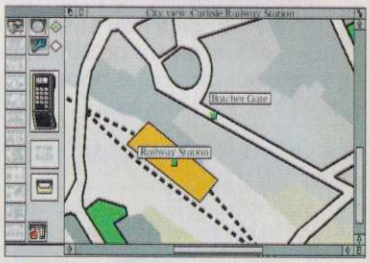
Frontier 2000

A historical simulation of the border regions







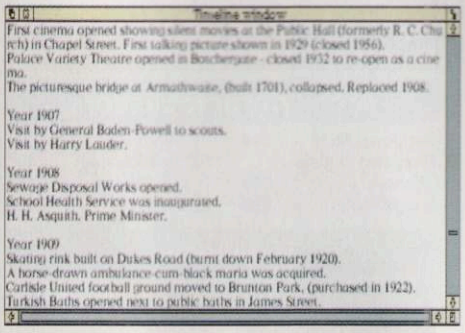


THIS superb education package has been greeted with rave reviews from teachers, historians, parents and children of all ages – from 8 to 80.

It is centred on the history, geography and environment of the Carlisle area and an integral part of the program is the depth of research and information available.

Frontier 2000 – the frontier being the one between Scotland and England – was produced in association with Tullie House Museum in Carlisle.

It is their expertise with the state-of-the-art programming and image manipulation of Cambridgeshire Software House which has gone to produce the 11 subject trails which will appeal to anyone regardless of where they live.


Timeline window

First cinema opened showing silent movies at the Public Hall (formerly R. C. Church) in Chapel Street. First talking picture shown in 1929 (closed 1956).
Palace Variety Theatre opened in Botchergate - closed 1932 to re-open as a cinema.
The picturesque bridge at Armathwaite, (built 1701), collapsed. Replaced 1908.

Year 1907
Visit by General Baden-Powell to scouts.
Visit by Harry Lauder.

Year 1908
Sewage Disposal Works opened.
School Health Service was inaugurated.
H. H. Asquith, Prime Minister.

Year 1909
Skating rink built on Dukes Road (burnt down February 1920).
A horse-drawn ambulance-cum-black maria was acquired.
Carlisle United football ground moved to Brunton Park, (purchased in 1922).
Turkish Baths opened next to public baths in James Street.

You can follow the subjects of:

- Beliefs
- Cathedral
- Reivers
- The Bruce
- Roman Military
- The Environment
- Railways
- Mary Queen of Scots
- English Civil War
- Bonnie Prince Charlie
- Hadrian's Wall

To give you a feel of the package and its potential, the cover disk contains The Reivers Trail.

Frontier 2000 is educational, informative and entertaining with a 25,000 word timeline – from 43AD to May 1991 – as well as facilities for grabbing pictures and maps for use in other applications.

In association with *Acorn Computing*, CSH have produced a limited edition of the software with all the trails, experts and full import and export of data features for £24.95 – the full package usually costs £95.

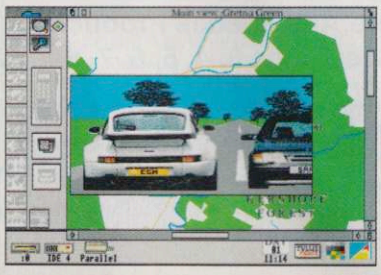
To take advantage of this exclusive offer just fill in the order form. The Trails disk requires 2Mb of ram.

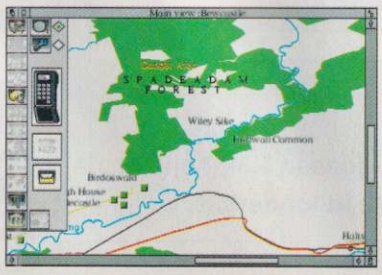
EXTRA: Special education offer

In additon to the Trails disk, if you would like the resources disk packed with data in !Draw, !Edit and !Maestro format, including role-plays, worksheets, topic webs and more information about the area, plus leaflets, postcards, books, VHS video, audio tape of poetry and ballads and an authentic piece of Roman timber – there is the chance to save £25.

Send your *Acorn Computing* November cover disk directly to CSH and they will give you £25 off the price of the full package which includes all the resource materials.

But hurry this offer – must end on December 31, 1992.





Order Form

Name.....

Address.....

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Postcode .....Tel.....

Please send me ..... copies of the Frontier 2000 Trails disk for £24.95 each.

1. I enclose a cheque for £.....

2. Please debit by Access/Visa card No:

Expiry Date: ..... for £ .....

Signature.....

3. Phone 0625 878888 ext 279 with your Access/Visa card quoting Frontier 2000 Trail Offer.

Send this order form to:
Frontier 2000 Trail Offer, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Watford Electronics

(A member of the Jessa group of Companies – Established 1972)

Mail Order & Showroom: Jessa House, Finway, off Dallow Road, Luton, LU1 1TR, England
Tel: 0582 48 77 77 Tlx: 8956095 WATFRD Fax: 0582 488 588

Showroom Only: Jessa House, 250 Lower High Street, Watford WD1 2AN, England
Tel: 0923 237774 Fax: 0923 233642

The sign of Quality

Shop Hours: 9am to 6pm (Mon.-Sat.) Thursday 9am to 8pm. FREE customer car park.
All prices exclusive of VAT; subject to change without notice & available on request.

The choice of Experience

Archimedes micro

System	Basic	Colour	Multiscan
A3010-1Mb Family	£424	£584	£749
A3010-2Mb L/C	–	£680	–
A3020-2Mb FD	–	£749	£799
A3020-2Mb HD60	–	£899	£949
A4000-2Mb HD80	–	£949	£999
A4000-Home Office	–	£999	£1049
A5000-2Mb HD80	–	£–	£1399
A5000-L/C 2Mb HD80	–	£1445	£1745
A5000-4Mb HD120	–	–	£1599
A5000-2Mb ES	–	£1299	–
A5000-2Mb NS	–	£1399	–
Pocket Book	£212	–	–
Pocket Book Class	£2127	–	–

Acorn Inkjet Printer add £199

For more Printers, see pages 5 & 6

Archi A4 Notebooks

A4 Notebook with 2Mb RAM	£1399
A4 Notebook 4M RAM/60M HD	£1699

FREE OFFER

When you purchase an Archimedes Micro from Watford, we will give you 10% worth of Hardware or Software of your choice at no extra cost to you.

Archi Accessories

• 3.5" 800K 2nd Floppy Drive (305/310)	£118
• 5.25" 800K external Floppy Drive	£80
• I/O Podule (Analogue/User/1MHz bus)	£79
• I/O Podule (Analogue/User)	£49
• MEMC 1A Upgrade	£29
• MIDI add-on to I/O Podule	£27
• MIDI Expansion Card	£65
• Econet Network Board	£42
• Archimedes IEEE Interface Adaptor	£269
• Dual RS232 Podule	£195
• 16 bit parallel I/O Card	£195
• Archi replacement mouse – New design	£29
• PC Emulator v1.8	£85
• Software Developers Toolbox	£149
• Floating Point Unit	£455
• SCSI Adaptor Expansion Card	£156
• Keyboard Extension Lead	£6
• 2 Podule Backplane	£20
• 4 Podule Backplane	£25
• Fan for above backplanes	£10
• Risc Os Extras Software Disc	£5
• Ethernet Card	£220
• SCSI Card 8 bit	£129
• A5000 Dust Cover 2pcs	£9pr

Risc OS 3 Upgrades

• A 5000 Software Upgrade Kit	£16
• Software Upgrade Kit for the rest	£40
• Hardware Upgrade Kit 300/440	£25

A3000 Accessories

• 3.5" External Drive	£95	• Monitor Stand	£15
• Technical Manual	£39	• Serial Upgrade	£19
• A3000 Dust Cover	£5		
• A3000 plus Monitor Dust Cover			£9
• A3000 User Port/Midi Upgrade Card			£44
• A3000 User/Analogue/IIC I/O Card			£42
• A3000 External Podule Case			£15

A5000 Hard Disc Drives

A5000 – 100Mb 18mS Hard Disc Upgrade	£269
A5000 – 210Mb 18mS Hard Disc Upgrade	£459

Archimedes Hard Disc

Watford's ST506 Hard disc drives for A310 & A410 series fit internally into the space provided.
P.S. A310 upgrades require a backplane and a fan.

• **3HDP** – Hard Disc Podule only	£99
• **3HD40** – 40Meg H' Disc + Podule for 310	£285
• **3HD50** – 53Meg H' Disc + Podule for 310	£359
• **4HD20** – 20Meg Hard Disc for 410	£69
• **4HD40** – 40Meg Hard Disc for 410	£195
• **4HD50** – 53Meg Hard Disc for 410	£260
• A3000 20Meg Hard Disc + Podule	£279
• A3000 40Meg Hard Disc + Podule	£379

Acorn A3010 Family Pack

Supplied with 3.5" Floppy Disc Drive and a mouse, upgraded to 2Mb RAM, Colour Monitor and lead, TV modulator, 30Mb fast IDE Hard Disk Drive, 'Compression' utility to increase the Hard Drive capacity to typically 60Mb, the highly acclaimed Computer Concept's Impression Junior DTP package, EasiWord wordprocessor, Quest for Gold game, applications suite of software packages and comprehensive audio training tape.

RRP: £1095

Sale Offer Price: £765

Above Package plus Acorn's Learning Curve £879

Special Education discounts available on micros, RAM upgrades, ARM 3 Turbo Card, etc. Please write in or telephone:

0582 48 77 77

Lease Purchase facility now available. Please telephone or write in for details.

Archimedes RAM Upgrade

All our memory upgrades are simple to fit. No soldering required. Fitting instructions supplied.

• **R300**-4 Layer RAM upgrade board (Bare).	£25
• **R302**-A3000 – to 2MB RAM Upgrade	£29
• **R303**-A3000 – to 2MB RAM Upgrade (expandable to 4MB)	£49
• **R304**-A3000 – to 4MB RAM Upgrade	£99
• **R311**-A305 – to 1MB RAM Upgrade	£30
• **R312**-A305/310 – to 2MB RAM Upgrade	£99
• **R314**-A305/310 – to 4MB RAM Upgrade	£199
• **R412**-A410/1 – to 2MB RAM Upgrade	£25
• **R413**-A420/1 – to 4MB RAM Upgrade	£50
• **R414**-A410/1 – to 4MB RAM Upgrade	£75
• **R810**-A410/1 – to 8MB RAM Upgrade	£579
• **R820**-A420/1 – to 8MB RAM Upgrade	£549
• **R840**-A440/1 – to 8MB RAM Upgrade	£479
• **R814**-R140 – to 8MB RAM Upgrade	£499
• **A5000** – to 2MB additional RAM Upgrade	£82

Desk Top Publishers

Acorn's Archi DTP Package	£69
• **Equasor** £39; • **Expression-PS**	£19
Impression 2 DTP Pack	£123
Impression Junior	£69
Impression Business Supplement	£39
Impression II Borders Disc	£19

Archi Wordprocessors

Pendown Archi	£48	1st Word Plus – 2	£63
Pendown Outline Fonts	£18	PD Spellchecker	£40
Image Writer	£25	Graphic Writer	£19
		EasiWord	£18

Databases

AlphaBase	£36	Magpie	£40
Flexifile	£79	Multistore v2.01	£176
Knowledge Organiser	£42	Pinpoint	£65

Spreadsheets

Intersheet Disc	£24	Schema	£89

Business Graphics

GammaPlot	£39	Sigmaplot	£39
Interchart Disc	£17		

Integrated Packages

• Pipedream 4	£149
• Desktop Office – Database, Graphs & Charts, Wordprocessor Spreadsheet, Communications	£98
• Desktop Folio – Wordprocessor, Desktop & Interactive Publishing. Ideal for school	£75

More Archimedes Products See Pages 3, 4, 5, 6, 7, 8

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 250234 or 233383

Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.

Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine. An optional 20Mb or 40Mb hard disc can be supplied on the podule expansion card itself, with its fast transfer rate and power saving modes the drive is ideal for storing commonly used software such as the !Fonts application.

A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.

By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Single width EuroCard
- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Built in Non Volatile RAM to hold configuration
- LED activity indicator
- 37 way D type socket for external drives
- Optional on-card 20Mb or 40Mb hard disc
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- Conforms fully to the Acorn IDE Specification
- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Up to four drives over multiple cards
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

Prices

Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	**£195**
ADA 0530	100Mb	16mS	**£295**
ADA 0570	200Mb	15mS	**£449**
ADA 0580	330Mb	15mS	**£799**

All the above 3.5" hard drives are supplied complete with Controller Card, cable & Software on ROM. (Internal fitting). For use with A300/A400/A500 series machines.

For A3000 users an additional external Case and PSU will be required.

AAA 0300 External Case & PSU for A3000 **£85**

Internal Hard Disc Drives for A3000

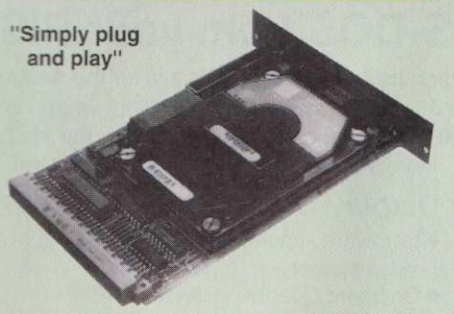
State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0770	30Mb	19mS	**£185**
ADA 0720	40Mb	19mS	**£279**
ADA 0750	60MB	18MS	**£329**
ADA 0730	80Mb	18mS	**£399**

Supplied ready assembled. No soldering required. Simply plug into the allotted space.

Archi IDE Hard Cards

"Simply plug and play"



Watford's easy to instal, low cost, high performance, revolutionary IDE Hard Cards for the A300 & A400 series Archimedes.

ADA 0650	21Mb	23mS	**£199**
ADA 0800	30Mb	19mS	**£195**
ADA 0660	40Mb	28mS	**£289**
ADA 0810	60Mb	18mS	**£339**
ADA 0670	80Mb	18mS	**£409**

(Can be used as a Removable Hard Drive)

NEW

Archimedes A300/A400 SCSI Hard Disc Offer

(while stocks last)

100MB Hard Disc Upgrade complete with Controller card, Cables, Formatter and Manuals

RRP: £799

Offer Price: £289

Syquest Removable Disc Units

These Hard Drive units are supplied complete with a cartridge 42Mb removable, cables and a high flow fan for cooling.

- Syquest Drive Unit pack **£379**
- As above + SCSI Card **£415**
- Spare 42Mb Disc **£55**

Archi to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.

New RISC OS Version also available (please specify)

- For A3000 **£15**
- For A5000 **£16**

For A3000 Serial Upgrade **(£19)** required

A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

Features

- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices. **£42**

Minerva's Archimedes Software

EasyWord	**£18**	Time Tabler	**£549**
Home Accounts	**£35**	System Delta	**£59**
System Delta Program Reference Manual			**£29**

Stand alone Business Accounts Packages

Sales; Purchase; Order Processing and Invoicing; Nominal; Stock management

£79 per module

or Complete Business Package **£325**

ARM 3 Turbo Card MkII

Simply The Best

Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £169. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.

Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £18.

(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

Offer Price £169

Acorn have satisfactorily evaluated Watford's ARM 3 upgrade and the A3000 upgrades are fitted by Acorn approved surface mount technology centre, therefore its fitment will not invalidate Acorn's warranty on the micro.

BBC MASTER

MASTER 128K Micro incl. Acorn's View, Viewsheet, ADFS, BASIC Editor & TERMINAL plus FREE OFFER (see below) **£375**

FREE with every BBC Master purchased from us during October

A 5.25" Double Sided, 40/80 track switchable 400K Disc Drive complete with cables and a Utilities disc incl. 2 games, plus

Gemini's OFFICE MATE & OFFICE MASTER

Add-Ons & Accessories

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Quad ROM Cartridge for Master		**£14**
Master Reference Manual I	(No VAT)	**£14**
Master Reference Manual II	(No VAT)	**£14**
Master Advance Ref Manual	(No VAT)	**£14**
64K Upgrade Kit for B+		**£32**
Acorn 1772 DFS Kit complete		**£49**
ECONET Upgrade Kit for BBC B		**£42**
ALL ECONET UPGRADES Available		
ARIES' IEEE Interface for BBC B & Master		**£238**
Morley Teletext Adaptor with ATS Rom		**£99**
Ecolink		**£270**

Continued→ → → → → → → → →

Watford Electronics Aries PC Card

Access the world of MS-DOS from your RISC OS based computer

Watford Electronics brings you a full specification IBM compatible PC card for the Archimedes. You no longer require the Archimedes PC Emulator, all PC software is run locally on the expansion card with custom written software to interface the PC card into the RISC OS environment. The expansion card is a full hardware implementation, with the ability to be turned into an ISA Bus, fully fledged 386 PC just by the addition of a power supply, keyboard, storage device and a monitor!

Processor

386SXL 33MHz low power processor. Socket for optional 387SX 33MHz numeric co-processor.

On Board Peripherals

- Uses 82C107 single chip solution.
- 128 bytes of battery backed CMOS RAM.
- AT compatible Keyboard Controller.
- Uses standard Archimedes keyboard and mouse. Full standard ISA 16 bit expansion bus available.
- Optional expander allows one or two half size PC cards to be installed in the adjacent Archimedes expansion slots.

Memory

- Uses 82C311 memory controller 2Mb zero wait state DRAM as standard, upgradable to 4Mb DRAM just by adding 4 more chips.
- Bank interleaving and page mode memory operation for maximum performance.
- On-board BIOS ROM.

Display Controller

- Hardware support for VGA with 512Kb of video memory.
- On board Quadtel VGA BIOS ROM.
- Multitasking screen display on RISC OS.
- Desktop can be achieved in software.
- Separate VGA monitor can be connected for simultaneous RISC OS and PC display or your Archimedes VGA compatible monitor can be used with optional video switch.
- Much faster and improved video speed compared to PC Emulator.

Hard & Floppy Disc

- Full background disk access, the Archimedes is not adversely affected.
- Any existing Acorn PC Emulator hard disk partition can be used, with the ability to create new PC hard disk partitions on any RISC OS hard disk.
- Optional IDE hard disk and floppy drive option for direct connection of a dedicated hard disk and floppy to PC card.
- Access to the Archimedes floppy disc drive for reading and writing of PC disc formats from PC.

Bundled Software

- MS DOS 5.0, Lotus Works and PC Organiser

Sound

- Uses the Archimedes internal speaker by connecting to the Auxiliary sound connector.

Enhancements

Optional expansion card will be available either hardware parallel and serial ports or the ability to connect an external AT style keyboard and mouse.

The PC card can also be plugged into a stand alone backplane to form the heart of a fully expandable, industry compatible 386SX computer, with no reliance upon the Archimedes.

Specifications may be subject to change. E&OE.

Call, fax or write now for more details!

See us at the Acorn User Show on Stand Nos. 90 to 93 for demonstration.

Scan256 – The only sensible scanner purchase

Scan256 – the innovative 256 grey-level hand scanner for the Archimedes range of micro computers. It offers up to 256 grey levels at a maximum of 400 dpi, and comes complete with the most advanced and sophisticated 256 grey scale scanner software currently available for the Archimedes.

- Multiple copies of the image in memory at once.
- Allows multiple consecutive operations without having to save the original image to disk.
- Instant re-draw of all 4 image buffers.
- No re-calculations needed unlike other packages that use on the fly screen-dithering.
- Highly advanced dithering and image size reduction.
- Available via industry standard Change FSI package for maximum image quality. An invaluable aid to reduce the size of the image whilst maintaining maximum image quality.
- Advanced in-built image processing options.
- Convolution digital filtering fully implemented with over 100 filters covering edge detection, image enhancement and image smoothing. Enables high quality images to be obtained from poor quality scans.
- A unique L.E.D. indicator on the scanner.
- Shows you when the scanner is being moved at close to the maximum scanning speed, not just when it is too late and a scan line has been missed by moving the scanner too fast.
- Fully adjustable scale and size of image preview when scanning
- Hand held scanner image preview window can even be behind other windows and preview is shown in real-time with maximum number of grey-scales available.
- Support for The Serial Port Graphics Enhancer.
- Forthcoming support for the State Machine G8 Graphics Card.
- Allows up to 256 simultaneous grey scales on screen at once.
- True brightness, contrast and gamma correction.
- All can be specified by a value to exactly match monitor/printer. No guessing with shapes of curves and correction is mathematically correct.
- RISC OS 3 features.
- Include rotation and shearing. Scans normally are scanned at a slant rather than being rotated, shearing enables the scan to be corrected better than rotation.
- Fast RISC OS printing.
- Multiple options such as scale to page, centre, sideways selected area, and any scale.
- Scanner scans at an amazing 3ms per line.
- A post card at 400dpi takes only 7.3 seconds to scan, creating over 3Mb of data.
- Selectable scanning modes.
- 256 grey-scale, 256 grey-scale half width, 16 grey-scale and monochrome scanning modes. Half width mode enables longer 256 grey-scale scans to be achieved.
- Save image foreign formats.
- Save as industry standard TIFF for exporting to other systems, AIM for further processing, or RISC OS Sprite format.
- Single width, high quality podule using surface mount technology

The only sensible scanning and image processing solution for the Acorn Archimedes. Just compare the features, there can only be one choice...

Scan256 Scanner, Interface Card, Software and Manual Only £185

Please specify Archimedes type.
Not compatible with A3010, A3020, A4000

Call now for details about our new Scan256 Flatbed Professional Scanner

BBC Education Software

A vous la France	French programs for beginners	£29
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Computers at work	Primary education program	£17
Espana Viva	Spanish educational programs	£20
Folks Tales	Listening and reading for ages 7+	£22
Geordie Racer	Look and read for ages 7+	£22
Hall of Mirrors	Practice word & number skills	£22
Help your child learn basic Mapwork No. 2		£18
Inside Science	Four common science subjects	£22
Letters and pictures	Educational programs for 6-8 years	£15
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Maths with a story 2	4 further maths programs	£20
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Fun School 3 (5-7)	Varied range of Education subjects	£17
Fun School 3 (Over 7)	Varied range of Education subjects	£17

Archi Educational Software

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- Arcventure (8-12 yrs) £29
- Bookbinder £43
- Bumper Disc £14
- Bumper Disc 2 £14
- Craftshop 1 £26
- Craftshop 2 £26
- Converta-Key £16
- Data Word £16
- Desktop Stories £35
- DigiSim £35
- Dream Time (5-7 yrs) £23
- Farm (5-7 yrs) £19
- Fleet Street Phantom (9-13 yrs) £25
- Fun School 3 Red (up to 6 years) £17
- Fun School 3 Green (6-8 years) £17
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- Gate Array Teaching System £68
- Glimpse Clip Art Utility (7-16 yrs) £8
- Highlighter (6-16 yrs) £42
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- Sting of the Dump (9-13 yrs) £22
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- Worst Witch (7-10 yrs) £25

Archimedes Software

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E-Type Designer	£13
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Grievous Bodily Arm	£19
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Mig 29	£24
Nebullus	£21
Nevryon	£14
Nevryon II	£20
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Power Band	£14
Puncman 1 & 2	£16
Puncman 3 & 4	£16
Pysanki	£14
Quazer	£10
Real McCoy	£22
Real McCoy 2	£23
Real McCoy 3	£22
Redshift	£14
Return to Doom	£16
Repton 3	£14
Saloon Cars Deluxe	£27
Spitfire Fury	£22
Splice	£25
Sporting Triangles	£24
Superior Golf	£14
Superpool + Break 147	£22
Swiv	£19
Talisman	£12
Timewatch	£24
Trivial Pursuit	£22
Twin World	£15
U.I.M.	£23
White Magic 2	£15
Wimp Game	£13
Worldscape	£16
XFire	£19
Zelanites	£23

Miscellaneous

Ancestry	£59
Arccomm 2	£38
Arcterm 7	£64
Armadeus Sound	£60
Avante Garde Fonts	£23
BBC DFS Reader	£6
Broadcaster Loader	£65
Compression (CC)	£38
Equasor	£38
FlexiFile	£97
Genesis Plus	£68
Genesis 2	£99
Investigator 2	£22
JX Archi Colour Printer Driver for Citizen & Star Printers	£15
Magpie 2	£42
Notate	£42
Numerator	£66
Pin Point	£65
Presenter 2	£29
Presenter Story	£145
Prophet	£132
Prophet Demo Disc	£10
Rainforest	£17
Revelation 2	£95
Rhapsody in Blue 2	£45
Score Draw	£46
Show Page	£127
Speech!	£15
The Victorian	£17
Time Tabler	£549
Toolkit (Clares)	£35
Touchtype	£40
Tracker	£39
Turbo Driver BJ10E	£42
Vox Box	£46
WorldScape	£17

LANGUAGES (Archimedes)

ISO-PASCAL; FORTRAN 77 **£77 each**
Assembler; LISP; Prolog X **£149 each**

Desktop C	£199	Logotron Logo	£45
Macro Assembler	£40	Risc Basic	£120
Robo Logo	£69	Risc FORTH	£110
BASIC Compiler	£77	Cambridge Pascal	£95

Archimedes External Disc Drive Interface

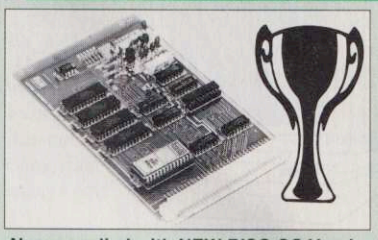
With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.

Price £21

Back Plate Extension

- A300/400 **£15;** • A3000 **£14**

Archi Real-Time Digitiser



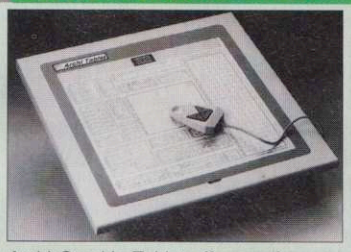
Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £119

A Set of Colour Filters for colour image grabbing using a video camera **£16**

Archi Graphic Tablet



The Archi Graphic Tablet offers performance and accuracy comparable to other tablets priced at well over £400, and has the useful addition of a liftable cover, which can hold tracing material or menu templates securely. The package is supplied complete with sophisticated Archi software. (Now, fully LinCAD compatible. Recommended by Linear Graphic for use in Education).

(FREE this month, PC Mouse Drivers & Art package)

Special Price £199

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra **£20**

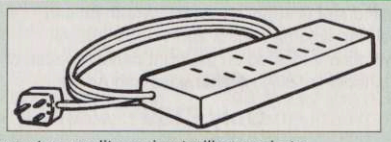
Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus **£125**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightning or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket



4 way top quality mains trailing sockets.
Supplied wired up with mains plug ready for use.
Can be screwed to floor or wall if required.
Very useful for tidying up all the mains leads from your peripherals.

£9.50

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System

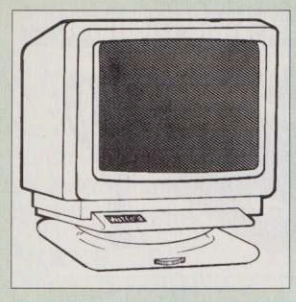
£16

8 Way DIP Switch

Increase the speed of your Disc Drives by soldering this switch to your BBC B or B+ keyboard

Only **£1.00**

Continued→ → → → → → → → →



FREE
Connecting lead with every monitor purchased from us. Please specify type required.

Microvitec Monitors

- **1431** – Standard Resolution Monitor £169
- **1451** – Medium Resolution Monitor £209
- **Cub3000** Medium Res for A3000 £189
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239

Now 3 years Parts & Labour warranty on all Microvitec Monitors

Multiscan Colour

• Eizo 9060S	£389	• NEC 6FG	£1525
• Eizo F550i	£725	• Taxan 770LR	£362
• Eizo T560i	£995	• Taxan 787	£249
• Eizo T660i-T 20"	£1599	• Taxan 795	£397
• NEC 3FG	£370	• Taxan 875	£679
• NEC 4FG	£465	• VIDC Enhancer	£25
• NEC 5FG	£850		

Aries AlphaScan Monitor

Pound for Pound, the AlphaScan VGA Multiscan monitor provides the maximum performance and greatest flexibility of any 14" colour monitor for the Archimedes micro.

Its multiscan circuitry provides automatic adjustment for frequencies between 30 and 60KHz horizontal, and 50 and 90Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The Multivideo VIDC Adaptor supplied (free) with the monitor allows high resolution operation in all screen modes. **£325**

- Aries Alphascan 17" Plus £495

Philips Monitors

- **BM7502** 12" Hi-res Green Monitor £67
- **CM8833** 14" Med. Res Colour Monitor £172
- Dust Cover for Philips Monitors £6

STAR BUY

Philips CM8833 Colour Monitor

This attractively finished, etched screen medium res monitor is supplied complete with built-in speaker, volume control and video input. All controls are located on the front panel for ease of use. Ideal for BBC, Archimedes and Amiga.

Only £159

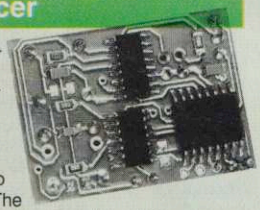
Spare Monitor Leads

BNC Lead for Zenith or Philips	£3
Skart Monitor Lead	£5
RGB lead for TAXAN Monitors	£3
Archimedes Colour Monitor Lead	£7.50

Integrex Ink Jet Printers

- Colour Jet 132 Printer £425
- Integrex Betajet £185
- Paper Roll £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £21
- Black Cartridge £12.40
- 100 A4 OHP transparencies £55
- 8K Serial Interface Optional £123
- Colour Jet 2000 £529
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43

VIDC Enhancer



This unique VIDC add-on board for the Archimedes, caters for all types of Multiscan and VGA monitor and mode requirements. There are 2 versions to suit all requirements. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

Super VGA VIDC Card: Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control **£45**

MultiVideo VIDC Card: As above but for MultiScan monitors only. **£25**

SPECIAL OFFER

- **Desk Jet 500 Mono Printer £264**
- **Desk Jet 500 Colour Printer £344**
- **BJ10EX + Turbo Driver £192**
- Above prices include 3 years extended parts and labour warranty at no extra cost to you.
- At an additional cost of £45, we will convert the above warranty to 3 years on-site warranty.
- Archimedes Printer Driver for DJ 500 Colour Printer £15
  (P.S. DJ 500 mono no driver required)

Panasonic Printers

KX-P1123	£126	KX-P2180C	£146
KX-P1124i	£170	KX-P2123C	£197
KX-P1170	£99	KX-P2180M	£156
KX-P1624	£250	KX-P2123M	£176
KX-P1654	*£332	Colour Kit for	
KX-P1695	£267	P2180M/2123M	£–
KX-P2624	*£268		

*** Price includes 12 months On-site warranty**

Cut Sheet Feeders

P36 – 1124/24i £79 **P37** – 1123/70/80 £69
P38 – P1624/95; P2624 £129

Buffers

P12 4K Buffer Board for KX-P1081 £55
P14 32K Buffer P1123/24/70/80 P1540/92/95; P1624/54/95 £16

Serial Interfaces

P13 for P1123/24/24i/70/80/1624/54/95/2624 £49

Original Panasonic Ribbons

Guaranteed to last 3 million characters

P110 for KX-P1081, 1592 & 1595 £6
P115 for KX-P1180 £7 **P145** for KX-P1124 £7
P140 for KX-P1540 £8 **P155** for KX-P1624 £8
Colour Ribbons for KX-P1081, 1592 & 1595 Brown, Blue or Red £9 each
P150C Colour for P2123/2180 £15

Citizen Printers

• 120D Plus	£95	• Swift 24E#	£195
• 224	£174	• Swift 24X	£299
• 240 Colour	£212	• 24X Colour Opt	£32
• PN-48	£199	• PN48 Ribbon	£4
• Swift 9	£145		

- AH29804 Manual Cut Sheet Feeder for Swift 9/24/124. Holds 50 Sheets £29

FREE Colour Option with Swift 24E
+ FREE 2 years Parts and Labour warranty on all Citizen Printers

- Swift 9 Colour Option £19
- Swift 24 Colour Option £29
- Swift 24 Ribbons Black £4 Colour £13
- Swift 24X Ribbons Black £8 Colour £16
- Citizen/Archimedes Colour Printer Driver £15

Roland Plotters

• DXY1100	£488	• DXY1200	£620
• DXY1300	£825	• DXY2500	£2345
• Sketchmate A3	£499	• Sketchmate A4	£308

- Roland plotter Pens, Fibre tip £7.50

Star Printers

LC15	£168	LC200 Colour	£140
LC20	£99	SJ48 Inkjet	£165
LC100 Colour	£136	XB24-200 Colour	*£288
LC24-15	£233	XB24-250 Colour	*£350
LC24-20	£148	XB24 Colour kit	£29
LC24-100 Colour	£162	ZA200 Colour	*£230
LC24-200	£162	ZA250	*£295
LC24-200 Colour	£205		

- Star/Archimedes Colour Printer Driver £15

* Includes 12 months On-site warranty

Cut Sheet Feeder

LC10/200/24-10	£65	LC15/LC24-15	£125
XB24-10	£80	XB24-15	£139

Serial Interfaces

8K Ser LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15 £52

Buffers

32K Ram Card for LC/XB24-10; 15; LC200 £55

Ribbons

LC10; LC10-II; LC15	Black £4;	Colour £6
LC-200; LC24-200	Black £5;	Colour £12
XB24-10; XB24-15	Black £5;	Colour £12

Laser Printers

All Laser Printers include 12 months On-site maintenance

Brother HL-4	4ppm	£490
Brother HL4-V	4ppm	£639
Brother HL4-PS Postscript	4ppm	£970
Brother HL8-V	8ppm	£895
Canon LBP4 LITE	4ppm	£479
Canon LBP4+ 1.5M RAM	4ppm	£632
Canon LBP-8III Plus	8ppm	£945
Epson EPL4300	4ppm	£570
Epson EPL4000	6ppm	£475
Epson EPL7500	6ppm	£1139
Epson EPL8100	10ppm	£939
HP Laserjet IIP+	4ppm	£530
HP Laserjet III	8ppm	£1009
HP Laserjet IIID	8ppm	£1487
HP Laserjet IIIP	4ppm	£685
HP Laserjet IIIsi	16ppm	£2510
NEC Silentwriter S62P P/script	6ppm	£1059
NEC Silentwriter 266	8ppm	£669
NEC Silentwriter 290P P/script	8ppm	£1369
Panasonic KX-P4410	5ppm*	£519
Panasonic KX-P4420	8ppm*	£615
Panasonic KX-P4430 Satin Print*	5ppm*	£586
Panasonic KX-P4451	11ppm*	£1085
Panasonic KX-4455 Postscript	11ppm*	£1444
Star LP-8 III 2	8ppm	£1249
Star LP-8 III	8ppm	£890
Star LP-8 Star(post)script	8ppm	£1130
Star LP-4	4ppm	£565
Star LP-4 Mk 3	4ppm	£589
Star LP-4PS Postscript	4ppm	£769

* Now with 2 years On-site warranty

Laser Toners

Canon 2, 3 & 4	£46	Star LP4/LP8	£56
Epson GQ	£13	KX-P4420/50	£19
EPL 4100	£69	Laserjet HP IIP & IIIP	£42
EPL7100/7500/ 8100	£125	Laserjet II/D, III/D	£48
		Qume Crystal (3)	£58

Laser RAM Upgrades

IIP; III/P 1Mb	£49	EPL7100 256K	£39
IIP; III/P 2Mb	£80	GQ5000 512K	£42
IIP; III/P 4Mb	£132	KX4420/50 1M	£75
II & IID 1Mb	£60	KX4420/50 2M	£115
II & IID 2Mb	£96	KX4420/50 4M	£195
II & IID 4Mb	£142	Star LP8 1M	£139
Canon LBP4 1M	£105	Star LP8 2M	£275
Canon LBP8 2M	£125		

Laser Drum & Developer

• Epson Drum	GQ5000	£93	EPL7100	£129
• Panasonic 4420 Drum		£60	Developer	£59
• Panasonic 4450 Drum		£93	Developer	£80
• Qume Drum		£76	Developer	£56

Jetpage Postscript Cartridge

- HP IIP/III £225 IID & IIID £227

Various Add-Ons

- Laserjet Appletalk Interface £135
- HP Adobe Postscript £399
- Pacific Page Postscript £259
- HP Premier Font Collection £28
- Laserjet various Font cartridges from £45
- Canon LBP-4 Lower Cassette Tray £75

Hewlett-Packard Printers

# Desk Jet 500	£264	*Paintjet XL	£1196
Desk Jet 500 Colour	£345	*Quiet Jet Plus	£382
Desk Jet 550 Colour	£442	*HP Think Jet	£265
*Paint Jet Colour	£518	*HP Deskwriter	£299

3 years extended Parts & Labour warranty FREE
* Price includes 12 months on-site warranty

- DeskJet 500 Cart. Black £14; Colour £23
- Paintjet Cartridges Black £19; Colour £23
- Desk Jet 500 256K RAM cartridge £69
- HP Epson FX Emulation Cartridge for Desk Jet £59
- DJ 500 High Capacity Black Cartridge £21
- DJ 500 Colour Archi Printer Driver £15

Plug In Font Cartridges for DJ 500

- 22706B – Prestige, Elite, Line Draw fonts £55
- 22706C Letter Gothic & HP Line Draw fonts £56
- 22707P – Proprint Emulation Cartridge £57
- Desk Jet Unlimited (Book No VAT) £19.75

Canon Bubblejet Printers

	Printer	CSF	D'ble Bin	Ink Cart
BJ10EX	£160	£43	–	£16
BJ20	£248	–	–	–
BJ300*	£284	£88	£65	£12
BJ330*	£373	£110	£79	£12
BJC800C	£1355	–	–	–

* Includes 12 months On-site warranty

- Spare Battery pack for BJ10E £33
- BJ10EX – Archi Turbo Driver £42

Special Offer:
Canon BJ10EX Printer + CC's Turbo Driver £210

NEC Pinwriter Printers

- P20 £178
- P30 £237
- P60 £322
- P70 £396
- P90 £605
- P60/70 Colour Option Kit £59
- Ribbons Black for P20/30 £6 for P60/70/90 £7
- Ribbons for P60/70/90 Black £9 Colour £13.50

Cut Sheet Feeders
P20 £59; P30 £85; P60 £89; P70/90 £80

Epson Printers

DFX5000	£1069	LQ1170	£429
DFX8000	£1920	LQ2550+	£669
FX850	£135	LX400	£90
FX1050	£322	LX850+	£134
LQ100	£144	LX1050	£199
LQ570	£197	SQ870	£409
LQ870	£352	SQ1170	£560
LQ1060 Colour	£588	SQ2550	£669
LQ1070	£308		

- Tractor Feed for LQ100 £29
- Original Ribbon for LQ100 £6

Cut Sheet Feeders for

LQ570, LQ870			£47
LX400/850/LQ200/400/450/500/550			
		LQ1010/1070/1170	£72
LX1050	£115	FX850/LQ860	£128
FX1050/LQ1060/SQ850			£155
LQ2550	£299	SQ2550	£210

Tractor Feed for
LQ800 £44; LQ850/FX850 £69; LQ1050/FX1050 £85; LQ2500 £90; LQ2550 £90.

Accessories

- EX800/1000 Colour Option £45
- EX800/1000 Colour Ribbon £14
- LQ2500 Colour Option £65
- Multifont Card for LQ550/850/1050 £95

Epson Printer Interfaces

RS232	£28	RS232 + 2K Buffer	£52

Printer Leads

BBC Centronics 4' long	£5
BBC Centronics 6' extra long	£7
Compact's Special Centronics Lead	£7
Nimbus Centronics Lead	£6
IBM/Archimedes Parallel Lead 6'	£5
IBM/Archimedes Parallel Lead 5 metres	£10
IBM/Archimedes Parallel Lead 10 metres	£15
Double Ended 36 way Centronics Lead 4'	£7
Double Ended 36 way Centronics Lead 6'	£9
RS232 Leads (Various)	P.O.A.

Laser Direct

- Special High Res Card 600 DPI for Canon LPB 4 & LPB 8 Laser Printers £315
- LPB 4 Printer plus High Res Card £945
- LPB 8III Printer plus High Res Card £1275
- LPB 4 Optional Paper Tray £79

Fujitsu Printers

B-100	£205	DL1100	£217
B-200	£270	DL1100 Col	£267
DL-900	£181	DL1200	£363

Ribbons

DL900/1100/1200	Mono	£5	Col.	£11
B-100/200 Ink Cartridge				£15

Concept Keyboards

Standard A3 Keyboard with BBC Software	£138
Standard A4 Keyboard with BBC Software	£109
Archi A3 Keyboard	£139
Archi A4 Keyboard	£110

Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold Paper £7
- 2,000 Sheets 9.5" x 11" Fanfold Paper £11
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold £21
- 1,000 Sheets 15" x 11" Fanfold Paper £9
- 2,000 Sheets 15" x 11" Fanfold Paper £16
- 1,000 Sheets true A4 Fanfold Paper 70gms £11
- 2,000 Sheets true A4 Fanfold Paper 70gms £21
- Teleprinter Roll (Econo paper) £4
- Telex Roll 50 metre £3

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Carriage 1K Sheets £2.50, 2K Sheets £3.00

Printer Labels

(On continuous fanfold backing sheet)

1,000 off, 90 x 36mm (Single Row)	£6.00
1,000 off, 90 x 36mm (Twin Row)	£6.25
1,000 off, 90 x 49mm (Twin Row)	£7.50
1,000 off, 102 x 36mm (Twin Row)	£6.75

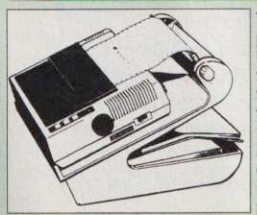
Laser Printer Labels on A4 Sheets

3750 off, 70 x 29mm (3 Rows x 10)	£15.50
2400 off, 70 x 37mm (3 Rows x 8)	£15.25
2625 off, 70 x 42mm (3 Rows x 7)	£15.00

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	–	£4.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£3.25	£4.50
DMP2000/4000	£3.75	£4.95
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£12.00	–
LX80/86	£2.75	£4.50
LX400/800/850	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic KX1080/81	£6.00	£5.00
Panasonic KX-P1124	£7.00	£5.00
Star LC24-10	£2.95	£6.00

Professional Printer Stand



The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £24 (carr. £3)
132 Column version £29(carr. £4)

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Type

Connects	Serial	Parallel
2 to 1	£10	£11
3 to 1	£13	£14
4 to 1	£16	£17

Professional Type

Connects	Serial	Parallel
2 to 1	£17	£18
3 to 1	£22	£25
5 to 1	£34	£38

Cables extra at £6 each

Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

Auto Printer Sharer

Connects	Serial	Parallel
2 to 1	£40	£45
4 to 1	£62	£49
8 to 1	–	£89

256k Multi Spooler

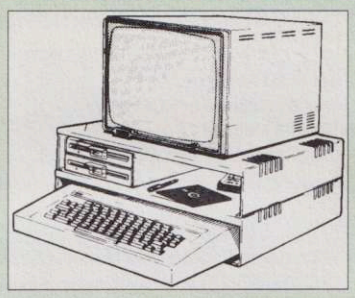
These Auto Parallel Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

- 2 In/2 out £135
- 4 In/2 out £169
- 8 In/1 out £199

Compact Converter Units

Serial to Parallel £36 Parallel to Serial £37

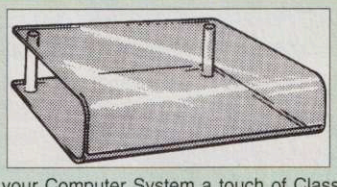
Plinths for the BBC B, BBC Master & A3000



Protect your computer from the heat of your VDU. Our micro plinths have slots for maximum ventilation. The single plinth is suitable for a BBC and VDU, whilst the double height version provides enough room for our stacked disc drive and other peripherals like, Eprom programmer, music unit or simply discs & stationery. The computer slides neatly in the lower section allowing easy access to remove the lid. Colour: Matching BBC Beige.

- Single BBC Plinth 420 x 310 x 105mm £13
- Double BBC Plinth 420 x 310 x 210mm £24
- Single Master Plinth 490 x 310 x 105mm £14
- Double Master Plinth 490 x 310 x 210mm £26
- A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive £15

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version **£16** (carr £3)
136 Column version **£20** (carr £4)

Continued→ → → → → → → → →

QUEST MOUSE Mk III

- Quest Mouse III & Quest Paint £49
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont £69
- Quest Mouse III only £25
- Quest Paint Software only £28
- Quest Font Disc (22 Text Fonts) £15
- Quest Mouse Mat (Red or Blue or Green please specify) £3
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer £18

  (P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

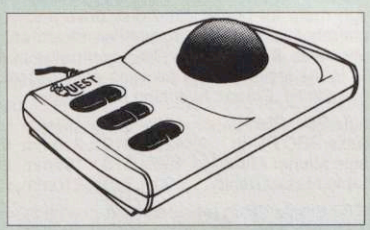
ConQuest

Quest combined with ConQuest and Acornsoft GXR ROM make up THE MOST POWERFUL drawing packages available for the BBC range. Quest Paint is able to take advantage of almost any additions to your machine, such as Shadow or Sideways RAM. ConQuest takes this principal even further, by utilising the otherwise normally incompatible Sideways RAM facility by holding pictures in them.

ConQuest ROM Package £28
(Price includes software in ROM and a comprehensive Manual).
(Not Compatible with BBC Compact)
(P.S. Conquest is a Quest Paint extension ROM).

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.



QT-10 BBC/Master Version **£25**
QT-20 Archimedes Version **£26**

Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose £3

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 250234 or 233383

Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. £15

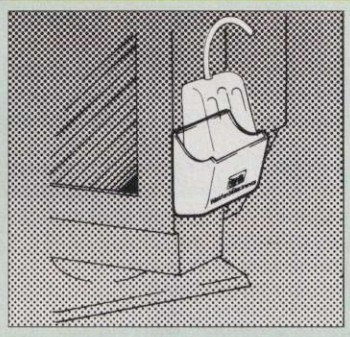
Mk III AMX MOUSE

- **AMX Mouse plus Super Art £49**

(Please specify for BBC, Master or Compact)

- AMX MOUSE ONLY £25
- AMX SUPERART Package £26
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse £25
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker £13
- AMX DESIGN (ROM) £29
- AMX EXTRA EXTRA £16
- MOUSE MAT £3

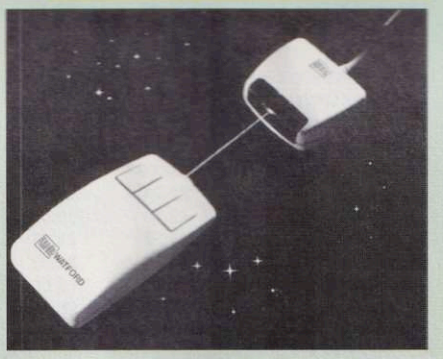
WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

Archi Cordless Mouse



Features
- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 seconds inactive
- Auto Power Shut-Down after 20 seconds inactive

Price £39

BEEB VIDEO DIGITISER

"Test Bureau Approved for Use in Education"

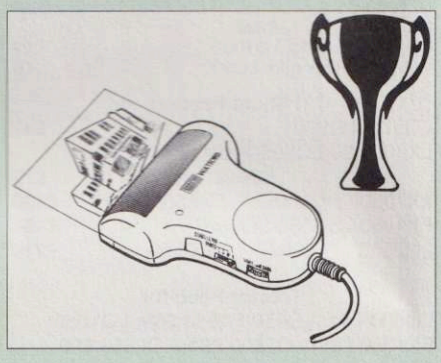
Using any source of composite video (colour or monochrome) and the Watford Beeb Video Digitiser, you can convert an image from your camera into a graphics screen on the BBC Micro. This uses the full graphics capacity of the BBC micro in modes 0, 1 or 2. The video source may be a camera, video recorder or television, and is connected via the video output socket. The software supplied includes a sophisticated, fast screen dump routine.
Images produced can be compressed, stored to disc, printed on an Epson compatible printer, directly used to generate graphics, analysed for scientific and educational use or converted to other formats e.g. Slow Scan TV or receiving a picture from a remote camera using a modem. The output from the digitiser exactly matches the graphics capability in each mode, with up to 8 levels of grey in mode 2. The unit connects into the User Port and automatically scans a complete picture in 1.6 seconds.

£99

(BBC B+ and Master compatible, except Master with Econet)
(Price includes) Digitiser Unit, Software in ROM & a Comprehensive Manual)

Beeb Hand Scanner

Hand-held Scanner for the BBC Micro

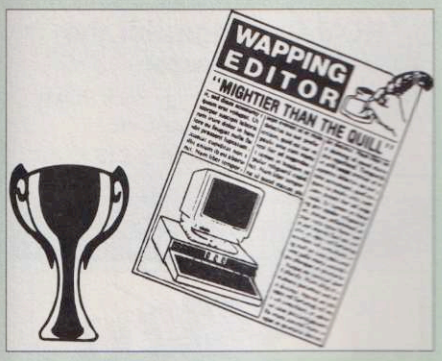


Watford Beeb HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs!

The HandScan plugs directly into the 1MHz bus on the BBC while a comprehensive set of utilities provided by the sophisticated ROM firmware. The scanner has a resolution of either 100 DPI or 200 DPI when accuracy is essential. Pictures as wide as 4" may be scanned in mode 0 and various types of dithering may be selected to simulate the grey levels of a scanned picture.

All necessary software has been included in the firmware to allow the scanner to read images directly into our Wapping Editor with little more than the click of the mouse. The digitised picture may then be incorporated into your magazine, newsletter, report or any other document.

Beeb HandScan & Firmware **£99**



Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Included with the system is a utility disc containing several high quality fonts, various utilities and a ROM image of a Support ROM. A comprehensive 100 page manual completes the package. The Support ROM contains routines to allow an area to be rotated to any angle or distorted to any four-sided shape. Also included are facilities to draw ellipses at any angle and sectors, segments and arcs (in Master or BBC B with Acorn GXR). Another of the features of the Support ROM is a 'Turbo DFS' which gives DFS access times comparable with those of ADFS.

Page Layout Section

The Wapping Editor may be used to create pages of any size from an A6 to a full A3 page. If none of the eight default page types suit your purpose, the stand-alone page creation program may be used to create pages to your own requirements. By using proportionally spaced fonts and genuine microspacing it is possible to print over 150 characters across an A4 page. A unique feature of the Wapping Editor is the 'A5 x 2' page size allowing two A5 pages to be printed side by side onto a single A4 sheet.

The graphics module incorporates the facilities like: pencil, brush, airbrush, polygon, circle, eclipse, fill, cut & paste, etc.

Text may be typeset, either justified or unjustified, in any font anywhere on the page. Simply select which font and text document you wish to use, and pull out a rectangle on the page where you want the text to be – it's as simple as that! Multiple columns may be printed just as easily and a special 'expand' feature may be used to expand the microspacing so that the document exactly fits the space defined.

Word-Processor

The integral word processor is the ideal tool for producing your text documents, although text can of course be read in from any of the other popular word processors such as View, Wordwise etc.

The Font Editor

The font editor module will allow you to design your own typefaces or to modify the ones provided on the utility disc. This sophisticated editor has numerous functions designed to take the tedium and frustration out of producing good looking, well balanced fonts. Each character may be individually proportionally spaced and characters of any size up to 16 x 16 pixels may be defined.

Pictures may also be 'grabbed' from a video source by using the Watford BEEB Video Digitiser.

Wapping Editor Software Pack £49
Wapping Editor plus Mouse £69

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc.
Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out.

Music writing symbols in the form of pattern and brush for quick production of manuscripts are included together with staves.

There are two prepared hi-res pages laid out for printing labels, both single and double width. Ready made label designs are included but these can be easily replaced with your own designs.

A Mode 0 screen dump routine is also included. To pack such a large amount of data onto the discs the screens have been compressed and routines to compress and expand Mode 0 screens are included on both discs. Using the packing routine you can archive large numbers of screens onto a single disc.

£15

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are three Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions.

£12

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only).

£13

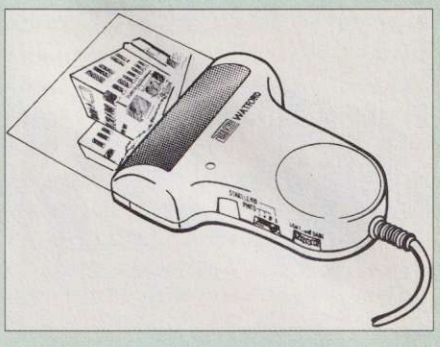
Archi A4 Scanner

This most advanced Archi A4 image scanner is supplied complete with ROM based podule software. Features provided include facilities for zooming in on an image and inverting the image in X and Y directions, saving and printing of the sprite created. Interactive help is supplied using the !HELP application on the Acorn applications discs.
The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.
Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.
All these features and facilities combine to make the Archi Page Scanner the fast and convenient way in which to add that extra impact, interest and clarity to documents, reports, instruction sheets, manuals, news letters, etc., from your Archimedes DTP package.

New Low Prices:

Archi A4 Scanner	£269
Sheet Feeder for above	£75
Scanner + Sheet Feeder	£359

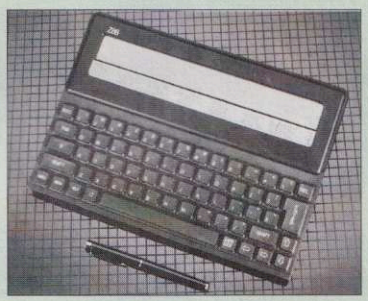
Archi Mk II Hand Scanner



Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion podule. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines.
Images can be printed on any printer supported by RISC OS.
On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

AHS-4 Archi 300/400 Version £109
AHS-3 Archi A3000 Version £119

Z88 Portable Micro

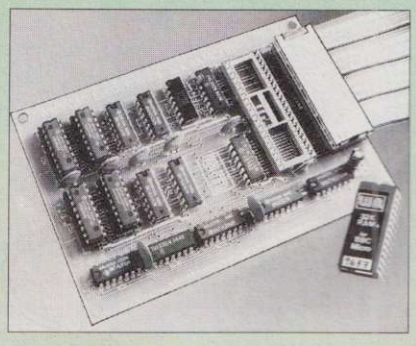


- Z88 Portable Micro £169
- 32K RAM Pack or 32K EPROM Pack £16
- 128K RAM Pack or 128K EPROM Pack £32
- 512K RAM Pack £86
- 256K Eprom Pack £55
- Z88 Eprom Eraser Unit £38
- Z88 Carrying Case £8
- AA Nicad Rechargeable Battery £1.50
- Battery Charger Compact & Fast £6
- Z88 Serial Printer Cable £8
- Z88 Parallel Printer Cable £18
- Z88 to Archi Link £15
- Z88 to BBC Link £8
- Z BASE £56
- Z88 to PC Link II £27
- Z88 to Macintosh £32
- Z88 Mains Adaptor £9
- Z88 Modem £114

CREDIT CARD 24 HOUR Ansaphone Hot Lines (0923) 250234 or 233383

Continued→ → → → → → → → →

32K Shadow RAM/Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.
- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.
- Use the full 32k or the bottom 12K of the expansion RAM as a printer Buffer. (P.S. Only 12K printer buffer can be used with Wordwise & WW+, due to the way they are written).
- Unique facility to turn ROMs off and on again.

Only £49

- **ARIES B-32 Shadow RAM Card £49**

Commander Joystick

Features:

- Direct connection to BBC Analogue input port – no interface needed.
- Fully compatible with all BBC Joystick controlled games programmes.
- Switchable springs allow selection of floating or centring operation.
- Trim adjusters for both X and Y axes for fine centre adjustment.
- Convenient stick mounted fire button with additional base buttons.

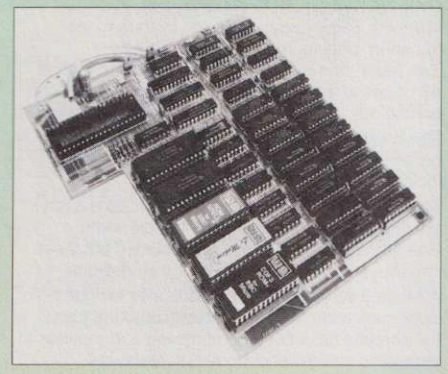
Price: £15

(PC version of above joystick available at **£16**)

Voltmace Joysticks

Delta 3B Single Joystick	**£10**
Delta 3B Twin Joysticks	£15
Delta 3C Joystick for Compact	£10
Delta 14B Single Joystick	£11
Delta 14B/1 Adaptor Module	£12
Transfer Software Disc-Tape	£7
Delta-Cat A mouse eliminator Joystick for the Archimedes	£24
Analogue aircraft style yoke Joystick to run in the analogue port of the BBC B & Master 128	£25

ROM/RAM Card



- NO SOLDERING required to fit the board.
- Fully buffered for peace of mind.
- Compatible with BBC micros (not BBC+ or Master).
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).
- Option for 16k of battery backed CMOS RAM (CMOS RAM needs one ROM socket).
- Software Write protect for ALL RAM.
- Read protect for CMOS RAM.
- Separate RAM write register (&FF30 to &FF3F).
- Automatic write to currently selected RAM socket for convenience.
- FREE utilities disc packed with software.
- Large printer buffer.
- UNIQUE fully implemented RAM FILING SYSTEM (similar to the popular Watford DFS).
- ROM to RAM load and save facilities.

The SFS (Silicon Filing System) can utilise up to the full 128k of RAM (with the SFS in any paged RAM) as a SILICON DISC. This behaves as a disc drive, with all the normal Watford DFS features (including OSWORD &7F for ROMSPELL, etc.) to provide an environment that looks like a disc but loads and saves MUCH faster.

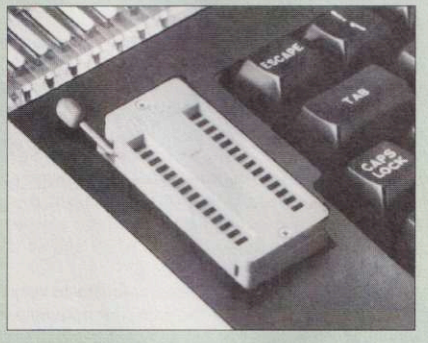
PRICES:

• ROM/RAM card with 32k DRAM	£39
• ROM/RAM card with 64k DRAM	£52
• ROM/RAM card with 128k DRAM	£83

OPTIONAL EXTRAS:

• 16k plug-in Static RAM kit	£8
• 16k DRAM for Upgrade	£13
• Battery backup	£3
• Read and Write protect switches	£2 each
Complete ROM-RAM card with all options fitted	£109

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without having to open the lid. The ZIF socket is located into the ROM Cartridge's position. It is very simple to install. No soldering required. Also included in the price is a plastic see through storage case with antistatic lining, which allows you to store 12 ROMs.

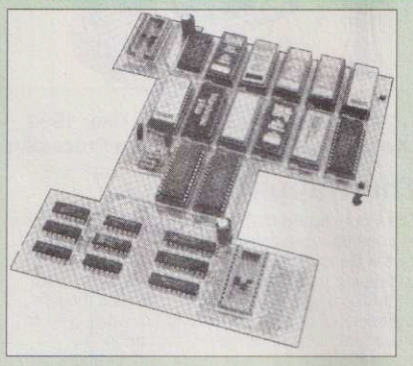
£18

ROM Cartridges for the BBC Master

Will accept the larger Piggy Back ROMs like Interword, Quest, etc.

• Twin **£8;** • Quad **£13**

Solderless Sideways ROM Socket Board



- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £32

Battery Backup fitted **£35**

Battery Backup only **£3**

16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

Only: £8

Connecting Leads

(All ready made and tested)

CASSETTE LEADS 7 pin DIN Plug to 3 pin DIN Plug + 1 Jack Plug	£2.50
to 7 pin DIN Plug	£3.00
to 3 Jack Plugs	£2.50
6 pin DIN to 6 pin DIN Plug (RGB)	£3.00

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00;** Dual **£3.75**

Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

Miscellaneous Connectors

	Plugs	Sockets
RGB (6 PIN DIN)	50p	75p
RS423 (5 pin Domino)	70p	80p
Cassette (7 pin DIN)	40p	95p
ECONET (5 pin DIN)	35p	50p
Paddles (15 pin 'D')	150p	250p
Disc Drive Plug 4 way	100p	–
6 way Power Connector	120p	150p

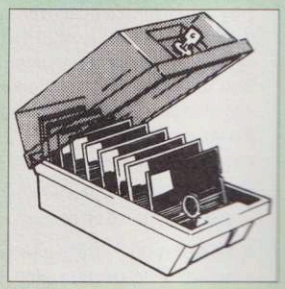
Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

£14

Watford POWER DUCK £8

Antistatic Lockable Disc Storage Units



- **M35** – holds up to 50 5.25" discs **£4.95**
- **M85** – holds up to 95 5.25" discs **£6.95**
- **M25*** – holds up to 25 3.5" discs **£4.95**
- **M50** – holds 50 3.5" discs **£6.50**
- **M100** – holds 100 3.5" discs **£6.99**
- **M10** – holds 8 of No. 10 Data Cartridges **£15**

* Not lockable

Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: **£2**

3M – Diskettes

Lifetime warranty on 3M Discs

- *10 x 5.25" S/S D/D 40T (744)* **£5**
- *10 x 5.25" D/S D/D 40T (745)* **£5**
- *10 x 5.25" S/S D/D 80 Track (746)* **£7**
- *10 x 5.25" D/S D/D 80 Track (747)* **£7**
- *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT* **£8**
- *10 x 3.5" S/S D/D 40/80 Track* **£6**
- *10 x 3.5" D/S D/D 40/80 Track* **£6**
- *10 x 3.5" Double Sided High Density* **£11**

Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- *10 x **M3** 3.5" D/S D/D 80 Track* **£6**
- *10 x **M9** 3.5" D/S High Density* **£10**
- *10 x **M4** 5.25" S/S D/D 40 Track* **£5**
- *10 x **M5** 5.25" D/S D/D 40 Track* **£5**
- *10 x **M7** 5.25" D/S D/D 80 Track* **£6**
- *10 x **M8** 5.25" D/S H/D Hi-Density* **£9**
- ***M2** 3" Double Sided* ***£2.50** each*

Special Bulk Offer Discs

(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£25	£30	£35
• With Sleeves 5.25"	£28	£33	£38
• 3.5" D/S D/D	£21 for 50		£39 for 100

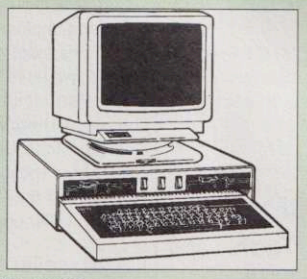
3.5" Disc Drive

These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	**£59**
• **CLD35:**	Twin Disc Drives, 800K	**£109**
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	**£82**
• **CD35:**	Twin Disc Drives, 800K	**£126**

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drives in Monitor Stand



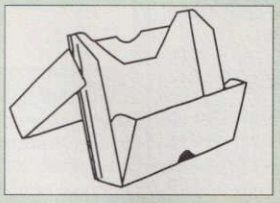
• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£165

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£154

Plastic Library Cases



DLC1 – Holds 5 x 3.5" Discs. **£1.50**
DLC2 – Holds 10 x 3.5" Discs. **£1.90**
DLC3 – Holds 5 x 5.25" Discs. **£1.60**
DLC4 – Holds 10 x 5.25" Discs. **£2.00**

Disc Albums

Attractively finished in leather-look PVC Vinyl

DW1 – Holds 6 x 3.5" Discs **£2.50**
DW2 – Holds 6 x 5.25" Discs **£3.00**
DW3 – Holds 20 x 5.25" Discs **£3.50**
DW4 – Holds 40 x 3.5" Discs or 5.25" Discs **£4.50**

Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of Cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. it is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

Acorn & Watford DFSs

- Watford sophisticated DFS ROM **£16.00**
- Watford DFS Kit complete **£49.00**
- DFS Manual (comprehensive) **£6.95**
- Acorn DNFS ROM **£17.00**
- Acorn ADFS ROM only **£25.00**
- Acorn 1772 DFS ROM Kit **£49.00**
- Acorn DFS Kit complete **£48**

Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

- Complete Kit Special Price **£44**
- DDFS Manual (No VAT) **£6.95**
- We will exchange your existing DFS Kit for our sophisticated DDFS for only **£26**

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).
P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

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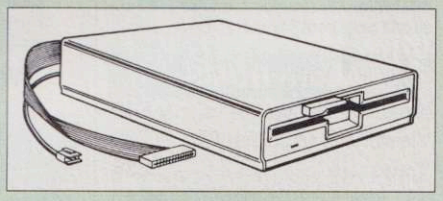

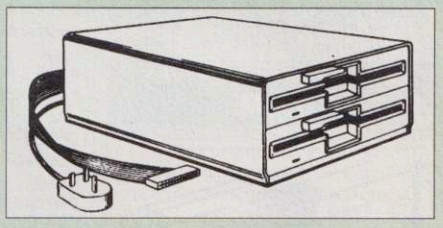

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Continued→ → → → → → → → →

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Word-Aid

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Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Acorn ROMS

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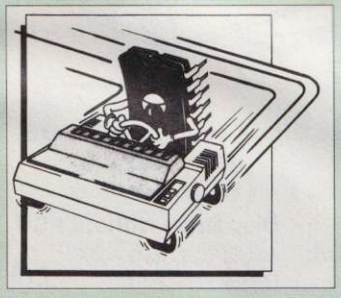
View-Index	£12

View Printer Driver ROM



View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

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for BBC B & B+	£12
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Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

Special Offer £14

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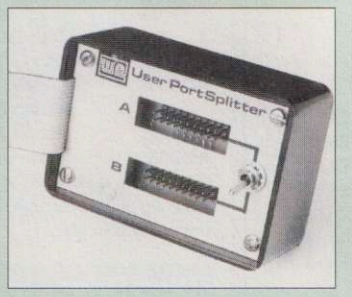

Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows two units to be connected to the User Port simultaneously, and select between them simply by toggling a switch. This device is particularly useful for those people using Quest Mouse and the Watford Video Digitiser or any similar combination

Excellent Value at **£22**

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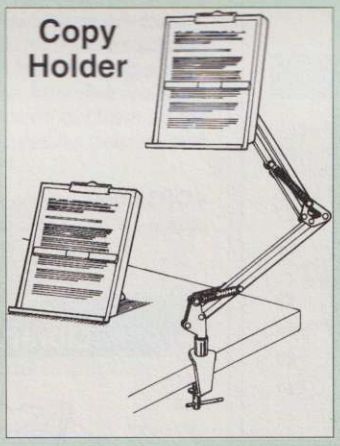

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(Now reads Archimedes Discs)

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It is possible to gain a full understanding of the mouse from this manual. For those not interested in exactly how the mouse functions, complete example programs are also included.

Price £5.95 (No VAT)

Example programs on Disc £4.95

The Epson RX/FX Printer Commands Revealed Handbook

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

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- They include **additional safety features** such as steel re-inforced keyboards
- If you already have a BBC, our research shows that the **cost to repair/replace** the most common components to wear out, such as the keyboard or power supply unit, would be at least a half the cost of one of our new ones!
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Why do we say "Unused" rather than "Brand New" ?

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Whilst every effort has been made to ensure the accuracy of this information we reserve the right to make changes & alterations without prior notice. Please note that these computers may not be compatible with all UK BBC B software, nor with hardware add-ons. (Prices are correct at the time of going to press. E&OE)

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Celebrates the start of its 11th year of publication

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Shaping the screen

Martin Dawe presents the second part of his superb pixel mapping system

NO one could have failed to notice that the 32-bit Acorn machines have very powerful facilities for manipulating graphics. It seems that every graphics package has options devoted to distorting bitmaps but no one ever considers that the 8-bit BBC Micro can do it too.

Last time we looked at the program for designing the shapes that pictures could be flowed into. This time we have the actual distortion program, the pixel mapper.

In fact it's extremely short. All you do is enter the screen mode of the original picture – 0, 1, 2, 4 or 5 – then the vertical length of the picture, the number of horizontal lines (up to 256). Next the current disk catalogue is displayed and you should enter the file name.

If the file is in a sub-directory just enter the full path, for example:

```
source.pic1
```

if you're on ADFS or, for DFS, something like:

```
s.pic1
```

Next you have to supply the file name of the shape to be used in creating the distorted image and then the name to use when saving the final result.

The shape file is loaded and rendered on the screen then the machine code routine called to map the picture on to the shape. The process is very fast taking five seconds or less.

The programs

There are two listings: The first is the pixel mapper – just type it in and save it. However this won't work as the machine code is not yet available. Enter the second listing and save it as PMSrce. When this is run it generates the machine code and saves it as mapcode. The pixel mapper will now run successfully.

Due to memory constraints the program may not work on a standard BBC B if the PAGE setting is higher than &1900. But it works perfectly on the 32-bit machines when using the !65Host BBC emulator – create a ram disk and load all files into it, enter the emulator and type *Dir ram:$. You can use the programs as normal.

All the programs for both the Shaper and the Pixel Mapper are on this month's subscription disk for both the 8-bit and 32-bit Acorn machines.

```
  10 REM BBC Pixel Mapper
  20 REM by Martin Dawe
  30 REM (c) Acorn Computing
  40 :
  50 OSCLI("LOAD mapcode 2C00")
  60 REPEAT
  70 MODE3
  80 HIMEM=&2700
  90 buff=&88:size=&89:pos=&79:ylen=&7A
 100 mode=&A00:file=&A0B
 110 mapper=&2C00
 120 REPEAT
 130 INPUT'"Source mode of picture to b
e mapped";m$
 140 UNTIL INSTR("01245",m$)
 150 half%=FALSE
 160 IF INSTR("45",m$) PROCdest:IF INST
R("01",m$) half%=TRUE
 170 M%=VAL(m$)
 180 IF M%>3 ?buff=&30:?size=&28 ELSE ?
buff=&27:?size=&5
 190 !mode=&27285801:!(mode+4)=&0311028
8
 200 IF M%<4 !mode=&4F503000
 210 IF M%=0 OR M%=4 !(mode+4)=&0701038
0
 220 IF M%=2 !(mode+4)=&015501AA
 230 IF M%=0 !(mode+8)=&280 ELSEIF M%=1
 OR M%=4 !(mode+8)=&140 ELSE !(mode+8)=&
A0
 240 IF half% ?(mode+10)=1
 250 ?pos=?(mode+1)
 260 REPEAT
 270 INPUT'"Vertical length of this pic
ture (max 256)";y%
 280 UNTIL y%>0 AND y%<257
 290 ?ylen=y%-1
 300 PRINT
 310 OSCLI("CAT")
 320 REPEAT
 330 INPUT'"Filename of this picture";f
ile$
 340 UNTIL LEN(file$)<21
 350 $file=file$+CHR$13
 360 INPUT'"Filename of shape file to m
ap picture to";file$
 370 INPUT'"Filename to save mapped pic
ture as";save$
 380 MODEM%
 390 HIMEM=&2700
 400 PROCshape
 410 CALLmapper
 420 OSCLI("SAVE "+save$+" "+STR$~(?(mo
de+1)*&100)+" 8000")
 430 PRINT"Mapped and saved"
 440 INPUT'"Map another";yn$
 450 IF INSTR("Yy",LEFT$(yn$,1)) UNTILO
 460 END
 470 :
 480 DEFPROCdest
 490 IF m$="4" ch$="(0,4)" ELSE ch$="(1
,5)"
 500 REPEAT
 510 PRINT'"Mode to map picture to "ch$
;
 520 INPUTm$
 530 UNTIL INSTR(ch$,m$) AND NOTINSTR("
(),",m$)
 540 ENDPROC
 550 DEFPROCshape
 560 f%=OPENIN(file$)
 570 INPUT#f%,num%
 580 FOR shape%=0 TO num%
 590 INPUT#f%,sx%,sy%,fx%,fy%,xx%,xy%,t
ype%
 600 IF type%>127 GCOL0,0 ELSE GCOL0,1
 610 type%=type% AND127
 620 IF type%=2 MOVEsx%,sy%:MOVExx%,xy%
:PLOT85,fx%,fy%
 630 IF type%=3 MOVEsx%,sy%:MOVEsx%,fy%
:PLOT85,fx%,fy%:MOVEsx%,sy%:MOVEfx%,sy%:
PLOT85,fx%,fy%
 640 IF type%=4 PROCcircle
 650 NEXT
 660 CLOSE#f%
 670 ENDPROC
 680 DEFPROCcircle
 690 cstep=2*PI/xx%
 700 mult=SQR((fx%-sx%)^2+(fy%-sy%)^2)
 710 FORang=0 TO 2*PI STEPcstep
 720 MOVEsx%,sy%:MOVEsx%+mult*COS(ang),
sy%+mult*SIN(ang)
 730 PLOT85,sx%+mult*COS(ang+cstep),sy%
+mult*SIN(ang+cstep)
 740 NEXT
 750 ENDPROC
```

> No one could have failed to notice that the 32-bit Acorn machines have very powerful facilities for manipulating graphics

GET IT RIGHT

```
 10 =    0 0     110 = D795 8     210 = 5B7C E     310 = 670F 7     410 = 72EA E     510 = A674 E     610 = FFAC 9     710 = 3A24 6
 20 =    0 0     120 = BFBA E     220 = 1911 B     320 = BFBA 1     420 =  501 F     520 = 1000 E     620 = DF8B C     720 = BFD9 F
 30 =    0 0     130 = 8087 0     230 = 220D 3     330 = FD07 0     430 = 11FC C     530 = 9B5D 4     630 = BF0D 5     730 = F088 F
 40 = 9719 9     140 = BCA3 2     240 = D6E4 4     340 = E077 0     440 = 8EEA 8     540 = ED0F 2     640 = BB41 0     740 = 2C83 A
 50 = DC53 4     150 = 4DC5 A     250 = ADE8 4     350 = CA00 3     450 = B934 8     550 =  6DC 3     650 = 2C83 0     750 = ED0F A
 60 = BFBA 1     160 = 6C65 C     260 = BFBA 2     360 = 557F F     460 = FD2E 8     560 = AA97 D     660 = 51A9 B
 70 = CA78 3     170 =   35 5     270 = DF59 F     370 = CBD4 C     470 = 9719 0     570 = FB1D 6     670 = ED0F 4
 80 = 8F60 0     180 = 6911 C     280 =  A0F 5     380 = 5F97 7     480 = 1183 8     580 = 13A2 0     680 = 10C0 8
 90 =   79 C     190 =  5C8 C     290 = BC4C 0     390 = 8F60 C     490 = 598F 9     590 = 2F88 9     690 = 4324 8
100 = 6B94 2     200 = 6647 6     300 = FF3E E     400 = ADB8 9     500 = BFBA 9     600 = 1265 8     700 = 8C30 D
```

This program and others mentioned in this issue are available on the subsciption disk.

```
  10 REM Source code for BBC Pixel Mapper
  20 REM by Martin Dawe
  30 REM (c) Acorn Computing
  40 :
  50 MODE7
  60 HIMEM=&4000
  70 ratxl=&70:ratxh=&71:sect=&72:strt=
&73:stop=&74:mainy=&75:num=&76
  80 dotm=&77:dotd=&78:pos=&79:ylen=&7A
:colour=&7C:bytel=&80:byteh=&81
  90 dvdl=&82:dvdh=&83:temp1=&84:temp2=
&85:temp3=&8E:temp4=&8F
 100 befl=&86:befh=&87:buff=&88:size=&8
9:dotl=&8A:doth=&8B:ratyl=&8C:ratyh=&8D
 110 OSFIND=&FFCE:OSGBPB=&FFD1
 120 Scrl=&C375:Scrh=&C376
 130 mode=&A00:file=&A0B:strtl=&A20:str
th=&A58:endl=&A90:endh=&AC8
 140 PRINT"Assembling code..."
 150 PROCass
 160 OSCLI("SAVE mapcode 4000 "+STR$~0%)
 170 PRINT"Finished and saved code."
 180 END
 190 :
 200 DEFPROCass
 210 FORPASS=4TO6STEP2
 220 P%=&2C00
 230 O%=&4000
 240 [OPTPASS
 250 .mapper
 260 JSRlines
 270 LDA#0:STAdvdh
 280 LDAstop:SEC:SBCstrt:STAdvdl
 290 LDX#8:JSRsl
 300 LDXylen:LDY#0:JSRdiv
 310 STXratyl:STYratyh
 320 LDA#64
 330 LDX#file MOD256:LDY#file DIV256
 340 JSROSFIND
 350 STAfdata
 360 LDAstrt:STAmainy
 370 .main
 380 LDA#0:STAnum:STAratxh
 390 .sub
 400 LDXratxh:CPXmode+2:BCSeol
 410 LDYmainy:JSRaddr
 420 LDY#0
 430 LDA(bytel),Y:BNEfnd
 440 INCratxh:BNEsub
 450 .fnd
 460 LDX#0:LDAmode+4
 470 .exct
 480 PHA:AND(bytel),Y:BNEret
 490 PLA:LSRA:INX:BNEexct
 500 .ret
 510 PLA
 520 LDAratxh:STAtemp3
 530 JSRproc
 540 STAstrtl,X
 550 LDAtemp4:STAstrth,X
 560 .fblk
 570 LDXratxh:LDYmainy:JSRaddr
 580 LDY#0
 590 LDA(bytel),Y:BEQfnd2
 600 STAtemp4
 610 INCratxh
 620 LDAratxh:CMPmode+2:BCCfblk
 630 .fnd2
 640 LDXmode+7:LDAmode+6
 650 .exct2
 660 PHA:ANDtemp4:BNEret2
 670 PLA:ASLA:DEX:BPLexct2
 680 .ret2
 690 PLA
 700 LDYratxh:DEY:STYtemp3
 710 JSRproc
 720 STAendl,X
 730 LDAtemp4:STAendh,X
 740 INCnum
 750 LDAnum:CMP#&38:BCCsub
 760 .eol
 770 LDXnum:DECnum
 780 LDA#0:STAdvdh
 790 STXdvdl
 800 DEX
 810 .tot LDAdvdl:CLC:ADCendl,X:PHA
 820 LDAdvdh:ADCendh,X:TAY
 830 PLA:SEC:SBCstrtl,X:STAdvdl
 840 TYA:SBCstrth,X:STAdvdh
 850 DEX:BPLtot
 860 LDX#&E:JSRsl
 870 LDXmode+8:LDYmode+9:JSRdiv
 880 STXratxl:STYratxh
 890 LDA#0:STAbefl:STAbefh:STAsect
 900 .sec
 910 LDYsect
 920 LDAstrtl,Y:STAdotl
 930 LDAstrth,Y:STAdoth
 940 .dot
 950 LDAbefl:CLC:ADCdotl:PHA
 960 LDAbefh:ADCdoth:TAX
 970 LDYsect
 980 PLA:SEC:SBCstrtl,Y:STAdvdl
 990 TXA:SBCstrth,Y:STAdvdh
1000 LDA#&E:SBCmode+10
1010 TAX:JSRsl
1020 LDXratxl:LDYratxh:JSRdiv
1030 TXA:ANDmode+7:STAcolour
1040 TXA
1050 LDYmode+5
1060 .rep
1070 LSRdvdh:RORA
1080 DEY:BNErep
1090 PHA
1100 LDAmainy:SEC:SBCstrt:STAdvdl
1110 LDA#0:STAdvdh
1120 LDX#8:JSRsl
1130 LDXratyl:LDYratyh:JSRdiv
1140 STXtemp3
1150 LDAdotl:ANDmode+7:STAdotm
1160 LDAdotl:STAdotd
1170 LDAdoth
1180 LDYmode+5
1190 .rep2 LSRA:RORdotd
1200 DEY:BNErep2
1210 LDAmode+10:BEQncm
1220 STAmode
1230 LSRmode+2:LSRmode+3
1240 .ncm
1250 PLA:TAX:CPXmode+2:BCCnoc
1260 LDXmode+3
1270 LDAmode+7:STAcolour
1280 .noc
1290 LDYtemp3:JSRaddr
1300 LDAmode+10:BEQncm2
1310 LDA#0:STAmode
1320 ASLmode+2
1330 LDA#&4F:STAmode+3
1340 .ncm2
1350 JSRread
1360 JSRplot
1370 LDAdotl:CLC:ADC#1:STAdotl
1380 LDAdoth:ADC#0:STAdoth
1390 LDYsect:CMPendh,Y:BCCdot2:BNEuh
1400 LDAdotl:CMPendl,Y:BEQdot2:BCCdot2
1410 .uh
1420 LDAbefl:CLC:ADCendl,Y:PHA
1430 LDAbefh:ADCendh,Y:TAX
1440 PLA:SEC:SBCstrtl,Y:PHA
1450 TXA:SBCstrth,Y:TAX
1460 PLA:CLC:ADC#1:STAbefl
1470 TXA:ADC#0:STAbefh
1480 LDAsect:CMPnum:BEQjmp2
1490 INCsect:JMPsec
1500 .jmp2
1510 LDAmainy:CMPstop:BCSend
1520 INCmainy:JMPmain
1530 .end
1540 LDA#0:LDY#0:JSROSFIND
1550 RTS
1560 .dot2
1570 JMPdot
1580 .proc
1590 LDA#0:STAtemp4
1600 LDYmode+5
1610 .mult
1620 ASLtemp3:ROLtemp4
1630 DEY:BNEmult
1640 TXA:ADCtemp3
1650 LDXnum
1660 RTS
1670 .sl
1680 LDA#0:STAtemp3:STAtemp4
1690 .sl2
1700 ASLdvdl:ROLdvdh:ROLtemp3
1710 DEX:BNEsl2
1720 RTS
1730 .read
1740 LDAbyteh:CMPpos:BCSmore
1750 ADCsize:ADCbuff
1760 SEC:SBCpos:STAbyteh
1770 LDY#0
1780 LDA(bytel),Y:STAtemp3
1790 RTS
1800 .more
1810 LDA#0:STAfdata+1:STAfdata+5
1820 LDAbuff:STAfdata+2
1830 LDAsize:STAfdata+6
1840 LDApos:CLC:ADCsize:STApos
1850 LDA#4
1860 LDX#fdata MOD 256:LDY#fdata DIV 25
6:JSROSGBPB
1870 JMPread
1880 .addr
1890 LDAmode+1:STAbyteh
```

```
1900 LDA#0:STAdvdl
1910 TYA:AND#7:STAbytel
1920 TYA:LSRA:LSRA:LSRA:ASLA:TAY
1930 LDAScrl,Y:STAtemp1
1940 LDAScrh,Y:STAtemp2
1950 LDAmode:BEQnodiv
1960 LSRtemp1:RORtemp2
1970 .nodiv
1980 TXA
1990 ASLA:ROLdvdl
2000 ASLA:ROLdvdl
2010 ASLA:ROLdvdl
2020 ADCbytel:ADCtemp2:STAbytel
2030 LDAdvdl:ADCbyteh:ADCtemp1:STAbyteh
2040 RTS
2050 .lines
2060 LDA#0:STAratxh:STAstop
2070 .lp3
2080 LDAmode+3:STAbefh
2090 .lp6
2100 LDXbefh:LDYstop:JSRaddr
2110 LDY#0
2120 LDA(bytel),Y:BNEfpix
2130 DECbefh:BPLlp6
2140 LDAratxh:BEQnxtl
2150 DECstop
2160 RTS
2170 .fpix
2180 LDAratxh:BNEnxtl
2190 LDAstop:STAstrt
2200 LDA#1:STAratxh
2210 .nxtl
2220 INCstop:BNElp3
2230 DECstop
2240 RTS
2250 .plot
2260 LDAmode+4
2270 LDXcolour:BEQskip
2280 .lp
2290 LSR A:DEX:BNElp
2300 .skip
2310 ANDtemp3
2320 LDXcolour:BEQskip2
2330 .lp2
2340 ASL A
2350 DEX:BNElp2
2360 .skip2
2370 PHA
2380 LDXdotd:LDYmainy:JSRaddr
2390 LDAmode+4
2400 LDXdotm:BEQskip3
2410 .lp4
2420 LSR A
2430 DEX:BNElp4
2440 .skip3
2450 EOR#&FF
2460 LDY#0
2470 AND(bytel),Y:STAtemp3
2480 PLA
2490 LDXdotm:BEQskip4
2500 .lp5
2510 LSR A
2520 DEX:BNElp5
2530 .skip4
2540 ORAtemp3:STA(bytel),Y
2550 RTS
2560 .div
2570 STXtemp1:STYtemp2
2580 LDX#16
2590 .lop
2600 ASLdvdl:ROLdvdh
2610 ROLtemp3:ROLtemp4
2620 LDAtemp4:CMPtemp2:BCCnosub:BEQcheck
2630 .ok
2640 LDAtemp3:SBCtemp1:STAtemp3
2650 LDAtemp4:SBCtemp2:STAtemp4
2660 LDAdvdl:CLC:ADC#1:STAdvdl
2670 LDAdvdh:ADC#0:STAdvdh
2680 .nosub
2690 DEX:BNElop
2700 LDXdvdl:LDYdvdh
2710 RTS
2720 .check
2730 LDAtemp3:CMPtemp1:BCCnosub:BCSok
2740 .fdata
2750 EQUD&005800FF
2760 EQUD&00050000
2770 EQUD&00580000
2780 EQUB&0
2790 ]
2800 NEXT
2810 ENDPROC
```

GET IT RIGHT

```
  10 =    0 0
  20 =    0 0
  30 =    0 0
  40 = 9719 9
  50 = 8AFC 8
  60 = 2D69 B
  70 = E7AF 9
  80 = 7630 0
  90 = 1D05 F
 100 = 6C39 8
 110 =   F7 3
 120 = 52E7 5
 130 = FA69 0
 140 = E093 1
 150 = CD80 0
 160 = 5CC5 C
 170 = 1518 3
 180 = FD2E 6
 190 = 9719 8
 200 = DB18 6
 210 = 1F9D E
 220 = CE71 3
 230 = 8CC6 C
 240 = C8B2 0
 250 = CEDF 8
 260 = AC7E 6
 270 = 9F9D 0
 280 = 734E 6
 290 = E4F7 B
 300 = 43EF 4
 310 = 4DBB A
 320 = E7C7 1
 330 = DC3E 9
 340 = 816D F
 350 = 54CB 6
 360 = 7B89 A
 370 = 37C9 8
 380 = FC8C 2
 390 = AF04 F
 400 = ACFF D
 410 = 3582 6
 420 = 9B97 C
 430 =  511 B
 440 = 57A2 B
 450 = B8D8 D
 460 = FE0C 9
 470 = 3348 B
 480 = 52F2 F
 490 = 8C13 2
 500 = E9B0 1
 510 = 4E8A 3
 520 = AB07 C
 530 = 72AB 1
 540 = CEAB A
 550 = 90DA 1
 560 = DFD6 E
 570 = C34E 4
 580 = 9B97 5
 590 = 194A 7
 600 = D153 2
 610 = FAB8 A
 620 = 6929 E
 630 = E8C2 A
 640 = 7FDA 7
 650 = 5821 4
 660 = 288E D
 670 = BCA7 9
 680 = CA16 8
 690 = 4E8A F
 700 = 1C42 0
 710 = 72AB 3
 720 = AFD5 E
 730 = EB95 3
 740 = C3BF 4
 750 = 44D9 B
 760 = 53B1 6
 770 = 893D A
 780 = 9F9D A
 790 = C070 6
 800 = E8A9 D
 810 = A0F1 2
 820 = D43C 8
 830 = 4E4A D
 840 = 290F D
 850 = 7C44 F
 860 = 7718 8
 870 = 14F0 1
 880 = A6C3 2
 890 = 70FC A
 900 = BC56 2
 910 = 9720 1
 920 = 7870 5
 930 = 69B3 8
 940 = F7B8 D
 950 = D48A 4
 960 =  642 D
 970 = 9720 4
 980 = A569 6
 990 = 17DA A
1000 = 98B9 3
1010 = 88D0 8
1020 = 536A F
1030 = ED05 E
1040 = 5DFD 7
1050 = E003 5
1060 = A934 D
1070 = 3D14 1
1080 = 1EFD 1
1090 = 824E 3
1100 = 5BFC 5
1110 = 9F9D A
1120 = E4F7 3
1130 = 4878 5
1140 = F3D2 A
1150 = FD2D 3
1160 = 5F01 E
1170 = 5545 8
1180 = E003 0
1190 = A53A 4
1200 = 18EE 3
1210 =  27C 8
1220 = D3FA 8
1230 = 17DA 3
1240 = F60C C
1250 = 6054 D
1260 = 38A4 7
1270 = E766 4
1280 = 52AF A
1290 = 2CBF 4
1300 = 4A53 6
1310 = 60B5 4
1320 = 7AA7 A
1330 = 8CAE F
1340 = 95C8 D
1350 =  AD8 B
1360 = 481F 7
1370 = B6F7 A
1380 = 9D38 F
1390 = CFA3 A
1400 = 647C E
1410 = 87C5 1
1420 = 6824 9
1430 =  1E6 7
1440 = 6F5F 5
1450 =  EA1 3
1460 =  5F1 7
1470 = 763C A
1480 = C184 F
1490 = B73E 3
1500 = 3117 D
1510 = FEC3 F
1520 = 7331 E
1530 = E188 4
1540 = 4ADB 8
1550 = 9843 0
1560 = 31E9 E
1570 = CB97 2
1580 = 74D0 0
1590 =  9EB D
1600 = E003 D
1610 = E4E4 8
1620 = BD01 C
1630 = FAD8 5
1640 = FDFA A
1650 = C3A8 3
1660 = 9843 3
1670 = 6DE7 B
1680 = B279 6
1690 = 4C1A 6
1700 = D18B 6
1710 = BC00 7
1720 = 9843 5
1730 =  CA3 A
1740 = 8ACF 5
1750 = 1DFC 3
1760 = A8B2 A
1770 = 9B97 7
1780 = 8B28 7
1790 = 9843 5
1800 = 422A D
1810 = 62A6 8
1820 = 3276 0
1830 = 5F61 6
1840 = 91AD 6
1850 = 31D1 B
1860 = AEBB 7
1870 = D47C 7
1880 = 36EA 7
1890 = FDD6 F
1900 = DF19 A
1910 = 4C1E D
1920 = EC65 F
1930 = 17A9 F
1940 = 2A1E E
1950 = 1629 2
1960 = F2B4 6
1970 =  6AB E
1980 = 5DFD 4
1990 = 6D72 C
2000 = 6D72 F
2010 = 6D72 0
2020 = 86A1 D
2030 = 7676 C
2040 = 9843 E
2050 = B7B8 2
2060 = C4A7 D
2070 = 7577 3
2080 = 3B46 0
2090 = 25D2 E
2100 = C314 E
2110 = 9B97 3
2120 = 9004 B
2130 = 2DA6 6
2140 = 16CB 0
2150 = 7263 0
2160 = 9843 5
2170 = 2F72 D
2180 = 5835 2
2190 = 2720 5
2200 = AEF8 5
2210 = 248A F
2220 = 7BC3 5
2230 = 7263 3
2240 = 9843 D
2250 = 4E64 2
2260 = 54F4 7
2270 = 4F1F C
2280 = AD17 D
2290 =  99D 8
2300 = BA0A 0
2310 = 7264 1
2320 = B03A E
2330 = 6556 9
2340 = 6311 8
2350 = 954C D
2360 = 1A80 D
2370 = 824E 1
2380 = AF11 F
2390 = 54F4 8
2400 = 1D91 3
2410 =  590 3
2420 = 1A09 B
2430 = F58A E
2440 =  AA1 3
2450 = 71CF D
2460 = 9B97 E
2470 = DE90 A
2480 = 4E8A 3
2490 = 6D76 2
2500 = 15B1 A
2510 = 1A09 4
2520 = E5AB C
2530 = 7A46 5
2540 = B0B2 4
2550 = 9843 3
2560 = 7D5C E
2570 = E32D 4
2580 = B6C2 5
2590 = 1E9D 7
2600 = 5433 D
2610 = 207B 0
2620 = 9003 9
2630 = 5B1E 9
2640 = C298 7
2650 = 39AF D
2660 = 9768 7
2670 = E940 F
2680 = D4F3 2
2690 = EE87 5
2700 =  28C D
2710 = 9843 7
2720 = 6D9B A
2730 = D87F 6
2740 = E690 B
2750 = 52FD B
2760 = 8C28 A
2770 = EE53 6
2780 = B6D2 8
2790 = 8B58 A
2800 = 2C83 C
2810 = ED0F D
```

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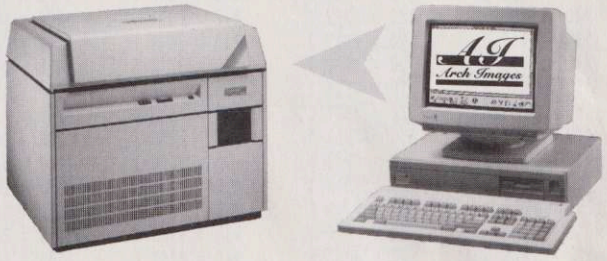

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It's the real thing

Mike Goldberg gives some real help on using your new Acorn 32-bit machine

WELCOME to the Archimedes it says in the Welcome Guide supplied with your new 32-bit micro and a big hello from me to all new Archimedes users and all Rom and Ram fans.

Like all good things you can have too much so we move on from our 8-bit heros to the inconceivably immense world of the 32-bit monster.

But this is no ordinary article. It's for human beings like myself for whom opening a packet of biscuits without breaking half of them would be deemed a scientific breakthrough equivalent to the discovery of penicillin.

So, I'm assuming you've just got your new Archimedes computer and plugged in all the plugs, switched it on and are wondering what to do next. Well, that depends on why you bought the machine in the first place. Oops, did no one ask you *why* you wanted a computer? Oh well, it's too late now, you've got one.

Go-faster stripes

All I wanted was a new type of BBC Micro with more memory, go-faster stripes and colourful sprites which is indeed what I got. I also got the biggest headache of my life trying to follow and understand user guide after user guide.

You see, if you compare the good old Beeb to the size of the Earth then the Archimedes is the galaxy within which our solar system is contained.

It's that vast, that daunting and about as easy to comprehend unless you have a brain the size of the planet.

The machine you now have is going to exhilarate you, annoy you, help you, hinder you, delight you and defy you.

But thankfully you're not alone. These articles will show you how to make a mess of things properly and how not to be intimidated by a pile of tin, plastic and micro chips.

First off let's do what everyone does when faced with a switched on Archimedes – grab the mouse and whirl the arrow around on the screen. That's enough!

Now then, I assume you must have read at least the first few pages of the User Guide supplied with your machine and will be familiar with the Desktop environment and the windows in it.

O.K. I admit it. I spent the first half hour moving the arrow pointer over anything I could see on the screen and clicking all the buttons on the mouse to see what would happen.

This is where books and guides fall down every time – they always assume you are a tolerant, reasonably intelligent and systematic person with limitless patience and that you own a machine that will react and respond exactly to how it does in the manual.

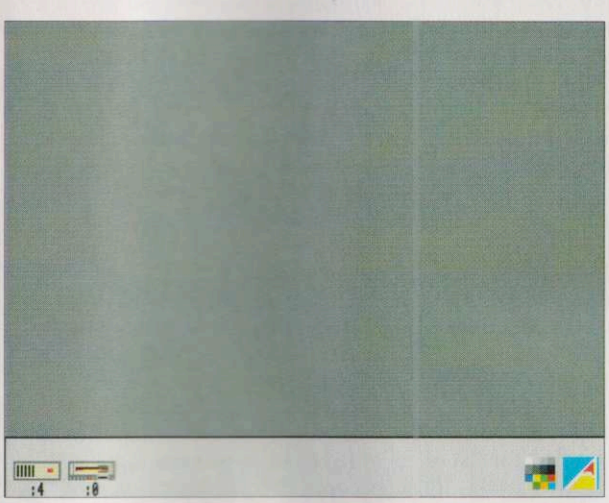
Where is Mode 7?

I wanted to know several things all at once like: Where is Mode 7 and what do all the other modes look like? Can I merge programs together like I used to? And I want to make some sprites move right now!

Oh boy was I a long way from moving sprites about, although finding Mode 7 was heartwarmingly simple as this information was part of the first few pages I'd read in the User Guide.

Press F12 and the screen jolts up a line and a * appears. Now type BASIC and press Return.

Immediately there it was, the good old familiar(ish) BBC Micro screen admittedly in black letters on white with a different message but

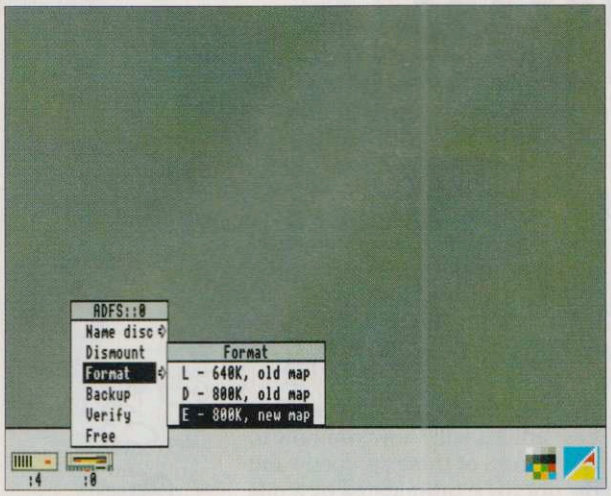


Default screen – yours should look something like this...

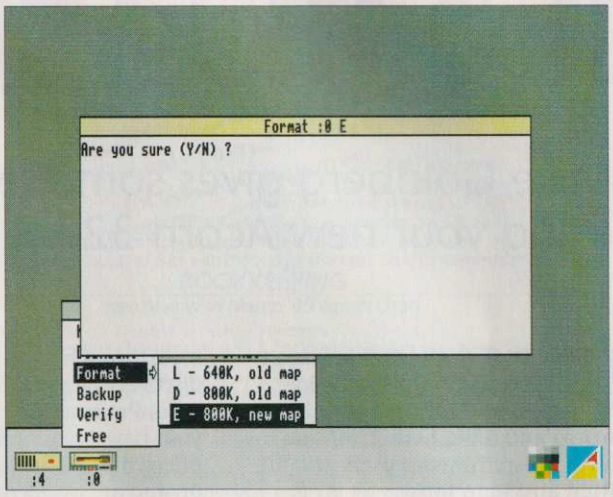
...but could soon look like this

Mike Goldberg is a professional illustrator who's been creating games for the BBC Micro and, more lately, the Archimedes since 1982 – he was one of the Ms in the immensely successful games company MRM.

He has written many of the best type-in games for *The Micro User* and recently created Dream Quest for the Arc. He still owns an Electron and two BBC Micros as well as a big cat.



● *Formatting a disk really is simple*



● *The pre-requisite warning – the first of many*

➤

back in the land of the familiar nonetheless.

Now type in MODE7 and, yes, there it is. For some reason I typed in OLD and was happy to see Bad program appear. I felt at home and reassured all at once – this was a machine with two personalities: One I knew virtually inside out and looking like its old glorious self and a new, alien environment with moving windows in it and little pictures in the windows just waiting to be explored.

With this highly satisfactory state of affairs safe in the knowledge that BBC Basic was still there and, more to the point, easily accessible, I ventured to return to the Desktop.

Just type in QUIT and press Return and indeed I was returned to the Desktop looking just like it did when I left it. Perhaps that's what this multi-tasking thing is all about but I wasn't sure – I'm still not.

Built-in sprites

The point is this – I wasn't at all sure what I was getting with my Archimedes but I'd heard how fast it was and that it had built-in sprites with 256 colours and you didn't have to write in machine code to make decent games. And it's true.

I can now manipulate sprites using Basic listings that I would have given my right arm for a few years ago. You don't need machine code to make flash games on a machine this fast because it's processing speed is awesome.

So it's the machine with everything, if you know how to make it yield, but it can also be hard going finding the correct information in the order you need it. This article will redress the *you now have sufficient knowledge to write this yourself* syndrome and demonstrate how simple most things are with the Archimedes.

> ...if you compare the good old Beeb to the size of the Earth then the Archimedes is the galaxy within which our solar system is contained

But I digress. Back in the land of Desktop it occurs to me I've never even seen a 3.5in disk let alone format and use one so I'd best pop in an Applications disk supplied with my micro.

The first thing I found disconcerting about moving over from 5.25in disks is that the write-protect procedure is reversed – that is on a 5.25in if there's a hole in it, it's unprotected and vice versa with a 3.5in.

Formatting

The first good thing about the Archimedes and disks is the built-in formatter which is accessed by moving the arrow (pointer) over the disk drive icon on the icon bar, pressing the *middle for menu* button on the mouse and reading the list of options presented.

Then move the pointer over FORMAT which inverses the colours and over the little arrow to the right which yields yet another list of several formatting options.

Choose *E - 800k, new map* and press the Select (left) mouse button. Now you will receive the familiar *are you sure ?* message and if you are and you have a disk inserted you really want to format then either type in Y or press the Select button on the mouse as displayed on screen – how friendly can you get?

So off it goes formatting sectors 0 to 79 after which the disk is automatically verified – looking for glitches – and if happy tells you *Formatted 800k - Press space or click mouse to continue*. As simple and as painless as that and all built in.

It makes a change from loading up my BBC Micro Welcome Disk each time but that is how it has been for eight or so years and so for me it's a big change for the better. Of course the next thing to do is format a few more disks to make sure it was not a fluke.

Feeling confident that I could handle all that this machine threw at me I thought I'd write and save a little program.

But it wasn't as easy as that as you will see next month when the sight of red triangle warning signs will become all too familiar– you have been warned!

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A3020/A4000 Memory – 2Mb £58

Both these machines contain 2Mb of memory, together with four empty sockets. Our upgrade pack consists of four 512k x 8 RAM chips, which plug in to give the full 4Mb.

A4 Portable Memory
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Once again, these upgrades are simply plug-in sets of chips, fitting into the sockets already provided on the motherboard, and are readily accessible after removal of the clip-on expansion cover of the machine.

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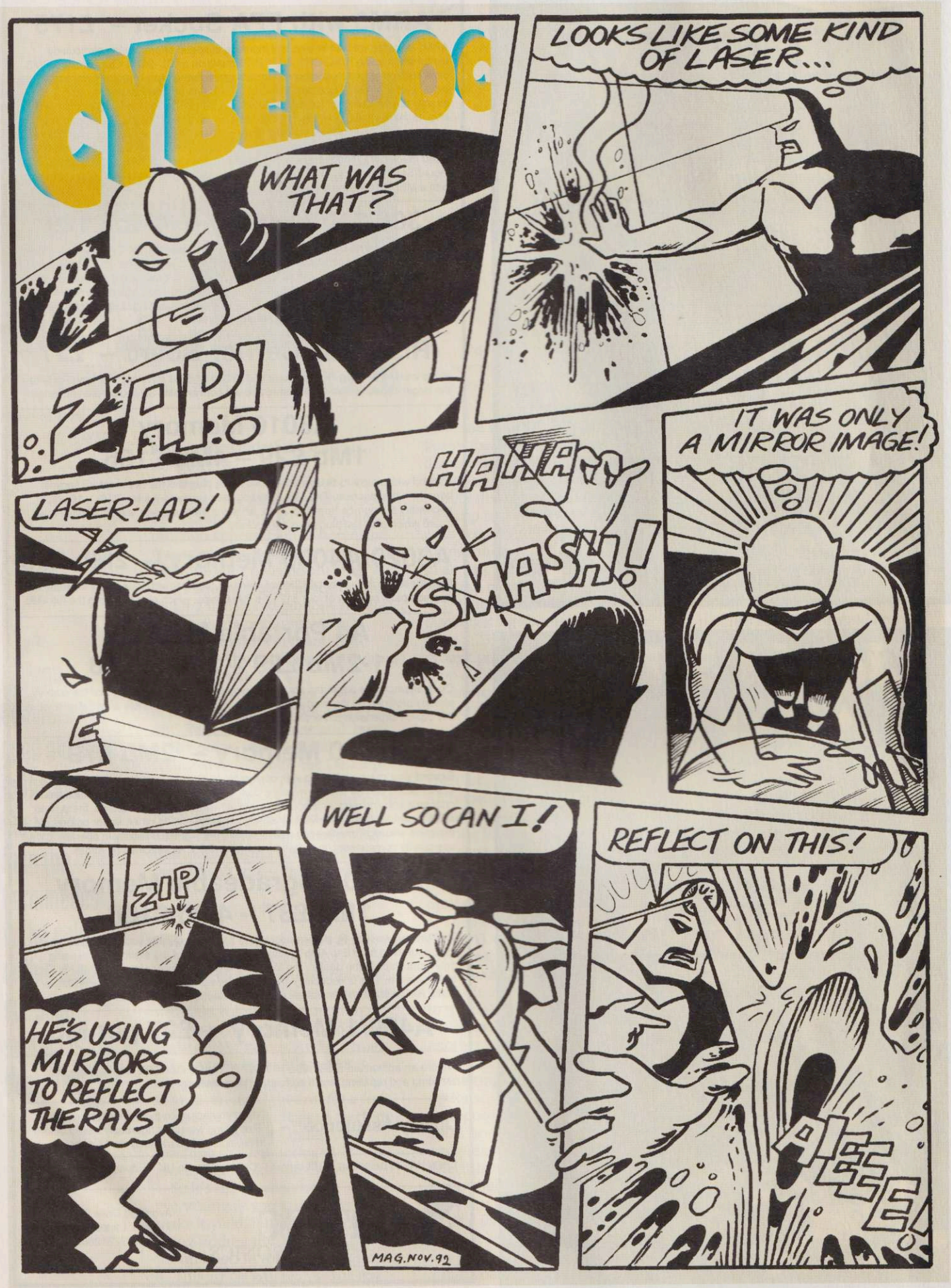
CYBERDOC
WHAT WAS THAT?
ZAP!
LOOKS LIKE SOME KIND OF LASER...
IT WAS ONLY A MIRROR IMAGE!
LASER-LAD!
HAHA
SMASH!
WELL SO CAN I!
REFLECT ON THIS!
ZIP
HE'S USING MIRRORS TO REFLECT THE RAYS
AIEEE
MAG.NOV.92

A little light relief

The Cyberdoc tackles the subject of flat mirrors and reflection

THE program listed here shows a lamp which shines a thin beam of light at a mirror. The ray hits the mirror and bounces off it, but the question is, where is it reflected to?

Your task – as so often in my programs – is to try to come up with a rule. You should be able to predict where the reflected ray will be. The program gives no solution – it is up to you to be a good scientist and come up with the answers.

The controls are simple: You can spin the mirror by using the A and Z keys. You may find it useful to have a protractor so that you can measure angles.

Although the program is not about curved mirrors, they work in just the same way. Some scientists would say that a curved mirror, like a car driver uses, is really a set of flat mirrors all set at slightly different angles.

If you are a clever programmer you might be able to alter the listing so that any shape of mirror could be used. Perhaps you could fathom out how the weird effects are obtained in a hall of mirrors.

Reflection of light is a part of the National Curriculum. It is a topic which will be covered frequently in schools from infant level up to the age of 16.

● *I hope I've shed a bit of light on that topic. Next time we'll be tackling orbits and how satellites can stay motionless above the Earth.*

```
 10 REM Reflection
 20 REM The CyberDoc
 30 REM (c) Acorn Computing
 40 MODE1:VDU29,640;512;
 50 VDU23,1,0;0;0;0;
 60 A=24
 70 PROClamp
 80 PROCinstruct
 90 PROCmovemirror(0)
100 REPEAT
110 IFINKEY-66 PROCmovemirror(+6)
120 IFINKEY-98 PROCmovemirror(-6)
130 UNTIL0
140 END
150 DEFPROCmovemirror(da)
160 TT%=TIME+20
170 PROCmirror(A,0):PROCrays(A,0)
180 A=A+da
190 PROCmirror(A,1):PROCrays(A,2)
200 REPEATUNTILTIME>TT%
210 ENDPROC
220 DEFPROCmirror(AN,C)
230 B=AN+90:GCOL0,C
240 MOVESINRADB*-200,COSRADB*-200
250 DRAWSINRADB*200,COSRADB*200
260 ENDPROC
270 DEFPROCrays(A,C)
280 GCOL0,C:A=(A*2+180)
290 MOVE0,-400:DRAW0,0
300 DRAWSINRAD(A)*400,COSRAD(A)*400
310 ENDPROC
320 DEFPROClamp
330 GCOL0,3
340 MOVE-8,-400:DRAW-40,-400
350 DRAW-40,-500:DRAW40,-500
360 DRAW40,-400:DRAW8,-400
370 GCOL0,2
380 MOVE-36,-404:MOVE-36,-496
390 PLOT85,36,-404:PLOT85,36,-496
400 PRINTTAB(22,30)"LAMP"
410 ENDPROC
420 DEFPROCinstruct
430 PRINTTAB(10,0)"A and Z rotate mirr
or"
440 COLOUR1:PRINTTAB(2,2)"MIRROR (RED)
"
450 COLOUR2:PRINTTAB(24,2)"RAYS (YELLO
W)"
460 ENDPROC
```

GET IT RIGHT

```
 10 =    0 0
 20 =    0 0
 30 =    0 0
 40 = 656E E
 50 = 8EF3 A
 60 = 8AFC 8
 70 = C28F 6
 80 = 645E A
 90 = 9A6D 9
100 = BFBA 2
110 = 152A E
120 = 436C B
130 = 53CE E
140 = FD2E D
150 = 62F3 9
160 = 277D 8
170 = 1241 7
180 = D752 5
190 = 3140 C
200 = BF1A C
210 = EDOF 3
220 = 36FB 4
230 = D92C B
240 = 671C 0
250 = 6C05 1
260 = EDOF 4
270 = D939 9
280 = 562A 1
290 = 6EA6 1
300 = 5B3E E
310 = EDOF 1
320 = 2878 0
330 = 236D 8
340 = 1295 D
350 =  A21 A
360 = FBEF 9
370 = 334C 7
380 = F99B 0
390 = AE4B 0
400 =  5D9 9
410 = EDOF 7
420 = EEDD 6
430 = DA8C 2
440 = 2E31 6
450 = CF62 B
460 = EDOF 4
```

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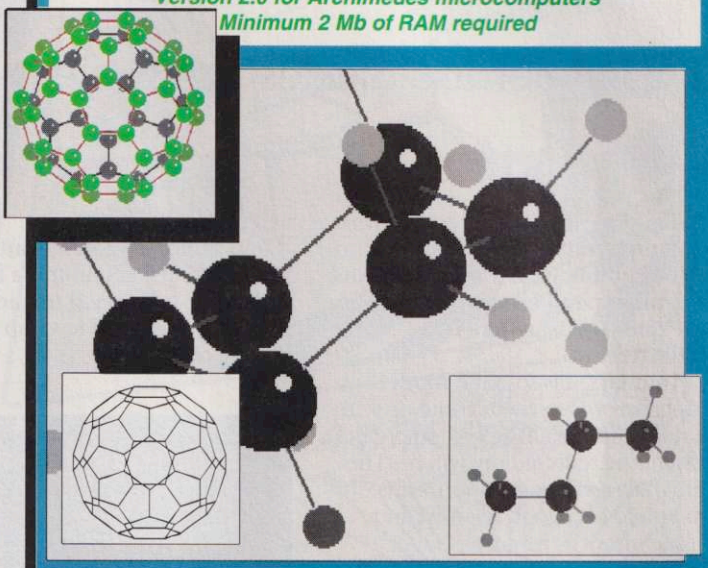

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Sharp shooting

Mike Cook goes hunting for ducks with his new phaser

LET'S face it, I am a pleasant enough sort of person, I get on reasonably well with my colleagues but one thing that drives me to distraction is that blessed desk duck on my Archimedes. Well this month I thought I would really do for it and design something I could shoot it with.

My inspiration came from my 7-year-old son Graham. Despite having some of the finest computers around the house he wanted a TV games console.

No matter that the Acorn games were better, he wanted one that all his friends had. Therefore for his birthday he received a Sega. Now this games console, along with others, provides for an optional gun attachment, the Light Phaser.

A phaser is really a line drawn on a polar graph to indicate the phase of an AC signal with respect to a fixed reference. Not a very frightening thing to face in a crisis: *Hand over the money or you get it with this line!*

However, phaser sounds a bit like laser and they have been getting away with it for years on Star Trek – so why not? The Sega Light Phaser can be bought from Tandy for about £30. Other light guns should work exactly the same but the plugs and wiring might be different.

Light gun

A light gun is really nothing more than a light pen for people with short arms – it works on exactly the same principle. Figure I shows a TV raster, that is the path the small spot of light traces when it moves across the TV screen. A light gun, shown in Figure II, uses a lens to focus one tiny part of the screen on to a fast photo diode light detector.

Unlike a light pen, the signal from this detector needs amplification. This is because the gun is much further away from the screen than the light pen. As the gun is focused on such a small part of the screen it produces a pulse whenever the screen spot passes that point.

An ideal device would only produce one pulse per screen scan, but all practical devices produce several as the dot scans through the sensor's field of view. This is no real problem because we only look at the first pulse.

The way this works is that if we know the time that the spot starts its scan from the top, by timing how long it takes from that point to produce a pulse, we can work out the position where the gun is focused.

The simplest way to do this is to have a digital time base running and freeze the count when we get the gun's pulse.

On the old Model B or Master this is easy because inside the CRT controller chip is a digital time base running connected to a latch that is clocked by a strobe signal you can feed in through the joystick connector.

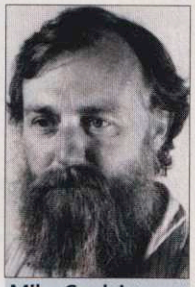
In fact the CRT controller was designed to be used with a light pen. Back in October 1983 the Body Build article dealt with fitting a light pen, and you need exactly the same software to drive a light gun. The only problem I found was that the pulse out of the Sega Light Phaser was the wrong way round.

The CRT controller needs a positive-going edge to trigger the latch whereas the gun produces a negative. It would be simple to turn the pulse upside down using a transistor but due to the saturated current response of low-cost transistors the pulse edge is slowed down.

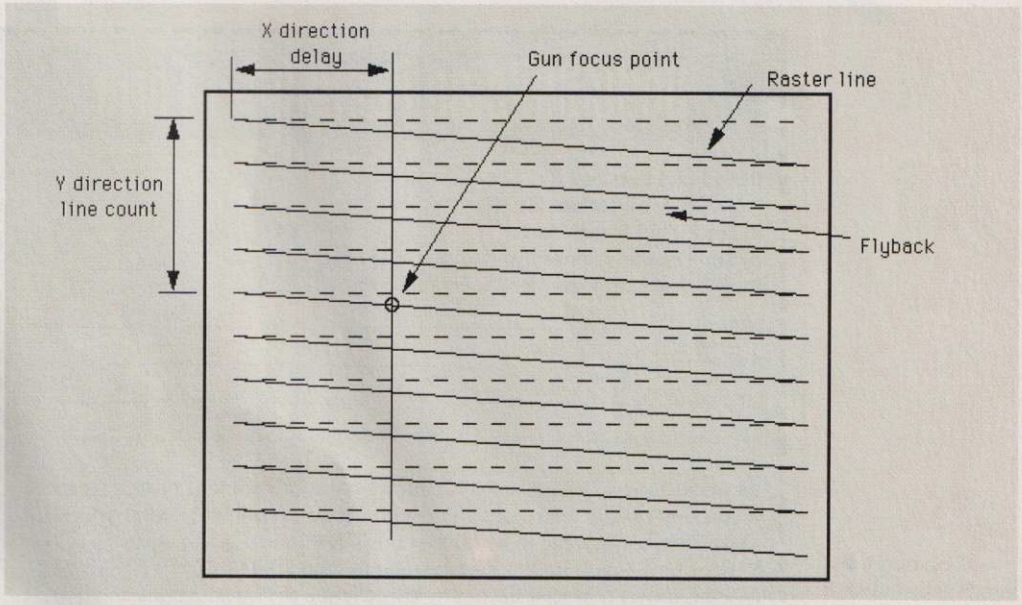
Simplest approach

You can go for more expensive transistors and a different design but the simplest approach is to use a logic gate to perform the inversion.

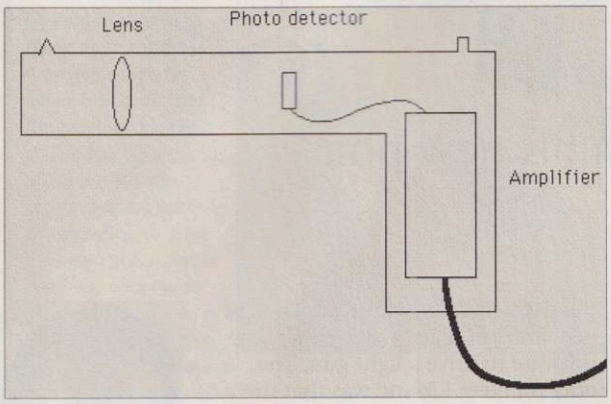
Figure III shows the connections from the Sega Light Phaser and how they appear on the end of a IDC (insulation displacement cable) connector. Figure IV shows how this is connected up to the 15 way connector of the original Model B or Master. Sample test software to ➤



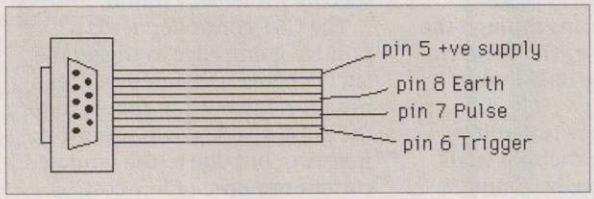
Mike Cook is a senior lecturer in Maths and Physics at Manchester Polytechnic. He has written over 100 articles and is the only person to have had something published in every issue of *The Micro User/ Acorn Computing*.



● *Figure 1: How the TV raster is formed*



● *Figure 2: A Light Phaser*



● *Figure 3: The Sega Light Phaser connections*

➤

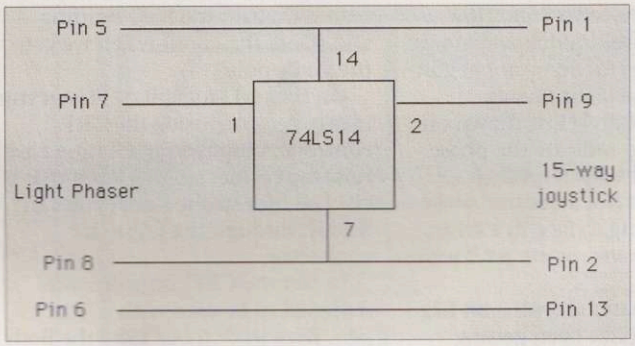
drive this is on the BBC subscription disk. You will see that it looks at the CRT controller register locations 16 and 17. The CRT controller just appears to be two addresses, at address &FE00 you write the number of the CRT controller register that you want to appear at &FE01.

These two 8-bit registers combine to form a 16-bit number related to the position on the screen where the gun focused. You need to do a little software juggling with these numbers because of the delays introduced by the system. This means that by the time you read the digital time base the spot is somewhere else.

The test program shows an asterisk at the point where the gun is pointing and also the raw and processed numbers from the CRT controller. Different monitors often have slightly different correction factors – you can use this program to fine tune your arrangement.

Different interface

Now the problem with the 32-bit machine is that it does not contain the same sort of CRT controller chip. The VIDC chip that controls the video display has no provisions for a light pen. Therefore, if I want to shoot that pesky duck I need some different interface circuitry.



● *Figure 4: Interface to a Model B or Master*

What we need to do is to generate a digital time base and use the gun to clock in its value when we get a pulse. In order that this time base is synchronised to the scanning of the TV raster spot we need to extract the synchronising signals from the computer.

This is best done from the composite video output socket. However, it could also be derived from the mixed syncs pin of the RGB socket where it is passed to a sync separator so that we can have separate line and frame sync pulses.

To find the Y location of where the gun is pointing we only have to count the number of lines that occur between the frame sync pulse and the gun's pulse. If we arrange for a counter to be fed from the line sync pulse and reset by the frame sync pulse the output of the counter will be the Y value.

Finding the X value is a little more tricky, we need to time the interval between the line sync pulse and the gun pulse. We can do this by counting the pulses from a fast running oscillator. However, we need to synchronise this oscillator to the line scan. This is done by stopping the oscillator every time there is a line sync pulse and at the same time resetting the counter.

The resolution of the gun is determined by how many bits we use for these counters, and a little experiment on the Sega revealed that there were just under 13 units of resolution in each of the X and Y directions. This can be mimicked quite nicely using the User Port of an input/output expansion card.

This gives you eight input lines, four for the X and four for the Y giving a resolution of 16 in each direction. Now we can dispense with the latch to freeze the digital time base if we use the latched option of the VIA.

In all the years of designing Body Build projects this is a feature I have never used before. An internal latch for the inputs is triggered by the

> In all the years of designing Body Build projects this is a feature I've never used before

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control line CB1. This leaves control line CB2 to look for the signal that indicates the trigger has been pressed. The circuit is shown in Figure V.

Multiple firings

Most of the operation has already been explained but note that the fire button goes through two inverters. Between them is a resistor and capacitor that removes any contact bounce on the trigger. I found that without this you could get multiple firings and also false firings when the trigger was released.

This is because the control lines only detect an edge and not a level. The 8-bit machines detect a level and so there is no need for this hardware contact debounce. In effect debouncing is performed in the software.

The test software is given on the cover disk and shows how the VIA is programmed and also how the User Port is read and the numbers extracted.

When setting up the interface circuit you should point the gun to the right hand edge of the screen and adjust the variable resistor that controls the oscillator frequency until the asterisk is at the edge of the screen.

If it is adjusted too far the asterisk will wrap round to the left hand edge. Also note that the User Port is accessed through the SYS calls and not by direct poking in memory like the older 8-bit machines.

The variable *D%* holds the bits from the control lines –bit 3 will indicate whether the trigger has been pulled and bit 4 will show if the gun detected the spot.

The gun can fail to detect for two reasons: It is pointing away from the screen or the area of screen pointed at was not bright enough to produce a pulse. I have found that the normal background on the desktop is not bright enough to trigger the gun, but this is not normally a problem.

Unstable

As expected the X direction is not very stable and tends to alternate between two adjacent positions. It's not the interface that's at fault here but the internal circuitry of the gun coupled with the fact that the spot is moving very fast. You can take this into account in the software to detect a target hit.

The components for the interface are available as Body Build Pack No. 81. The 32-bit interface includes a printed circuit board but does not have printed circuit board mounting sockets for the gun.

This is so that you can accommodate other sorts of light gun with the same board. All you need is a flying lead like Figure III – included in the kit. With pack (b) you also need a User Port cable Pack 2.

● *Over the next few months I hope to produce some more programs for the Light Phaser, for both the old and new machines. In the meantime if you have written some of your own send them in, I would love to see them.*

The Duck Shoot program

Finally to that pesky duck. On the Archimedes subscription disk is !DuckShoot, my modification of DeskDuck+. When you hit the duck it disappears. What really happens is that it is moved off the screen, so eventually it will wander back. You could make the application quit when it gets hit simply by adding:

```
: PROCterminate
```

on the end of line 1700.

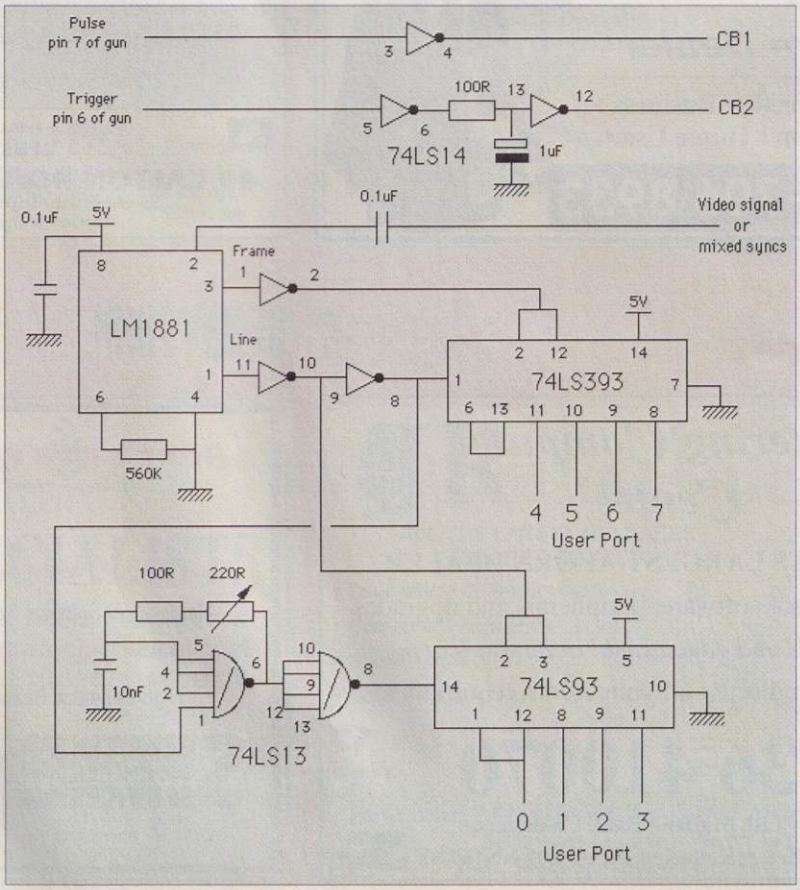
The other little offering is a modification of the Wanda program. This is where several fish hide behind your windows and blow bubbles. By changing the fish icons to flying saucers, and the bubbles to parachuting men that go down not up I have produced another Desktop game.

All you do is to shoot at the parachutes and they will disappear. As the desktop background itself will not register a hit even if you are very close, the sound produced by this game is designed to help you.

A short sound will indicate you have pulled the trigger but not detected the spot (you missed). The longer sound will indicate you were pointing at a bright part of the screen but if the man does not disappear you were not quite right.

There is plenty of scope here for added graphics when each man is shot. You could replace him with an icon without a parachute and move him faster so that he plummets to the ground and produces a sickening squelch and scream when he arrives.

Just one ethical point about altering someone else's software. Leave in all the credits of the original and simply add a few of your own stating what you have added.



● *Figure 5: The Archimedes Phaser Gun Interface*

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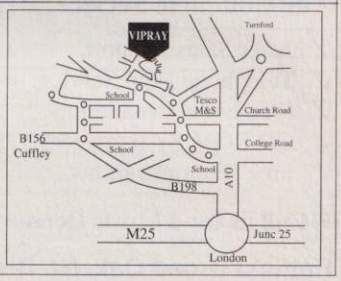

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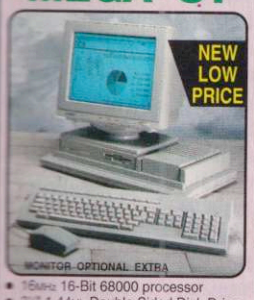

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Betrayed and gutted

I AM extremely pleased to see the Acorn games market growing so steadily. It seems as though the number of games recently released or planned for future release has multiplied several times recently.

I realise that with Christmas being so close this is inevitable but I believe that it is a permanent move for a family of computers that still have not had their full potential exploited.

However, it seems the Fourth Dimension may not be doing so well. It has been confirmed that Spitfire Fury and the Exotic Adventures of Sylvia Lain have been scrapped. And having recently ordered Nevryon 2, I have been informed by 4D that it too has been cancelled. Is this permanent?

Following Nevryon's huge success, it seems extremely foolish for a company to scrap such a promising money-earner. Surely a company could find another programmer to finish games they have invested in?

Another opinion I wish to voice is how let down and betrayed I and many other A3000 owners feel with the release of the A3010 and A3020. These machines have the better Risc OS 3.1, the faster Arm 250 and are cheaper. It seems to me that the A3000 must be seriously over-priced in comparison.

Acorn gave us no warning about their impending releases which means A3000 buyers could not wait to save their hard-earned cash and take advantage of the newer models. I for one would have preferred to wait a few months to get a better deal.

It makes my blood boil to think that overnight I have got an out of date computer and people this Christmas who would usually buy STs and Amigas will be able to buy a computer worthy of my envy for far less money.

It seems that loyal Acorn users raised on BBC Micros and Electrons have been ripped off. It is of little consolation that the increased sales will further the Acorn world. After all for the amount of money I spent on a base A3000 and monitor I could have bought a 486PC with 20MHz, SVGA graphics, 105Mb hard disk and 2Mb of ram which knocks the A3000 flat.

And to top it off, no matter how much Acorn protest and deny it, it seems inevitable that the A3000 will become redundant as I cannot envisage people ordering an A3000 when they can have an A3010 at a fraction of the price.

So it seems I am doomed. Forced to die with a computer that will have no software support. After all who in their right mind would buy my second hand – only 12 months old and much loved – computer for a fair price when they could buy a new A3010 for less? Farewell Acorn world I'm off to buy a PC because I honestly feel gutted. – ***S.A. Oldale, Cobham, Surrey.***

● Having spoken in depth to 4th Dimension about their titles which have been dropped over the months, it appears that the decisions were made either because the quality of the programs weren't high enough, or the programmers hit problems which couldn't be solved.

4D are very open about the whole situation and people who ordered Nevyron 2 were offered any title from their catalogue as a replacement regardless of cost.

Magazine deadlines mean that advertisers have to plan and place their adverts several months in advance often before the products are finished. 4D plan to change this standard practice by only advertising their games when they are genuinely available.

Coming next from them are Chopper Force, Black Angel and Galactic Dan. If you have any questions you can ring 4D on 0742 700661.

I can appreciate your annoyance on the hardware side but I think that you may be over-reacting. You like your A3000, you can use all the software you want on it. Risc OS 3.1 is an enhancement but you can live without it. You can always upgrade to ARM3, extra ram, a hard disk and Risc OS 3.1 if you want. Personally, I'd prefer an ARM3 to an ARM250 any day and the new machines can't be upgraded to ARM3.

The A3000 is still being manufactured – as is the Master 128 – because many schools want these models to match the ones they already have in the classroom.

Most of the price difference can be put down to the fact that you don't have to have a monitor. And it is interesting to note that if they developed and released the A3000 now it would be cheaper as memory prices are falling world wide.

You also object to Acorn not admitting they were releasing new machines, but your letter states the exact reason why Acorn – or any other computer manufacturer – will never admit they are producing newer, cheaper, faster machines. People stop buying the existing ones so the money flow stops and the company dies.

People who bought 486PC computers a year ago are probably wishing they had waited too as the cut-throat PC market has led to ever-falling prices – much worse than the Acorn market.

You are comparing an A3000 to a 486PC but you don't say what sort of applications you are interested in apart from games. If you do decide to opt for a PC make sure that

Indexing the past

I HAVE been an avid reader of your magazine since its infancy and thus have an understandably large collection of back issues which fill any available cupboard at home.

They provide a huge amount of information but I am always annoyed when I can't find that vital piece of information I need and have to spend precious programming time thumbing through the multitude of back issues. I am sure others feel the same way.

I decided to solve the problem and set about the daunting and time-consuming task of using my BBC Micro to create a disk-based index to the magazine. Many hours of spare time later I have a disk with about 1,300 references from 100 issues plus an easy to use data search program to tie it all together – I won't mention the worn out fingers.

Each article from each issue, is stored as an Ascii record including a description of the article, the author, the date of the magazine and the relevant page number. All articles, listings, series and reviews from April 1984 to July 1992 are documented.

The simple data handling program allows viewing of all records – in chronological order – or a search for a specific keyword. For example entering DISK as a keyword would provide all the references to it, while entering COOK will produce the details of all the articles written by Mike Cook – a respectable total of over 145 documented articles.

The found items can be dumped to a printer or just viewed on screen.

It has proven very useful to me in finding all sorts of long lost pieces of information but I feel my time and effort has not been put to its full potential if other readers cannot benefit from this.

If any readers would like a copy, they should send a blank, formatted (DFS) disk (40/80t S/D Density) with a stamped self-addressed envelope and £4. – **Tim Boughton, 33 Westbourne Avenue, Harrogate, North Yorkshire HG2 9BD.**

MSDos or DRDos and/or Windows are included in the price. They are often extra and you'll have to install them – there's no just switch on and go I'm afraid. They also take a lot of ram and vast amounts of hard disk space.

Software is also more expensive. Whereas Impression will work on a base A3000 and costs less than £200, an equivalent PC product will set you back over £700 and if you want a multi-tasking-type interface you can say goodbye to 8Mb of ram. As a rule of thumb to run any Windows product you'll need an absolute minimum of 4Mb.

Compact home

HAVING read with interest the letter published in a recent Problem Solved from Simon Deur of Bath.

If Mr Deur has no use for his Compact, then we certainly have. Some thieving so-and-so has stolen one of ours but he left the external disk drive and power supply. – **Dr D.A.E. Evans, School of Physics and Space Research, University of Birmingham.**

Arcade knowhow

I OWN an A3000 and would like to know how to create a multi-colour sprite and how to make the sprite move without erasing the background. Also how do you use the command Sound? – **Billy Kotsias, London.**

● To answer these and other questions I'd heartily recommend Terry Blunt's book: *Archimedes Game Maker's Manual* available for £12.95 from bookshops or from Wiley (0243 775878).

Circuit breakers

PREVIOUSLY the owner of a Spectrum, Amstrad CPC 464, BBC B, Atari ST, Amiga and Archimedes A440, I have now purchased an A5000. I also use PC compatibles and Sun Workstations on a regular basis at university.

I can say, therefore, that I have a lot of experience with computers. The Archimedes is most definitely the best system as far as operating systems go, although the ARM3 is slow when compared to some processors.

The soon-to-be-released Intel 586 is likely to be more powerful than the ARM, the 6040 chip is already more powerful and some of the chips available from Sun also beat the ARM.

The question I ask is: Can Acorn keep up with the technological developments and continue to beat the competition on a price to performance basis?

I think not, because already 486 66MHz PC compatibles are available for around £2,000. Considering a less powerful A5000 Learning curve costs £1,700 and and A540 costs £2,000+ Acorn have got big problems ahead. I have, however, opted to stay with the Archimedes although that 486 66MHz was very tempting.

After opening up my A5000 I was alarmed to see the difference in the circuit board when compared to my old A440. The circuit board in the A5000 is much better quality but the important chips are not socketed but soldered directly on to the motherboard.

This means that it would be very difficult to get the VIDC replaced by the VIDC2 or even a faster ARM chip if and when they become available. Why have Acorn cut corners? Even the ARM chip in my old A440 was socketed. – **John Smith, Woolwich, London.**

● While we're not afraid of criticising Acorn when we feel it's justified, the decision to solder rather than socket is not as bad as you might think.

The fact is that any new machine with 24-bit colour capability will have a radically re-designed video system so a simple chip replacement will not be applicable.

As for Acorn's commercial future, check out Steve Turnbull's Comment in the next issue of *Acorn Computing*.

Boots, diaries & language

I HAVE a BBC B and when I try to boot a program from disk by using Shift+Break keys it takes me up to 20 times for the disk to boot. Is their any reason for this?

I'd also like a Diary for the BBC Micro, is there one on the market? Last, is there still a version of Pascal for sale for the BBC? If so how can I get hold of it? – **Stephen Hawkes, Sheffield.**

● There's a very good reason for the trouble you're having. Most likely is that your disks are not centring properly when the drive gets up speed.

The best solution is to centre the disks in their sleeves by hand before inserting them and press Shift+Break before you've put the disk in, then gently insert the disk and close the drive door slowly.

This should result in the disk being properly centred. If the fault still persists it means the drive head is out of alignment and this will need to be adjusted at a proper service centre.

The best diary system for the BBC Micro was Genie from PMS which has a sealed hardware unit that plugged into a rom socket. Pressing a special key combination took you straight into the system which had its own battery-backed memory.

PMS were at 38 Mount Cameron Drive, St Leonards, East Kilbride G74 2ES. Last time we spoke they did have a number of Genie systems that were unsold.

As for Pascal we think your only chance is to advertise in the Classifieds for a copy.

All programs printed in this magazine are exact reproductions of listings taken from the running programs which have been thoroughly tested.

However, on the rare occasions when mistakes occur, corrections are published as a matter of urgency.

Should you encounter error messages when you type in the program, they will almost certainly be the result of your own typing mistakes.

Unfortunately we cannot answer personal programming queries concerning mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in these pages

Virus attack

WOULD you please tell me if there is a later version than 2.40 of Richard K. Lloyd's !VKiller program? – D.C. Davits, Llandysul, Dyfed.

● No and neither will this version work on Risc OS 3 machines. Virus killers are only as good as the number of times they are updated to cope with new viruses and strains.

VKiller is way out of date which is why we no longer supply it on our disks – if we did supply it people would be lulled into a false sense of security thinking they were protected when they weren't.

From the number of letters we are getting people are still not checking their systems regularly and the Module virus has been raising its head again and again – luckily it's only irritating not dangerous.

However, we can't stress strongly enough that although our disks are virus checked at all stages not everyone is as particular. Pineapple Software operate – in conjunction with Acorn – a very cost-effective service sending updated Killer software every few months. For further details contact them on: 081-599 1476.

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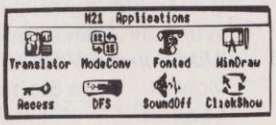

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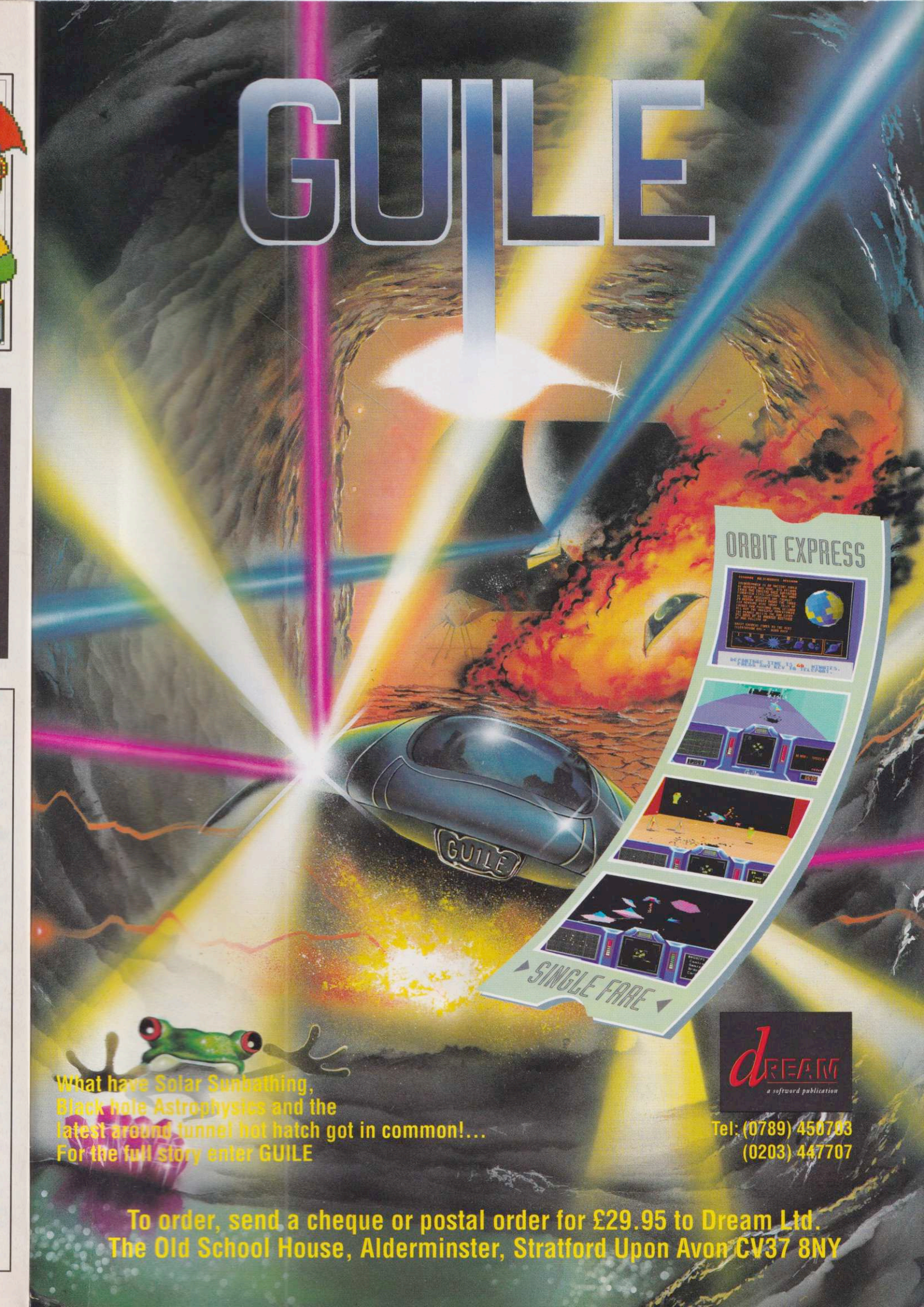

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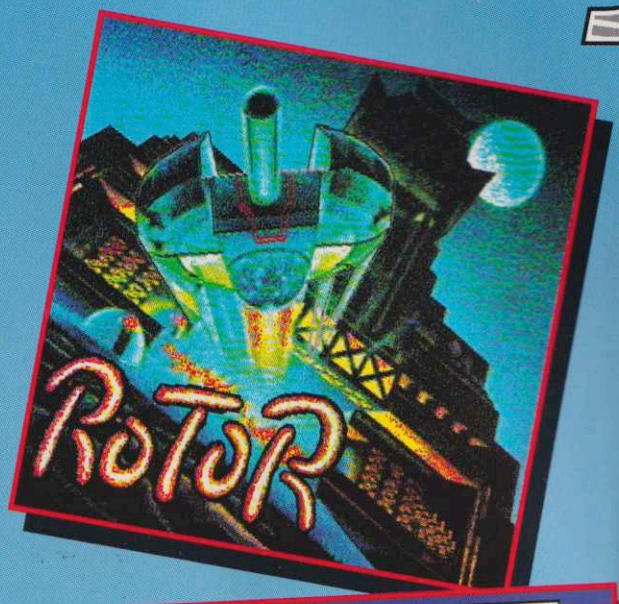

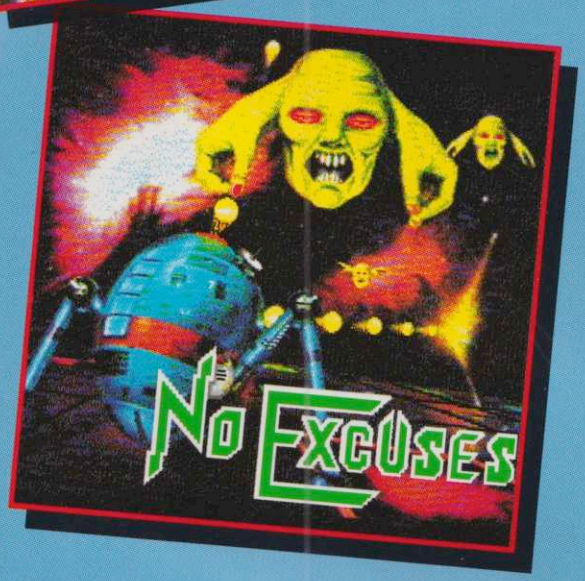

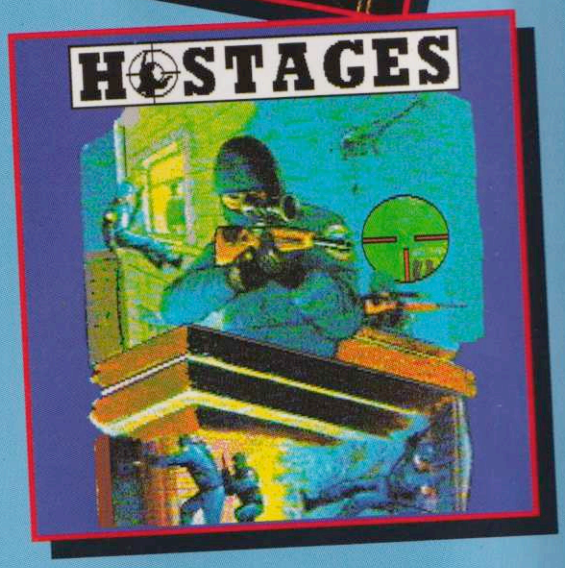

Conqueror
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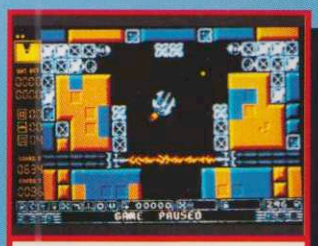

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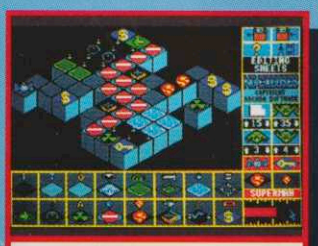

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