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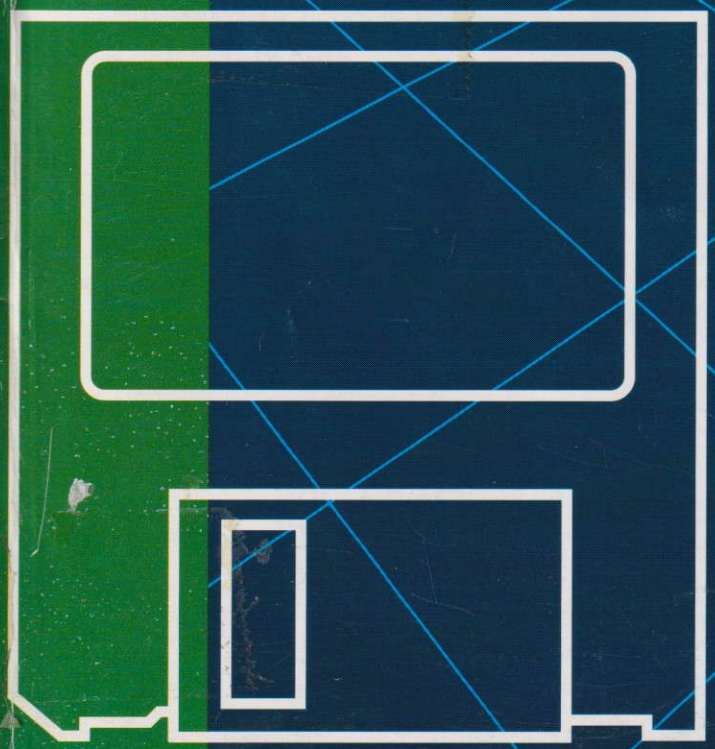

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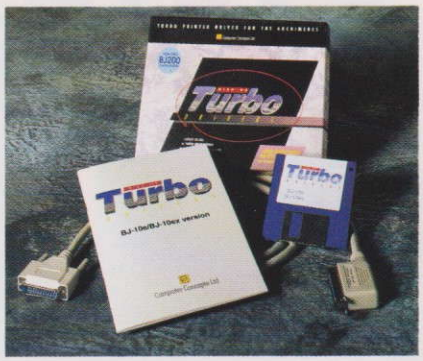

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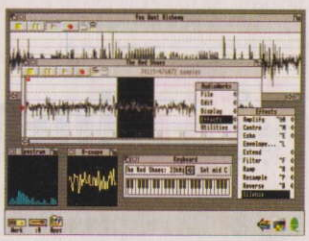
• Greyscale and full colour (8, 16 and 24 bit) *real-time* video digitiser. • ScanLight greyscale image processing software • Stereo audio capture and playback • AudioWorks audio processing software • Audio mixing of Eagle and computer sound with mixer software •Audio control software for linking arbitrary desktop events to any sound • MIDI in, out and thru (Acorn MIDI standard compatible) • Acorn !Replay compatible movie capture • Acorn !Replay movie compressing software • The amazing Eidos real-time movie capture software • !TakeTwo video application supports live video in a window on the desktop



"This superb interactive sound and vision card has set a new standard for others to chase... an essential creative powerhouse for the artistically inclined... it looks set to be one of the highlights of the year". **Acorn User.**

"Results obtained with it are superb... Eagle does so much, so well, for such a modest outlay that it will take some beating. In short, Eagle comes highly recommended". **Archimedes World**

Price: £329 + £6 carriage + VAT (£386.57) including the Eidos software.

Consists of one standard size expansion card, suitable for all machines that accept this size expansion card, including the new Risc PC. RISC OS 3.1 and a minimum of 2 MBytes required (ARM3 and 4 MBytes for movie recording and sound output).

Further details are available from Computer Concepts on request.

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ultimate (the ability to EXPAND)

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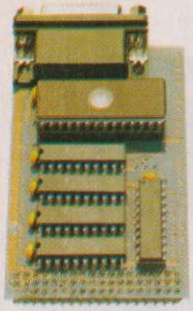


But if you'd designed an expansion system which let people use the same expansion cards on their A3010 and their Risc PC (and every machine in between), which smashed through expansion barriers to give three grown up expansion slots to A3010, A3020 and A4000 users; an expansion system comprising a complete range of industry standard and proprietary interfaces all at prices which won't break the bank, you probably wouldn't want to keep quiet about it.

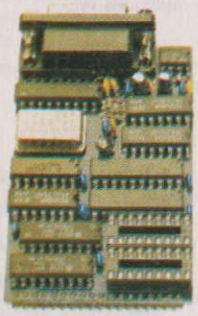
Neither do we.

We designed the Ultimate Expansion System to be the most versatile, cost effective and reliable expansion system for every Acorn 32 bit micro. Starting with a clean sheet we created the versatile MicroPodule system: a range of credit card sized upgrades with full sized specifications. Then we designed MultiPodules for every Acorn 32 bit micro for them to plug into. For computers which didn't have their own IDE hard disc interface (A3010 & A3000) we built that into the MultiPodule along with space for a 2½" hard disc drive. Then, for the A3000, A3010, A3020 and A4000 we threw in a fully BBC compatible User Port (great for Concept Keyboards).

We worked around the clock to fill the Ultimate range with every MicroPodule you'll ever need: SCSI, Dual MIDI, Vision Digitiser, Vision 24 Professional Colour Digitiser, ScanLight 256 Scanner, BBC Compatible Analogue Port, Audio Sampler, CD ROM Interface.

In every case we shattered the accepted price conventions.

And we knew that just because you had an A3010 didn't mean you didn't care about multimedia, so we made sure that even the most humble Acorn machines could deliver the maximum performance from CD ROM drives, hard discs, MIDI musical instruments and live video.

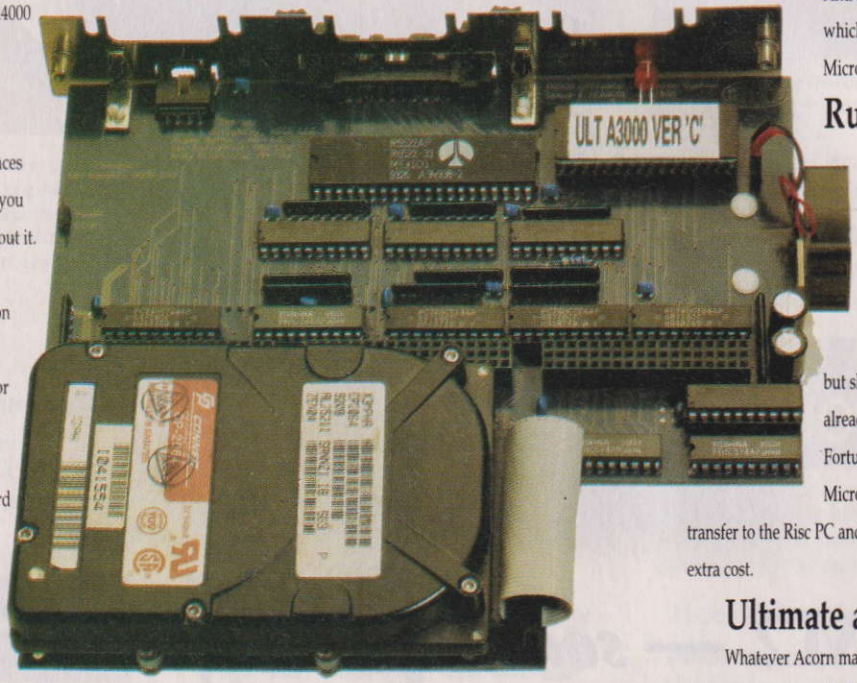


We understood that your first computer won't necessarily be your last, so we protected your investment by making the same MicroPodules work in every computer in the Acorn range.

Tom and his A3010

Tom's Mum and Dad bought him an **A3010** for his 16th birthday last year. It's a great machine but he's played all the games and now he wants to do something serious.

He needs a hard disc drive for his school work, and a MIDI interface for his keyboards. The only problem is that once he has fitted a conventional IDE hard drive he'll have no expansion space left.



Ultimate to the rescue!

Tom can fit an Ultimate MultiPodule with an IDE hard disc drive and plug the Dual MIDI MicroPodule into one of the expansion slots leaving him with a spare slot for future expansion.

James' A3000

James Williams is a teacher in a large comprehensive school. For his personal use he has a battered **A3000** with an internal IDE hard disc, and a hand scanner in an external podule case. His head says he can buy a CD ROM drive and a video digitiser but how can he fit them to his already overloaded machine?

Ultimate to the rescue!

James can trade up to an Ultimate MultiPodule with 3 MicroPodule expansion slots. He returns his computer to his local dealer who moves his hard disc drive onto an Ultimate MultiPodule and fits a HiVision Colour Digitiser and an Ultimate CD ROM drive leaving a **spare expansion slot** for another MicroPodule.

Wendy Says...

Wendy Morrison writes software for a living. Her trusty **A5000** has a whacking 8 meg of RAM, a SCSI interface, and a hand scanner.

For her next project she needs a high quality audio sampler, a MIDI interface and a CD ROM drive.

But she only has two slots free and she doesn't want to lose her scanner.

Ultimate to the rescue!

Wendy buys an Ultimate MultiPodule with a Dual MIDI / Sampler MicroPodule and a CD ROM MicroPodule. Three interfaces in one slot.

And she's got a full sized expansion slot left which is space enough for two more MicroPodules.

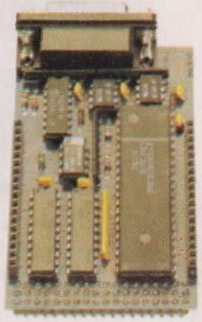
Ruth and her Risc PC

Ruth Martin is the head of a secondary school. She used to use an **A4000** with a scanner, CD ROM drive and video digitiser. She's just bought a brand new **Risc PC** so that her deputy can inherit the A4000 but she wants to keep the podules she already has.

Fortunately they are all Ultimate MicroPodules so her whole system will transfer to the Risc PC and leave a free expansion slot – at no extra cost.

Ultimate and You

Whatever Acorn machine you use Ultimate can make sense of your upgrade needs. The Ultimate system grows with you so whatever the future brings you won't get left behind.



If you would like more information about Ultimate return the coupon to HCCS.

Of course, if you can guarantee that you'll never change your computer, and you're sure that you have enough upgrade capacity you won't be interested.

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Acorn World Show Special
Issue on sale 13th October

HELP!

NO matter how easy Acorn machines are to use, everyone needs hints and tips to help make full use of the machines' facilities. This issue is packed full of features and regulars to make that come true for you.

REGULARS

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Now you can measure the effects of solar storms on your 32-bit Acorn computer.

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THE MEGADISK

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

Full details about the packed Megadisk – see Page 6.

- **Spobbleoid**
  Arcade puzzle fun from the author of Technodream.
- **Party Time**
  A collection of useful clip-art and templates you can customise easily.
- **Using files**
  Programs that illustrate how easy it is to use the RISC OS Filer to the full.
- **TechForum**
  A replacement version of the Acorn Squash module without the bugs.
- **Body Building**
  Software to help you detect solar storms with little more than a compass.

Subscribe now! – See page 42

SUBSCRIBE to *Acorn Computing* and you'll get an amazing value-for-money deal that beats all our rivals: Not only do you get a whole year's-worth of issues for LESS than any other Acorn magazine, 32-bit owners get TWO disks every month.
See Page 42 for details of this unbelievable offer.

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AVAILABLE AT W.H. SMITH AND ALL GOOD NEWSAGENTS

Most of the editorial and adverts in this magazine were produced with ArtWorks and Impression from Computer Concepts.

FREE! Five disks for you

NEXT MONTH, on the cover *Acorn Computing* magazine, you can pick up a free voucher for FIVE high-quality disks. Why miss out? Make sure your copy is guaranteed and subscribe or reserve it at your newsagent.

The MegaDisk

What's on this month's disk?

- Spobbleoid
- Programs from the magazine
- CFSCreate
- Cyberdelic
- MP
- Tidy clock

Spobbleoid: Puzzle mad

WITH games success already under his belt, Graeme Richardson has formed his own games development house called Cybernation (091-230 0000).

His first release is Spobbleoid and *Acorn Computing* are please to bring you a selection of screens in a specially-created demo exclusive to our readers.

The aim of the game is to collect every object on each level of the

● *Inside the Sweet shop – Spobbleoid is waiting*

● *Get the sweets – avoid the pepperpots*

game. Apart from the actual objects, the levels are composed of blocks. Most of the blocks can be pushed in any direction. Some in only two directions and some cannot be moved at all.

Door blocks require you to find the key of the same colour before they will move. Time locks can be moved for a period of time after which they close – when the gong sounds. The demo version puts you in the Sweet Shop, but be beware of the rampaging pepper pots – they will eat away at your ever-decreasing time limit. However, a nifty bit of manoeuvring with the blocks should dispose of them permanently.

The full version of the game features 36 levels set over six different backgrounds, including several more features and a far higher difficulty level, and costs £24.95 with a level designer available and extra levels available for £19.95.

Load Spobbleoid in the normal way and press Space or Fire to start.

Controls	
Z	Left
X	Right
"	Up
?	Down
Return	Push block
R	Retry level
Control+R	End game

From the start screen you can press Control+Escape to quit back to the desktop whereby Control+S will toggles the sound effects on and off.

● Cybernation are also making readers of *Acorn Computing* a very special offer – if you order your full version of Spobbleoid directly from Cybernation they will knock £5 off the RRP.

Getting started with the MegaDisk

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

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques. Switch on your Acorn micro, put the disk in the drive and click the drive icon.

Now double-click !ACmenu – there's a short pause while it scans the archive then it displays a window of the contents. You can treat this new window like any other one for viewing disk contents, and run programs and open directories by double-clicking them.

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

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

CFS Create: Reducing the CFS confusion

To make any real use of CFSCreate you need Compression from Computer Concepts. CFS is a very useful utility but it does have numerous shortcomings – CFSCreate is designed to compensate for some of these.

If you are a regular user of CFS you will undoubtedly have discovered that it is all too easy to get CFS compressed files and non-compressed files mixed up. Efficient use of CFSCreate should prevent this.

CFSCreate constructs CFS directories, so you can use CFS in a similar manner to Spark. Everything put into these CFS directories is compressed, but nothing else.

To create a CFS directory, load CFSCreate. Then either click on the CFSCreate icon on the iconbar or select the Create CFS directory option on the iconbar menu.

This produces a save box. Alter the name of the CFS directory in the usual RISC OS manner and drag the file to where you want the CFS directory to be based.

The hourglass will appear and in a few seconds the directory will contain the CFS directory you created – depicted as a green box with squashed edges.

Another Filer window will also appear. This is the contents of the CFS directory. Anything dragged, saved, loaded or run from this directory will go via CFS.

You don't need to have CFSCreate loaded to use CFS directories you have created, though you will need to have your copy of CFS to hand.

CFS directories can be treated similarly to standard directories. Double-clicking a CFS directory opens it, and objects inside the directory can be manipulated as normal.

As CFS directories are really applications their sprites can easily be changed. Just Shift+double-click on the CFS directory and then load the Sprites file into Paint.

Save the sprites when you've finished editing them and then double click on the Boot file again – the CFS directory will now be represented by your customised sprite.

● *Requires RISC OS 3.*

Tony Howat

Cyberdelic and Techtonic: Cyber-fun for all

While developing his game skills, Graeme Richardson produced some programs to test various ideas – we present them here to show just what experts can achieve.

The first and more extensive of the two programs is Cyberdelic. When run, the screen will clear except for the cursor, which is a large sparkle in the centre that can be moved by the mouse. When moved it will leave a trail.

This is the basis of the program. Pressing I displays all the controls such as mirrors, multiple cursors, stars, colours and so on. Some impressive results can be achieved by just playing around with combinations – try pressing the cursor keys, the six keys above them and the mouse buttons, especially as these are the main control keys that it uses.

The program can save screens, with the Tab key, into a directory called Screens in the application directory. The optimum setup for this program is one of the ARM 250-based machines, such as the A3010 on which it was written, as this offers far more power than an ARM 2 for screen displays. On an ARM 3, the cache is automatically turned off as the program would run too fast. Therefore an A5000 would run it as fast as a A3010, whereas a 410 with ARM3 probably would not.

The second program is Techtonic. This will display its control keys on loading up, and the idea is the same except it uses an isometric display of falling blocks.

There are far less features in this program than in the first, but it is interesting all the same. Typing quit will return you to the Desktop.

Graeme Richardson

MP: Run the country

Have you ever wanted an income tax rate of only 5 per cent? Or unemployment benefit raised to £150 per week? Well, now is your chance. In MP, you can pretend to be the Chancellor of the Exchequer.

To begin a game, click Select on the iconbar to open a window for your name and choice of political party. Number 10's famous door will then open for you.

Waiting for you is a window containing all the information about the country and the state of the economy. The Budget window will let you change any of these values.

When you have finished playing around with the budget figures, update the situation and you'll be shown a General Information window, showing how the population has responded to your radical new policies and you can then start preparing for the next election.

The idea of the Manifests is to boost your popularity rating to sky-high proportions. To do this, you must place your 1000 units in the areas that you think most need it. For example, if inflation was 250 per cent, then obviously a substantial amount of your units should be allocated to reducing it.

After you have positioned your 1000 units you can see how the election is going. Click on Do Election and wait while the country votes. The hourglass will give you a rough guide to how long this process will take.

If you win the election, you then have the chance to put the country right again. If not, then you must start a new game.

Ricky Dawson

Programs from the magazine

- Body Building – Discover a solar magnetic storm telescope
- Party Time – Draw and paint files to make a party go with a swing
- TechForum – The secrets of LZW compression

FAULTY DISK?

If your cover disk or 32-bit subscription disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

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

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

Tidyclock: Handy desktop extra

One thing that no programmer seems to have thought of is making a clock that would always be visible on the desktop, whatever you do. Tidyclock will always try to stay at the front of all the windows, while providing some useful functions as well.

The clock is in a little window that can be dragged around using Adjust – even with Larger's virtual desktop facility – and when you move around the virtual desktop, the clock window stays still. The clock's stored position is remembered relative to a corner of the screen.

At the bottom is a set of icons that open windows when clicked on. You can also find the functions represented by the four icons on Tidyclock's main menu.

The main menu can be accessed by clicking Menu in any window that is a part of TidyClock. The left hand icon opens a little window containing the current date, while the next icon is the Selector Tool. This is a menu where you can put your favourite programs and it is the only item that cannot be accessed from the main menu.

The little clock icon is a stopwatch. This is a seconds timer and is controlled by a Start/Stop and Reset button. The screwdriver and spanner icon on the far right brings up the Options window.

The current settings can be saved to disk by selecting Save settings from the main menu. But note that when you next run TidyClock, the clock will appear at the stored position, not necessarily the one it is at when you save the settings.

The contents of the user menu – the selector tool – is listed in a text file inside the TidyClock application. To load it into Edit, Shift+double-click on TidyClock and then double-click on UserMenu.

Inside, you will find the names of the sub-menus, prefixed by a #. These can be up to 11 characters long. And underneath are the commands which perform the actions for each menu item in that sub-menu.

The filename is extracted from the command, and is used for the name of the menu item. For example:

```
#Utilities
Filer_Run ADFS::4.$.Utilities.!Prin
ters
Filer_Run ADFS::4.$.Utilities.!Kill
er
Filer_OpenDir ADFS::4.$.Utilities
```

In this example, the sub-menu *Utilities* will have the following menu items: Printers,Killer, and Utilities. As you specify the command as opposed to the name of the program to run, the system is far more flexible.

You can have almost as many sub-menus as you want, with as many items on them as you want. If you want to add another item, type in the full path of the object, for instance:

ADFS::4.$.Utilities.!Printers. Then before it, add the appropriate command:

- **In RISC OS 2**: You should use the commands: Run – runs a program or file, or Filer_OpenDir to open a directory.
- **In RISC OS 3**: use Filer_Run instead of Run. In RISC OS 3, if you are using Edit instead of having to type in the path, Shift+Drag the file, program, or directory into the document's window, and it will insert the filename with the full path, into the text.

You can also put in comment lines by prefixing them with a |, just like in an Obey or Desktop Boot file.

Once you have finished, you save the UserMenu file, and when you next run TidyClock, it will use your changes.

TidyClock's best feature is that it only uses 48k of memory, so it should fit easily into even 1Mb machines.

Matthew Hammond

What's on this month?

- Spex
- Public Domain
- 8-bit programs

The 32-Bit Subscription Disk

Spex: A spot of interior design

THE full version of Spex from Aspex Software (0822 611060) will let you design entire buildings, but this sampler lets you try out your design skills with a bedroom. The software can be run from floppy disk but a hard disk is preferable. Load Spex in the normal way and when the title page appears click OK.

The room is built entirely to your specifications, starting with the measurements which have a default setting – but you can adjust these. You can now experiment with the furnishings and wall fittings.

You can rotate items by clicking Adjust over the item before you drag it to the plan view. Drag the items you want to the room and when satisfied, click on the small *menu* icon or close the window to return to the main menu.

The finished design can be viewed in three dimensions via the View window. Although you cannot save and print from this version you can use the zoom options, colour the walls and floor and see the items of furniture in chart and spreadsheet form. You can design as many different layouts as you want.

Once you have finished designing the bedroom, you can select the *click me* icon to load up pre-designed environments for viewing. Each subsequent click on the next view icon reveals a new environment view. The views comprise items which can be found in the full version of Spex and in the forthcoming environment disks.

You will need access to a 2Mb RISC OS machine with RISC OS 3.1 to access Spex.

Plus

- **8-bit programs:** Programs for people with BBC B and Master computers and a serial link, or you could always try the !65Host application
- **Public Domain** A choice from Teri Paul's column this month

easy *to understand*

easy *to access*

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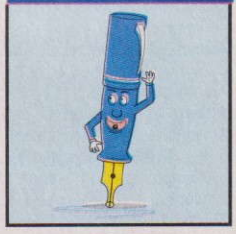

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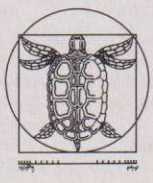

LONGMAN LOGOTRON

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ICS

Price list prepared 17th August 1994

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"I say Grayson, have you heard the latest from ICS?"
"What's that, Mr Cholmondley-Warner?"
"I understand they have installed some additional telephonic apparatus."
"Yes, I have been in communication with them just now."
"Well, Grayson, and were you connected speedily?"
"I was indeed, to a very charming young lady. She was able to promise me Resultz by Friday."
"So the new ICS telephones are a great improvement?"
"Quite so. Apparently they anticipate being able to handle twice as many calls."
"First class service, Grayson."
"And jolly good prices too, Mr Cholmondley-Warner."

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*not suitable for Risc PC

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LICENSED CREDIT BROKER

Day of the dinosaur

Steve Turnbull finds some interesting analogies in the evolution of species

ONCE all bias has been swept aside it has to be said that the most successful type of creature in the history of life on Earth – so far – is, or rather was, the dinosaur. It had over 200 million years of dominance while we can only claim to, at most, two million years.

Arguments over warm- or cold-bloodedness, egg-laying versus live birth, caring for young and all things we attribute to being *successful* are largely irrelevant when compared to the sheer weight of numbers.

Regardless of its individual features, the dinosaur was a winner. Anything that could last that long had to have something going for it even if we don't know what that something was. But there was one department in which it didn't excel: Adaptability.

It's true, of course, that there were hundreds, thousands, or tens of thousands of different species of dinosaur that evolved through their period of dominance.

Given a big enough time scale they could fill niches occupied by earlier creatures, probably wiping many out completely – even creating new niches as the environment changed slowly around them.

They weren't alone during this time though. There were the early mammals for example which managed to fit into the ecology where dinosaurs had yet to extend themselves, though with nothing to stop them the dinosaurs probably would have done eventually.

But there was a sudden catastrophic change in the environment – which, depending on your preference, was a huge meteor impact in the Caribbean, half of India exploding or something else – and the Earth was wiped clean of them, save for a few hardier varieties for whom the change was less significant.

The specific reason for the mass demise of the dinosaur is not important. What is is that the environmental catastrophe happened too fast for them to adapt either individually or as a group. And now they only exist in the imagination, on the big screen and in the trees.

Dinosaur is also a term used to describe the IBM PC and compatibles by people who want to be derogatory about this particular specie of computer.

The usual intent of this insult is to imply the IBM PC uses *old* technology – and ten years in the computer industry is probably equivalent to a hundred million years of living evolution.

But the level of technology is not relevant: The bicycle uses old technology but is extremely successful as a form of personal transportation not requiring a motor – I don't see any replacement on the horizon, do you? The same goes for the internal combustion engine, regardless of its undesirability as a part of the environment.

The IBM PC and all its sub-species *are* dinosaurs but in a completely different sense to what's usually meant: They are extremely successful, but given a sudden catastrophic change in their environment they won't be able to change fast enough and will die out.

It is in the nature of the IBM PC that it cannot change, and cannot be allowed to change. Suppose for a moment that Microsoft came up with a radical new operating system that was not compatible with earlier versions? It would not be used and it would die. The inertia of 40 million PC clones prevents a rapid change.

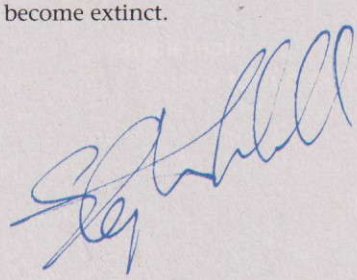
They can introduce a Power PC – but it must be compatible. They can introduce a RISC OS-like operating system (eventually) – but it must be compatible. And even then there's still the weight of the existing machines hanging like a millstone round the necks of software producers.

The question then is this: What is the environment that computers operate in and how could it change catastrophically?

The environment of the computer is the user. That's a bit of a different look, isn't it? Normally we think in terms of people in a computer environment, but that's wrong, it should be computers in a people environment – after all, we're in charge, aren't we?

So if the *way* people want to use computers suddenly alters *catastrophically* the machines that can't cope with the change will disappear.

It's arguable that a global change in *usage* is unlikely but that is precisely what Interactive Multimedia promises and the machines that can adapt will survive while those that can't will become extinct.



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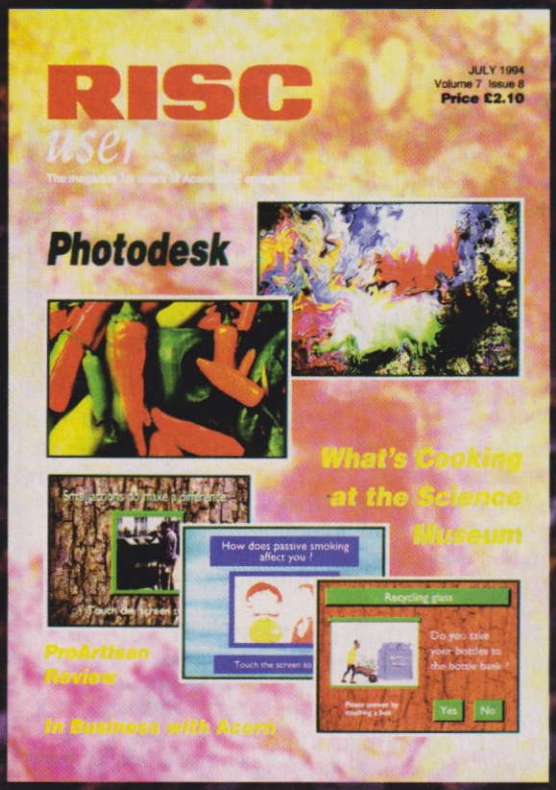

RISC user

Subscribe now and get a year's worth of invaluable information for half the price of a piece of budget software!

Our readers range from those who want to understand the technicalities of their computer, through programmers, educationalists, business and professional users, to the less experienced users who need simple down-to-earth advice without jargon. Each issue of RISC User has plenty for everyone.

- We give you up-to-the-minute news on all that's going on in the Acorn world.
- We go behind the doors of the major developers and tell you what they're really thinking and planning.
- We give you detailed practical advice on how to get the best out of your software and hardware.
- We review all the important software and hardware releases, and also publish group surveys covering all the major products in a particular field.
- Our reviews and practical articles are written by authors with years of expertise in the field, not by busy journalists.
- RISC User builds into a comprehensive reference source on all aspects of using Acorn computers. Most back issues are still available, together with indexing software allowing you to locate any article quickly.

Recent articles and series in RISC User have included:

Hands-on Multimedia	*practical advice on using multimedia tools*
Using Colour on the Risc PC	*a practical guide to harnessing the new machine's graphic capability in your own programs*
Desktop Publishing for Children	*a look at this popular subject from an educational viewpoint*
Wimp Topics	*a series of programming articles aimed at the serious programmer*
What's Cooking	*behind the scenes at companies such as Computer Concepts, Minerva and Eidos*
Desktop C	*a tutorial series on Wimp programming in C*

We also have regular columns such as Into the Arc for beginners, PC Forum, C Notebook, Acorn in Business, Using Ovation and Impression, Hints & Tips, Technical Queries and much more.

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Play away

THE ARM Club are selling a solution to game-starved Risc PC users. Many an old favourite game will not work on the Risc PC – enter Game On.

This application with its simple graphical interface gives you access to games such as Chuck Rock, Saloon Cars Deluxe, Chocks Away, Gods, Lemmings and Swiv.

Game On will also enable other applications to run on the Risc PC, such as Faster PC and some Tracker, Coconizer and Digital Symphony players.

A database is included with the program, listing all the games which have been tested so far. The cost is £10 and orders should be sent to: The ARM Club, FREEPOST ND6573, London N12 0BR.

Large graphics

THE latest version of bitmap art package Colossal is now available from Crisis Software (0803 862189) priced at £25 inc VAT. Version 1.21 supports all RISC OS 3 256-colour modes as well as extra tools and options.

These include shape creation tools such as polygons and stars, a variety of brushes from a fast brush to a star brush, tools to remove colour, flip and tile and a colour cycling operation.

There are also tools to let you highlight or produce swirls, as well as others to give you rain, starry nights, balloons and fuzzy effects. You can also lighten, darken and blur images with a range of simple image processing tools.

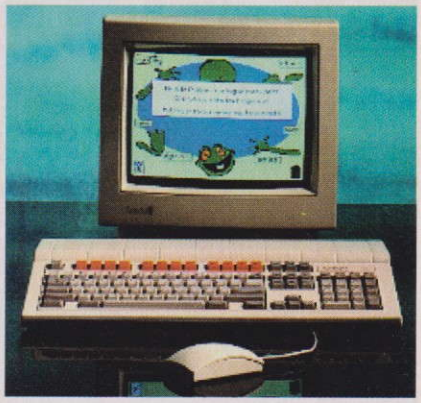
Each tool can be configured to your own way of working and can change all the variables, such as sides to polygons or outline thicknesses.

Graphical cat

TABBY is a low cost, high performance graphics tablet which is moving from the PC and Atari platforms to the RISC OS environment. First Computer Centre (0532 319444) have developed the software so that Tabby will work on all screen modes on RISC OS 3 and higher.

The Tabby plugs into the serial port – A3000 machines require aserial chip and a special adaptor available from First Computer Centre – and is easy to use. The cost is £68.08.

Autumn £50 cashback



IF YOU are a teacher or an educational establishment you can claim £50 back on every A3020 you buy in September and October. This applies to both the floppy and hard disk A3020s and schools can make as many claims as they like, provided that the systems are bought between 1 September and 31 October.

Machines must be from an authorised Acorn education dealer and all cash back vouchers must be returned to Acorn by 30 November. For the details of your nearest Acorn education dealer you can phone Acorn's hotline number 0223 254222.

The war to end all wars

WORLD WAR 2 has had a great deal of coverage this year and the support materials for classroom use are varied and detailed. NW Semerc (061-627 4469) have two fact-filled resource disks on this theme – one for use with My World 2 and one for Optima – aimed at primary and lower secondary school pupils.

The My World 2 pack provides a comprehensive picture with pre-war and wartime maps featuring the details of the D-Day preparations. There are also profiles on the leaders of the day: Churchill, Roosevelt and Hitler and information on the technology and weaponry of the day. Life is also covered from the civilian point of view with information on rationing, bomb shelters and evacuations.

The Optima program's split into three. The first two parts illustrate life for a typical British and German fam-ily, with the third section covering the political and military events in chronological order.

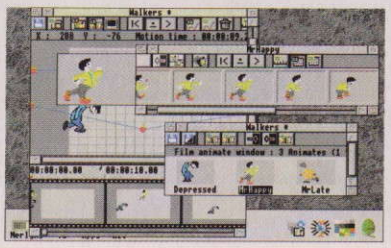
Yorkshire-Tyne Tees Television (0532 438283) have released a two-disk CD-Rom set called World War II. The first CD provides an overview of the causes of WWII along with significant events and has a powerful index, on-screen glossary and hypertext links to help the student find exactly what information is needed, in seconds.

The second contains enormous quantities of source material combining archive photographs, newsreel and film footage, personal diaries, pamphlets and cartoons in a way not possible on any other medium.

The program has been developed by Interactive Learning Productions and features many unique pictures, released for the first time from the National Archives of America who have worked with Yorkshire TV in the past on a wide range of war documentaries. The package costs £130.

Reel-time

AFTER a long wait, Minerva (0392 437756) has now released PrimeMover. This real-time animation package will be launched at the Acorn World Show in October at a special price of £69.95 (inc VAT) with a normal RRP of £92.83 (inc VAT).



MPEG meets Acorn Replay

ACORN were showing an enhanced version of Replay at the recent Interactive Learning Show. The new version of this full motion video application now includes MPEG capability.

Acorn's Peter Bondar commented, "In addition to the exceptional video and graphic capability announced at the launch of the Risc PC in April, users can now benefit from a further selection of video formats, including Video CD.

"Existing users of applications which understand Replay will now have access to MPEG-quality video. For anyone who wants to be at the leading edge of multimedia performance, the MPEG-enabled Risc PC is now the product of choice."

This new version of Replay has been developed with Wild Vision and Anglia TV, and is the first example of technology developed by Online Media being incorporated into Acorn's main line of computer products.

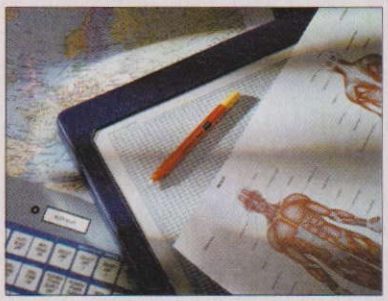
Anglia is one of the developers updating existing multimedia CD-Rom titles to allow them to run in both MPEG and Replay modes. These disks will render full and quarter-screen Replay movies into the desktop if no MPEG hardware is present, and will render MPEG equivalents if an MPEG card is present.

The selection and use of video formats is totally transparent as far as the user is concerned.

Universal linx

INFORMATRIX is the latest product from The Concept Keyboard Company (0962 843322) and is a high resolution version of the Universal 2010 overlay keyboard. Designed with NW Semerc, this A3 board has 4,096 programmable keys on top of which you put an overlay sheet.

Children can produce graphics, text, numbers and sounds by pressing the appropriate word, number or picture. The improved resolution means that the Informatrix is suitable for map work and with irregular shapes and detailed graphs.



In addition, The Concept Keyboard Company have launched Remote Linx, a remote control switch box with eight independent switch sockets. This has been designed for users with severe physical disabilities.

8-bit numbers

LONGMAN Logotron (0223 425558) has published a new program for 8 and 32-bit Acorn users. Called Numbertime: Adventure in NumberLand, it supports the Numbertime broadcasts on BBC radio and TV.

The aim is to support children working towards National Curriculum Maths Level 1 by looking at numbers 1-10 in the context of a story.

As well as counting pictures on screen you can match quantities, count forwards and backwards, look for patterns and sequences and put numerals in order.

Everything is presented in black and white as all the colours of the rainbow are missing. Your mission is to cheer up the sad-looking nursery rhyme characters and find the colours.

Hence, you join Incy the spider to find six missing pots of colour located in a maze only big enough for a spider. While helping Incy, children will come across Bo-Peep and the Queen of Hearts.

The cost of Numbertime is £24.95 for the BBC B and Master with the 32-bit version available next summer.

What's on

Big Ben Open Day
1 October
Pieter Groen College, Helmbergweg, Holland
Contact: Big Ben Club (010 31 20 6631849)

IT Coordinator Show
5 October
Queen Elizabeth Hall, Oldham
Contact: NW Semerc (061-627 4469)

Micros for Special Needs Exhibition
6-7 October
Queen Elizabeth Hall, Oldham
Contact: NW Semerc (061-627 4469)

Acorn World '94
28-30 October
Wembley Exhibition Centre, London
Contact: Vector Services (0933 441448)

European Technology in Learning '94
16-18 November
NEC, Birmingham
Contact: BIC (0254 663922)

ARM Club Open Day
19 November
St Mary's Activity Centre, Sedgley, Wolverhampton
Contact: ARM Club (0785 714535)

Microtest Acorn Open Day
20 November
Cornwall Coliseum, St Austell
Contact: Microtest (01208 73171)

Computer Shopper Show
1-4 December
Olympia, London
Contact: Computer Shopper (081-742 2828)

Acorn Computing Open Day
4 December
Portland Hotel, Manchester
Contact: Acorn Computing (0625 878888)

BETT '95 Technology in Education
11-14 January
National Hall, Olympia, London
Contact: EMAP (081-984 7711)

Clerical acclaim

ST MATTHEW'S Church in Cambridge has won the joint first prize in the National Parish Magazine competition with *Streetwise*. The Rev Philip Frost, one of the editorial team of five which received their £500 cheque from the Archbishop of Canterbury, remarked, "We have used Acorn equipment from the second edition of the magazine and have never looked back."

Their co-winner St Faith's in Crosby produced *Newslink* also on an Acorn machine and both churches use Computer Concepts' Impression.

Gone west

EDUCATIONAL software house Topologika (0326 377771) is moving west to a new address: Topologika Software, Islington Wharf, Church Hill, Penryn, Falmouth, Cornwall TR10 8AT.

The first new release from the Cornish address is Freddy Teddy's Playground which is being re-released for older children replacing Freddy with Izzy and Lizzy. The new program will cost £25 or you can update your original Playground for £10.

● *All prices exclude VAT unless otherwise stated*

ARM'd to the teeth

ARM Ltd (0223 400400) have signed a licence agreement with Asahi Kasei Microsystems to combine the ARM7 with its advanced mixed signal technology to provide *ARM Powered* communications solutions.

AKM manufacture and sell many full custom and application-specific products in mobile telecommunications, audio and mass storage. The deal helps ARM penetrate the Japanese market where AKM supplies almost all the major electronics companies.

Creative education

Creative Curriculum Software (0422 340524) is producing a woodland series of CD-Roms. There will be at least four disks, the first of which will be released this autumn at £39.

They have been developed by APA Multimedia and will be dual format – Acorn and PC readable.

Other CD's covering maths and technology are in the pipeline from CCS' other developers and will be available for BETT '95.

The plan is to keep the price low and format both PC and RISC OS, increasing the flexibility and usability in both home and school.

Far afield

THE Image Factory – Melbourne-based computer art dealers – are distributing Walter Briggs' artwork in Australia. The first Kingfisher Graphics disks on sale will be themed around manned flight and meadow wildlife, followed by a third covering animal and transport images.

Disks cost $20 (Australian) for one disk in Artworks format or $24 for Draw format pictures over three disks. A sampler disk is available for $8.

The Image Factory have an Image Selection facility to allow customers to order just the images they want. Full details from: The Image Factory, PO Box 599, Rosanna, Victoria 3084, Australia. Tel: +61 03 459 2380.

● *Walter Briggs' Artworks creations won him first prize in Computer Concepts' 1993 Artworks Competition*

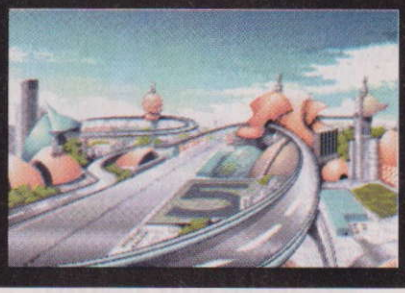
Scientific exploration

A NEW series of science-based adventures based around the voyages of the spaceship Discovery are under development by Sherston Software (0666 840433).

In the first adventure, the principles of electricity and magnetism will be introduced on a mission to deliver a parcel to the spaceship.

On docking there is something amiss – there is no one on board and the ship's computer has lost its memory.

The program features 3D scrolling graphics, animations, sound effects and is accompanied by a user guide, map, worksheets and disk-based resources. The price is £31.95.

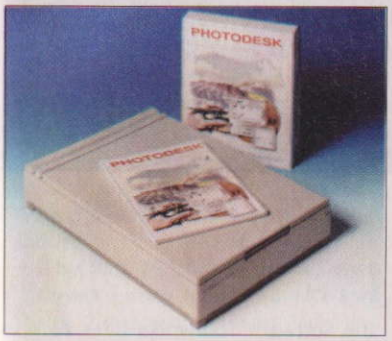


● *A whole universe is ready for you to explore*

Professional scanning

COMPUTER Concepts (0442 63933) has released a colour scanner pack for all RISC OS machines. The package includes a Canon colour flatbed scanner, driver and Spacetech's PhotoDesk application for £891.82 inc VAT.

The scanner is the compact Canon IX-



4015 A4 24-bit colour scanner producing up to 800dpi colour and 1200dpi mono scans. This model is noted for its speed and connects to Acorn machines via a SCSI card. The drivers are adapted specifically to drive the Canon IX-4015 and include full TWAIN support.

On the software side, PhotoDesk provides the manipulation of the scanned colour images and was chosen by Computer Concepts as it was the best match for the Canon scanner and CC's other products such as the ColourCard Gold.

Share and share alike

ACORN has released the results of research carried out with a sample of 610 IT coordinators in the schools across the UK. These show that one computer is shared by more than 18 children in the average UK primary school, and that many children are unable to gain easy access to computer equipment.

On average, primary schools have 10.7 computers per school, independent schools have 32.7 and secondary schools 76.2. When asked how many pupils had to share one machine, the replies showed that primary schools had one child for each 18.5 children, with independent schools having 7.3 and secondary schools 9.5.

Acorn's General Manager UK Education, Peter Talbot commented: "Although British education has really led in the uptake of technology in schools, this research suggests there is still a long way to go.

"We must ensure that UK education continues to develop our children's computer and communications capabilities for life and the IT-rich future. Computers must be accessible to all children to enhance traditional learning across the entire curriculum with these new literacy skills. This research is part of Acorn's wider initiative to work with education and industry partners to develop this *New Literacy* in Britain's schools."

Acorn also surveyed the sample to discover which factors most strongly influenced the school's choice of computer. In both the primary and secondary sectors cost and ease of use were the deciding issues.

Additional information from the survey showed that 93 per cent of secondary schools and 54 per cent of independent schools now have CD-Rom drives. However, in the primary schools there are only 18 per cent with CD-Roms having not so readily adopted multimedia technology.

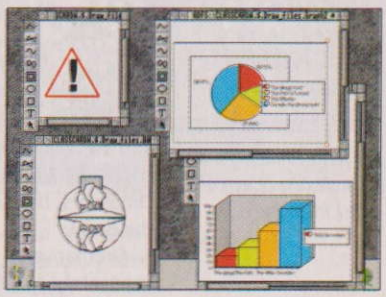
It can be surmised that with the £4.5million funding – following the Department for Education's CD-Roms in Primary Initiative Scheme – these figures will change dramatically.

WorkCardz

COLTON Software (0223 311881) has developed ClassCardz for Wordz. This resource aims to help schools explore the word processing facilities of Wordz and Fireworkz. However, they are just as valid for anyone using these packages for the first time.

The ClassCardz pack contains 17 laminated A4 cards and a ClassCardz disk. The cards contain tasks to be learned with information on the buttons, icons and menus. There is also a record card to monitor progress.

The disk contains draw files, CSV files and document layouts referred to in the cards. The cost for this learning pack is £20 and Colton plan to release ClassCardz for Resultz in the next few months.



● *Some of the clip art provided*

Racetrack cuties

TWO new games are about to make their impact on the Acorn games scene via Oregan Developments (021-353 6044). The first is *Burn 'Out* which is principally a racing game set on tracks that have more in common with roller coasters than Brands Hatch.

Seated in a dune buggy, you have five other vehicles to outwit – finish in the top three and you go on to the next race. There are 20 drivers to choose from and ten dune buggies.

● *Racing around an island is not as easy as it sounds*

Racing takes place on an island divided into 10 areas with widely different scenery: Woods, beaches, deserts, canyons, towns, mountains and a coastal port.

Each have between 3 and 10 tracks which may be on the ground or run over scaffolding, logs or water. Burn 'Out will cost about £24.95 and with a serial link between multiple machines you can play one player on each machine.

Available at the same time will be Sally and Wally priced at £24.95. This cute duo have just been on their honeymoon but on their return home their beautiful tree house has been infested buy a plethora of nasties. Wally sets out on his mission to rid their home of the squatters.

● *Sally and Wally's honeymoon is definitely over*

You must guide Wally through six areas and over 100 levels. There is a two-player mode so that Sally can help Wally with his task.

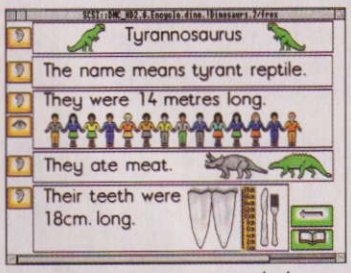
Pioneering deals

CUMANA (0483 503121) has been appointed an educational distributor for Pioneer's range of auto-changer CD-Rom drives. There are three of these drives which form part of Cumana's Victor range: the DRM-602X double-speed, DRM-604X quad-speed and the DRM-1804X quad-speed drives which hold 6 and 18 CDs respectively.

In addition, Cumana has developed a specialist graphic user interface and driver software for the Acorn machines.

Talking shop

FOLLOWING the success of talking software, Sherston Software (0666 840433) are combining the skills of their best selling author Simon Hosler with their talking book technology. The result is the Look! Hear! series for infant aged children.



● *Reference books which are open and friendly*

The series takes a topic-based approach to producing infant reference books, with information imparted via digitised human speech and clever animations. The first volume costs £59.75 and covers Land Transport, Dinosaurs, the Seaside, Pets, Homes and the Body.

Alternatively, you can buy each topic separately for £11.95 which includes two disks, a teacher/parent guide and a set of worksheets.

They're game — are you?

SOFTWARE 42 has retired and in their place comes S42 Developments with the avowed intent to revive the games scene.

Their first release is a compilation pack containing upgraded versions of their older titles plus a new beat-'em-up Raw Power 2 accompanying FRED, Ixion and Cycloids. These now all work on the Risc PC.

Over the next few months you can also expect to see Atomix – based on the popular game on PC and Amiga platforms. This is a puzzle game with a difference as you must arrange atoms in the correct order to complete molecules, but against the clock.

Their Christmas release is DreamZone which has been in development for two years. The game gives you fast action, cute graphics and a multitude of levels.

All the games are coming out under the Gamesware label, as will a new version of ArcFS 2.5. This promises better speeds and special dynamic memory management techniques.

Buying the software now means that you are also buying a year's subscription to a support service, which entitles you to free upgrades and technical help.

Gamesware has moved premises and you can now contact them at: Worthy House, High Street, Hamble, Hants SO3 5HA. Tel: 0703 457333/456523.

CD interaction

LONGMAN Logotron (0223 425558) has expanded into the area of educational CDs with a vengeance, following the recent signing of a distributor agreement with a leading American multimedia company called 7th Level and UK-based Software Toolworks.

7th Level comprises record producer Bob Ezrin and Pink Floyd sax player Scott Page, so it's hardly surprising that their first product was a musical one.

Called TuneLand, it is an interactive musical cartoon aimed at children from three years of age. Add to the catalogue the Software Toolworks titles such as Multimedia World Atlas and there is a range crossing the education spectrum.

You can obtain a catalogue by phoning Longman Logotron, and educational users can select a free copy of Photobase Landscapes or Revelation with their first order received before Christmas '94.

However, if you want to try TuneLand, Grolier Multimedia Encyclopedia, Multimedia World Atlas and Prehistoria on the Acorn platform, you'll need access to a Risc PC, CD-Rom, PC co-processor and sound card.

New strokes

QUANTUM Software (0506 411162) has released version 3.05 of Keystroke, their text and mouse macro-making program. This new version is easier to use and includes algorithms which allow Keystroke to work with all commercial RISC OS programs, including Computer Concepts' Style, Publisher and Artworks.

There is a library of over 20 functions so that you can get information from the desktop or manipulate text in a writable icon in many different ways.

They have also added a slow option to provide a demonstration-like mode whereby you can see the mouse pointer moving through menus and selecting icons and so on.

Keystroke works across the RISC OS platform and costs £29.95 or £4.95 to upgrade. However, if you have version 3, the upgrade is free.

Pinpointing history

THE latest in Longman Logotron's (0223 425558) PinPoint Datafiles is *Britain since the 1930s*. These support the BBC TV Landmark series for 9-13 year olds studying history. Each datafile costs £12 and will work with Junior PinPoint or PinPoint.

Data has been collected from 1930 to 1990, enabling pupils to piece together some of the significant changes which have occurred during this time. It also covers some interesting information on population patterns, housing, census information and inventions.

Competition winners

THE July issue of *Acorn Computing* featured a chance to win £3,000 of DTP utilities from Fabis Computing. The entries have now all been judged.

The first 10 correct entries each received a copy of Easy Font, 2 Font Packs, 2 Impression Border Packs and copies of Lexique and Wortgut, and the winners are: G. Kharbando, Edinburgh; A. Eggleton, Basingstoke; V.J. Attew, Crawley; Mrs Coulson, Rochester; W.A. Hopkins, Gosport; S. Szubert, Bushey; C. Morris, Cardiff; I. Sharp, Shaw; D. Sprint, Pudsey and A. Potter, Mersham.

In addition there are 90 runners up prizes of Easy Font, Font Packs and Impression Borders Packs en route to the winners.

Show time: Micros for Special Needs

Micros for Special Needs Exhibition
6-7 October
Queen Elizabeth Hall, Oldham
Entry: FREE
Contact: NW Semerc (061-627 4469)

This will be the eighth year of this show devoted to software and hardware solution for people with special needs, ranging from physical disabilities to learning difficulties.

In previous years the exhibition has included a seminar programme aimed at IT coordinators. This year's event will divide into two, with the IT Coordinator Show being on the 5 October with seminars on Good Practice in IT, IT and the National Curriculum and Making the Most of Multimedia, among others.

Exhibitors at the event include: Soundbeam, Valiant, Literacy Development, Liberator, Franklin, Advisory Unit for Microtechnology in Education, Holdfast, CCS, TFH, Integrex, KCS Premier, Ablac, Klick Technology, FCD, Tandy, Crick Computing, Widgit, SRS Systems, NORICC, Eltec, Atkinson, Resource, Quill, NECT, Acorn, MicroAid, Vertical Twist, ACE Centre, Eric, Oak Solutions, Lego Dacta, Dolphin Systems, Concept Keyboard Company, Don Johnston, ESPA, SpaceKraft, Semerc, Apple, Cumana, Penny and Giles, 10 out of 10, QED, Brilliant Computing and Research Machines.

Risc PC for special needs

RESOURCE (0509 672222) plans to launch the Resource Special Access Risc PC which will come equipped with a user port for £1499. More important is the accompanying package of specially-written new software:

Talkwrite is a talking word processor with special features to suit both Special Needs and mainstream users. It will also check spelling and provide wordlists.

Clockwork provides help with how to tell the time; ***Easicalc*** is a jumbo calculator with a configurable keypad; ***BigDesk*** gives easy access to programs; ***MiniMouse*** lets the mouse be changed to suit an individual's needs; ***CoinSpotter*** introduces coin recognition and shopping and also has speech output; ***TeddyBears*** concentrates on the concepts of *same as, more than, less than* and so on; ***BookWorm*** provides colourful and easy to read stories; ***Gophers*** is an exciting game which can be played with the mouse or TouchWindow and finally ***MiniAlex*** is a program to encourage discussion about expressions and emotions.

There is a multimedia option which adds a CD-Rom drive to the above as well as speakers and Sherston's Naughty Stories for an extra £279.

If you prefer to use TouchWindow you can add one to the system for another £279, for which you'll also receive Complete the Picture and 1st Paint software, and an overlay keyboard driver so you can use the TouchWindow as an overlay keyboard.

Top of the polls

THE Book Trust have named NW Semerc *Best Software Publisher* in the 1994 Read Easy Awards sponsored by the Joseph Rowntree Foundation.

The awards were launched in 1990 to encourage the production of reading, software and audio visual materials for adults with learning disabilities.

NW Semerc were praised for both Optima and My World 2 resource packs *The Garden* and *Letters and Numbers*.

Commenting on the award, NW Semerc's Martin Littler said, "Semerc has always strived to produce affordable, simple-to-use software for all users, including those with learning difficulties. There are never enough special needs resources – official recognition certainly helps."

A3010

This machine may be upgraded by easy to fit, plug-in components. No soldering is required.

A3010 extra 1Mb (2Mb total) - **£38**

A3010 upgrade to 4Mb - **£145**

Hard disc upgrades

Prices are for complete systems, including metalwork, power supplies, controller card and cables as appropriate. No specialist knowledge is required either for installation or use. Supplied with a year's warranty.

A300 and 400/1 series machines

	Internal	External
200Mb IDE	£270	-
240Mb IDE	£290	-
330Mb IDE	£399	-
120Mb SCSI	£299	£374
290Mb SCSI	£360	£435

Larger sizes available on request. Please ring for a quotation. The A305 and A310 require a backplane, and this should ideally be a 4-layer version.

Fast 16 bit SCSI card - **£100**

A3000 & A3010 internal drives

80Mb IDE	£215
120Mb IDE	£275
240Mb IDE	£399

(These drives include an integral user port).

Prices for external A3000 drives are the same as those for the 300 series machines shown above.

RISC OS 3 £72

Acorn's new operating system for their range of RISC computers. The upgrade consists of four replacement ROMs, utility discs, and manuals.

RISC OS 3 may be used on the A305, A310, A440, 400/1 series, A3000, 540 and A5000.

RISC OS 3 **£72**

RISC OS 3 class pack (10 ROM sets) **£339**

A305, A310 and A440 owners please note. You will need to install the RISC OS Carrier Board in order to use RISC OS 3. The RCB may be used with any version of RISC OS. This carrier board is compatible with memory boards, ARM3 upgrades and does not in any way obstruct expansion cards ("podules"). Unlike some other adaptors, the IFEL RCB allows ROMs up to 8Mbit to be used. (RISC OS 3 chips are currently only 4MBit.)

RISC OS Carrier Board **£17**

All products fully guaranteed. Many products also carry our 14-day money-back guarantee. Please phone for details.

A300 series upgrade column. 2Mb £89, 4Mb £119

Memory expansion

Extra memory is without doubt the most worthwhile addition to any A300 series machine. Some programs won't even run with only 1Mb, and 2Mb is a bare minimum. Certain applications, desktop publishing for example, benefit from a minimum of 4Mb.

1Mb to 2Mb - £89 **1Mb to 4Mb - £129**

Compatibility. The memory is detected and used by the machine automatically, so there are no special commands needed. Works with both RISC OS 2 and RISC OS 3, and can be used with our 8Mb upgrade.

Fully compatible with ARM3 upgrades, backplanes, hard discs etc. This upgrade is supplied on just one, compact board measuring only 195mm by 46mm. Four-layer circuitry reduces electrical noise for trouble-free operation. A copy of the fitting instructions is available free of charge.

Is there any other 300 series RAM upgrade which has been available for as long as this one, and which has the same reputation for quality and reliability? No.

4-slot backplane with fan **£59**
(This is a four-layer circuit board)

Combination deals

4Mb with MEMC1a, self-fit **£143**

Collection of your computer, installation of 4Mb of RAM, MEMC1a, and RISC OS Carrier Board, testing, full guarantee, and return delivery **£189**

As above, but with 2Mb of RAM **£135**

(Add £69 to have RISC OS 3 fitted at the same time.)

A5000 memory

2Mb memory board (4Mb total) **£74**

A compact board measuring just 104mm by 37mm, this design fits vertically in your machine. No soldering required. Unlike larger boards, there is no need to remove the disc drive. Four-layer design as specified by Acorn.

8Mb RAM - see "New release"

Fitting service

Many upgrades are straightforward to fit (eg A3000 memory), but others require expertise. We can provide a fitting service for all of our products, usually with a three day turn round. Please ask for a quotation.

Supply and fit ARM3 to A3000 - **£134.**

A3000 upgraded to 25MHz ARM3 and 4Mb of RAM. Includes carriage. **£243.**
(While ARM3 stocks last).

A310 upgraded to 4Mb RAM, MEMC1a and RISC OS Carrier Board. Includes carriage. **£189.**

Free price list available upon request.
Prices exclude VAT.

New release
A5000 8Mb RAM upgrade £259

This upgrade expands a 4Mb machine to 8Mb. Four-layer PCB's are used together with gold-plated connectors for maximum long-term reliability. The two memory controllers included in the upgrade are precision matched to guarantee correct performance.

We recommend that these upgrades are fitted by a dealer. IFEL provide an efficient fitting facility at an additional cost of £50. This includes UK carriage and is normally a three day service (eg collected Monday, returned Wednesday).

4Mb to 8Mb upgrade **£259**
Collection/fitting service **£50**
Please phone for details of trade-in allowance.

A3000 column

Memory. An easy to fit and reliable RAM upgrade. **Gold plated** connectors ensure long term reliability. This upgrade uses a four-layer circuit board as recommended by Acorn. No soldering needed.

1-2Mb upgrade **£60**
1-4Mb upgrade **£116**

Trade-in offer. When purchasing the 4Mb board, we will give an allowance for any A3000 2Mb memory card. Please phone for details.

4Mb-8Mb memory system for the A3000. **£249.** (Fitting charge £50 including UK carriage)

Hard discs - see separate section

A4000/A3020 upgrade to 4Mb

Upgrade from 2Mb to 4Mb - **£79**

RAM for 410/1 & 420/1

Upgrade from 1Mb to 2Mb - **£45**
Upgrade from 2Mb to 4Mb - **£90**
Upgrade from 1Mb to 4Mb **£135**
Supplied with full instructions.

This month's specials

25MHz ARM3 - **£89**
2Mb upgrade for A3000 - **£38**
(This is a 4-layer board using gold plated connectors. Offer subject to availability - Please ring before placing an order)

IFEL Ltd

Educational and quantity discount available.

34 Culver Road, Saltash, Cornwall PL12 4DR. Tel (0752) 847286. *Fax (0752) 840029*

Not to be missed

...at Acorn World 1994

THIS year's Acorn World Show promises a host of new hardware and software developments. It is an ideal opportunity for seeing a huge range of products on a variety of subjects aimed at – among others – professional artists, classroom teachers and home users.

These developments are supported in the theatre, with Stuart Watson from Chameleon Design showing how a retouching package can be used as a creative design tool incorporating the use of images from PhotoCD. In addition he'll be creating a montage of images, proving once and for all that the camera can lie.

For anyone involved in education, there are items on the home/school link making home computers support children's use of computers at school, as well as more information on the concept of New Literacy and how IT and education is moving towards the 21st century.

Acorn's Pocket Book II will be on display at the Show with its larger screen, improved memory and better memory capabilities providing a host of built-in applications at your fingertips. The Pocket Book has proved a dramatic success in the recent NCET portables' trials in schools.

Watch out for a special jigsaw competition as winners will walk away with their very own Pocket Book or Pocket Book II. The *Acorn Computing* stand will be featuring the Body Building Tunnel. This will host a series of Mike Cook's ever popular Body Building Projects for you to try.

The Acorn stand will be showing the interconnections between home and school. From the classroom area a child can walk with a Pocket Book to a home computer, while the family access the incredible amount of information and entertainment from Online Media's STB in the lounge.

The PC card for the Risc PC may be at the show which promises to give Acorn users *the best of both worlds*. A new feature this year which will appeal to all power-mongers, is the workbench area.

● *Packing them in at Acorn World '93*

This will demonstrate what a high spec Risc PC can deliver, including high configured Risc PCs relaying images to a bank of overhead screens.

If you want to see how Acorn is challenging the barriers when it comes to operating systems, networking, data transfer, video conferencing and MPEG, this is a stand not to be missed.

The extremely popular games arcade will be back again this year – incorporating a laser light show – containing all the latest games and classics for you to play. The arcade is being sponsored by *Acorn Computing* and *Acorn User* and the Games Editors from both will be in attendance to help with your problems.

● PLUS there will be competitions sponsored by *Acorn Computing* and *Acorn User* to win both hardware and software, so make sure you pick up your entry forms as soon as you arrive.

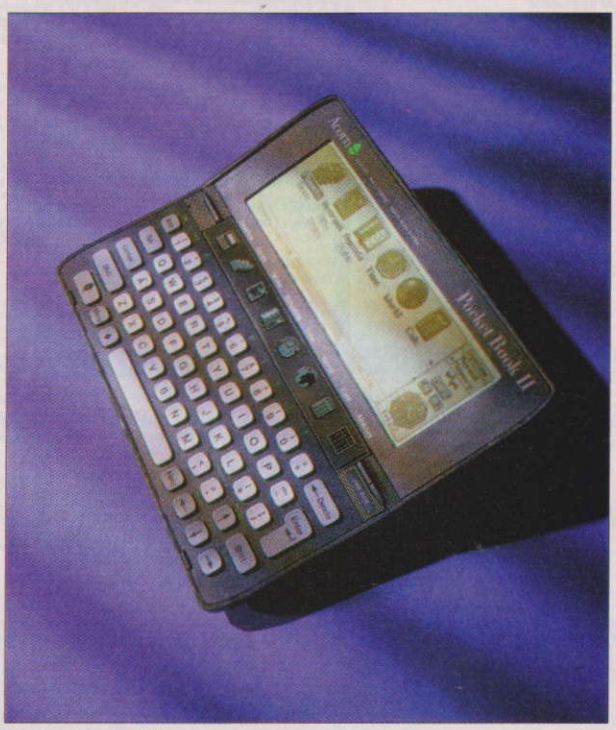
● *Acorn* are planning special show offers on the A3010 and other equipment.

● Make sure you don't miss our special eight-page *Acorn World Show* Supplement in the November issue.

PRODUCT SPOTLIGHT

The Acorn World 1994 Show
Wembley Exhibition Centre
28-30 October 1994
Advance tickets: Adults £5,
Children £4 and Family £16
Ticket Hotline: 0933 441448

● *Something for everyone*



● *True Portability*

Showroom open Mon-Sat 10-18.00 hrs (All prices exclude VAT)

TopicArt

Single disc clipart containing approx. 50 high quality draw format clip art images, each on a single subject. Comes with mono reference sheet. 12 subjects are available now. Please specify when ordering. Site licences are £16+VAT per disc, please ring for further details.

TopicArt9 - Dinosaurs

Subjects available
1 - General
2 - Transport
3 - Costumes
4 - Entertainment
5 - Bugs 2 Slugs
6 - Road Signs
7 - Sports Equip
8 - Sports Figures
9 - Dinosaurs
10 - Symbols
11 - Tools

£8 + VAT per disc

TopicArt catalogue now available. £1.50 Inc VAT & p+p (cheques only)

Buy 4 TopicArt discs get one free
not incl SpecialArt

TopicArt12 - AnimalsGB

TopicArt4 Entertainment

SpecialArt (Xmas or Signs) £20+VAT (each)

Special editions of TopicArt consisting of a minimum of 4 discs full of clipart

Hard Discs

A5000/RiscPC 2nd Internal Drive

210Mb IDE 14ms Cache (~1Mb/s)	£159
420Mb IDE 14ms Cache (~1.5Mb/s)	£259
540Mb IDE 12ms Cache (~1.5Mb/s)	£399

The above include all cables, screws and instructions. All the above drives are Connor as used in the RiscPC

A300/A400 Series Internal (IDE)

210Mb 14ms Cache (~1Mb/s)	£239
420Mb 14ms Cache (~1.5Mb/s)	£339
540Mb 12ms Cache (~1.5Mb/s)	£479

The above include all cables, screws and instructions. Add £79 for ext case and/or £15 for A3000 podule case. All the above drives are Connor as used in the RiscPC

Syquest Drives

IDE 105Mb Internal for A5000/RiscPC	£259
(Above Includes one cartridge, cables & driver software)	
SCSI 105Mb External for all Machines	£349
(Above Includes one cartridge, exclude SCSI card)	
105Mb Syquest Cartridges	£55

CD-ROM

Our drives are PhotoCD compatible (multi-session) and include a driver for CDFS =>2.2

External
(suitable for all machines)
Matshita Tray Loading SCSI CD-ROM drive, (300kb/s, 295ms access time) c/w cables.
without SCSI card £215
with Morley SCSI card £335

RiscPC Internal
Toshiba XM-3401B caddy SCSI CD-ROM drive (330kb/s, Fast 200ms access time) c/w caddy and cable.
without SCSI card £239
with Morley SCSI card £359
The above prices are for a Morley uncached SCSI card.

QuickTile v1.02 £25+VAT

Up until now it has only been possible to print posters from Draw & Sprite files. Now with QuickTile you can create posters from ANY RISCOS application, including Impression. Simply enter the size of poster required & select PRINT from the application! QuickTile does the rest, printing each tile with crop marks and tile references. RiscPC compatible.
Requires RISCOS 3.10 or later.
Return Disc with SAE for upgrade.
Upgrade from Tiler for £15+VAT.

DIY Ink Jet Refills

Single Refills (req an orig cartr.) £7
Twin Refills (Black only) £12
125ml / 400ml Cleaning Kit £4 / £10
Available in Black, Cyan, Magenta, Yellow, Red, Green, Blue, Brown

Please specify colour(s) required when ordering. These do-it-yourself refills can be used with any printer where the head and ink reservoir are combined, ie. DJ-500, BJ10/200. Please do not send empty cartridges. Please note that colour quality may not be 100% from a black cartridge refilled with another colour. We cannot guarantee against dried up empty cartridges and/or blocked nozzles.

QuickSound £10
Load, play, convert & resave Armadeus, Tracker and raw data sound samples. Apply special effects including Reverse, Echo, Max Vol, alter replay rate and resample frequency. Convert samples into modules for use with the RISCOS sound system. Create stand alone Utility mod's.

QuickShow £25
Slide show presentation and video titling package. Create sequences of frames containing text of any colour with drop shadows, outline shadows and rubout boxes using the RISCOS fonts. Sprites can also be included in frames, positioned and resized as necessary. Screens can be linked together with the sequencer with fades in and out.

Hardware, Software & Books (All prices exclude VAT) See us at Acorn World '94 Stand 86

Acorn RiscPC 600

ring for alternative offers 0% and low finance avail.

We operate Acorn Assist for teachers & academics

RiscPC 2MHD210 £1199
2Mb DRAM, 210Mb HD, AKF60 Monitor

RiscPC 5MHD210 £1299
4Mb/1Mb D/VRAM, 210Mb HD, AKF60 Mon.

RiscPC 9MHD420 £1599
8Mb/1Mb D/VRAM, 420Mb HD, AKF60 Mon.

All RiscPC's incl. 1yr on-site maintenance
RiscPC prices are for purhases made by cash, cheque, Delta or Switch.
Add £400 for 17" AKF85 Monitor

RiscPC Upgrades

4Mb Simm RAM	£125
8Mb Simm RAM	£230
16Mb Simm RAM	£450
32Mb Simm RAM	£950
1Mb VRAM	£129
2Mb VRAM	£149
1 to 2Mb VRAM Upgrade (exchange)	£109
Connor 210Mb Hard Drive	£159
Connor 420Mb Hard Drive	£259
486 PC Upgrade (available --Oct 94)	£99
MS-DOS 6.2 & Windows 3.11	£99
2nd Slice Case Upgrade	£99
Acorn Access for RiscPC	£119
Ethernet Interface Card	£99

A Series

A3010 Action Pack 2Mb RAM	£339
A3010 Learning Curve with AKF30/40	£599

All A3010 include Lotus Turbo Challenge II

A3020 2MFD/AKF52 MultiScan System	£699
A3020 2MHD60/AKF52 MultiScan Sys	£849
A4000 2MHD105/AKF52 MultiScan Sys	£879

Add £55 for AKF50 0.28dp Monitor (Above excludes A3010 computers)
For A4000 only add £250 for 1Mb 386PC card and £450 for 4Mb 486PC card

Learning Curve £42

Includes Acorn Advance & PC Emulator & demos of Applications & Games

Home Office £85

Includes EasiWriter2, DataPower, PipeDream4, PC Emulator & demos

The above software packs are available with any of the above computers except. They are not available separately.

Portable Computers

Acorn Pocket Book (256k)	£169
Pocket Book II (512k)	£280
Psion 3a (512k)	£249
A-Link for Pocket Book or Psion 3/3a	£42
P Book/Psion 3/3a Mains Adaptor	£17
A4 Portable 4MHD60	£1599

Free PC Emulator with every A4

Monitors

Acorn AKF52 14" 0.39dp MultiScan	£250
Acorn AKF50 14" 0.28dp MultiScan	£310
Acorn AKF60 14" 0.28dp MultiScan	£325
Acorn AKF85 17" 0.28dp MultiScan	£649
Microvitec Cub Scan 1440 (3yr warr)	£310

Hardware Upgrades

486sx25MHz PC Card 4Mb RAM	£495
486SLC50MHz PC Card 4Mb RAM	£570
ARM3 (25MHz, Inc FPA socket)	£129
ColourCard Gold (CC)	£239
Joystick Interface (all m/c's)	£28
Midi Expansion Card	£69
Powerpad (dual) (Gamesware)	£33
Scanlight Video 256	£199
Stereo Speakers (mains powered)	£36
Vision24 Colour Digitiser Int £99/Ext £112	
Hi-Vision24 Digitiser A5000 Int £149/Ext £165	
Mono-Vision24 u/g £70 / Vision-HiVision	£60
Sportster 14,400 Fax/Modem (Inc Cbl)	£169

RAM Upgrades

A3000 Up to 2Mb	£55/4Mb £129
A3010 2Mb £40 / 2-4Mb £100 / 1-4Mb	£140
A3020/A4000 Up to 4Mb	£89
A5000 Up to 4Mb	£89 / 8Mb £259
A400 RAM	£45 per Mb
A300-A400 8Mb RAM	£249

Hard Discs/Syquest

A3010 HCCS Hard Disc Multi-Podule	
20Mb + User Port	£209
80Mb + User Port	£295
SCSI Archimedes Internal	
127Mb 17ms Cache	£319
210Mb 15ms Cache	£40
A3000 Internal IDE Hardcards	
20Mb + User Port	£159
80Mb + User Port	£229

For other hard discs & Syquests refer to section at top of page

CD-ROM Drives

Sony Caddy CD-ROM 300kb/s 295ms £175
Includes extl. case, PSU, caddy & Driver
Toshiba External caddy loading CD-ROM 330kb/s with 200ms access time. £329
The above drives exclude SCSI Card

DIY Ink Jet Refills

Single Refills (req an orig cartr.) £7
Twin Refills (req an orig cartr.) £12
125ml / 400ml Cleaning Kit £4 / £10

These do-it-yourself refills can be used with any printer where the head and ink reservoir are combined. Available in Black, Cyan, Magenta, Yellow, Red, Green, Blue and Brown. Note that colour quality may not be 100% from a black cartridge refilled with another colour. We cannot guarantee against dried up cartridges and/or blocked nozzles. Please do not send empty cartridges.

RiscOS 3.1 Upgrades

A300/A440 Series (inc carrier board)	£97.88
A400/1, A3000, A540 Series (In stock)	£75.75
Bulk Pack of ten upgrades	£339.00

Please add £4 (Inc VAT) carriage to RiscOS3

Remember Carriage is free on most items

Printers (Inc Cable)

Canon BJ-10sx	£145
Canon BJ-10 Sheet Feeder	£50
Canon BJ-200	£220
Canon BJ-230	£280
Canon BJC-600	£435
Canon BJC-800 Turbo	£1150
HP LaserJet 4L (300dpi)	£500

Add £35 to above printers for TurboDriver

Printer Consumables

BJ-10 Ink Cartridge (BC-01)	£18/£19
BJ-200 Ink Cartridge (BC-02)	£18/£19
BJ-300 Ink Cartridge (BJI-642)	£17
BJ-600 Black Cartr. (BJI-201)	£8
BJ-600 Colour Cartr. (BJI-201)	£9
BJ-800 Black Cartr. (BJI-643)	£18
BJ-800 Colour Cartr. (BJI-643)	£21
DeskJet500 Mono/Col Cartr.	£23/£24
Swift24 Mono/Col Ribbon ea.	£7/£15

Books (No VAT)

Acorn RISCOS3 PRM's	£99.00

Add £7 (Inc VAT) carriage for PRM's

Acorn BBC Basic VI Guide	£19.95
Acorn AASM Manual	£25.00
Acorn ANSI C v4 Manual	£25.00
ArtWorks Made Easy (Dabs)	£14.95
Begin's Guide to WIMP Prog	£12.95
DTP on the Archimedes (Sig.)	£12.95
First steps in prog RiscOS (Sig)	£14.95
Game Maker's Manual (Sigma)	£14.95
Mastering 1st Word+ (Dabs)	£13.95
RiscOS 3 First Steps (Dabs)	£14.95

Add £2 Carr to above (£4 for Acorn books)

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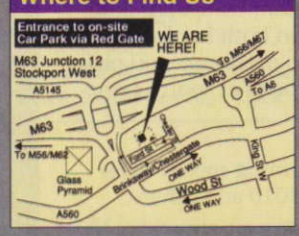

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OCT 94

It's Party time

Steve and Anne Bruntlett produce some entertaining ideas which you can create

THOSE few words are enough to send most parents into panic or depression, but have no fear, your trusty Arc is here to take the strain and leave you to enjoy the day!

If you thought the use of a computer was limited to an odd birthday card think again, the possibilities are endless. All you need is a computer, access to a printer and this month's MegaDisk. If you can't print in colour it's out with the felt tip pens.

Immediate style can be added to designs with a good selection of fonts. There is no shortage of reasonably priced and excellent fonts for the Acorn machines and likewise, if drawing is not your strong suit, access the huge amount of clip art. But if you have access to a scanner you can produce virtually what you like.

However, if your daughter is dedicated to My Little Pony or the X-Men you could always trace an image, tape it to the computer screen and draw behind it, using Draw or a paint program like Revelation.

Here is a guide to what the computer can help you with in the count down to the big day.

A stylish invitation

These can be the more usual folded cards or the more adventurous pop-up type. They can be shaped into recognisable objects such as rabbits or football boots and can be printed on different coloured card.

If you've a black and white printer you can stick to monochrome designs or colour them in yourself. Cards like this are much more personal than ones you buy in the shops and using a computer enables you to produce a batch of slightly different invitations.

We've included a basic matching card and envelope shape on the MegaDisk, though there's no reason why you shouldn't use your own clip art images and every reason why you should lay the text out exactly as you want.

There's also a sheet of *Happy Birthday, Please come to my party* and other blocks of text produced using fancy fonts, but which have been converted to graphic objects so that you don't need the original fonts. This is done in Draw by producing the text in the font and size you require and using the Convert to path option from the Select menu.

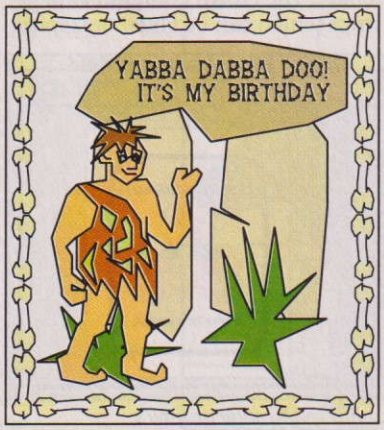
When placing text and images on your card, remember that the right-hand side is the front of the card. To print text on the inside of the card, use the same outline card design and put the text again on the right-hand side.

Once you've printed the outside of the card you can turn your paper over lengthways and print the inside. Whether the inside coincides with the outside horizontally depends on your printer margin settings.

If you don't want to mess about with these settings, then print out the card outline on both sides of the paper and measure the distance you need to move the inside to match the outside. Move the card outline left or right by the recorded measurement and save the new card outline as Card/2 or CardInside.

● *Or you could opt for a pirate theme on your invitation envelopes*

● *Teddy constructed using circles, ellipses and curved lines*



● *A coloured Flintstones invitation design*

Greetings cards

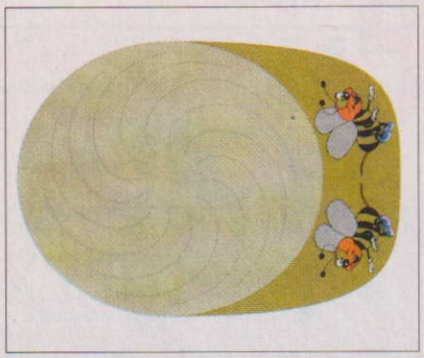
As well as preparing for your own children's parties you're likely to be involved in other children's birthdays and these usually mean an endless supply of birthday cards and thank you notes.

You can produce your own or you could try using Card Shop from Clares. Its ready-formatted card, envelope and stamp make creating so easy, even the children can do their own at a fraction of the cost of a bought one and each one is personal.

Don't worry if you haven't got a colour printer. Just print out the design outline and present the ➤

cards and a pack of crayons or felt pens to your offspring and hey presto, peace and quiet while they colour in your carefully drawn details. Anything for a quiet life.

Remember, invitations and greetings cards need printing on card otherwise they fall over. Most printers will take thinnish card but if not you can always photocopy on to card unless you're printing in colour and then you'll have to spray-mount your printouts.



● *Make your own party hats*

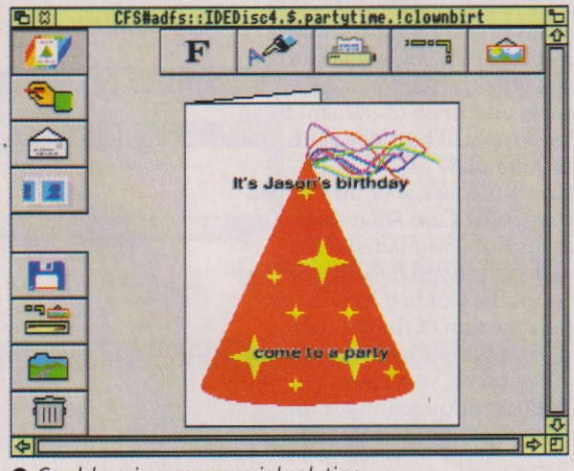
If you want to use ready-made party illustrations look at the two-disk Party, Weddings and Anniversary Clip Art pack from DEC_data.

Menus, food and place labels

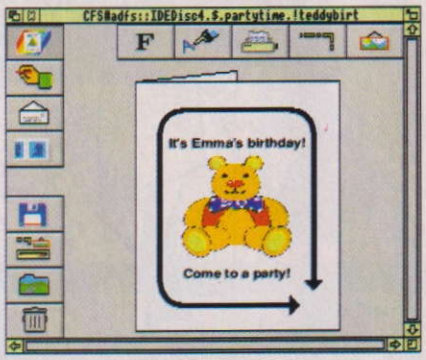
If you want to move a bit more up-market from Dinoburgers and Bluebeard jelly, you can always use a design and some good-looking text to produce a posh menu. You might also want to produce labels for the food, especially if you can't tell the potted meat sandwiches from the egg and cress ones.

These are always useful for grown-ups and small flags on cocktail sticks can be used to explain what is inside the sandwiches, pies, pasties, rolls and so on before all the corners are turned up and grubby.

You can label the food but kids of nursery age aren't likely to be able to read *paté de foie gras* on a tiny label – it's better to use pictures if you can.

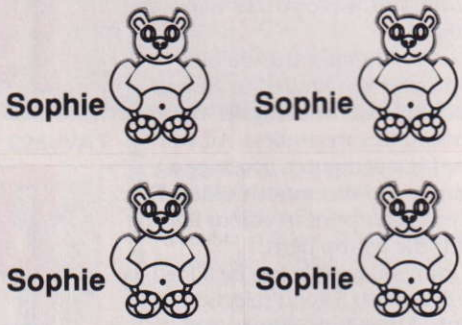


● *Cardshop is a commercial solution...*



● *...with read-made graphics, cards, envelopes and stamps*

● *Add a bit of style with a place setting ...*



Place mats

These can cut down your cleaning bills quite dramatically. One of the first games on arrival could be to colour in the mat and win a prize – anything to slow them down and keep them occupied.

We have included two place-mats on the theme of pirates and Flintstones on the disk, but you can make your own by assembling pre-drawn clip art.

If your clip art is already coloured then you should be able to select the coloured bits and replace them with white to give you an outline image ready for colouring. You could try them at a dinner party when the boss comes round for dinner. At least it would give you something to talk about.

● *...or place mat*

Party hats

These are fairly straightforward to produce and with decoration can give a bit of added atmosphere. We have produced two types: A baseball cap-type which takes a bit of cutting out, has a tendency to break but looks very impressive.

The other kind comes as a crown which has lots of jewels ready to colour, or as a classic piratical model. The crown comes in two strips which can be glued or stapled together.

You need two copies of the pirate's hat to staple together at the sides. Really the pirate's hat should be black with a white skull and cross-bones, but we don't recommend trying to print out such a massive area of solid black. You'd use an ink pack for each hat.

If you really want to be authentic we suggest you use the outline pirate hat as a template, cut the hats from black sugar paper and stick a separate skull and cross-bones motif on the front. All of these hats need printing or photocopying on to thin card.

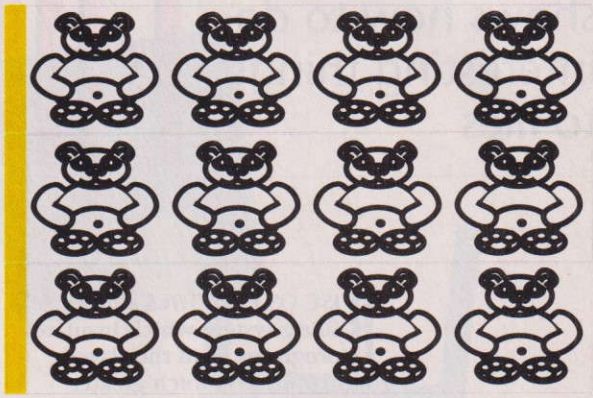
Bags of frills

One of the most insidious aspects of kids parties these days is the ever-increasing pressure to provide goody or *booty* bags at the end. A simple outline design for such a container can be found on the cover disk – we used the same basic design for the Christmas project on the Special issue of *Acorn Computing*.

A nice touch is a cake frill. Measure round the cake and produce as many strips as needed, allowing for joins. Decorate the strips with the chosen motif or text and print out in outline or colour.

You could use food dyes to colour the cake frill – be careful normal

● *The theme is up to you*



● *Or continue the theme to the cake*

inks don't leak on to the cake – and it's best to line the printout with a sheet of greaseproof paper or foil.

Cake templates

You can produce templates and stencils for icing sugar or fondant icing by printing the outline shape of a chosen motif. Cut out the motif to use as a pattern for cutting shapes from rolled-out, coloured, ready-made fondant icing, following the instructions provided on the packet or use the remaining stencil to sprinkle icing sugar through on to the cake.

If you're feeling really adventurous you could try stencilling with coloured food dyes directly on to the fondant, or at least on to fondant shapes which can be applied to the cake if successful. This may well be a whole new art form or then again...

Alternatively, you could use an enlarged outline motif – such as a teddy bear or elaborate number two – as a pattern for cutting out a fancy shaped cake.

Finally, why not use some of the box outlines from the Special issue MegaDisk to create cake boxes to send to friends or relative. Or if you want one with a pirates theme, there's a treasure chest you could have a go at constructing.

Fun and games

There are lots of games you can play at parties and some which the computer can help produce – such as pin the tail on the donkey. The donkey produced here can be printed out as large as you like but make sure you print out one tail per person at the same scale.

Instructions for playing the game are not included, so if you've never been to a children's party and don't know the game, see if you can figure out what you're supposed to do by a process of elimination.

We've also included a sheet full of bones with different numerical values so that you can have a bone hunt. These just need copying on to card, cutting out and hiding in the garden.

You can produce an endless supply of streamers, bunting, and flags. Work out your basic design, decide whether you're gluing or stapling, cram as much on one sheet as possible and leave the printer running.

If you're doing a street party you'll need an army of volunteers to colour and assemble the bunting.

We've included a sheet of flags too but these are signalling flags and not flags of all nations. They look colourful though.

And finally...

We hope that gives you a few ideas for livening up the next children's (or adult's) party you're involved with. Feel free to modify the designs provided and use clip art if you must, but hopefully this article will have encouraged you to produce your own artwork.

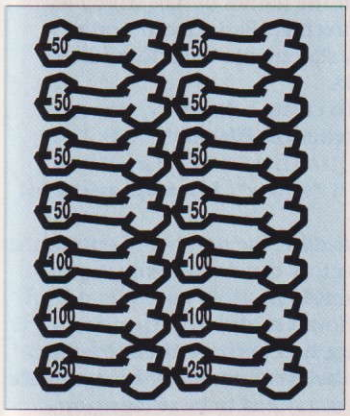
If the party turns out to be a nightmare at least you'll have enjoyed yourself producing the props. Happy sticking.

Professional supplies

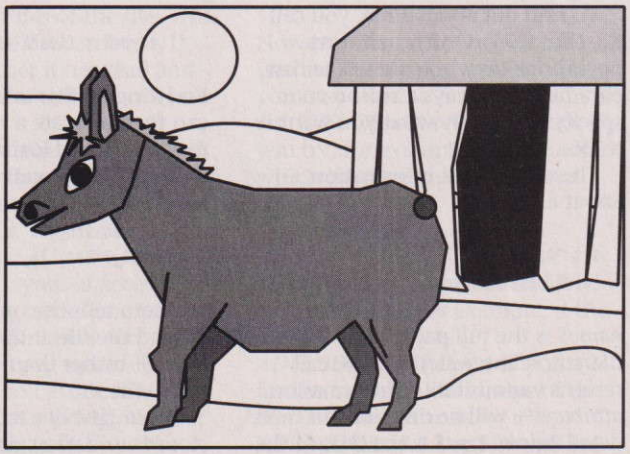
Fonts and ClipArt disk sets are available from Skyfall PD, PO Box 2220, Birmingham, B43 5RZ.

CardShop is available from Clares Micro Supplies, 98 Middlewich Road, Rudheath, Northwich, Cheshire CW9 7DA. Tel: 0606 48511.

Party, Weddings and Anniversary Clip Art from DEC_data, PO Box 97, Exeter, EX4 4YA. Tel: 0392 221702.



● *Use your computer for creating games...*



● *...instead of playing them*

Ben Summers shows how to do interesting things to files

Filing systems

RISC OS PROVIDES a powerful filing system which insulates programs from the actual hardware to a much greater degree than most other machines. Your program doesn't have to know anything about differences between floppy disks and the latest magneto-optical drives, for instance.

Basic provides a relatively small set of commands to let you read and write files, but these are not particularly efficient. If you talk to the operating system directly, you open up more sophisticated facilities which allow you to process files with much greater efficiency than Basic commands – and, in some ways, they're easier to use.

Accessing whole files

If you use the Basic commands to access your files, you have to open the file first and then read bits of data in a value at a time. This is not very efficient and, if you've written programs which load large files in this way, you'll probably have noticed that they're a bit slow.

A much faster way of loading a file is to load it directly into memory, but first you need to know how big it is. You might also like to find out its file type just to check it's one your program understands.

To find out about a file, you call *OS_File*, a SWI which performs operations on whole files. The first parameter is always a reason code specifying exactly what you want it to do.

The call to read information about a file is:

```
SYS "OS_File", 17, name$ TO type%, ,
load%, exec%, length%, attributes%
```

name$ is the full pathname of the file you're interested in. The call returns various bits of information. *attributes%* will be described in more detail below. *type$* is the type of the object, not the filetype, which can take four values:

0 Object not found – it doesn't exist
1 Object is a file
2 Object is a directory
3 Image file – both a file and a directory

An *image file* is something like an archive or a PC partition. It's a file which can be loaded in memory but also behaves like a directory which can be opened and files accessed from within it.

length% is the length of the file in bytes while *load%* and *exec%* are the addresses at which the file will be loaded and run from, respectively.

However, under RISC OS these two parameters are more often used for the file type and time stamp of the file, and their names really come from the days of the BBC Micro. The values are split up as follows:

```
load% = &FFFtttdd
exec% = &dddddddd
```

The lower 12-bits of the load address are set to &FFF to tell the operating system that this file has a file type and a date stamp, and the 12-bits, *ttt*, are the file type.

The date stamp is in the standard 5 byte format, and is split across the two words with the most significant byte in the load address.

To find the file type of the file, you use:

```
filetype% = (load% AND &FFF00) > 8
```

Knowing all this information, you can then allocate a block of memory for the file and load it in using another *OS_File* call:

```
DIM file% length%
SYS "OS_File", 16, name$, file%, 0
```

The zero tells the operating system to load the file at the address given in *file%* rather than the load address of the file.

You might like to use a heap to store your data as described in the December 1993 issue, rather than using DIM which you can't give back.

Saving a file is very easy. You use a call like:

```
SYS "OS_File", 10, name$, filetype%,
, file%, file% + length%
```

filetype% is the filetype you want the saved file to have. The last parameter is *file% + length%* because you give the call the start and end addresses of data rather than the start and length.

If you've saved a file using Basic's filing commands, your files will have the *Data* filetype. You can change the filetype of a file with another OS_File call:

```
SYS "OS_File", 18, name$, filetype%
```

Deleting a file is, again, a simple OS_File call:

```
SYS "OS_File", 6, name$
```

Use it with care.

Example1 on the MegaDisk demonstrates all these calls. Double-click on SetDir before running it. Copy the files from the cover disk to another disk, with some free space before you run them as you can't write to the MegaDisk.

Directories

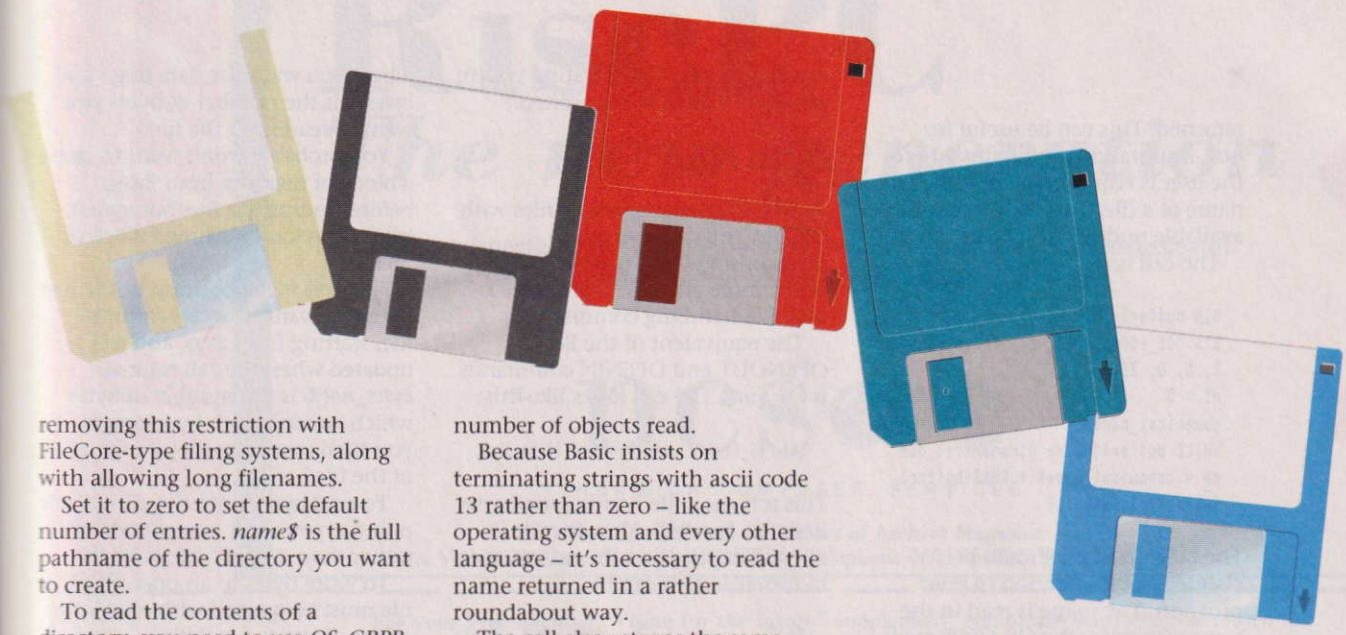
It's sometimes useful to be able to create directories and to be able to read the names of files stored within a directory. Basic doesn't provide any statements to perform these tasks.

To create a directory, you use another *OS_File* call:

```
SYS "OS_File", 8, name$, , , entries%
```

entries% is the number of entries the directory can have before it needs extending.

However, directories on most filing systems have their size fixed by the disk format – although Acorn are rumoured to be working on



removing this restriction with FileCore-type filing systems, along with allowing long filenames.

Set it to zero to set the default number of entries. *name$* is the full pathname of the directory you want to create.

To read the contents of a directory, you need to use *OS_GBPB*. This stands for Get Byte, Put Byte and so, logically, is used to read directory contents – this too has its basis in the BBC Micro.

This call will read lots of entries into a large buffer but it's a lot easier to read one entry at a time, so you don't have to work out the start of the next entry in the buffer from the length of the filename – each entry is a variable length to allow for long filenames in the future.

You call this SWI many times, and each time you pass it the number of the item you want it to read. This may not necessarily be the number of the object within the directory.

The call tells you the number of the next object, and you keep on calling the SWI until it returns -1. This number is kept in *item%* in the example below.

To print the names of all the objects (files and directories) in a directory, you would use:

```
DIM result% 128
item% = 0
WHILE item% <> -1
 SYS "OS_GBPB", 10, directory$, resul
t%, 1, item%, 128, 0 TO , , , read%
, item%
 IF read% > 0 THEN
 n% = 20
 name$ = ""
 WHILE result%?n% <> 0:name$ = name
$ + CHR$(result%?n%):n%+=1:ENDWHILE
PRINT name$
 ENDIF
ENDWHILE
```

The dimensioned block *result%* in the first line is best claimed at initialisation of your program so that you don't repeatedly claim it and waste memory. *read%* is the number of objects read.

Because Basic insists on terminating strings with ascii code 13 rather than zero – like the operating system and every other language – it's necessary to read the name returned in a rather roundabout way.

The call also returns the same information as the *OS_File* call to read information about a file in the result block. The locations of this information in the result block are, in Basic notation:

```
result%!0        Load address
result%!4        Execution address
result%!8        Length
result%!12       Attributes
result%!16       Object type
result% + 20     Object name
```

All the values are the same as the *OS_File* SWI.

The program Example2 shows how to recursively read directory entries and print a directory tree of everything below a directory. Run it, and type in the pathname of the directory.

For example, to display the tree of the disk *IDEdisc4* you would enter *ADFS::IDEdisc4.$*.

File attributes

You will have noticed earlier that the *OS_File* and *OS_GBPB* SWIs return the attributes of the file. This specifies how the file can be accessed – whether it has read and write access and whether it can be deleted.

You can see all these attributes if you select a file in a directory viewer, click Menu and open the dialogue box *File 'x'=>Access=>Access details=>*.

There are two types of access set by the attributes, owner and public. The distinction is mainly for networks, where you would obviously want to be able to stop other people from reading, altering and even deleting your files. The attributes of any files you create are, by default, set to unlocked and owner read and write. The contents of the attributes word is as below. Only the top 8-bits have a universal meaning. Some filing systems return extra information in the rest of the word and you should ignore it.

Bit	Meaning when set
0	Owner read
1	Owner write
3	Locked
4	Public read
5	Public write
7	Locked against public deletion

All other bits are undefined and should be set to zero. To test to see if bit *n* is set, use:

```
IF (attributes% AND (1 << n)) = (1
<< n) THEN REM bit is set
```

You can change the attributes using OS_File, as below:

```
SYS "OS_File", 4, name$, , , , new_at
tributes%
```

However, it's probably best to let the user set them using the Filer, but you may want to test for certain bits set. RISC OS will return an error if you try, for example, to read a file which hasn't got read access set.

Canonical names

The canonical name of a file is its full pathname. For example, if the current directory is *ADFS::IDEdisc4.$.Dog* and you ask for the canonicalised name of the file *Fish*, the pathname *ADFS::IDEdisc4.$.Dog.Fish* will be ➤

➤

returned. This can be useful for non-multitasking programs where the user is required to enter the name of a file. This facility is only available under RISC OS 3.

The call is:

```
DIM buffer% 256
SYS "OS_FSControl", 37, name$, buffer
%, 0, 0, 256
n% = 0
canonical_name$ = ""
WHILE buffer%?n% <> 0:canonical_nam
e$ = canonical_name$ + CHR$(buffer%
?n%):n%+=1:ENDWHILE
```

The block *buffer%* should be claimed at initialisation of your program. The name is read in the same way as for the *OS_GBPB* read directory call for the same reason.

This call can also be used to find out the name of a disk in a particular drive. For example, to find the name of the disk in drive 0, you would canonicalise *ADFS::0.$*. It's necessary to include the *.$* as you need to have a valid object name to canonicalise.

As specifying the disk by its drive number is more vague than by its disk name, it's canonicalised to include the actual name of the disk. Something like *ADFS::Floppy.$* is returned, and it's trivial to separate the name of the disk from this pathname.

Example3 illustrates this technique. You shouldn't need to use it in most programs, but occasionally it's useful. For example, if your program is designed for unattended use, you might like to use this to check that a disk is present before trying to save to it, and possibly locking up the machine while the operating system asks for the disk to be inserted.

Open files

As well as accessing whole files with *OS_File*, you can also use a mechanism which is similar to, but much more efficient than, Basic's own file-handling commands.

The equivalent of the Basic OPENOUT and OPENIN commands is *OS_Find*. The call looks like this:

```
SYS "OS_Find", reason%, name$ TO handle%
```

This returns a file handle, similar to Basic, in *handle%*. How the file is opened depends on the reason code in *reason%*. This can be:

&4F	open a file with read access
&8F	create a new file and open it with read/write access
&CF	open a file with read/write access

You can specify more options with the reason code, but these mainly control how errors are returned – the full details are on page 2-76 of the PRM.

Once the file is open, you use *OS_GBPB* for actually getting and putting bytes from the file. It can either read or write data at the current file pointer – automatically set to the byte after the last one you accessed – or you can tell it explicitly where you want to get the data from. Like *OS_File*, the first parameter to *OS_GBPB* is a reason code.

To read bytes from an open file, you would use:

```
DIM buffer% bytes%
SYS "OS_GBPB", 3, handle%, buffer%, b
ytes%, pointer% TO , , , bytes_not%
, pointer%
```

handle% is the file handle returned by *OS_Find*, *buffer%* is the address of where you want the data to go and *bytes%* is the number of bytes you want to read from the file.

You probably won't want to claim a block of memory from Basic before reading the file, but load it into a previously-claimed block of memory.

pointer% is the position of the first byte you want to access from the file, starting from zero, and it is updated when the call returns. *bytes_not%* is the number of bytes which weren't read, for example, if you tried to read bytes past the end of the file.

To read bytes from the current file pointer, you use a reason code of 4 rather than 3, and omit *pointer%*.

To write bytes to an open file, the file must be opened with read/write access. You use a call like:

```
SYS "OS_GBPB", 1, handle%, buffer%, b
ytes%, pointer%
```

The data you want to write is at *buffer%* and *bytes%* bytes will be written, overwriting any data which is already there rather than inserting it.

pointer% has the same function as in the previous call. If the specified pointer is past the end of the file, it is extended by writing zeros to get to the given pointer.

To write bytes to the current file pointer, use a reason code of 2 rather than 1, and omit *pointer%*.

When you have finished with the file, close it with:

```
SYS "OS_Find", 0, handle%
```

As with the Basic commands, you should always close files when you finish with them. If you're writing a desktop program, it's not considered good practise to leave a file open over calls to *Wimp_Poll* unless absolutely necessary – some naughty program (or user) might issue a global file close command and then your program might be in big trouble.

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Paddling in

Pam Turnbull introduces a new series about the world of e-mail and Internet

THE last time I dabbled in comms I was using a BBC B and MiniOffice II software. Several years on and with a US-Robotics Sportster 14,400, Hearsay software and an A5000, I felt fully equipped to join the slip road to the *information superhighway*.

There is no graphical comms interface for the Acorn machines which make it to the Internet, such as Mosaic, but various Acorn bods are looking into converting this.

In the meantime, you can access all the same areas of interest and expertise – in addition to a host of Acorn-specific bulletin boards, but you'll need someone to shine a torch into those elusive corners.

● *Getting on-line courtesy of Hearsay and CIX*

And that's the mission of this occasional series. From time to time I will be turning these pages over to people with specific areas of interest, but this month, and in keeping with the hints and tips theme, we'll be looking at FAQs – frequently asked questions.

● *How do I send messages to people?*

Most systems work in similar ways but by way of an example, here's what you do on CIX: By typing *MAIL* you can talk confidentially to others with electronic mailboxes.

At the Mail: prompt hit Return and all the messages sent to you will be displayed – you are also told each time you log on if people have sent you messages. To send a message to *Acorn Computing*:

```
Mail: to acorncomputing<cr>
Subject: Going on line
<your message>
.<cr>
Send/Action:send
```

To send messages to people on other host systems, you can do so if they have access to Internet but you'll have to type their full address.

● *What is my e-mail address?*

This depends on your host system, for instance:

Compuserve
<number>@compuserve.com
MCI Mail
<user>@mcimail.com
Fidonet
<user>@<node>.<network>.<zone>.fidonet.org
CIX
<nickname>@cix.compulink.co.uk
Demon
<user>@<company>.demon.co.uk

If you are still not sure, send a message to someone and your address will automatically be put on it – so that they know who to reply to. Mailboxes differ depending on how a site is laid out, but in general the bit to the left of the @ character is your mailbox and the bit on the right tells the mail system where the mailbox is located.

The dots separate the domain into sub-domains. The rightmost being the top level domain, either the country code or the network – the *uk* is for United Kingdom.

However, you might find EDU, COM or GOV which would be Educational, Company or Government. The next sub-domain to the left is, in most cases, *co* standing for company; next comes the site and machine name.

● *How do I get on to Internet?*

There are various routes and a variety of costs on top of your phone bill:

CIX – 081-390 8446 – Compulink *I*nformation e*X*change – This has a wide range of conferences and you can e-mail around the system with external mail via the Internet.

It also has a full read/write Usenet news feed, Telnet and FTP access to Internet, Gopher and World Wide Web (WWW) systems, e-mail and fax gateways. £25 to register plus £2.50 – £3.60 an hour

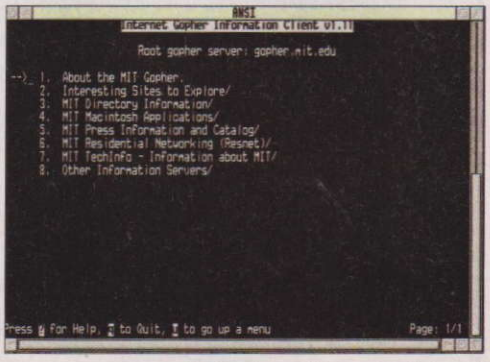
Demon – 081-349 0063 – Has lots of free software to get you up and running and full Internet connection means that you could use the graphic Mosaic interface – if there *was* one for Acorn machines.

You can also access Usenet groups which may otherwise be unavailable, there are Usenet feeds coming in all the time and people can FTP and Telnet into your system when you're on-line. £12.50 registration, £10 a month.

Direct Connection – 081-317 0100 – There is an information file on-line if you phone 081-317 2222. This gives you access to WWW, Gopher, FTP and Telnet as well as e-mail and fax gateways. Its news service has a good reputation and the costs are low. £7.50 registration, £10 a month or £20 for enhanced Telnet

● *What is Internet?*

Internet is a network of computers that stretches around the world. These connections can be anything from serial cables to fibre optic links giving access to databases, file servers,



● *Gopher – it goes for this and that, whatever you need*

the cybersurf

games and so on.

There are many *gateways* on to Internet and once logged on, you'll be presented with the ip> prompt (Internet protocol), but then what?

Telnet – Using this program will connect you with on-line services, anything from a NASA database to information on Star Trek.

FTP – This will connect to a file server letting you pull files off and on to other computers – as long as you have permission. On many servers there are public directories.

To connect to another computer using these programs you will need to know its address. You only need to specify the computer's address such as ftp.uu.net, though sometimes you'll be expected to quote a port number at that site.

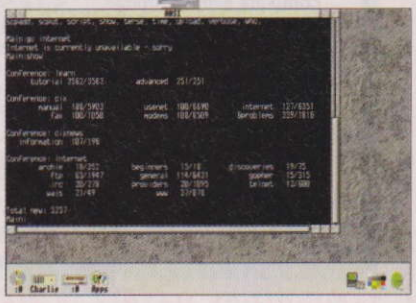
The mass of information is very daunting. Life is made a little easier with the *ADDRESS* command. For example, type *address startrek* to pull out the information stored on sites which have something to do with Star Trek.

DIR will produce a list of your CIX IP directory which is where files you have pulled from another computer using FTP are stored, and *GET* will download them to your machine.

Another useful command is *FINGER* which lets you get more information about a site or user who is currently online at a site – finger @eros.uknet.ac.uk

The Internet Gopher is a useful animal. It's a menu-driven categorised database which lets you know what information is available, on which information provider, on which site. Other tools to help you find what's out there are WAIS and World Wide Web project.

The WWW project was originally aimed at the High Energy Physics community, but it has spread and can handle a variety of different data formats with access to Gopher, News, FTP and Telnet.



● *If your Internet gateway is down you can always chat to someone*

Jargon city

To be in with the in crowd you need to know the lingo:

Baud The speed at which modems transfer data. One baud equates to one bit per second

Bounce What your e-mail messages do when they can't find an address – bounce as with cheques

Domain The last part of an Internet address – *cix.compulink.co.uk*

Download Copying a file from a host system to your computer.

e-mail Electronic mail. The ability to (and act of) sending a message to someone else *on-line* regardless of their host system or computer platform

FAQ Frequently Asked Questions. You'll find that newsgroups have such files posted once a month or so for beginners

Finger An Internet program that lets you find out information about other users provided they have created a .plan file and their domain is on line

FTP File Transfer Protocol – a system for transferring files

Host system A public access site which provided access to people outside the research and government community

Netiquette A set of common-sense guidelines for not annoying others

Off-line When your computer is not connected to a host system or Internet

On-line When you are connected, for instance to a bulletin board

.plan Lists anything you want others on the Internet to know about you

Protocol A transfer method between a host system and your computer – Kermit, YMODEM, ZMODEM.

Server A computer that can distribute information or files automatically in response to specifically worded e-mail requests

Smiley A sequence of characters :-) that show you're happy (also helps show people without a sense of humour that what you just wrote was a joke). Other derivations are: Grumpy as :-I, moustache and glasses 8-{ and others

Snail mail The normal postal system – needs a stamp

TCP/IP Transmission Control Protocol/Internet Protocol. System for transferring information over a computer network

Telnet A program which connects you to other computers on the Internet

Upload Copying a file from your computer to a host system

User name This can be any combination of letters and numbers. For example *acorncomputing* is a user and *cix.compulink.co.uk* is a domain. Together you have the magazine's e-mail address: *acorncomputing@cix.compulink.co.uk*

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A CD-Rom drive for all pockets? Pam Turnbull investigates

Drive matters

WHEN it comes to hardware there is really only one criteria on which to judge it – does it work? With the Department of Education's CD-Rom initiative, a host of Acorn suppliers decided to take advantage of part of the £4.5million pounds being given to Britain's primary schools.

For those not in education, it meant an increase in the number and variety of CD-Rom drives available. With more companies involved, the prices began to drop rapidly. Two years ago a CD-Rom drive was the price of a computer – now the prices are more realistic.

Part of this problem was down to the fact that CD-Rom drives were SCSI connected, this changed with the devices from Morley, HCCS, Atomwide and Cumana.

Cumana is a name which has adorned computer drives on a variety of platforms for a good number of years, but their latest CD-Rom drive range gives everyone access to the increasing amount of CD software.

Being a price conscious bunch, we opted for the two lowest-priced models, but if you need quad-speed multi-CD-Rom drives Cumana can oblige.

Oscar: Completely accessible

As a rule the more modern your computer the cheaper it will be to add a CD-Rom drive. For the Archimedes machines with bi-directional printer ports – not the A300/400/500 or A3000 – you can just plug this drive in. Older machines would have to opt for the SLCD interfaced Bravo range at £299.

● *Indigo – just slot it in*

If you have dongled software – Impression or Artworks for instance – this plugs into a port on the back of the CD-Rom drive, but you must remember to turn on the drive before the computer otherwise the hardware key will not be recognised. Likewise, a printer lead or other device would be plugged in here.

All you need to do now is load the software drivers. You are provided with several utilities, including Boot PSLCD with the relevant notes and user guides, and hidden in Boot PSLCD is CDFS. If you plan to use your CD daily, all you have to do is load the application to your Boot file in the normal way.

Indigo: You're in control

Whereas Oscar is an external device, Indigo fits into the Risc PC slot and is connected to an IDE interface, leaving the expansion slots free for other devices and interfaces.

The 300i is the cheapest version at £120 but if you need more, the 300iA gives audio-mixing as well as Clare's ProArtisan 2 CD and Cumana's PhotoAlbum Photo CD and software vouchers. There are SCSI options as well.

Fitting Indigo into a Risc PC is a bit fiddly – not hard, just fiddly – and I was not keen on the fact that the extra board you are given is glued in, which means that your options are restricted.

Do check if you have a very early Risc PC as these were missing the Link 14 from the motherboard, so you can't plug in the audio card – which is even more fiddly to fit. Once in it works perfectly.

The driver software goes into the Boot:PreDesk directory and once in, is totally transparent.

The software

Both Oscar and Indigo come with the CDPlayer application which lets you play audio CDs through the headphone jack – the stereo quality is very good.

The application sits on your iconbar and lets you pause, forward, rewind, set tracks, repeat and memorise favourite combinations as well as having a SCSI setup option.

This is not that it's needed for either of these interfaces, but it's a generic application so gives the same options regardless.

PhotoView gives you access to Kodak PhotoCD resources – commercial and your own.

PRODUCT SPOTLIGHT

Product: Oscar
Price: £229
Product: Indigo CAA300i
Price: £199
Supplier: Cumana, Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH.
Tel: 0483 503121
Requirements: RISC OS 3+

Specifications

	Oscar	Indigo
Photo CD multi-session	Y	Y
Acorn Replay capable	Y	Y
Cache	64k	64k
Speed	double	double
Access time	320ms	320ms
Stereo line out	Y	Y
3.5mm headphone jack	Y	Y
Volume control	Y	Y
Internal power supply	Y	N
Integral power lead	Y	N
Load mechanism	Drawer	Drawer
Motorised load/eject	Y	Y

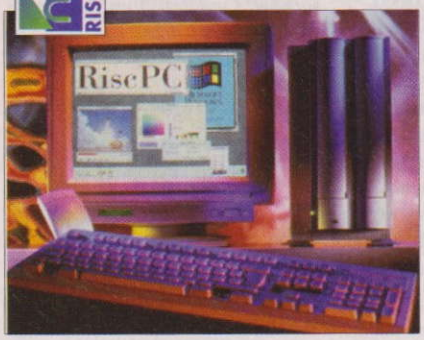
Watford Electronics

Jessa Group of Companies – Established 1972

Mail Order & Showroom: Jessa House, 1 Finway, Dallow Road, Luton LU1 1TR
Tel: 0582 487777 Fax: 0582 488588

Showroom Only: Jessa House, 250 Lower High Street, Watford WD1 2AN
Tel: 0923 237774 Fax: 0923 233642

RiscPC 600 Computer Systems



The RiscPC from Acorn offers all the traditional strengths of RISC processing, and a great deal more, at a remarkably affordable price. Based on a 30MHz ARM610 processor, the RiscPC simply leaves the competition standing.

It is the world's most cost-effective 32-bit RISC computer. The graphics on the RiscPC are astounding - 24-bit colour (2Mb VRAM required) at resolutions up to 1600 x 1200 pixels. The memory capacity starts at 2Mb and can be expanded to a massive 256Mb. A special slot for a 2nd processor is provided, allowing you to add an additional ARM processor or any other processor, so allowing easy low cost access to DOS and Windows based applications.

The standard sound system offers 8 channel stereo sound, which can be upgraded with the optional 16-bit sound card. Networking options include Econet and industry standard Ethernet. There is also a choice of either 14" or 17" monitors.

Specification:
- ARM610CPU running at 30MHz
- 2Mb, 4Mb or 8Mb RAM expandable to 256Mb
- 210Mb or 420Mb IDE Hard Disc Drive
- up to 2Mb VRAM for high resolution graphics
- 8 channel stereo sound
- up to 1600 x 1200 dpi resolution
- 24-bit colour graphics
- 2nd processor slot
- RISC OS 3.5 operating system in ROM
- 2 or 4 32-bit expansion slots (expandable to 8 slots)
- 3.5" 1.6Mb high density floppy disc drive
- 5.25" drive bay for floppy drive or CD ROM drive
- 14" EPA compliant SVGA monitor (AKF60)
- 12 months On-site warranty

RiscPC Upgrade Options

Memory Upgrade Options

ARA0340/U	upgrade from 2Mb to 4Mb RAM	£59.00
ARA0350/U	upgrade from 4Mb to 8Mb RAM	£149.00
ARA0370/U	upgrade from 8Mb to 16Mb RAM	£279.00
ARA0400/U	upgrade from 0Mb to 1Mb VRAM	£109.00
ARA0410/U	upgrade from 1Mb to 2Mb VRAM	£79.00

Hard Disk Upgrade Options

ADA1520/U	upgrade from 210Mb to 420Mb IDE hard drive	£119.00
ADA1530/U	upgrade from 210Mb to 540Mb IDE hard drive	£179.00

Monitor Options

MKA1640/U	upgrade from 14" to 15" Aries 5000 monitor	£99.00
MKA1620/U	upgrade from 14" to 17" Aries 7560 monitor	£299.00
MKA1670/U	upgrade from 14" to 17" Acorn AKF85 monitor	£379.00

Miscellaneous Options

AEA1650/U	upgrade to 4865 x 33 PC Card	£99.00
APAQ250/U	upgrade to dual speed CD ROM drive (CAA300)	£189.00

RiscPC 2M HD210

- 2Mb RAM expandable to 256Mb
- 210Mb IDE Hard Disk Drive
- 2 expansion slots
- 14" EPA compliant SVGA monitor

£1249

RiscPC 5M HD210

- 4Mb RAM expandable to 256Mb
- 210Mb IDE Hard Disk Drive
- 1Mb VRAM for enhanced graphics
- 2 expansion slots
- 14" EPA compliant SVGA monitor

£1399

RiscPC 9M HD420

- 8Mb RAM expandable to 256Mb
- 420Mb IDE Hard Disk Drive
- 1Mb VRAM for enhanced graphics
- 4 expansion slots
- 14" EPA compliant SVGA monitor

£1699

RiscPC 600 CDi Systems

Enter the world of multimedia with the RiscPC CDi system. Gain access to massive amounts of data on CD ROM – study the masses of text, pictures and sound all interacting with each other.

RiscPC 5M CDi System

- 5Mb RAM expandable to 256Mb
- 210Mb IDE Hard Disk Drive
- 14" EPA compliant SVGA monitor
- Dual speed CD ROM drive
- CD bundle as described below

£1599

RiscPC 9M CDi System

- 9Mb RAM expandable to 256Mb
- 420Mb IDE Hard Disk Drive
- 14" EPA compliant SVGA monitor
- Dual speed CD ROM drive
- CD bundle as described below

£1899

Specification:
- Dual speed CD ROM drive and IDE interface
- Hutchinson Encyclopaedia CD
- Sherlock Holmes CD
- Aries Stereo Speakers
- Acorn Video Collection CD
- Really Useful CDv2

RiscPC 600 Publishing Systems

One of the main uses for the Acorn RiscPC is DTP work. Utilising its immense processing power and high quality graphics capabilities, you can produce professional quality documents for a fraction of the cost.

5M Publishing System

- 5Mb RAM expandable to 256Mb
- 210Mb IDE Hard Disk Drive
- Impression Publisher
- Artworks
- CD bundle as described below

£1499

9M Publishing System

- 9Mb RAM expandable to 256Mb
- 420Mb IDE Hard Disk Drive
- Impression Publisher
- Artworks
- CD bundle as described below

£1799

Specification:
- 5M HD210 or 9M HD420 system
- Impression Publisher DTP software
- 14" EPA compliant SVGA monitor (AKF60)
- Artworks image manipulation software

Acorn 32-bit RISC Computer Systems

- A3010 Action Pack £319
- A3010 Learning Curve £589
- A3020 2M FD System £699
- A3020 2M HD System £839
- A4000 2M HD System £869
- A4 4M HD Notebook £1599

FREE Shoulder Bag with every A3010 or A3020 computer

Upgrade Options

Memory Upgrades

ARA0220	upgrade to 2Mb RAM - A3010	£49.00
ARA0260	upgrade to 4Mb RAM - A3010	£135.00
ARA0230	upgrade to 4Mb RAM - A3020/A4000	£79.00

Monitor Options

MKA0170/U	upgrade to AKF52 monitor	£40.00
MKA1020/U	upgrade to AKF50 monitor	£120.00

Miscellaneous Options

AAA0600	Learning Curve software pack	£39.00
AAA0610	Home Office software pack	£79.00

Hard Disk Upgrade Options

ADA0720	80Mb IDE hard drive - A3010	£179.00
ADA0730	120Mb IDE hard drive - A3010	£199.00

Acorn Pocket Book

The truly personal computer. With built-in word processor, spreadsheet, database, spell checker and scientific calculator, it provides all the basic tools for recording ideas, notes and data.

- Pocket Book 256K Computer £165
- Pocket Book 256K Class Pack £1650

Pocket Book II with 256K £229
Pocket Book II with 512K £279

Pocket Book Accessories

A-Link	£40.00	Plotter Class Pk	£250.00
Parallel Link	£25.00	128K RAM Disc	£49.00
PC Link	£59.00	256K Flash Disc	£59.00
Mac Link	£65.00	512K Flash Disc	£85.00
Schedule	£16.00	OPL Editor	£59.00
Schedule Class Pk	£160.00	Mains Adaptor	£12.00
Plotter	£25.00		

0% Finance

available on all basic RiscPC systems, A4000 systems and A4 Notebooks. Call 0582 745555 for more details.

TO ORDER CALL OUR SALES HOTLINE or FAX YOUR ORDER on 0582 488588

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CD-ROM and Multimedia

CD-ROM Software

Artworks	£129
Artworks Clip Art CD	£18
British Birds	£150
Castles	£40
Changing Times	£125
Countries of the World	£40
CD – 4 Disc Set	£149
CD Francais	£120
Creepy Crawlies	£90
Daily Telegraph	£125
Dictionary of Living World	£175
Directions 2000 – French	£140
En Mercha – Spanish	£140
Elements – Science series	£130
Frontier 2000CD	£125
Grooves	£90
Hutchinson Encyclopaedia	£49
Illustrated Holy Bible	£23
Illustrated Shakespeare	£23
Image Warehouse	£53
ITN European Atlas	£149
Interactive French Tutor	£149
Interactive Periodic Table	£99
Inventors & inventions	£150
Materials – Science series	£130
Number Games	£79
Pro Artisan v2	£129
Revelation II	£99
Really Useful CD v2	£47
Sherlock Holmes	£23
Sherston Naughty Stories	£79
Space Encyclopaedia	£57
Times & Sunday Times	£195
Times Newspaper Sampler	£40
Tekkie CD	£99
Understanding the Body	£40

CUMANA

Oscar CD-ROM Drive

Dual speed CD-ROM drive – connects to parallel port on A3010, A3020, A4 and A5000 computers.

- Oscar CD-ROM drive – parallel **£229**

Bravo CD-ROM Drive

Dual speed CD-ROM drive – connects to parallel port or with SLCD interface.

- Bravo CD-ROM drive – parallel **£299**
- Bravo CD-ROM drive – A3000 **£299**
- Bravo CD-ROM drive – A5000 **£299**

Victor CD-ROM Drive

Dual speed SCSI CD-ROM drive, available as a single drive, or dual and quad speed versions with a SCD autochanger. Interface not included.

- Victor 402A CD-ROM drive **£299**
- Victor 632A CD-ROM drive **£399**
- Victor 602 - dual speed 6CD A/C **£499**
- Victor 604 - quad speed 6CD A/C **£969**

Indigo CD-ROM Drive

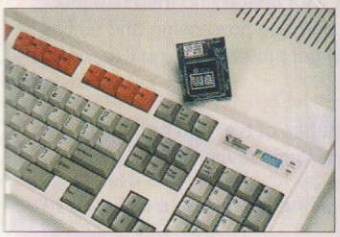
The ideal CD-ROM drive for the RiscPC. A dual speed unit that connects to the IDE interface (300i series). SCSI version also available.

- Indigo 300i CD-ROM drive–IDE **£199**
- Indigo 300iA CD-ROM drive–IDE **£249**
- Indigo 401 CD-ROM drive–SCSI **£199**
- Indigo 631 CD-ROM drive–SCSI **£299**

Accessories

- 8-bit SCSI Interface – A3000 **£119**
- 16-bit SCSI Interface – A5000 **£119**
- SCSI-2 Interface–A5000/RiscPC **£199**
- SCSI Interface cable **£15**
- SCSI-2 Interface cable **£20**

25MHz ARM3 Turbo Card



Using the latest surface mount technology on a high quality 4 layer PCB, the ARM3 Turbo Card will increase the speed of your A300, A400 or A3000 computer by up to 6 times.

The upgrade can be fitted by the user in A300 and A400 machines, but for owners of the A3000 we can collect, fit and deliver your computer back for an additional £34.

Owners of A300 and old A440 models will require a MEMC1A upgrade to use the ARM3.

Buy ARM3 Turbo Card and RISC OS 3.1 upgrade for £159

Special Offer Price £89

Hard Disc Drive Upgrades

A3000/A3010 Internal IDE Hard Drives

• ADA0720	80Mb	19ms	£169
• ADA0730	120Mb	19ms	£189
• ADA1070	250Mb	11ms	£249
• ADA2080	340Mb	11ms	£309
• ADA2200	540Mb	10ms	£489

A300/A400 Internal IDE Hard Drives

Complete with interface, drive, cables and mountng brackets

• ADA0520	40Mb	23ms	£99
• ADA2010	250Mb	13ms	£199
• ADA0580	340Mb	13ms	£229
• ADA2030	420Mb	12ms	£269
• ADA2210	540Mb	11ms	£329

A5000 Internal IDE Hard Drives

To replace existing hard drive, if required to be additional drive, 2nd drive kit will be needed.

• ADA2050	250Mb	13ms	£159
• ADA0880	340Mb	13ms	£189
• ADA2000	420Mb	12ms	£219
• ADA2220	540Mb	11ms	£279

A300/A400 IDE Hard Drives

• ADA0670	80Mb	19ms	£179
• ADA0680	120Mb	19ms	£199
• ADA1090	250Mb	11ms	£259
• ADA2000	340Mb	11ms	£319
• ADA2230	540Mb	10ms	£499

A300/A400 SCSI Hard Drives

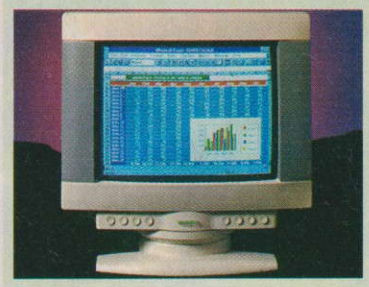
Complete with 16-bit interface, drive, cables and mountng brackets

• ADA2300	365Mb	12ms	£340
• ADA2310	540Mb	11ms	£429
• ADA2320	1.0Gb	9ms	£579
• ADA2330	2.0Gb	10ms	£1069

Cables & Accessories

- A5000 2nd Drive Kit **£10**
- 16-bit IDE Interface - A300/A400 **£39**
- 8-bit IDE Interface - A3000 **£49**
- SCSI Interface - A300/A400 **£119**
- SCSI-2 Interface - A300/A400 **£199**
- 25-way - 50-way SCSI Cable **£10**
- 50-way - 50-way SCSI Cable **£16**
- 50-way - 50-way SCSI-2 Cable **£20**

Aries Multiscan Monitors



For the ultimate in high definition, flicker-free monitors displaying the sharpest text and graphics look no further than the new Aries range of monitors.

They're safe, easy to use and set up and excellent value for money. All models are low radiation and conform to the Swedish MPR II standard.

The 15" and 17" models are also EPA compliant, ideal for use with RiscPC which supports this type of monitor.

All monitors are supplied with connection cable with 15pin VGA connector. If they are to be used with an older Archimedes, a SVGA VIDC Enhancer and 9pin to 15pin adaptor will be required.

14" A-Scan Pro LR

- 14" non glare tube, 0.20mm dot pitch
- 1024 x 768 resolution @ 60Hz
- 29KHz to 70KHz horizontal frequency
- Microprocessor controls
- Low radiation MPR II standard

£199

15" EnergyPro 6000i

- 15" FST tube 0.20mm dot pitch
- 1280 x 1024 resolution @ 60Hz
- 29KHz to 70KHz horizontal frequency
- Digital controls with LCD display
- Low radiation MPR II standard

£259

17" EnergyPro 7560i

- 15" FST tube 0.20mm dot pitch
- 1280 x 1024 resolution @ 60Hz
- 29KHz to 70KHz horizontal frequency
- Digital controls with LCD display
- Low radiation MPR II standard

£499

Scan256 Scanner

Scan256 gives you up to 256 grey levels at a maximum resolution of 400dpi and is supplied with state-of-the-art software. This makes it the only sensible scanning and image processing solution for Acorn 32-bit machines.

The highly advanced software supplied with the scanner offers you many different image processing options, such as dithering, image enhancement, edge detection, brightness and contrast controls, plus many more.

Features include:

- Multiple copies of an image in memory at once
- Advanced image processing tools
- Convolution digital filtering with over 100 filters
- Adjustable scale & size during scan
- Save images in industry standard formats
- True brightness, contrast and gamma controls
- 105mm scanning width
- Ability to rotate and shear the image

- Scan256 for A300/A400/A5000 **£129**
- Scan256 for A3000 external **£139**

Archi A4 Scanner

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, etc, with its detachable sheet feeder, or used as an A4 wide hand scanner. 64 grey levels are produced from the scanner at resolutions up to 400dpi.

- A4 Scanner for A300/A400 **£199**
- A4 Scanner for A3000 **£229**
- Sheet Feeder for A4 Scanner **£69**

Upgrade to Archi A4 Scanner

For existing users of the Archi MK2 hand scanner we can offer you an upgrade to the A4 Scanner for only **£129**

Fax/Modem Bundle

Now you can use your Archimedes computer as a fax machine. Prepare a fax, send it using the ArcFax software. Receiving a fax is simple - display on the screen or print out on any RISC OS printer.

- Fax/Modem with ArcFax software **£149**

Memory Upgrades

- A3000 to 2Mb RAM upgrade **£49**
- A3000 to 4Mb RAM upgrade **£119**
- A3000 to 8Mb RAM upgrade** **£259**
- A3010 to 2Mb RAM upgrade **£49**
- A3010 to 4Mb RAM upgrade **£139**
- A3020/A4000 to 4Mb RAM upgrade **£79**
- A410/1 to 2Mb RAM upgrade **£35**
- A410/1 to 4Mb RAM upgrade **£70**
- A420/1 to 4Mb RAM upgrade **£105**
- A540 additional 4Mb RAM upgrade **£249**
- A5000 to 4Mb RAM upgrade **£79**
- A5000 4Mb to 8Mb RAM upgrade **£259**
- RiscPC additional 2Mb RAM module **£85**
- RiscPC additional 4Mb RAM module **£139**
- RiscPC additional 8Mb RAM module **£279**
- RiscPC additional 16Mb RAM module **£499**

** Dealer fit only

RISC OS Upgrades

- RISC OS 3.1 Single User upgrade **£69**
- RISC OS 3.1 Bulk Software upgrade **£319**
- RISC OS 3.1 Hardware upgrade **£24**

Graphics Cards

- Colour Card Gold **£239**
- Chroma 500 Genlock card **£419**
- Chroma 150 PAL Encoder **£169**
- Chroma Genlock card **£209**
- Hawk V9 MKII Digitiser **£189**
- Eagle M2 Multimedia card **£319**
- Vision Colour Digitiser **£99**
- HiVision Colour Digitiser **£149**
- Scanlight Video 256 **£199**
- Vision24 Colour Video Digitiser **£99**
- Multiscan VIDC Enhancer **£15**
- SuperVGA VIDC Enhancer **£29**

We stock a full range of add-ons and expansion cards from HCCS, Computer Concepts, Wild Vision, Cumana, Aleph One, IFEL, Lingenuity and Acorn. If there is a product you can't see here, it doesn't mean we don't stock it.

Call 01562 745555 for price and availability

from £499

A 2400dpi* colour flatbed scanner for the Archimedes or RiscPC for under £700. With true colour capabilities (16.7 million), we are sure you'll agree that it's an offer you can't afford to ignore.

Having brought you the most innovative handscanner back in 1992, we thought it was time to do it again. Following their success in the PC field, we introduce the award winning Aries Relisys flatbed scanners for the Acorn Archimedes and RiscPC. When you see the remarkably affordable price, you'll be sure to want one.

With the Aries Relisys scanner you'll open up a whole new world of possibilities. Imagine being able to scan a whole A4 size picture and in true colour. If you don't want the whole image, simply select the required area and scan again - the software will capture only what you want to see.

The Aries Relisys scanner is the perfect answer for anyone involved in desktop publishing (DTP) work that requires the ability to import graphic images easily, or import text via Optical Character Recognition (OCR) software.

There are three models to chose from - 1200dpi 256 greyscale, 1200dpi 24bit colour and 2400dpi 24 bit colour, and with prices starting from only £499, you can't afford not to have one.

The scanners are amazingly fast. Using the new industry standard TWAIN drivers and state of the art SCSII II interface technology**, you can scan a whole A4 page in 15 seconds (mono) and in minutes (24-bit colour).

All scanners come supplied with ImageMaster, a powerful image scanning/editing package, and a copy of Sleuth OCR software, enabling you to turn scanned text into a form that can be edited.

An optional 50 page document feeder is available for scanning long documents, and an adaptor to get the best results when scanning transparencies.

FREE Software

All Aries Relisys scanners come bundled with two FREE software packages.

ImageMaster
Scan your image and then use the powerful image processing and editing tools to get professional quality result

Sleuth OCR
Scan pages of text and turn it into an editable form, saving hours of typing.

(Minimum 4Mb RAM required to use scanner)

Accessories

• SCSI-2 Interface & Cable	£159
• 50 sheet Auto Document Feeder	£259
• Transparency Adaptor	£295

Auto Document Feeder

Specification

- Capacity: 50 pages
- Paper size: 8.5" x 14" (max)
  5.0" x 7.2" (min)
- Paper thickness: 0.05mm to 0.15mm

£259

SPECIFICATIONS

Model	ArcScan 3420	ArcScan 3520	ArcScan 2412
Scanner Type	Mono	Colour	Colour
Interface	SCSI-2	SCSI-2	SCSI-2
Scanning Process	Single Pass	Three Pass	Single Pass
Image Data - colour	N/A	16.7 million colours	16.7 million colours
Image Data - mono	256 Greyscale	256 Greyscale	256 Greyscale
Scanning Area	216 x 356mm	216 x 356mm	216 x 356mm
Optical Resolution	300 x 600dpi	300 x 600dpi	300 x 1200dpi
Maximum Resolution*	1200 x 1200dpi	1200 x 1200dpi	2400 x 2400dpi
Scan Speed - A4 page	10 secs	40 secs	26 secs
Brightness/Contrast	256 levels	256 levels	256 levels
Auto Document Feeder	ADF-30 (option)	ADF-30 (option)	ADF-30 (option)
Price	**£499**	**£549**	**£699**

* Resolution quoted is the maximum achievable using interpolation

** as the Relisys scanner utilises a SCSI-2 interface, we recommend that you purchase the interface listed above to use with the scanner. We have found, when evaluating other interfaces that this one gives the best results.

Discounts available to Schools, Colleges or other Educational establishments - Call 0582 74555 for details

TO ORDER CALL OUR SALES HOTLINE 0582 745555
or FAX YOUR ORDER on 0582 488588

Access AMERICAN EXPRESS

Archimedes Software

Networking

- Econet Interface - all models £49
- Ethernet Interface III - A5000 £149
- Ethernet Interface - RiscPC £99
- Acorn Access - A3000 £145
- Acorn Access - A5000 £145
- Acorn Access - RiscPC £119
- Accord P/P Networking - A3000 £145
- Accord P/P Networking - A3020 £149
- Accord P/P Networking - A5000 £145
- EtherLAN Card - A3000 (BNC) £131
- EtherLAN Card - A3020 (BNC) £143
- EtherLAN Card - A5000 (BNC) £131
- EtherLAN Card - A3000 (B/TP) £131
- EtherLAN Card - A3020 (B/TP) £148
- EtherLAN Card - A5000 (B/TP) £131
- EtherLAN Card - RiscPC (B/TP) £113
- 8 port UTP Ethernet Hub £179
- 12 port UTP Ethernet Hub £259
- 16 port UTP Ethernet Hub £329

I/O Cards

- A3000 User Port/MIDI card £44
- A3000 Analogue/User card £35
- I/O Podule - User/Ana/1MHz £79
- Archi Analogue/User card £49

PC Cards

Transform your Archimedes so you can run standard PC MS-DOS software and even Windows 3.1. Available as a bare card with either 486SLC25 or 486SLC2-50 (no memory) or with 4Mb RAM fitted. Prices do not include DOS or Windows, which we can supply for an extra £99, at time of purchase only.

- 486 25MHz 0Mb RAM £369
- 486 25MHz 4Mb RAM £629
- 486 50MHz 0Mb RAM £449
- 486 50MHz 4mb RAM £609
- MS DOS 5.2/Windows 3.1 £99
- 4Mb SIMM RAM Module £149
- 486SX33 Card for RiscPC £199

Miscellaneous

- Floating Point Accelerator £99
- MIDI Expansion card £85
- MEMC1A Upgrade £25
- 4 Podule Backplane £22
- Fan for Backplane £7
- Arc to BBC Serial Link £16
- A3000 Serial Upgrade £19
- Laser Direct Hi-Res 4ppm £799
- Laser Direct Hi-Res 8ppm £1099
- A4-1200 ArcLaser £985
- Scanlight 256 – A3000 internal £195
- Ultimate Expansion System £39
- Ultimate Expansion & IDE I/F £99
- Ultimate SCSI uPodule £69
- Ultimate Vision Digitiser uPodule £69
- Ultimate MIDI uPodule £49
- Ultimate Analogue uPodule £29
- Ultimate ScanLight 256 uPodule £229
- External Floppy Disc Interface £10
- ST506 Hard Disc Interface £49

Accessories

- A3000 Keyboard Dustcover £5
- A3000 Combined Dustcover £9
- A300/400 Dustcover £9
- Archi Keyboard only Dustcover £6
- A5000 Dustcover £9
- 14" Monitor Dustcover £8
- Perspex Keyboard Cover £8
- A3000 Monitor Stand £15
- A3000 Podule Case £15
- A3000 Carry Case £10
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All Laser printers (excluding Hewlett Packard) include 12 Months On-Site maintenance

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• Brother HL-630	6ppm	£379
Brother HL-10DPS	10ppm	£1445
• Canon LBP 4i	4ppm	£477
• Canon LBP-8 IV	8ppm	£920
• Canon LBP-8 IIIR	8ppm	£1559
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• Epson EPL-5200	6ppm	£478
• Epson EPL-5600	6ppm	£660
• Fujitsu VM600	6ppm	£529
• Fujitsu VM4	4ppm	£499
• HP Laserjet 4L	4ppm	£460
• HP Laserjet 4 ML	4ppm	£743
• HP Laserjet 4P	4ppm	£597
• HP Laserjet 4MP	4ppm	£857
• HP Laserjet 4+	12ppm	£946
• HP Laserjet 4M+	12ppm	£1270
• HP Laserjet 4Si	16ppm	£2099
• HP Laserjet 4Si MX	16ppm	£2999
• NEC SuperScript 610	6ppm	£275
• NEC S 102P	6ppm	£992
• OKI OL-410ex	4ppm	£515
• OKI OL- 850 PS	8ppm	£770
• Panasonic KX-P4410*	5ppm	£425
• Panasonic KX-P4430*	5ppm	£492
• Panasonic KX-P4440	10ppm	£775
• Panasonic KX-P5400	4ppm	£599
• Star LS-5	5ppm	£365
• Star LS-5 EX	5ppm	£485
• Star LS-5 TT	5ppm	£528
• Star WinType 4000	4ppm	£299

*2 years on-site warranty

Laser RAM Upgrades

Type	1M	2M	4M	8M
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• Canon LBP-4i	£109	–	£279	–
• Canon LBP-8 IV	£119	–	£299	–
• EPL-4100/4300	£70	£110	£205	–
• EPL-5200/5800	£58	£115	£215	–
• Fujitsu VM600/VM4	£57	£85	£149	£299
• Fujitsu VM800	£115	–	–	–
• HP III/IIIP/IIID	£75	£115	£135	–
• HP II/IID	£75	£115	£135	–
• HP IIISI	£57	£85	£158	£299
• HP 4/4M/4P/4MP	£85	£85	£149	£299
• HP 4L/4ML	£75	–	–	–
• KX-P4410/4430	£129	£199	–	–
• KX-P4420/4450i	£75	£115	£135	–
• KX-P4400/5400	£89	£139	£229	–
• OKI OL400e	£99	£118	–	–
• Star LP-8	£138	£225	–	–
• Star LS-5	£75	–	–	–

Laser Consumables

Type	Toner	Drum	Dev
• Canon/Star 4s	£48	–	–
• Canon LBP-8 IV	£70	–	–
• Canon LBP-8 III	£52	–	–
• EPL-4100/4300	£75	£89	–
• EPL-5200	£85	–	–
• EPL-7100/7500/8100	£117	–	–
• Fujitsu VM600	£85	–	–
• Fujitsu VM800	£115	–	–
• Fujitsu VM4	£29	£149	£89
• HP II/III/IIID	£52	–	–
• HP IIP/IIIP	£46	–	–
• HP IIISi/4Si	£85	–	–
• HP 4/4M/4P/4MP	£72	–	–
• HP 4L/4ML	£49	–	–
• NEC 610	£85	–	–
• NEC S60/S62P	£99	–	–
• OKI OL-400/800	£19	£189	–
• OKI OL-400e	£17	£129	–
• KX-P4410/30	£29	£80	£90
• KX-P4440	£32	£108	£115
• KX-P4420	£24	£60	£55
• KX-P4450/50I/51/55	£18	£75	£60
• KX-P4400/5400	£32	£69	–
• Qume Crystalprint	£99	£189	–
• Star LS-5	£83	–	–

Laser Accesories

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• LaserJet 4 Lower Paper Cassette	£205
• LaserJet 4 JetDirect Ethernet Card	£339
• LaserJet IIIP Lower Paper Cassette	£115
• Ozone filter for KX-P4420	£9
• Ozone filter for KX-P4450/4455	£20
• LaserJet 4Si Duplex Unit	£475
• Envelope Feeder for LaserJet 4	£199
• LaserJet Font Cartridges	from £45
• LaserJet III FX/IBM Emulation Cart.	£79
• Lower Paper Tray for Canon LBP-4	£98
• A5 Paper Feeder for LaserJet 4P	£85
• Postscript Upgrade for LaserJet 4P	£225

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• Citizen Swift 90C	80col	£121
• Citizen 1200+ Parallel	80col	£90
• Citizen 120D+ Serial	80col	£102
• Epson LX100	80col	£109
• Epson LX300	80col	£90
• Epson LX400	80col	£89
• Epson LX1050	132col	£172
• Epson FX870	80col	£223
• Epson FX1170	132col	£282
• Epson DFX5000C	132col	£1095
• Pansonic KX-P1150	80col	£89
• Panasonic KX-P1695	132col	£267
• Star LC15	132col	£177
• Star LC100C	80col	£89
• Star ZA200	80col	£255
• Star ZA250	132col	£315

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• Citizen Swift 200 Mono	80col	£136
• Citizen Swift 200 Colour	80col	£146
• Citizen Swift 240 Mono	80col	£160
• Citizen Swift 240 Colour	80col	£178
• Citizen Swift 24X	132col	£235
• Epson LQ100	80col	£98
• Epson LQ150 Colour	80col	£154
• Epson LQ570+	80col	£185
• Epson LQ870	80col	£353
• Epson LQ1070+	132col	£335
• Epson LQ1170+	132col	£407
• Epson LQ2550+	132col	£679
• NEC P20	80col	£129
• NEC P30	132col	£236
• NEC P32Q	132col	£238
• NEC P62Q	80col	£315
• NEC P72	132col	£379
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• Panasonic KX-P2624	132col	£253
• Star LC24-20 II	80col	£113
• Star LC24-15 II	132col	£235
• Star LC24-30C	80col	£148
• Star LC24-100	80col	£95
• Star LC24-300C	80col	£178
• Star XB24-200C	80col	£315
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(Manufacturers Original Ribbons Only)

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• Canon BJ10ex/BJ10sx	£14	–
• Canon BJ200/BJ230	£16	–
• Canon BJ300/BJ330	£11	–
• Canon BJC600	£6	£7
• Canon BJC800	£16	£22
• Citizen 120D+	£4	–
• Citizen Swift 200/240	£4	£13
• Citizen Swift 24X	£8	£18
• Epson LX400/LX850/FX870	£4	–
• Epson LX100	£4	–
• Epson LX1050/FX1170	£5	–
• Epson LQ100	£4	–
• Epson LQ150	£4	£12
• Epson LQ570/870	£5	–
• Epson LQ1070/1170	£8	–
• Epson LQ2550	£8	£16
• Epson SQ870/SQ1170	£21	–
• Epson Stylus Colour	£14	£29
• Epson Stylus 300	£12	–
• Epson Stylus 800/1000	£10	–
• Fujitsu DL1150/DL1250	£5	£7
• Fujitsu DL3600	£6	£12
• Fujitsu B100/B200	£14	–
• HP DeskJet Colour	£–	£21
• HP DeskJet High Capacity	£20	–
• HP DeskJet 310	£15	£21
• HP DeskJet 1200	£20	£21
• HP PaintJet	£16	£18
• HP PaintJet XL300	£16	£18
• Kaga/Taxan KP810/815	£5	–
• NEC P22Q/P32Q	£8	–
• NEC P62/P72/90	£8	£14
• Panasonic 1150/1170/1180	£7	–
• Panasonic 2180/2123/2124	£7	£15
• Panasonic 1624/2624	£8	–
• Star LC10/LC20/LC100	£5	£9
• Star LC100/200	£5	£11
• Star LC24-20/24-100/24-200	£5	£12
• Star LC24-30	£8	£12
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• Star SJ48	£15	–
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• Canon BJ300	80col	£319
• Canon BJ330	132col	£369
• Canon BJC600	80col	£409
• Canon BJC800	132col	£1070
• Canon BJC820 (Mac)	132col	£1228
• Citizen ProJet II	80col	£299
• Epson Stylus 300	80col	£138
• Epson Stylus 800+	80col	£172
• Epson Stylus 1000	132col	£339
• Epson Stylus Colour	80col	£376
• Epson SQ870	80col	£409
• Epson SQ1170	132col	£580
• Fujitsu B100	80col	£145
• HP DeskJet 520	80col	£183
• HP DeskJet 500C	80col	£217
• HP DeskJet 560C	80col	£367
• HP DeskJet 310	80col	£163
• HP DeskJet 310 & CSF	80col	£204
• HP DeskJet 1200C	80col	£1079
• HP DeskJet 1200C PS	80col	£1595
• HP PaintJet XL300 A4	80col	£1616
• HP PaintJet XL300 A3	132col	£1735
• HP PaintJet XL300 PS	132col	£2575
• HP DeskWriter 520 (Mac)	80col	£189
• HP DeskWriter 580C (Mac)	80col	£375
• Star SJ48	80col	£182
• Star SJ144	80col	£285

Sheet Feeders

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• Canon BJ300	£88
• Canon BJ330	£92
• Citizen Swift 24/200/240	£75
• Epson LX400	£69
• Epson LQ570/LQ870	£47
• Epson LQ1070/LQ1170	£89
• HP DeskJet 310	£48
• NEC P20/P220	£59
• NEC P3Q/P32Q	£85
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• HP DeskJet Std Capacity - 5 pack	£14
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• Citizen Projet II Cartridge	£3
• Canon BJ10sx Battery Pack	£32
• Epson 0K Serial Interface	£29
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• Epson 32K Serial Interface	£95
• Epson LQ100 Tractor Unit	£29
• HP DeskJet FX Emulation Cartridge	£49
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• HP DeskJet 310 Battery Pack	£33
• HP DeskJet Carry Case	£49
• HP DeskJet 310 Colour Kit	£28
• HP DeskJet 1200 Postscript Upgrade	£499
• HP DeskJet Prestige Elite Fonts	£55
• HP DeskJet Letter Gothic Fonts	£56
• HP DeskJet 310 Parallel Cable	£12
• Panasonic Serial Interface	£49
• Panasonic 32K Buffer	£16
• Panasonic 2180/2123 Colour Kit	£30
• Star 8K Serial Interface - LC range	£52
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• 51838J - 50 x DJ500 Glossy A4 Paper	£35
• 51630Z - 50 x DJ500 A4 Paper	£15
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• Appletalk Interface for DeskJet 1200	£129
• Appletalk Interface for LaserJet III	£189

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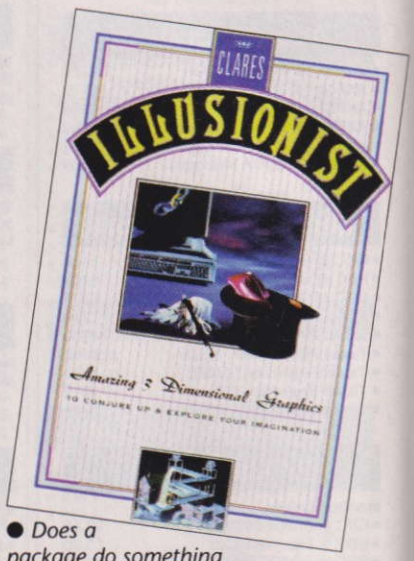
Desperately seeking software

Mark Sealey provides some guidelines for selecting good packages



● *Does a package do something only possible on a computer?*

WELL over two thousand educational software titles for the 32-bit range are now available, let alone the rest. Some packages are outstanding, some are abysmal, but many more are well... *undistinguished.* **How can you tell which is which?**

No two people agree entirely on what constitutes good software. Much depends on your circumstances and experience. There are certain ground rules, though, which cannot reasonably be broken.

What is important is that you go into the business of choosing software having really thought about these. Only then are you in a position to make a proper decision.

This will often be difficult without seeing the software first. But there are ways of overcoming this. After getting things clear in your own mind, you will know which points to put to someone else who has used a product that you are considering and which questions to ask of the publishers.

You will also know whether those criteria which are important to you have been used (directly or implicitly) in any review that you may read.

In some cases you can also try the software before you buy – an excellent policy that is operated, to their credit, by some, mainly education, publishers.

Even so, it is all too easy – while trying to learn what a package does – to be distracted by snazzy graphics and sound from the task in hand: Namely, to decide whether or not it's for you.

Before beginning...

There is one thing that ought to be settled before any other: Can the task be done more simply or more effectively off the computer? In the case of a suite to assist with estimating distance or teach French verbs, this may very well be the case because the computer is no substitute for the real thing. If so, leave it switched off.

There are exceptions: Where the *real thing* would be impossible or too costly – historical explorations and simulating explosions are cases in point.

Even if the computer is chosen for the task, remember that *you* know about IT. Non-specialists may feel uncomfortable with it – more so than you realise or than they'll admit.

What is more, equipment is still fallible. Although you may be convinced by what the package claims, could the money be more profitably spent? Only if these objections can be met, can you legitimately decide that the computer is the best medium for the job.

What's it for?

If you are going to use the computer, is it obvious to you that the program or suite under consideration has a clearly stated purpose? If not, forget it. Do you really want something best described as *a good idea at the time*?

Assuming that it is more than this, is this purpose set out in precise terms? If so, is this exactly what you need? Or could there be a rival – albeit dearer – package that covers the same ground, and more? Or covers it better?

For education, would you find it useful to have clear references to National Curriculum Attainment Targets and Statements of Attainment indicated? If so, are they set out intelligibly?

If the software is described more generally – *to assist with language development*, for example – how do the publishers claim that this is done? If such information is absent, be a little wary. Sometimes the idea behind a package is so innovative that you can forgive generalisations. All of the exact jobs that can be performed by the likes of LOGO, and Knowledge Organiser as well as certain utilities (Snippet and The Data Store's compendium disks, for instance) are often – legitimately – hard to define, although none the less useful for that.

But if it is this sort of product that is being advertised you soon realise as much. It usually establishes itself as a classic, whose claim to a place in the disk box is virtually irrefutable. This sort of software, often generic and open-ended, is relatively rare though.

Does it do it right?

Once you know the intended aim of the package in which you are interested, the next step is to try to discover how well (or indeed whether) this aim is achieved.

The basic idea and indeed the programming may both be sound but can you be sure that the publishers have thought things through from the right perspective?

There are still many developers who are competent technically but who are not trained to understand and appreciate what goes on in a user's mind. Regrettably, this failing still mars a significant number of titles. There are several clear criteria to help you decide on this:

At the chalkface: A good indication is the documentation, does it contain a section headed something like *suggestions for classroom use*?

This can be found out in the course of an enquiry to the publishers. The more realistic and

thoroughly treated this essential support is, the more likely it is that the learning outcomes which the software claims to promote are achievable.

The right age: This sort of research can also yield information on how suitable the product is for the target age range. If this is not clear from the advertising – and it should be – put it in your enquiry to the publishers. You could try to discover whether the product has been adequately trialed.

Overload: Has this trialling led to some necessary cutting down of what perhaps was an over-ambitious design brief on the one hand, or to the careful integration of missing features at the suggestion of the best testers of all, the pupils, on the other?

Make 'em laugh...: The importance of the entertainment factor – that the package is *fun to use* – cannot be overestimated. Even some computer games which were never intended for educational use can help with such skills as dexterity, reading, decision-making, turn-taking and so on. Anyway, most of us do better what we enjoy doing.

...and feel good, too: Does the software ensure that pupils will avoid repeated failure, however challenging the task? This is still more important wherever it is to be used by children with Special Needs.

Will they learn? Ok, so you've established that the learning objectives have been clearly stated and even that they look likely to be met.

But there are other questions to be asked. Is there a coherent (although not necessarily explicit) set of learning theories behind the design of the product? Or is the software nothing more than drill and practice?

A little learning...: Such software relies on the flawed theory that learning is no more than a response to a predetermined stimulus.

This behaviourist model of learning argues that we only make our response (matching an historical event to a date or spelling a word *properly*) because we have correctly memorised the association between stimulus and response.

Such techniques are found at their most extreme in the *teaching machine* of the 1950s and 60s developed in the USA. Far too much drill and practice software today has unconsciously and unquestioningly followed this model.

It tends to be arid and of only ephemeral value. Memorising is not the same as learning, although much educational software equates them totally. Avoid, or use such material very selectively.

Typical of this behaviourist approach are the maths suites that present the user with a series of 'sums,' and reward or punish with smiles or sad faces plus the ubiquitous bing or boing.

They may seem to appeal at first to many children who have experienced nothing better. In fact, they often keep the pupil running on the spot and are likely to reinforce the idea that everything, but everything, is amenable of a right or wrong answer.

A sounder educational principle (despite what the present regime appears to believe) is to help and encourage children to make their own choices and trust their own judgements.

Behaviourism has been largely discredited. So it makes sense for somewhat subtler models to be followed: Good software should allow the formation of new ideas – at the learner's pace – by building on familiar ones. This open-ended approach is what packages like LOGO and Numerator aim to do.

What's the point?

Pupils must be able to see the reason for what they are doing and understand it well enough to use it in a meaningful context, before there should be any question of their having to commit it to memory. This is superbly executed in simulations like Dans le Metro (St Martin's College) or Badger Trails (Sherston).

This is not to say that there should be aimless wandering, with material repeated regardless of success or failure. Progression must be built in but remember two things:

Firstly that the user will not necessarily see the progression in the same way as the designer(s) of the software did. Some conceptual jumps intended to be moderate by the authors may seem enormous to a pupil who is less familiar with the material.

The reverse is also true. This argues strongly for the flexibility of approach advocated later on. It may mean several different ways through the material according to the abilities and predispositions of the user.

Secondly, remember that children respond to rewards. To rewards, though, not so much the smiling faces type as to ones that result from intrinsic motivation. For example, pupils delight in being able to get further today than they could yesterday in a well-planned adventure or simulation like Frontier 2000 (Cambridgeshire Software House).

and a little science...

We learn effectively by seeing something from several different points of view. The more ways in which pupils can explore an idea the better.

Think about it: The easiest instructions to follow in a car are those that give you not only directions for left, right and straight on but also locate where you should be by referring to buildings, colours, sounds (past the roadworks) and even texture (along the cobbled street).

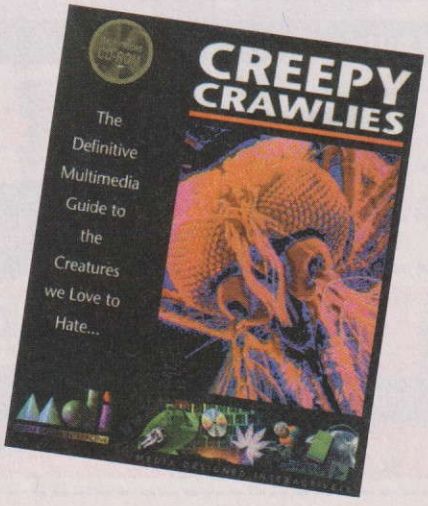
By the same token, it is a better piece of software that sponsors activities away from the computer where more senses than sight (and perhaps hearing) can be involved.

In the case of a suite dealing with map-reading skills for instance, a good piece of software will directly stimulate model making, drama, verbal inquiry and drawing and so on.

Some of the classics – Quest support packs like Discovering Datchworth (the Advisory Unit) – and newer favourites like the Arcventure series (Sherston) are very good at this.

If a piece of software has all or most of these attributes, the chances are that it will actually promote learning soundly and effectively. But there is still much more to be considered.

● *Next month we'll take a further look at the questions to be asked and the decisions to be made when buying software.*



● *Is a package's aim clearly defined?*

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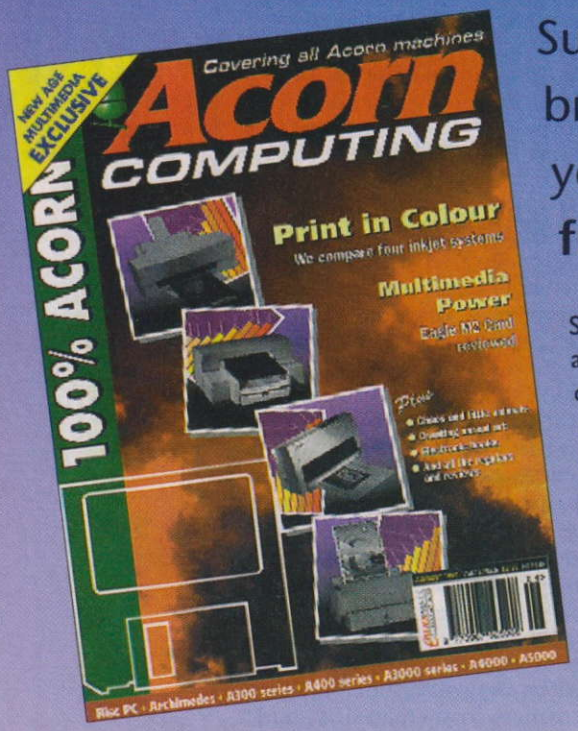

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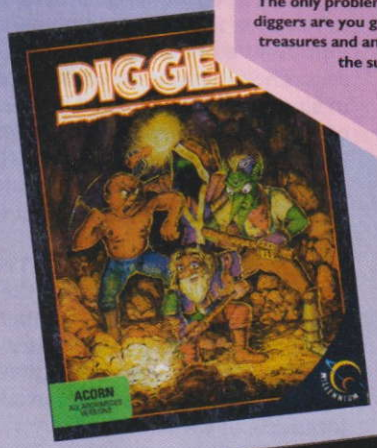

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Spreading

PROSHEET has been designed to provide most facilities required in a spreadsheet for education, home and small business users. It is priced accordingly, at less than half the price of its heavyweight competitors such as PipeDream, Eureka, Schema and Resultz.

As supplied, ProSHEET allows a maximum sheet size of 26 columns by 100 rows. A separate configuration program is supplied to change this maximum but this should not be set too high as ProSHEET will request enough memory for the largest possible sheet, however small the actual spreadsheet. The largest possible is 26 columns by 999 rows.

Click Select over the ProSHEET icon on the icon bar and a dialogue box appears which allows you to set the actual size of the sheet within the maximum. The default size is 12 columns by 30 rows but this can be increased, up to the maximum configured size, while editing the sheet.

PRODUCT SPOTLIGHT

Product: ProSHEET
Price: £39.95
Supplier: Silicon Vision, Signal House, Lyon Road, Harrow, Middlesex HA1 2AG.
Tel: 081-422 3556

After defining the sheet it is displayed with the familiar spreadsheet grid pattern showing the bounds of each cell. Values or expressions can immediately be entered into any of the cells, expressions are distinguished from text by an initial +, -, or number. ProSHEET's facilities can be accessed either by conventional RISC OS menus or by an icon-based tool box.

The top line of the sheet's window is more comprehensive than in most spreadsheet applications. As well as indicating the current cell being edited and the contents of the cell, it is possible to click on icons to change between fixed and floating numbers, the number of decimal places of accuracy for the display and whether the result should be left or right justified within the cell.

ProSHEET's icons are not the 3D ones from RISC OS 3.1 but specially defined to allow compatibility for users of RISC OS 2. Interestingly, the shadows are not consistent with the light coming from the top left as in RISC OS 3.1 which could annoy purists.

Expressing yourself

A good range of functions can be used in expressions. These include trigonometric ones, absolute values, logs and exponentials, square roots and random numbers.

The normal boolean operators are available, and there are conditional functions that return the value 0 for false and -1 for true. These are useful, for example, if you only want to charge tax if wages are greater than £4000. The following conditional operator > can be used:

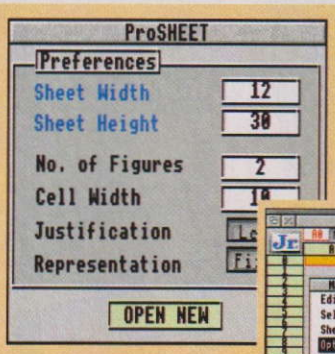
```
tax=-(wage>4000)*tax_rate*wage
```

There are also four range functions to calculate the sum, maximum, minimum and average of a range of cells. The functions are summarised in a function dialogue box which can be used to enter an expression into a cell.

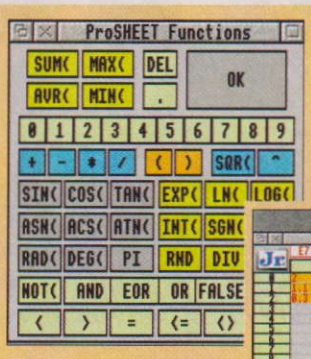
Cell by cell

Individual cells and blocks can be copied or moved elsewhere in the sheet. An option is given to either update all the references to other cells in copied expressions so that the new block will refer to moved locations, or the absolute copy option leaves references to point to the original locations.

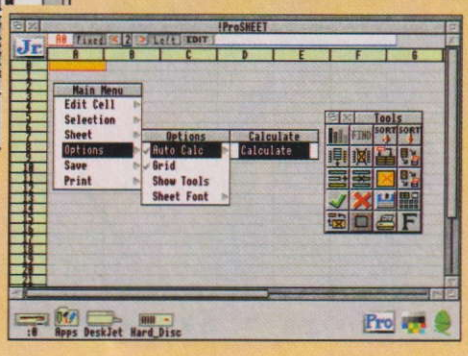
It should be noted that it is not possible to fix some of the references absolutely while moving others relative. This would be useful, for example, when referring to a constant, such as the VAT rate in a particular fixed cell while the other



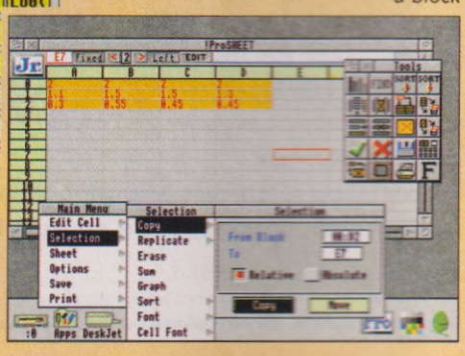
● *Sheet definition dialogue box*



● *Function box*



● *An initial sheet*



● *Copying a block*

John Allen looks at a spreadsheet sporting the 'professional' tag

the data

references need to move with the block.

Unusual and handy features of ProSHEET are menu cells. If you click on a menu cell it will change the display to show another part of the sheet – this makes moving around a large sheet very simple. The cell contents take the form:

```
M: F47,Bills Outstanding
```

In this case Bills Outstanding would be displayed as the contents of the cell and clicking on it would move the sheet display to cell F47. Similar Macro commands can be defined for other features of ProSHEET such as sorting, graphing, colours, fonts and searches.

The spreadsheet can be sorted, either by row or column, so it could be used as a very simple database.

ProSHEET has good graphing facilities and it is really easy to produce hot-linked graphs from a table of values. It can produce bar and line graphs as well as pie charts in several different formats. It is fast and intuitive.

Inter-activity

ProSHEET will load its own sheets and ones that are in CSV format. This is the general way that data is exchanged between editors, wordprocessors, databases and spreadsheets.

There are a wide variety of save options: The whole sheet or a block of it can be saved in ProSHEET format, the sheet or graphs can be saved as draw files for later manipulation, and the sheet can be exported in a range of other ways that will make it simpler to import into other applications.

All printing is via the RISC OS Printer Manager. The sheet, selected areas of the sheet or graphs can be printed and, for education users, there is an RSA format which will print out a selected area as well as labels, numerical values and formulae within that area.

The concept

Spreadsheets are a relatively modern idea. They are one of those concepts that once devised seems so obvious, and they have been a runaway success. They are now the backbone of most financial and accounting systems. Not only do they allow records to be kept in an easy-to-read form, but they can allow easy *what if?* questions to be tried on models.

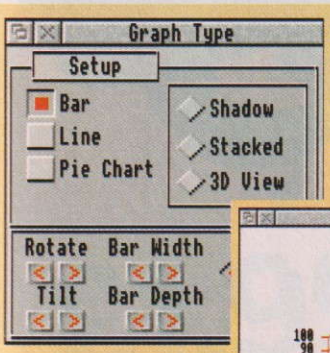
In its simplest form a spreadsheet application allows sheets to be created which are a grid of boxes, known as cells. Generally, the columns of a sheet are labelled by letter and rows by number, so the top right corner cell of a sheet is referred to as cell A0. Each cell can contain a value or mathematical expression which relates the value of the particular cell to other cells in the sheet.

A simple example of an expression might be A1-A2 which means that the cell in question contains the values of the contents in cell A1 minus the value of the contents of cell A2. The expression SUM(C3C10) would mean that the cell contained the sum of the values in column C from row 3 to row 10.

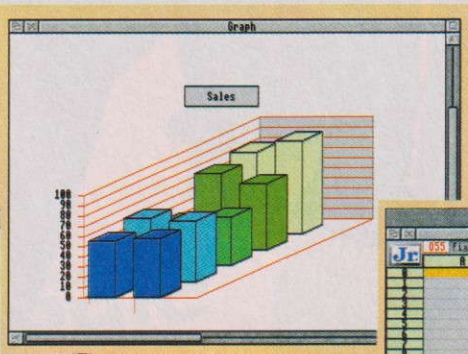
Summing up

ProSHEET does not have all of the facilities of its heavyweight competitors but then it does not have their price tag either. It is pitched more squarely at home and education users who will find it more than adequate for most of their needs. The graphing facilities are particularly good, which will be attractive in education.

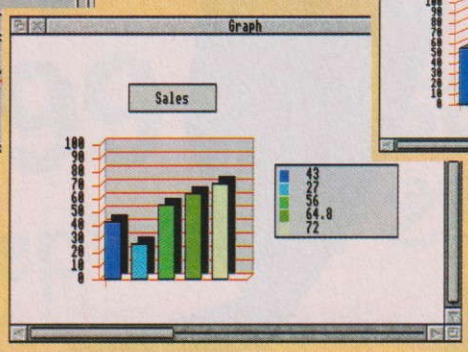
More serious users will probably be deterred by the maximum size of the sheet and the difficulty of using outline fonts, which do not work at all satisfactorily with the number default colour of red, or menu default of blue.



● *Graph type selection*

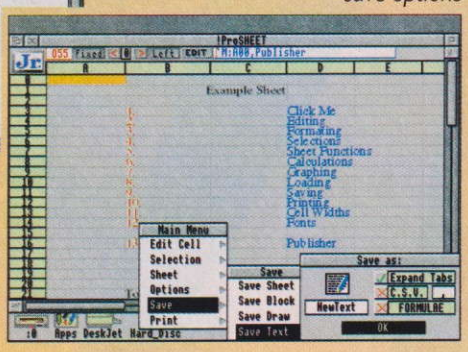


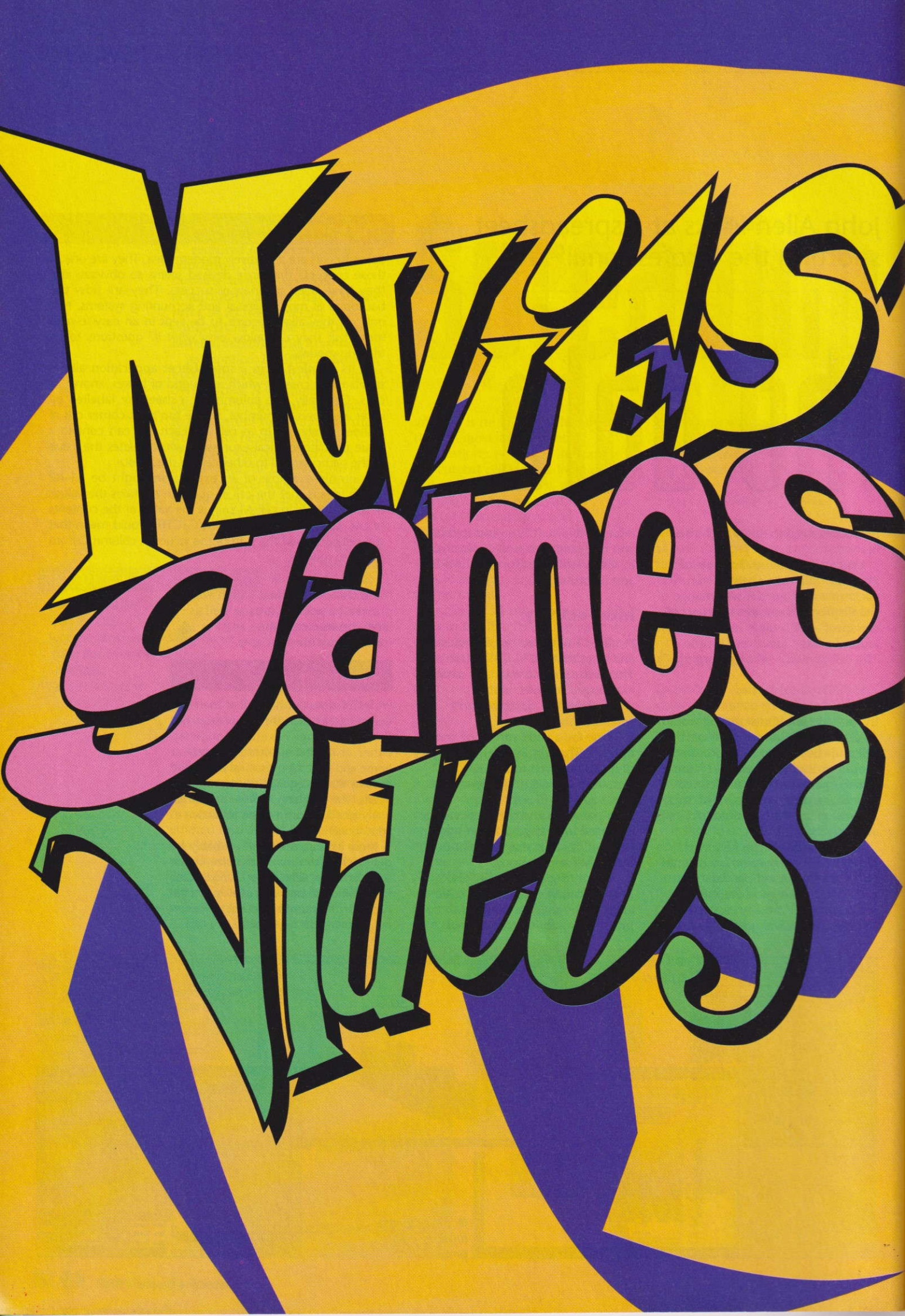
● *The graphing facilities – in three dimensions*



● *The graphing facilities – bar graph*

● *The selection of save options*

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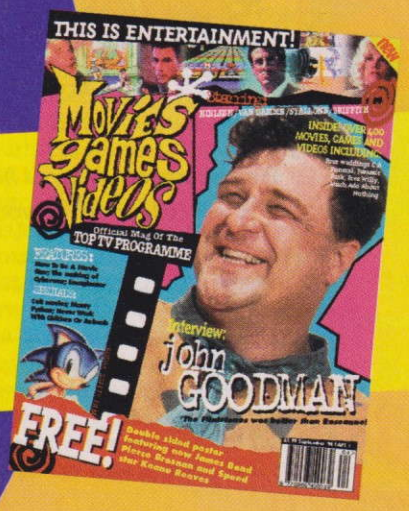

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Hot keys

Acorn computers are so easy to use no one reads the manual. But Rob Sherratt has...

Having graduated from an A440/1 to a Risc PC, I was surprised to find myself actually reading the Welcome Guide and discovered that Acorn have greatly improved the ease with which special characters can be accessed. I was so amazed at this discovery that I wanted to shout about it in technicolor, so I used Artworks to produce this jazzy keyboard guide.

I decided my keyboard guide, together with various add-on bits, would approximately fill an A4 page. So selecting the round-edged rectangle tool and choosing a 5mm corner radius, I drew a large rectangle to be the outline of the keyboard.

The light-blue fill colour I wanted is not a standard colour, so I made my own by clicking on the fill/line colour tool then New Colour, calling it pale blue, with 82 percent red and green and 100 percent blue using the RGB process colour selector.

What's the fastest way to generate a matrix of 60 keys, all the same size and all evenly spaced? I decided to get the computer to do it. Using the rounded rectangle tool again, I drew a 15mm square with 4mm rounded corners, copied it (control C, control V) and positioned the two squares to form either end of the top row of 13 keys.

Using Adjust click to select them both, I aligned them horizontally (Objects->Alignment->Align top) and then used the blend tool to fill in the missing 11 keys.

In case you have difficulty finding it, it's the one looking like a photograph of a sunset over a grey sea tilted at 45 degrees. Then I used Make Shapes to allow the individual keys to be edited later.

I now had the top row of 13 keys, and by selecting 12 of the 13 and copying them three times (deleting one from the bottom row) I almost had my key layout as I needed it.

It is hard to get the vertical spacing exact even by hand, so I grouped each row of keys together and used the alignment top-to-bottom/distribute option to get it spot on.

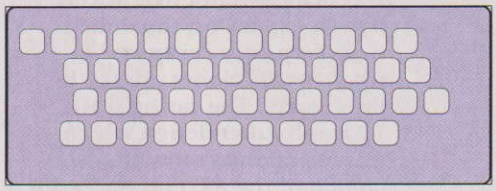
The horizontal offset from one row of keys to the next was – I admit – determined by one eye looking at the screen while the other looked at my keyboard.

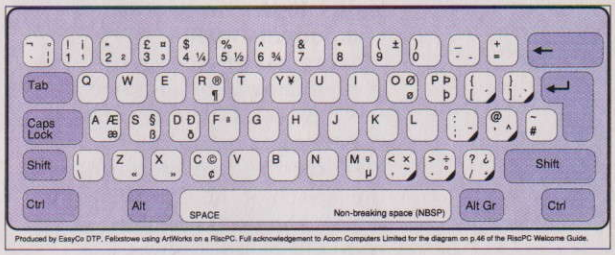
Now to label the keys. I typed a single list of every character that would appear on my keyboard layout, and then converted the text list into shapes. I dragged each shape into approximately its correct position on the relevant key.

This took a fair amount of fiddling around to get the result right and the work would have been made easier if ArtWorks had a mechanism for aligning objects with an offset measurement – away from the key border, for example. But it doesn't.

However, I did carefully select every character along a horizontal row of characters and then aligned the top of those characters vertically. The little black marks in the corner of the rightmost six keys were drawn freehand using the curve drawing tool. An oft-forgotten fact is that this tool draws solid objects as well – you draw your line to roughly the right shape, and then drag the unclosed control points over the top of each other. ArtWorks then assumes you want a solid object and it closes the path and fills in the object's middle.

The control keys (coloured mid blue) were then drawn and aligned in much the same way as I have already explained. The Return key was just two overlapping rectangles with the unwanted line down the middle, "snowpaked" out using a small rectangle of the same fill colour as the keys behind it.





Produced by EasyCo DTP, Felixstowe using ArtWorks on a RiscPC. Full acknowledgement to Acorn Computers Limited for the diagram on p.46 of the RiscPC Welcome Guide.

Possibly the fanciest bit of the design is the main title. In fact it was one of the easiest parts. I typed the text in using the Homerton bold font, typing the various Alt+special character combinations as I went. Then I used the radial fill tool (looks like a globe) with fill colours set from yellow to red.

Starting from the C of Characters, I dragged the control arrow and dropped it at about the b of keyboard and the result is what you see. The amazing thing to me is that every character in that title is still editable – I can type or replace any part of it directly.

The wording for The Tip was done in a similar way, except that I used the linear fill tool with the colours white and light blue (the one I defined myself) progressing from bottom left to top right.

The keyboard guide was now nearly complete – I just needed to add the arrows and other annotations. I used two white rectangles to prevent too many lines crossing, and to give the impression that the section of the keyboard I have reproduced is a sub-section of the larger full keyboard – I have not drawn the function keys or the numeric keypad. For those who would like to use or modify the artwork, there is a copy of the file on the Subscription disk.

TIP

Alt Break
pressed together allows you to quit from any nasty software that's locking up the computer, and carry on working as normal.

What does the re-badged Psion 3a offer Acorn users? Pam Turnbull investigates

Porta

THE ability to move machines from one place to another has not been one of Acorn's strongest suits. The A4 was an excellent idea but overpriced, and its expansion capabilities were very poor compared to what the PC clones offered for less money. The casing was a Triumph Adler design which was abandoned soon after the launch of the A4, and never did justice to the superior components within.

Acorn has toyed with the idea of producing a colour model but this has been little more than a kite-flying exercise. The Pocket Book release – sneaked in with the launch of the A3010/20 and A4000 – was real portable computing, but this was a rebadging of the Psion range. Psion have got an excellent and enviable reputation when it comes to usable portable solutions which are reliable and well priced.

Acorn's partnership with Psion has switched the emphasis away from portable machines to portable data. With the advent of Computer Concepts' MacFS, your desktop RISC OS machine can read and write Mac, PC, ST and Acorn disks. This flexibility is continued with the Pocket Book's serial links to Acorn, PC and Mac desktop machines.

The latest Psion is the Series3a which translates to the Acorn platform as the Pocket Book II. But why should you go for the Acorn badge rather than the Psion, and the new rather than the older and cheaper model?

Educational computing

The Pocket Book fills a niche in the education market which Acorn, as a company, was better able to fill than Psion, presenting the Series 3 as an educational tool rather than as a business aid.

The school response has been excellent – as reported in the September 1993 issue of *Acorn Computing* – and children and teachers have benefited by an accessible, truly portable data capture unit with a useful battery life and excellent home/school interaction.

The ability to transfer information in standard CSV and text format as well as directly into particular packages like Event from ExpLAN and Minerva's Desktop Office database and into spreadsheets accepting Lotus 1-2-3 files is a real boon.

Acorn are targeting education, leaving business users to Psion, but the Pocket Book gives non-educationalists a flexibility not available with the A4.

The marketing of the PBII is aimed at parents and schools, with the computer being tagged an *electronic exercise book* which is light, sturdy and easy to use.

With the new version having better memory, a larger screen as well as more power and an increased number of built-in applications, the PBII could find itself moving out of education as parents are introduced to this *home* computer by the back door.

The soft options

Although the PBII is only just available, I was lent a prototype for a limited period and was very impressed with the enhancements. The keys are still small for continued touch typing, but size and weight considerations mean that this is unlikely to change and I, for one, can live with the minor inconvenience. The improved screen size is a great improvement and one which has not meant a loss of portability.

If you want to program the little beast, an OPL programmer is available with its own manual including error handling code. However, for the majority of users it is the built-in software which will hold the biggest draw.

Cards – A palmtop computer would not last long without a database, so unsurprisingly this application allows you to have a simple address book to a client database with prices and search facilities to match. You can also design labels for the lines of data as a guide for inputting new information.

Write – The uses of this application are manifold, from short notes to long documents. The standard word processing features are present as well as specialised options such as *Outline*, which lets you see the sub-headings of documents allowing you to view the structure of a piece at a glance.

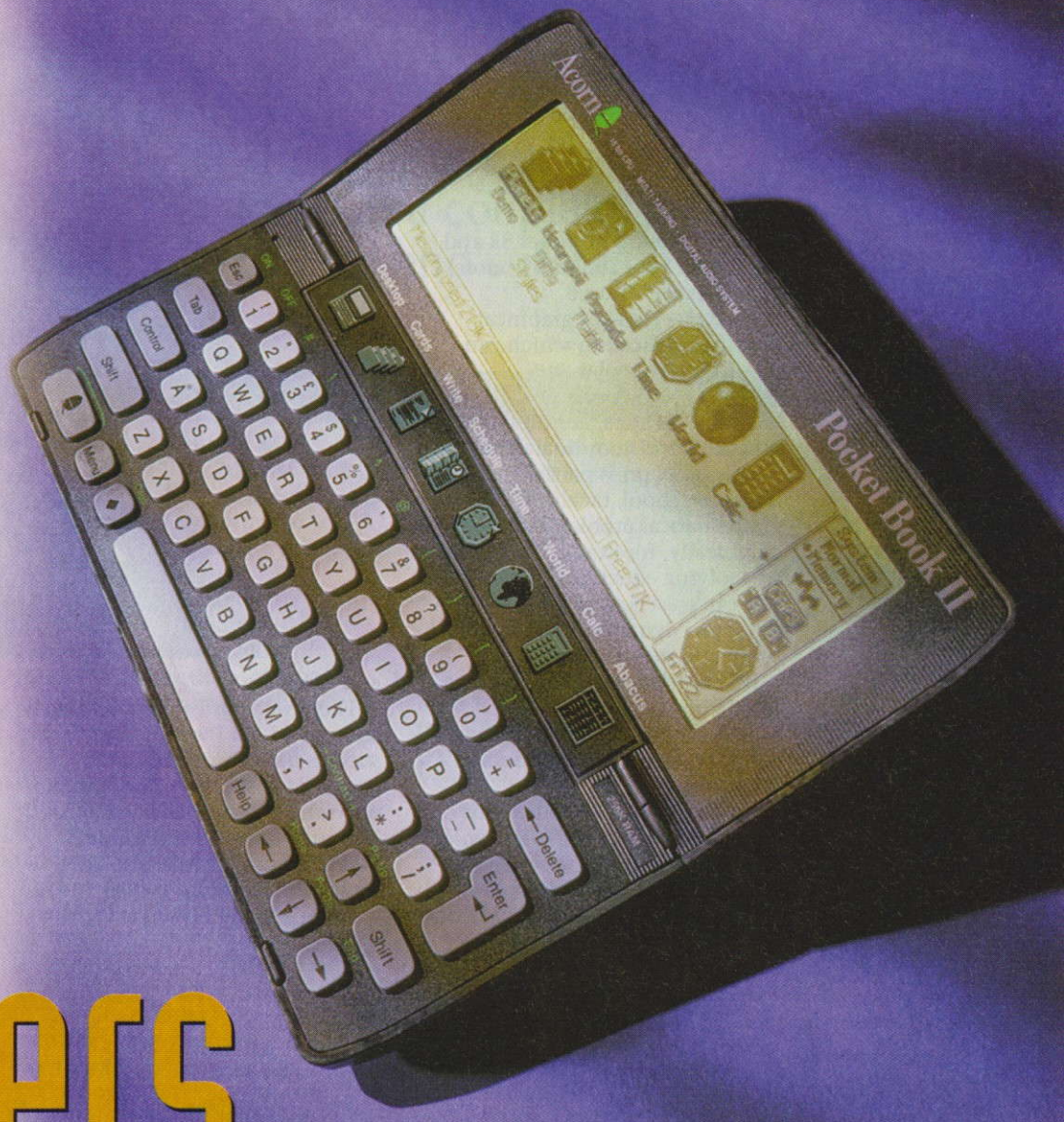
You can embolden text, alter font and set the alignment, tabs and tables as necessary. The styles you use are up to you and the templates you create.

Printing can be in plain text to any printer and Write will show you a preview of how the document will look before you commit yourself to a hard copy. I was surprised to see the provision for headers and footers and the useful ability to number pages automatically.

Schedule – Communicates directly with Event on a desktop RISC OS machine. This is a personal organiser keeping the details of appointments, anniversaries and so on. Repeats can be set as can alarms and the appearance of the pages.

Time – As well as setting the correct data and time you can set which days are work days and which is the first day of your working week. You can set your

bility matters



home base details which effect other applications.

The alarm functions – a maximum of six – are comprehensive, giving you an alarm clock with a variety of noises that will repeat daily, or week days only and so on. Due to the nature of the Pocket Book software, you can also view the alarms set by other applications.

World – A simple program, which for most people will be interesting more than useful. For over 500 cities there are details about its dial code, current time, position on a map of the world and the times of sunrise and sunset. All the information is given using your *home city* as a base, which can be anywhere, and is set from the Time application.

Calc – This scientific calculator allows you to copy calculations or values from a list to form other calculations. There are ten memories which can be named as you want for easy access, and more importantly these names can be used in your calculations. Finally there is access to OPL functions and procedures for more specialised or advanced use.

Abacus – The spreadsheet is very straightforward with options that those experienced with spreadsheets will need, as well as the accessibility required by younger or novice users. The ability to save in CSV and Lotus 1-2-3 format means that maximum flexibility is assured.

Spell – A spelling checker and thesaurus in one – this application is very welcome as a built-in function. You can check your work against 100,000 words as well as find synonyms and definitions in the thesaurus – according to the manual there are 660,000 synonyms, I didn't count them.

You can add to Spell and keep separate dictionaries for different documents. Finally, there is also an anagram solver and a missing letter solver – now where's that crossword book gone.

Record – With this application you can record voices and sounds as files on the internal disk or on a ram SSD. These can be used as additional alarm sounds. Don't get too carried away though as a

➤

second of sound occupies 8k and the louder your sound the more battery power is used.

Plotter – This is a graphical plotting application which can plot cartesian, polar and parametric functions as well as inequality graphs, families of functions and coordinate pairs.

This program is particularly at home in school, tackling mathematical problems graphically, for example writing and solving equations. In addition, you can trace and recalculate functions dynamically as well as zoom and merge graphs.

JP150 printer driver – You can print from Write, Abacus, Schedule, and the OPL Program Editor and they have a standard print option.

Having all these applications on one machine begs the question of how you share data. This is achieved with the Bring option available to Write, Schedule, Cards and Abacus.

There were also some additional features which I was pleased to see, such as built-in security with password and encryption options on Write and Abacus documents. You can password the whole machine too. There is also an incremental backup facility.

An intriguing option is DTMF dialling. When you implement this the Pocket Book will dial your phone numbers, from Cards for instance – all you have to do is hold your phone to the speaker. Success is sporadic and this is more a gimmick than a serious addition.

As well as the screen being larger, there are two status windows which give you information on the Caps Lock key, SSDs, serial port and battery. You can press the icon buttons above the keypad to go into applications or key combinations, but these are all very intuitive.

You can also group applications together to reduce the length of the list of on-screen icons and change between a serif and sans serif font for file list names if you want.

Pocket Book II – the next generation

One of the reasons for releasing new models is an improved specification:

	Pocket Book I	Pocket Book II
Cost	£169.95 (256k)	*£229.74 (256k)* *£280.81 (512k)*
Size	165mm x 85mm x 22mm	165mm x 85mm x 22mm
Weight	265g inc batteries	*275g inc batteries*
Screen	40 characters x 8 lines	*80 characters x 25 lines*
Internal rom	512k	*2Mb*
Internal ram	256k	*256k or 512k*
Expansion	2 x SSD 2Mb Flash SSD 1Mb ram SSD (own battery)	2 x SSD 2Mb Flash SSD 1Mb ram SSD (own battery)
Processor	16-bit NEC V30H (80C86 compatible) 3.84Mhz	16-bit NEC V30H (80C86 compatible) *7.68Mhz*
Sound	Loudspeaker and piezo buzzer	*Loudspeaker with DTMF auto-dialling and digital playback, microphone for digital sound recording*
Power π	2 x AA alkaline batteries	2 x AA alkaline batteries
Keyboard	58 keys, qwerty	58 keys, qwerty
Comms	Serial interface (1.536Mbits/sec)	Serial interface (1.536Mbits/sec)
Built-in software	Cards, Write, Abacus, Time, Calc	Cards, Write, Schedule, Time, World, Calc, Abacus, Spell, Record, Plotter, OPL Editor, JP150 printer driver

{} Differences in italics*
80 hours continuous use with no expansions
Additional software: Timing/billing, telephone call costing, games and leisure, general business, sale and business contact systems, finance, language translators, health and nutrition, paint and graphics, utilities, personal organisation, PLUS Psion Series 3 software.

Summing up

The Pocket Book II is an extremely welcome addition to the Acorn range. I'd say it is a must for children of all ages and abilities regardless of what – if any – computer they have at home.

For people in business, it is an ideal way of keeping vital information to hand at all times and giving you complete compatibility with all the major computer platforms. For someone with no interest in computers, it looks enough like a calculator to be unthreatening with enough power to deliver.

At just under £300 for the 512k model it may seem a lot of money, but can you produce another computer which will fit in your pocket and give 80 hours of use on batteries with over ten comprehensive programs built-in?

Book shelf

This month our team looks at a couple of books to help and stimulate

The Acorn Companion: Easy does it

IN a world where manuals for electronic products – particularly computers – are often confusing, unfriendly and in some cases completely unhelpful, this 132-page book by Geoff Love makes for a refreshing change.

A4 in size and written in a friendly and easy to follow manner, the book quickly instils confidence and aids fast progression from raw beginner to competent user.

Each chapter is composed of small, digestible sections with illustrative screen grabs where appropriate. Sadly, some of these have reproduced using dark grey scales, making them a little unclear and hard on the eyes.

The first chapter introduces the desktop environment and the mouse. The structure of a RISC OS window and the filing system are briefly described, followed by a guide to configuring the desktop environment and printer drivers.

In the second chapter, the filing system is examined in greater detail. This includes disk formatting, basic file organisation and locating resources such as System and Fonts.

However, the book doesn't just concentrate on acquainting you with your machine. There is an introductory guide to the main hardware peripherals/upgrades that you may wish to consider buying. The developing world of CD-Rom – of increasing importance in educational circles – is examined as a separate topic.

The fifth chapter focuses on software – though this is primarily from a schools viewpoint.

Copyright issues and licensing related to commercial products, public domain and shareware are discussed, followed by a short guide to commonly used software in education.

Next comes a useful trouble-shooting guide which provides remedies for many common problems/error messages. Coupled with the handy hints found throughout the text, this makes for more productive, less frustrated users. Following this, the book closes with a sensible glossary and index.

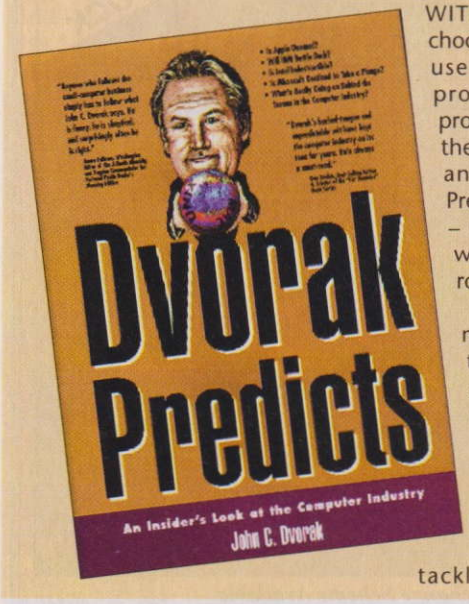
Although the manual is targeted at the average classroom teacher or non-specialist IT Coordinator, I firmly believe it will appeal to a much wider audience. Whoever you are, if you're new to Acorn's 32-bit range it is worth giving this book serious consideration.

Stephen Wade

PRODUCT SPOTLIGHT

Price: £9
Supplier: NW Semerc, Broadbent Road, Watersheddings, Oldham OL1 4HU.
Tel: 061-627 4469

Dvorak Predicts: Computer clairvoyance



WITH a variety of computers to choose from, numerous packages to use and even more businesses promoting the benefits of their product, Dvorak's aim is to look at the computer industry as a whole and then predict its future. Predictions are usually a safe option – by the time you are proved wrong you are long dead and the royalty cheques spent.

However, these predictions are made in the fast moving world of the computer industry and as such, this book could become a classic or a dinosaur in very short order.

There is very little in this tome for Acorn users with Dvorak concentrating on Microsoft and their *duel* with Apple. He does tackle the emergence of the computer/TV, the influences of Nintendo, Sega and Virtual Reality, discussing whether these would have a successful impact on the industry or whether they would fade out of the limelight and something else would appear in their place. I think I could predict that one.

The book is mostly jargon free and will probably appeal to the trained enthusiast or untrained inquisitor. But with the *next big thing* being hailed as interactive multimedia, perhaps Dvorak's insights were more timely when written than when the book was actually published.

Judith Chapman

PRODUCT SPOTLIGHT

Price: £12.95
Supplier: McGraw Hill, Shoppenhangers Road, Maidenhead, Berkshire SL6 2QL.
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A310/A400 IDE Interface	£75.74	£89.00

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130 Mb	£262.98	£309.00
260 Mb	£382.13	£449.00
80 Mb	£207.66	£244.00

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A3000 1 Mb (expandable to 4 Mb)	£55.28	£64.95
A3000 4 Mb	£119.11	£139.95
A3010 1 Mb	£33.19	£39.00
A3010 4 Mb	£131.87	£154.95
A5000 4 Mb	£93.57	£109.95
A310/305 4 Mb (including fitting & carriage)	£170.17	£199.95

MISCELLANEOUS

ARM 3	£119.11	£139.95
Risc OS 3.1	£76.55	£89.95

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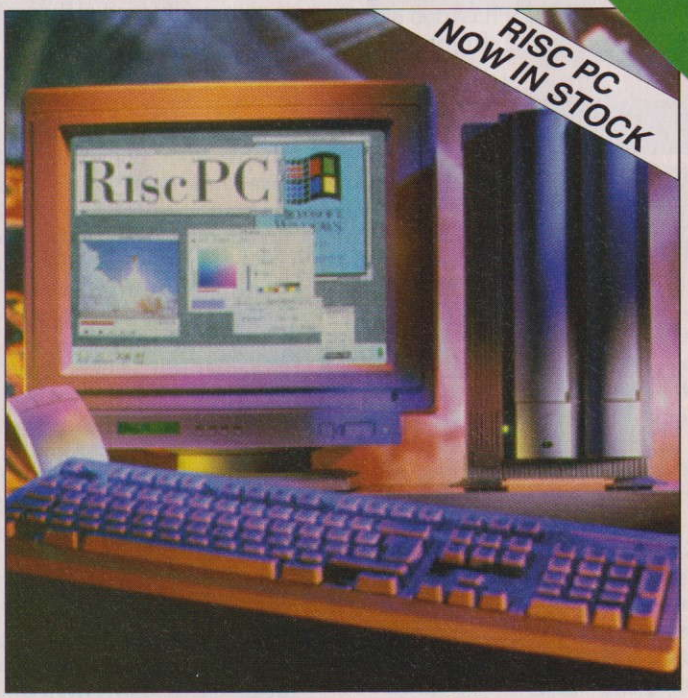


Part Exchange Scheme Available

Approaching the zenith

Teri Paul looks at a selection of the serious, useful and salacious in the PD market

WITH summer hols behind us there is a lot of new PD doing the rounds. So with no more ado let's get to it.

Spurred on by Tottenham's – *sorry* – minus points status before the footie season even began, Alexander Seeley has changed his League program so that the Amstrad boys don't mess up your Premiership league.

This was quite a simple procedure and the update file is on the subscription disk or if you send the original program to Alexander he will update it for you.

Datafile are branching out to be the first PD house to release a CD-Rom of software. Okay, so I know that APA's Really Useful CD contained software but I don't think they'd relish being referred to as a PD house.

Datafile's CD gives you the equivalent of 331 disks, so at £30 that's not bad value for money. Although you are not likely to want all the software, there is enough to keep everyone happy. That was until I accessed some of the JPEG files...

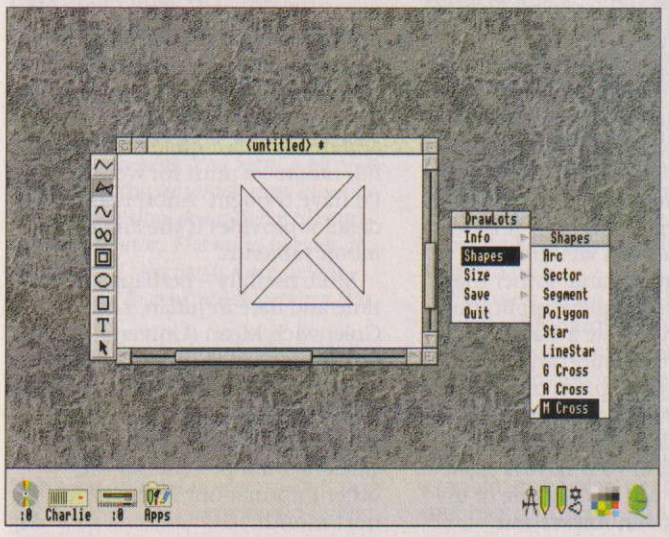
I assume that most of these have come via bulletin boards and apart from being a little disappointed with the quality Star Trek: Next Gen pics, most were of an excellent quality and comprised a good selection.

I expected the *page three-type* photos and if you like fantasy art you'll be used to the Boris Vallejo pics, but there are four pictures which leave that realm and enter into another altogether.

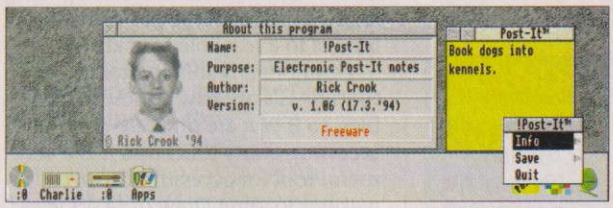
I am reliably informed by male heterosexual friends that there are worse to be seen on the top shelves of newsagents – even so I'd personally prefer it if this was an oversight on Datafile's part and not a sign that we are going to be following the *sad* CDs you see advertised in the PC press.

I would hate to think that this stopped people buying an extremely comprehensive collection of Acorn PD, freeware and shareware comprising games, utilities, languages, fractal and demos as well as tons of music, clip art and graphics.

However, if you are a parent or teacher, perhaps you should think twice about leaving the CD just hanging about.



● *DrawLots makes drawing such shapes easier and quicker*



● *Better than a knot in a hankie*

Making life easier...

Rosemary Miskin has produced a useful little application that sits on the icon bar and produces draw files of various geometric shapes. Called **!DrawLots** you are provided with a sub-menu of shapes: Arc, sector, segment, polygon, star, lstar – lines joining vertices, G(eorge), A(ndrew) and M(altese) Crosses.

You can also size your shapes as appropriate for that geometric design, so you can set the radius and angle of an arc or the size and number of sides of a polygon. You can then drag your design into Draw and so on for further manipulation.

I have used Ben Summer's commercial Notes package for some time, so I was interested to see Rick Crook's **Post-It** in the PD. As you would expect, it is less flexible than the commercial package but useful nevertheless.

Post-It appears on the iconbar and you must click on it to be presented with a window where you can type in a message which will stay on screen. Post-It remembers these messages, so each time it's loaded it presents them again.

You can also save the messages on all the Post-It notes as text files. If you have run out of handkerchiefs ➤

Featured this month	
DrawLots	GemPD
MoonTool	GemPD
Post-It	Five Star
Quotation	Gem PD
Thumbnail	Five Star

➤

to knot or rainforests, this electronic aide memoire could be the thing.

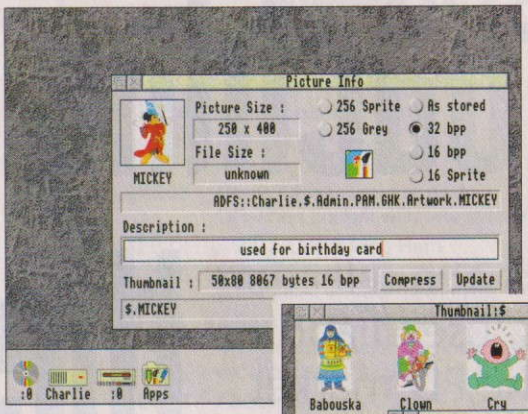
In one way you just can't have too many pictures at your disposal for display, DTP or programming. On the other hand, viewing them all takes its toll of your patience and time. Enter **Thumbnail** from Ian Palmer.

This shareware program – which needs RISC OS 3 – is a must if you are serious about your picture database, as it provides you with a convenient way of searching for a picture from a library of pictures by providing thumbnail versions of them. By using Acorn's ChangeFSI it can convert images to a readable format.

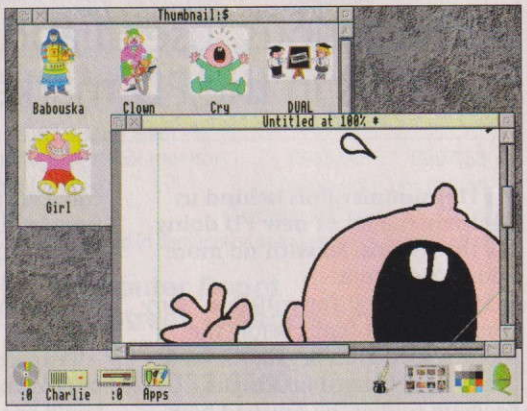
Thumbnail is able to produce thumbnails of Draw and Artworks files, so if you are unlikely to be accessing many JPEG files it is a very useful tool for accessing clip-art without loading Draw or !AWViewer.

As well as a small version of the image you are given information on where the original file is. In addition, all the pictures are stored at 16bpp (or 32 bpp) and dithered to 256 colour or 16 colour.

I have been using Thumbnail to collate my clip-art on my hard disk – though the program will work from floppy. As space is at a premium I have one central index, leaving all the original draw files on their floppies.



● *Information on storage, size and usage*



● *Know what your importing without loading !Draw or !Paint*

Creation is straightforward and the help file is easy to follow. I did have to load my older draw files into the RISC OS 3 version of Draw and then save them out to get the information into them required by Thumbnail, but this caused no real problems.

You can set the size of the thumbnails up to 80x80 pixels as well as the number of thumbnails in each row, and you can opt for a display like a collection of photograph slides.

To create a thumbnail picture, simply drag picture files to the Thumbnail window. Once your pictures are converted, double-clicking on one will produce an information window showing the thumbnail and name, the size of the original in pixels, radio icons for selecting the output type and the full path name of the original.

By setting the six radio icons you can convert the file to a 256 or 16 colour dithered sprite, 32bpp sprite, 16bpp sprite or transfer the file in its original format.

There is also a box for you to add descriptions of the pictures and also search the pictures for those whose descriptions contain certain words.

RISC OS 3's Squash module provides compression if needed, but with very large collections it is best to have thumbnail viewers in separate locations and, rather than duplicate the complete application for each copy, create a Slave.

Just select the option and a window will pop up containing an icon which you drag to the directory where you want to install the slave application, and your slave is created.

Now, if I want to drag one of my draw files into an Impression document, I don't have to go through all my clip art disks to find it first. At £5 to register, it is very good value indeed. Definitely recommended.

...or just more fun

Roger Spooner's **Quotations** now has a random selection of sprites, so once run your machine will pop up a window every 30 seconds with pictures, quotations and witticisms to laugh or despair at. If you don't like them you can just edit the Remarks text file.

MoonTool is available for RISC OS 3 machines, courtesy of Edouard Poor from Auckland, having liberated it from a Sun Workstation version by John Walker. This is a program which aims to add to your pool of useless information or interesting remarks for boring parties.

Quite simply, MoonTool presents you with: The phase, age and distance to the moon, as well as the dates of the last and next new moon and first and last quarters and the full moon – a must for werewolves I'd have thought. Another essential detail it provides is the angle the moon subtends.

More usefully – perhaps – is the time and date in Julian, Local and Greenwich Mean (Universal) times, the distance to the Sun and the angle the Sun subtends.

The program starts with a picture of the current phase. Clicking on it presents all the other information. That's all 'til next month.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 17 Lambert Park Road, Hedon, Hull, East Yorkshire HU12 8HF.
BBC PD, 18 Carlton Close, Blackrod, Bolton BL6 5DL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Masterdisc, 2 Seaview, Hoylake L47 2DD.

32-BIT HOUSES

3PD Swapshop, 66e Picardy Road, Belvedere Kent DA17 5QN.
Alpine PD, PO Box 25, Portadown, Craigavon BT63 5UT.
APDL, 39 Knighton Park Road, Sydenham, London SE26 5RN.
Arcaynia, PO Box 1927, Sutton Coldfield B74 3QZ.
ArchAngel PD, PO Box 41, Exeter, Devon EX4 3EN.
Archimedes Fractal Group (AFG), 30 Bowen Drive, West Dulwich, London SE21 8PN.
ARM PD, 109 Woodland Drive, Cassiobury, Watford WD1 3DA.
ARMistic PDSL, 136 Wellesley Road, Ilford, Esex IG1 4LJ.
Australian RISC, 241 Hawkesbury Road, Winmalee NSW 2777 Australia.
Cheap PD, Greenways, Grubwood Lane, Cookham Dean, Maidenhead, Berkshire SL6 9UB.
Craig Beech PD, 30 The Deerings, Harpenden, Herts AL5 2PE.
Datafile, 71 Anson Road, Locking, Weston-Super-Mare, Avon BS24 7DQ.
Datastream, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Different Ideas, Eyton House, Eyton, Leominster, Herefordshire HR6 0AG.
Digital Phenomena, 104 Manners Road, Southsea, Portsmouth, Hampshire PO4 0BG.
DigiTech, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
Eureka PD, 78 Rawlinson Road, Southport, Merseyside PR9 9NE.
Gem PD, 15 Partridge Down, Oliver's Battery, Winchester, Hampshire SO22 4HL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
LowCost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Lunchtime Disk Magazine, 203 London Road, Chesterton, Newcastle, Staffs ST5 7HF.
Moonlight Graphics, PO Box 3569, Cape Town 8000, South Africa.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Planet PD, 37 Manor Drive, Berrylands, Surbiton, Surrey KT5 8NF.
Skyfall, PO Box 2220, Birmingham B43 5RZ.
Westbourne Services, 34 Bradley Street, Wooton-under-Edge, Gloucester GL12 7AR.

Quick, quick, quick quick, slow

With another selection of your hardware and software problems, here's Mike Cook

Q I'VE HAD my A5000 for 18 months and in all that time a simple but incredibly annoying problem has never been fixed. You see, with my lovely new machine I bought an equally lovely Taxan 795 monitor.

The display is beautifully crisp, more steady than a mountain, sharper than a Sheffield-made knife and more vibrant than Robin Williams. But it has a tendency to complain when certain games are run.

I understand this problem is due to the differences in the frequencies of the monitor and what some games run at. But after over a year of side-stepping this problem, I really would like someone to tell me that there is a bit of software to temporarily slow down the monitor's frequency. Many people have told me that it's possible but they haven't come up with the goods.

As a last effort – and before I do something nasty to the monitor – I appeal to your wisdom. Somewhere I read that State Machine's Video Card could solve the problem because it generates custom modes. Is this correct?

T. G. Riches, Worcester

A *Now let's think about this a moment. You want a piece of software which runs in your computer to slow down the oscillators in your monitor. The mind boggles at what sort of telekinesis force field it would have to generate to perform this trick.*

The sad fact is that the 795 monitor cannot lock on to normal frequency TV signals, and if some software demands Mode 15 or similar your computer and monitor synchronisation part company. Using one of the video cards won't help as the hardware is incompatible with most games.

There are two solutions: Sell your monitor and buy one that will work in a multisync mode or sell you computer and buy a Risc PC. This new machine emulates the lower frequency modes in a letterbox shape.

The only down point about this is that a lot of games software thinks it knows about the relationship between memory and display screen – on the Risc PC this is all different so they won't work anyway.

Video out

Q I HAVE been trying to record the output from my 4Mb A310 running RISC OS 3.1 and a VIDC enhancer on to video tape, using a Scart plug which I made myself. I could only get a very dim image to start with but closing a link near the back of the machine – link 11, if I remember correctly – has now given me a lovely clear picture, but only in black and white.

I've tried everything I can think of to get colour but it just doesn't work. The lead takes the RGB components from the A310 and feeds them to the Scart socket.

I've tried putting 5v from the backplane connector into pin 16 of the Scart plug, which I believe informs the VCR to use the separate RGB signals, but still with no luck.

I've seen active Scart leads advertised for around £40 which seems outrageously expensive but they presumably do the job. Where am I going wrong?

Is there any image processing software which can make use of graphics enhancers or the Risc PC's graphics hardware. All I really need to know is whether the new sprite formats are supported on the machine – is there a new version of SpriteExtend or SpriteUtils which my program can look out for?

Liam Gretton, Leicester

A *I think the problem here might be your VCR. Many VCRs will not accept RGB colour signals, only composite colour signals. The signals from the Scart socket will be converted to black and white.*

You can test this theory by connecting up only the red signal then display a message in each of the primary colours and see what happens when you connect the other leads.

If you can only see the blue writing when you connect the blue lead, the VCR is generating a monochrome output from the Scart. If it did not do this, it would have to perform a PAL encoding on the video input which is quite expensive to do and is not needed in most cases, whereas to convert to monochrome takes just a few resistors.

None of the fancy active leads would help as all they provide is impedance ➤

AGENDA

- High spec monitors
- Mono video
- Accessing Hi-Basic
- Loose chips
- A3000 to Electron
- Printer problems
- Identity chips

Weak links

Q I HAD a similar problem to F. Langton when I upgraded my A3000 to RISC OS 3.1. I took my machine to my local Acorn dealer who corrected the fault and told me it was simply loose chips. The cure was pressing the chips firmly into place.

F. W. Startin, Solihull, West Midlands

A *Yes, my motto in fault finding has always been rattle the wires and push the chips. Sometimes it looks like I am fault finding by the practice of laying on of hands but it's surprising how often it works.*

The weakest link in any electronic system is always the mechanical connections. That's why some machines have all the chips soldered in. It does produce a more reliable machine but one that's harder to upgrade.

➤

matching buffering.

The Risc PC uses the sprite format described in the Programmers' Reference Manual for RISC OS 3. There are no additions in the draft version of Volume 5 of the OS 3.5 supplement.

Sprites can have 256 colour palettes but when shown the operating system will convert them to a standard palette. It seems to be that the Risc PC software is being held hostage by past hardware standards and we all know what happens when that occurs.

Basic news

Q I HAVE resurrected my BBC B which I bought in 1983. I shall keep this machine as I see it as a significant contribution to computer literacy. When I had the Z80 Second Processor I could not resist the temptation of the Body Building series and purchased the 6502 Second Processor from Musbury Consultants.

Hi-Basic will not work with the I/O processor but last year I visited Morley Electronics and bought one of their last eprom programmers with the utilities disk. Can I change the load address of Hi-Basic and *blow* an eprom to use in the I/O processor?

My Issue III is fitted with Basic I (1981) and the Hi-Basic is 1983 and equates with Basic II. If this is *legal* and possible I would appreciate details of the procedures involved.

Gordon Wileman, Portstewart, Co Londonderry

A *It's not just a matter of changing the load addresses for Hi-Basic, it is also a matter of input/output protocol. You see, Hi-Basic expects to be on the other side of the Tube interface not in the I/O processor. Therefore, even if you could get it to load into the correct place it still would not run.*

A solution to your problem would be to purchase a new Basic II chip – I think Watford Electronics still sell them.

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

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

Electron download

Q I OWN an A3000 and an Electron with 64k Master Ram board, Plus 1, Plus 3 and PRES' AP6 rom adapter and user port. My daughters would love to play Colony on the Electron that was featured in the April issue of Acorn Computing. I understand that I need a serial link to download programs to the Electron but that is where my knowledge ends.

Could you explain in simple terms what I need to run programs like Colony that won't run on the A3000 using the !65Host. Can programs be sent to and from either computer and is there a limit to the length of cable you can use?

If this is not possible can I list the program and copy it across?

N. Ratcliff, Queenborough, Kent

A *I am not sure if I am missing something here, but if you have an Electron with a Plus 3 interface you can simply copy it on to the disk. Whereas the Electron can't read the Archimedes disk the Archimedes can read/write Electron disks.*

However, as for Colony, I am not absolutely sure that it will work on the Electron once you've got it there.

Silent running

Q I WOULD like to have your comments regarding printing using an A3000, RISC OS 3.1 and Panasonic KX- P-1081 printer configured to an Epson FX 80.

Even though I have loaded Printers and the icon on the iconbar shows as FX-80, I am always asked to insert the disk with Printers on it before it will print, and it must be unprotected. Is this okay? I thought Printer had already been loaded into the computer?

When printing text, FX_80 is replaced by printing on the iconbar but Draw and Paint have the hourglass.

On page 65 of the RISC OS 3 user guide under the heading Quality, it suggest you can choose No Highlights, Draft or NLQ. I don't seem to have the choice of NLQ. I am able to print but wonder if I am making the best use of what I have.

A. H. Green, Hindley Green, Wigan

A *What your computer is looking for is the Scrap directory. It uses this as a temporary store while it is making up the image to send to the printer. Just like the System directory, the computer uses the first one it sees and it first saw this on the disk you loaded it from. If you want to use another disk, make a copy of Scrap on to it and then double-click on it before printing. The computer will then ask for this disk.*

RISC OS has two methods of printing – pure text and graphical. When you get the "printing" message you will have dragged a text file on to the printer icon or used the Print option from Edit.

When used in this way the printer driver just sends the text directly to the printer, and to get the various text effects you would have to embed codes into the text being sent using the Fancy text format which should be explained in your user guide.

Draw and Paint – and most other applications – use graphical printing which takes a lot longer but gives much better results, producing exactly what's on screen on the paper.

SWI-calling

Q MY FRIEND and I are avid programmers. We are presently trying to produce a copy-protection software system called LimitUse which will be easy to install and will protect your programs.

Although it is in its early stages, we have seen room for improvement and want to include computer-identity recognition. When an engineer came to fix my A5000 he showed me what the identity transistor looks like and explained what it was for. He said that some programs can log the 256 bytes inside it and then the software will only run on the computer.

Please could you tell me which SWI call to use in order to read the contents of this transistor as we don't have £80 for the PRMs. Hopefully we will be able to integrate the identity system into *!LimitUse* making it that more secure.

Marcus Baw, Selby, North Yorkshire

A *I am not sure that there are any 256 bytes inside the chip but the call OS_ReadSysInfo is the one you want on entry. R0 should contain the value 2 and on exit R3 will contain the first word and R4 the second of the unique machine ID. If these values are 0 then the machine has no chip in it.*

However, it is not such a good idea to use this for copy protection in this way. First of all it artificially limits you to a part of the market that has machine fitted with that chip, and secondly it is severely discouraged by Acorn, so much so that there have been severe behind the scenes *rows between Acorn and major software publishers.*

LZW = EZ says Michael Rozdoba

Number crunching 2

IN the August issue I mentioned that Andrew Wood of Whitley Bay wanted to know how LZW compression works and that I didn't know. Well I've done some research and now I do. So simple and elegant is it, that I have decided to dedicate this month's TechForum to it.

This article is accompanied by some code on the MegaDisk, called Squish – a mix of C and assembler – that can directly read and write Acorn's Squash file format, which uses 12-bit LZW.

There's also a small shell application, to demonstrate these routines, which will load a file, compress or decompress it, and then save the results back to disk.

The two crucial routines are provided as assembler source code which specifies a couple of APCS-compliant functions – that's ARM Procedure Call Standard to the uninitiated.

This means they can be directly accessed from a compiled language such as C, as well as from assembler. However, as the source is provided, you could turn it into a piece of Basic assembler if needed.

I haven't bothered to build the code into a relocatable module, as it's so compact that it adds little to an individual application – only 752 bytes in total. This also makes it easier for you to modify if you want.

I should point out that this code doesn't provide the flexibility of Acorn's Squash module, as it only allows compression and decompression in a single step – all data, input and output, must be held in ram at the same time.

Usually this isn't a problem, and it does permit faster processing of the data.

Of course, with RISC OS 3 you get the Squash module in rom, which largely makes this code redundant. However, if you wish your programs also to run under RISC OS 2 you would formerly have had to obtain a license from Acorn to distribute their soft-loaded RISC OS 2 version of Squash. This may present PD authors with a slight financial problem.

If you fall into this category, or you'd like a customised LZW algorithm, or are just curious as to what LZW is all about, you should find this article of interest.

It's also come to my attention recently that there are one or two potentially serious bugs in Squash – you'll find a few notes and warnings about these on the MegaDisk in Misc.AcornBugs. There shouldn't be any similar problems with Squish.

Adaptability

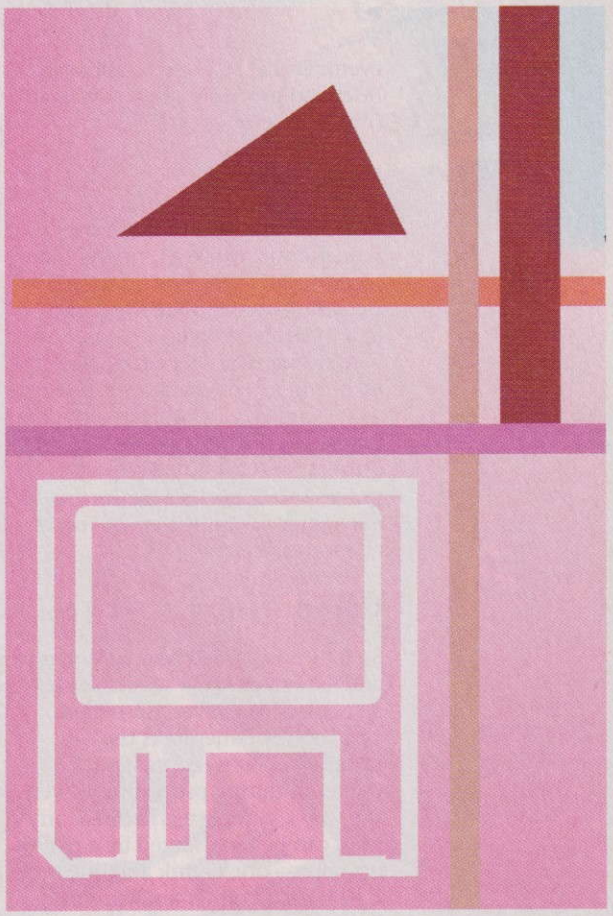
LZW is an adaptive compression technique. It looks for patterns in its input data – patterns in sequences of bytes – and replaces subsequent occurrences of any such pattern with a tag that implicitly indicates where that pattern can be found in the earlier data.

There is no need to explicitly store the association between tag and sequence within the compressed data, as this can be reconstructed during decompression.

Thus to decompress data, one only needs to scan it in sequence and replace any tags with the indicated sequences to be found earlier in that part of the data which has already been decompressed.

Tags

All data is no more than a stream of bits yet when decompressing, LZW



requires a way to distinguish between a raw value to be copied directly to output and a tag which refers to an earlier sequence of output bytes.

Now since a raw value is byte-sized – 8-bits – it becomes necessary to store compressed data in larger chunks so that a tag can be differentiated from a raw value.

To maximise compression, LZW uses a varying chunk size. This starts out at 9-bits and increases as needed up to 12-bits, in the case of the 12-bit algorithm which I will concentrate on.

A chunk value of 0-255 specifies a raw value, while above 256 is used for tags. 256 has a special meaning, which I'll come back to.

Initially, we have tag numbers from 257 to 511. These are allocated during compression and decompression in strict sequence, and when they are all exhausted, we shift up a gear to use a larger chunk size, first from 9 to 10-bits, giving further tags 512 to 1023, and then from 10 to 11 and finally 11 to 12-bits, giving a maximum tag of 4095.

For a typical data file of 10Kb or more, we will still eventually run out of tags during compression.

This is where the tag of 256 comes in. It is used to mark this ➤

➤

event, and at such point all tags are reset and processing begins anew from wherever we left off.

Patterns

To LZW, a pattern is either any sequence of two bytes, or any longer sequence of bytes formed from a previously encountered sequence and one further byte.

All recognised sequences overlap by one byte. For example, in the data 1•2•3•2•3•4, LZW notices only the sequences 1•2, 2•3, 3•2 and 2•3•4. This last one is a noted sequence, unlike 1•2•3, because by the time it encounters 2•3•4 it already knows about the sequence 2•3.

Compression

So far I've outlined how LZW works and explained what sequences it recognises. However, it isn't yet clear how it remembers the association between tag and sequence during processing. Given the way a sequence is defined, any such can be represented by a pair of numbers – one chunk and one byte.

The first is either a raw input byte, in the case of a sequence of two bytes, or is a previously allocated tag, in the case of a longer sequence.

If we go back to our example data of 1•2•3•2•3•4, the sequence 1•2 gets tag 257 and the sequence 2•3, tag 258. So 2•3 can be represented by the pair 2,3 while sequence 2•3•4 can be represented by 258,4.

During compression, LZW keeps on hand the last two data values. Initially these will be bytes of input. It checks if this is a known sequence, by using the two values specifying the sequence to look up an associated tag – at the outset all such tags, stored in temporary workspace, are reset to flag that they are not in use.

If this is unused, the first part of the pair is stored in output and a new tag allocated to this sequence. LZW then pairs the last byte of the old pair and the next input byte and repeats the process with this new pair.

However, if the sequence already has a tag, LZW considers the pair (*tag*, *byte*) where *tag* is the known sequence's tag and *byte* is the next input byte, and the algorithm then loops back to check if this longer sequence is also already known.

Either way, on each occasion the process must eventually terminate with a known sequence – possibly of just one byte – followed by another byte, together forming an unknown sequence.

The value, either input byte or sequence tag, for the known section is then written to output, and the process resumed with the remaining unprocessed input.

This is essentially all there is to LZW compression, though there are a lot of details to fill in, not least of which is how workspace stores the association between (*chunk*, *byte*) pairs and their given tag.

This can be done in several ways, and the method used is crucial to a speed efficient compression algorithm.

The quickest is to store an array of tags indexed by the two values. However, with the indexes spanning 0-4095 and 0-255 and each tag occupying up to 12-bits, this would need 1.5Mb of workspace!

Not only is this impractical, it is also highly inefficient as no more than 0.4% of it will ever be in use at once, as there are only 3839 (= 4096-257) tags to store within it. The most compact method is to maintain a list of triplets (*chunk*, *byte*, *tag*) for each possible tag, as this uses only 3839 words.

Unfortunately this is also horrendously slow to access via chunk and byte entries, as the whole list has to be scanned. The solution to this dilemma is an intriguing compromise. We can use a triplet list, but attempt to store values within certain regions of it depending on the (*chunk*, *byte*) pair.

The pair, spanning 20-bits, are combined to give a narrower index *i*, say 12-bits, and we attempt to use this location in the list. If it isn't available, as it has been used by a different pair which have the same index, then we scan the list for a free location.

For maximum efficiency, the list is scanned by incrementing our attempted index by the original guess *i*, mod the list length. This adds the constraint that the list must be of prime length, so that in the worst case, we will be able to scan the whole of it.

The list should also leave some free space to reduce collisions through common indexes.

I've experimented with various methods, and decided that a 12-bit list index is the best choice – 13-bits doubles the workspace needed from around 20Kb to 40Kb, but gives only a 6% increase in speed. For this, a list length of 5119 works well.

How the index is constructed is also important. It should maximise use of the available 12-bits and not be biased to certain values. Choosing the right method can make a speed difference of 3000 per cent.

For pair (*chunk*, *byte*), indexes of *(*chunk*+16**byte*) mod 4096* and *(*chunk *EOR 16**byte*)* are efficient, with the latter being quicker to code.

The 16* part is used as chunks will usually be low so this makes better use of the high bits in the index.

EOR or + are also better choices for the combination, rather than OR or AND, as the latter are biased towards set and clear bits respectively. Take a look at the source code to see how this works in practice.

Decompression is a much simpler task. A tag is allocated at each step and workspace used to maintain a list of addresses in the output where each tagged sequence ends.

To decompress a tag, all LZW needs to do is make a copy of the earlier output bytes as bounded by the buffered addresses for the given tag *t* and for *t-1*.

Acorn Squash

You should now know enough to implement your own LZW algorithm. However, if you wish to access an existing format you may need to take one or two other factors into consideration. I'll confine myself to considering Acorn's own Squash format. Following the file header of 20 bytes is the LZW data.

This starts with a 24-bit flag &8c9d1f, indicating the compression type I guess, in case other methods are added in the future.

Then comes the actual compressed data. This is as previously described with one exception.

Whenever a tag of 256 is written and all tags are reset, a batch of zeros is written to output, possibly for helping to trap errors in transmission of compressed data. The number appended depends on the number of bits written to output since the last tag reset.

Specifically, setting *n = (number bits)/4 MOD 8*, m[n] zero bits are added, where m is the array {0, 60, 24, 84, 48, 12, 72, 36}. When decompressing data, these need to be skipped.

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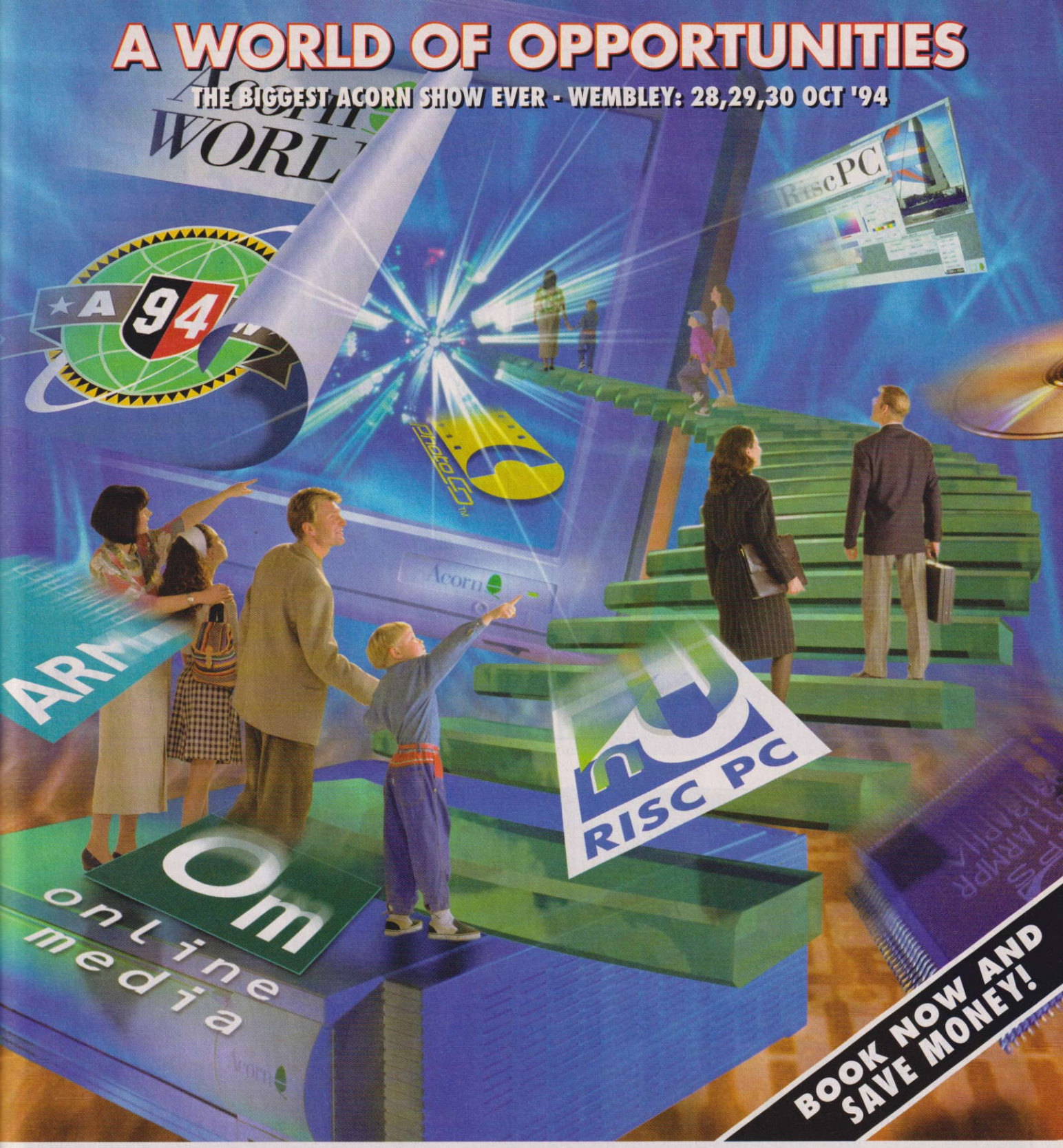

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Black Widow to the rescue

IN 1989 a notorious criminal known as the Purple Shadow vanished from police custody while being transported to prison. Nothing was heard of him until 1994 when a message was delivered to the United Nations demanding £1,000,000,000, otherwise a deadly virus would be released into the environment. There was only one chance, the Black Widow was called in to find and destroy the Purple Shadow in his lair and prevent the virus from being released.

As the Black Widow, you have located the underground base of the Purple Shadow and from a location above ground you must penetrate his defences, find key cards to the lower depths and set explosives to destroy the base. However, the Purple Shadow won't take it lying down, he's throwing everything he's got at you and you'll need to use the ammo crates and first aid kits you find to survive and, ultimately, destroy the base.

The following standard keys are used:

Z	Left
X	Right
*	Up/jump
?	Down
Return	Fire
Shift	Pick up/drop
Space	Use object
Escape	End game

James Watson

● *Here are your tools – now go save the world*

Roman numbers: Counting in tongues

The Romans used the letters M, D, C, L, X, V and I for our numbers 1000, 500, 100, 50, 10, 5 and 1 respectively. They repeated a letter if necessary, so if they thought of 1258, for example, as 1000 + 100 + 100 + 50 + 5 + 1 + 1+ 1 which is MCCLVIII.

Normally the Romans avoided writing more than three of the same letters together by moving a lower value letter in front of a higher one. They needed to do this wherever there was a 4 or 9 in a number, so 4 = IV, 9 = IX, 40 = XL, 90 = XC, 400 = CD and 900 = CM. D, L and V never have to be put in front of a higher value Roman letter. For instance, 995 should be CMXCV and not VM. There are four programs related to Roman numerals on the disk. The first simply gives you a Roman number if you enter an Arabic one, and vice-versa. The second displays in double height characters Arabic numbers from 1 to 2000 and their Roman equivalents.

The third shows all the Roman numbers, which have fewer letters than their Arabic equivalents have digits.

In the fourth you enter as many as you want of the letters M, D, C, L, X, V and I to find out how many different Arabic numbers your group will form. With C, L and X, for example, the micro will give you 140 = CXL and 160 = CLX.

Jon Millington

Prompt: Changing what you see

Prompt works on all 8-bit Acorn machines and provides a facility similar to that available on DOS and the Archimedes, whereby the prompt can be changed. It's done like this:

```
*PROMPT <string>
```

<string> is the characters you want to appear in your string, plus any of the optional special characters below:

!!@	the time in HH:MM:SS format
!!A	date and time in *TIME format
!!B	the old prompt ">" or "*"
!!C	the current language rom, Basic for example

!!@ and !!A will usually only work on a Master 128 but as they use legal calls they will work on other Beebs that are suitably expanded. As you may have noticed these are in the GS format, so it is also possible to put VDU sequences into the prompt, like !G for the bell, !M for Return and !? for delete. GS format is explained fully on page 16 of the Advanced User Guide. Here are some further examples:

```
*PROMPT !!C !!A !!B
*PROMPT Econet printer server !!B
*PROMPT it's !!@, so party on! !!
B
*PROMPT Buy Acorn Computing !!B
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The system will work with View, ViewSheet, Basic and the OS *GO cli, and on the command line of Acorn screen Edit and InterWord.

J.D. Lampard

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Back to basics

What are the principles of a picturebase? Chris Drage investigates.

● *Thumbnail pictures save time when browsing*

THE advent of CD-Roms arriving in numbers in the education market has produced a plethora of picture resources from a variety of publishers. Most use some form of display software in order for the user to see a selection of thumbnails – small transparency-like images – in order for a choice to be made. This is fine if all you are ever going to use is one CD-Rom, but as the collection grows the problem of knowing which image is stored where is exacerbated.

What is needed is a system which, when requested, will automatically prompt you to insert the correct CD-Rom containing the image or group of images you require. A pipedream? AVP have come up with just such a system: Picture Base.

PRODUCT SPOTLIGHT

Product: Picture Base CD-Rom
Price: Victorian Britain, £199 for all eight modules (£59.50 per module purchased singly); Art in the National Curriculum, £150 for two modules (£79 and £99 if purchased singularly)
Supplier: AVP, School Hill Centre, Chepstow, Gwent, NP6 5PH.
Tel: 0291 625439
Requirements: RISC OS 3.1, 2Mb ram. Hard disk drive with at least 10Mb free for each module.

Picture Base presents subject modules in a series of interconnecting, interactive windows. A module comprises between 20 to 50 images grouped according to specific subjects, topics or themes, with accompanying descriptive text. Some modules have a distinct cross-curricular appeal and some contain sound files where appropriate.

All the modules are designed to clip together on the hard disk, thus building up a database which can be searched according to a variety of criteria: By title, keywords, a word in the text or words added by the user, with Boolean operatives available on all fields.

If all this sounds a trifle complicated, it isn't. Simple to use dialogue boxes make the process quite straightforward and even complex searches using filters are easily achieved.

Each Picture Base CD-Rom comes complete with a disk of software and a manual. From the wide range of titles available, I reviewed *Art In The National Curriculum* and *Victorian Britain*, each of which is a compilation of two and eight modules respectively.

If you do not yet have a CD-Rom drive modules can be purchased separately on floppy disk, but be warned, you will need plenty of space available on your hard disk for each module: Typically 10Mb per module.

No such memory overheads exist for Picture Base CD-Roms as the only data held on the hard disk is database information – all pictures are stored on the CD.

At present, installation is quite a complex procedure which does not accurately follow the instructions in the handbook. However, AVP have assured me that a new installation procedure is currently being written that should make the process a whole lot easier. As it stands, it is unnecessarily complex.

The problem is exacerbated by the fact that each new module you purchase must be installed. Once the software knows which module it needs to look for, everything works very smoothly.

The Picture Base screen is the basic feature of the program and like a database *card*, is divided up into a number of fields: A picture field, title and subject fields, description field – panel of descriptive text – user notepad field, key words field and user key words field.

Two of these fields prove particularly valuable: The notepad can be used to supply alternative or supplementary text while user keywords can supplement or supersede those offered by the program.

A portfolio feature allows the contents of a module to be seen at a glance in thumbnail format. All pictures are best displayed in a 256 colour, 640/480 resolution screen mode.

Control of the software is by a set of buttons on the Picture Base screen. From here search can be undertaken with *and/or* filters if required. Thus a search for Victorian bridges and canals can be undertaken with the software searching over all the installed modules, loading pictures from installed CD-Roms and prompting for others to be loaded.

The only negative point in an otherwise excellent system is that the software asks you to insert CD-Rom COM5001-2 or COM2001-8, all of which is pretty meaningless, and AVP assure me that useful names will be used in future releases of the software.

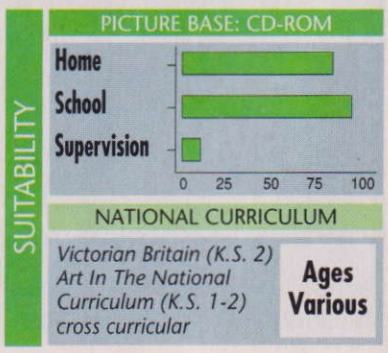
Picture Base has one more very useful feature: Trails. A trail can be set up linking any number of individual images spread over several CD-Roms – great for directing children's exploration of a particular subject.

● *Using Picture Base as an Art database*

Summing up

Essentially, Picture Base is an illustrated database which builds up to become an electronic encyclopedia. However, its purpose is to permit picture resources to be located, grouped and saved out for use in children's or teacher's work.

Despite reservations over the installation procedure, it is a task which Picture Base achieves extremely well.



Once upon a rhyme

Graham Keeling puts Topologika's new KS1 package to the test

COMPUTER jigsaws that talk has been a good idea for many years, but at last Topologika have come up with a package that does the job really well. Aimed at pre- and early readers, each program is based on a well-known nursery rhyme.

The child is presented with a screen of jumbled up bits of the rhyme which he/she must un-jumble before the computer takes over, reads the rhyme and plays a really nice animation along with a simple tune.

All this would be fine if that was all that was on offer, but Talking Rhymes has a few more tricks up its sleeve. You can tell this is something special when you realize it takes up the best part of 2Mb of memory – 1Mb users weep here as you stand no chance.

Upgrade your machine or prepare to look on with envy as others have all the fun. Any infant school heads who thought their children only needed small Acorn computers had better start looking at their IT policies again.

The main screen consists of the puzzle which is a picture and/or words. I found the two together very confusing, but children may just find it a challenge.

When the child uses Select over a part of the puzzle the voice will read out that part of the rhyme. This voice has to be heard to be believed and the pictures here can give no idea of the excellent quality of this product.

Dragging any part of the puzzle to any other results in the two being swapped. There is also a blank area on the screen where text can be stored while other pieces are swapped around.

Icons on the screen help with reassembling the rhyme and manage the program. An eye when selected will assemble the jigsaw correctly and speak the text in full. Once Select is released the puzzle re-jumbles itself ready for the child to attempt to solve it.

An ear icon when selected will *read* the current top line and of course when Select is clicked on any piece of the jigsaw the voice reads the piece.

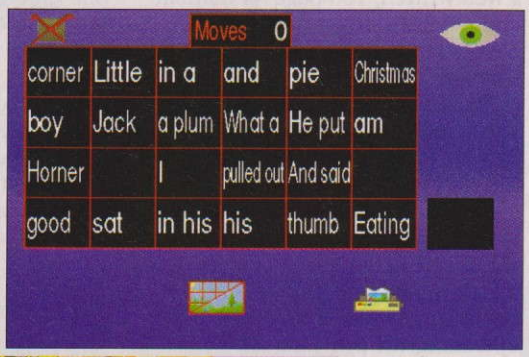
Screens can be configured to present the child with whole lines, columns or just words. When pictures are selected then whole rows, columns or pieces have to be sorted.

This software has tremendous potential for use with younger children. The quality of animation is superb, better than anything I have seen before from a 800k floppy on Acorn machines.

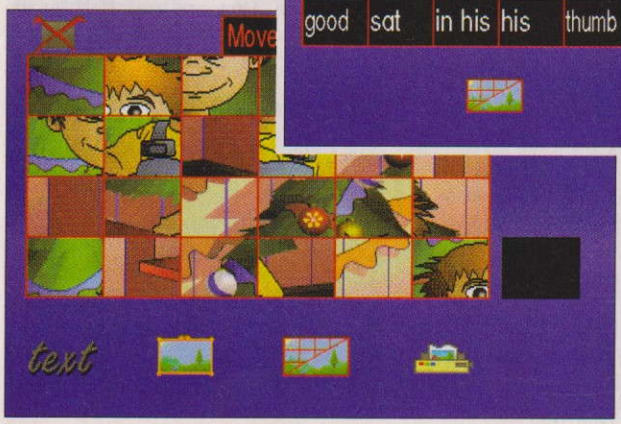
Children will thrill as they watch the detail and humour within the screen. A simple video control panel at the top of the screen allows you to play the animation forwards, backwards or return to the puzzle screen.

A simple manual tells you all you need to know and there are some superb suggestions for using Topologika's other packages, TinyDraw and MusicBox.

The combination of Talking Rhymes with either of these packages makes for a suite of software that offers creative tools and now creative inspiration for younger children.



● *If you prefer you can make a jigsaw of the words*



● *The number of jigsaw pieces is set by teacher or parent*

Summing up

After the obvious use of Talking Rhymes with language work, one must realize that both art and music could be enhanced by the use of talking rhymes.

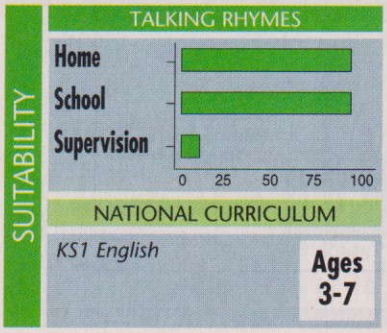
Given sufficient memory in your computer, a printer driver can be loaded and screens can be printed from any point within the puzzle or animation.

The package comes complete with photocopiable sheets of art work from the programs. These can be made into jigsaws or used in other ways within the classroom. Talking Rhymes sets new standards for animation for younger children.

Children will love solving the puzzles and huge amounts of cross curricular work could result from the animations and music within the software.

PRODUCT SPOTLIGHT

Product: Talking Rhymes
Price: £12 (each) £40 for set of four
Supplier: Topologika, Islington Wharf, Churchill Hill, Penryn, Falmouth, Cornwall TR10 8AT.
Tel: 0326 377771
Requirements: 2Mb ram



Taking advantage?

A new spreadsheet designed with children in mind – Rog Frost reports

SPREADSHEETS – crucial in the commercial world – still struggle to find a firm foothold in the world of education. Advantage is the latest candidate. This is not overloaded with rarely-used bells and whistles, as the publishers wanted a product with features to encourage teachers to use it across the curriculum and ages.

The bad news is that the program requires at least 2Mb of memory and many schools still regard this amount of memory as something of a luxury.

Even for those with 2Mb, Advantage can still create some problems. For example, using my A3000 I cannot run a standard word processor, Advantage, and a printer driver all at the same time.

Now for the good news. My pupils, a year 11 Business Studies group, were immediately impressed with Advantage. They liked the fact that they could create sheets with a high-quality style, making good use of colour, fonts and layout. They liked the graph quality and the fact that graphs can be saved as draw files and imported into other applications.

They also liked the clear range of mathematical operations which more than met their needs but without confusion. I liked the fact that they could get on and use the program with virtually no instruction. The over-used phrase *intuitive to use* really does seem to apply in this case.

They also enjoyed *playing* with the example applications that come on the disk. A particular favourite was the summary of all of the twentieth-century General Election results.

They did not like the lack of a hot link between the spreadsheet and the graphs. They hated the very slow printing speed – although they did like the quality. I liked the ability to select *Print on one sheet* which irons out a lot of problems.

Advantage offers customers quite a lot for their money. There is a well written, 100-page A4 manual and nearly 30 pages of this are devoted to the various functions available.

These vary from the ordinary mathematical functions such as Cosine, Product or Sum, to the interesting date functions which allow you to find the day of the week for any date.

Other functions allow for searching, tidying displays and organising. A useful set of operations are provided for computing the interest to be paid on loans. The most useful dozen or so functions are available at the click of a mouse button. The less usual options require knowledge of their existence.

Entering data is very straightforward. There are the usual range of copying and moving tools, plus the easy ability to justify the contents of each cell.

The font used and its size can be selected and colour can be used to highlight areas. These features make no difference to the operation of the spreadsheet, but they do a great deal to enhance the pleasure of using the program and also ensure that the final output has a polished style.

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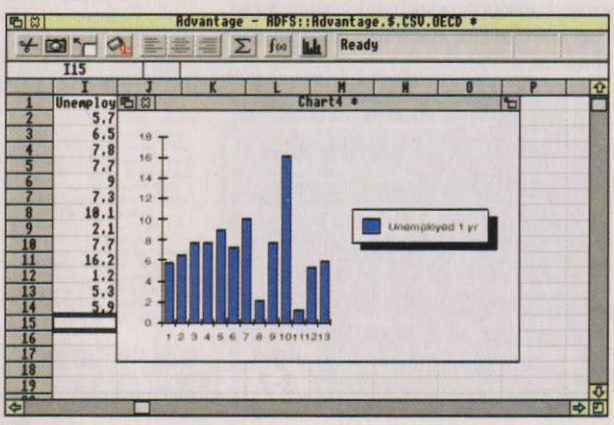
● *Advantage provides neat displays which can be in any RISC OS font*

PRODUCT SPOTLIGHT

Product: Advantage
Price: £52
Supplier: Longman Logotron 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS.
Tel: 0223 425558
Requirements: 2Mb ram



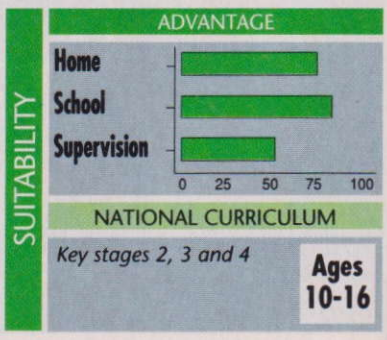
● *Advantage has good graphing facilities but unfortunately there is no hot link*

Summing up

Graphically, Advantage is sound but not spectacular. Columns or rows of data can be displayed as bar charts – vertical or horizontal – pie charts, line graphs, area graphs or scattergraphs.

Several sets of data can be stored on one graph and the choice of colours for these displays is rather ordinary, but everything works easily and as expected.

Advantage is claimed to be a spreadsheet geared to the needs of education. It is a thorough, if uninspired, program. Pupils like the clear displays and general ease of use. They are frustrated by the lack of hot links and the very slow speed of printing.



Speaking the lingo

Chris Drage examines a CD-Rom and what it has to offer French teachers and pupils

EVER since Genesis saw the light of day it promised a wide range of applications very much in the mould of Hypercard on the Apple Mac. That range now exists and one of latest and more novel applications is CD Français, a modern languages application which is a joint venture from Oak Solutions and Leeds EdIT Centre as part of the NCET Audio CD Project.

Designed for students at Key Stages 3/4, the package comprises an audio CD and two disks containing the Browser and Genesis.

Not only will this speed up the program but will negate tedious amounts of disk swapping. An external, powered, speaker set – such as the Ross RE-4230 – helps.

Once the application resides on the iconbar, the opening screen presents a map of France on which three locations are marked with large dots.

Clicking on these takes you to Calais, Paris and Lyon respectively. Together, these locations contain approximately 60 varied activities which aim to help pupils practise and consolidate their listening and oral skills.

The range of skills used in CD Français include: Listening, sequencing, dealing with money, weight, object recognition, handling personal information, descriptions, maps, directions etc.

Some of the activities are suitable for pupils at an early level who have been introduced to, for example, directions or to asking for food and drink in a café, while other activities are suited to more able students.

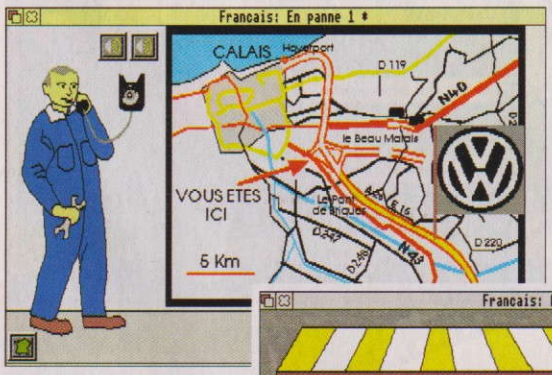
A scene outside a café-bar exemplifies how the program operates: The opening screen shows a cafe and waitress. Clicking on the *i* and *?* icons provides information and instructions – en français, of course.

Click on one of the seven loudspeaker icons at the bottom of the screen and the scene will change, showing one or more customers sitting at a table who are then invited by the waitress to order. The order is spoken and this can be paused, played back in parts or repeated as often as necessary.

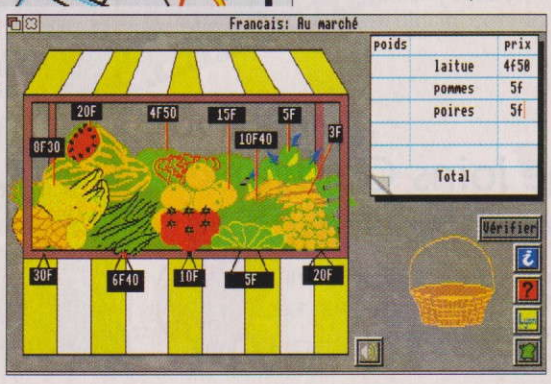
The objective is to identify each of the items ordered and drag them from a food selection window on to the table. When complete, clicking on the *verify* button will confirm in French whether or not the interpretation was correct.

Incorrect items can be dragged back to the *kitchen* and replaced with the correct items. This particular activity has seven graded exercises.

The locations are varied and interesting and relate well to the real world – from *la gare* to *la marché*, from the airport to finding your way around the streets of Lyon.



● *Car trouble on the continent*



● *Getting the most from your shopping expedition*

Summing up

It is very tempting, having previewed the application, to work pupils through all the activities sequentially from Calais to Lyon – after all that is probably how one would visit France during a holiday. This, I believe would be a mistake and miss the major value of the package.

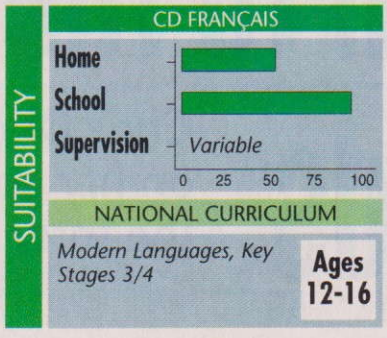
Each scenario relates to a specific area of learning and should be linked instead to the course and other resources pupils are using. For additional resources, draw files of all the graphics used and work sheets based on CD Français are available from the Leeds EdIT Centre.

CD Français is not a program for those recently embarked on learning French, but provides pupils who have an elementary but firm grasp of the language with a useful array of true-to-life situations, in which they must accurately interpret and respond to aural stimuli.

All in all, a most useful resource which should motivate flexible learning in modern languages classroom.

PRODUCT SPOTLIGHT

Product: CD Français
Price: £120
Supplier: Oak Solutions, Dial House, 12 Chapel Street, Halton, Leeds LS15 7RN.
Requirements: RISC OS 3.1, 2Mb ram (preferably 4Mb), hard disk drive, external speaker system



If you go down to the woods

Chris Drage joins Goldilocks on her adventure with the three bears

GOLDILOCKS is the latest in an ever-growing series of Genesis applications spawned by the EdIT Centre, funded by Leeds City Council and NCET. Designed to introduce children at lower Key Stage 1 to IT skills, the package comprises an audio CD and two disks containing Browser, GenLib, Goldilocks application and support materials.

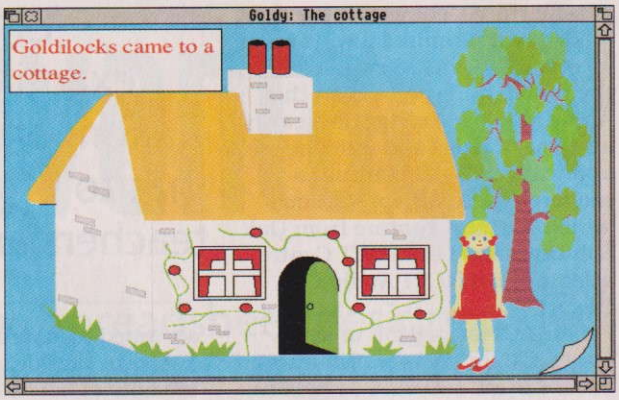
For added speed and improved access time install copies of GenLib and Browser into a hard disk folder then add the Goldilocks application. It is also a good idea to have 2Mb of memory to hand and a set of headphones connected to the CD-Rom drive or – better still – an external, powered speaker system in order to hear the audio CD properly and to obtain clear and accurate speech.

PRODUCT SPOTLIGHT

Product: Goldilocks
Price: £39.95
Supplier: Cumana, Pines Trading Est, Broad Street, Guildford GU3 3BH.
Tel: 0483 503121
Requirements: RISC OS 3.1, CD-Rom drive, 2Mb ram (preferably 4Mb), hard disk, headphones/external speaker system

Goldilocks is designed to encourage young children to explore, read, write, listen and to develop matching, sorting and counting skills. Using the spoken word, simple clear graphics and a degree of animation, the program positively encourages independence with the computer.

As the traditional story unfolds, from the opening screen onwards there is spoken help making the story accessible to pre-readers. The voice is that of Yorkshireman Keith Speight, so at times the pronunciation of some words proved a delight to my Kiwi ears – but this hardly detracts from the overall enjoyment and provides an interesting discussion point on accents.



● *The graphics are simple but struck a chord with our five- year olds*

Within the story, all the red text is spoken if clicked upon. The page format has been designed to make it easy for children to move through the story, find the speech and do the activities.

It is this degree of interaction which is the key to the success of this program, as children not only delight from the security in knowledge of a familiar plot but delight in the anticipation of the next screen.

The story contains pages with activities appropriate to lower Key Stage 1 pupils, but behind the screen interacting with the children is another level. Here the program stores all the changes that have been made to each screen, allowing the teacher/parent to view the changes made.

Pressing the two Alt keys displays the children's work and each page can be printed or the whole set saved as a CSV file. However, any or all selected pages can be printed as a permanent record.

The ability to monitor each child's response is a very useful means of assessing both their performance and progress. The support disk contains various files with follow up ideas and cross curricular links.

A large pack of photocopiable resources accompanies the pack and includes keyboard overlays and sheets encouraging children to write, draw and colour in.

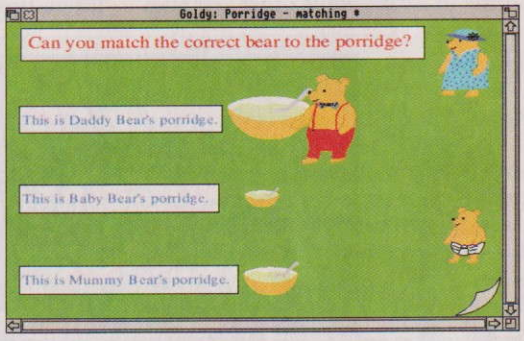
Summing up

Although Goldilocks is eminently suited to main stream pupils, it also provides valid IT experiences for children with a range of special educational needs, and to this end accompanying Goldilocks is a wide range of activity sheets and overlays for use with a Concept Keyboard.

It is also an imaginative way of introducing children to IT skills such as using the mouse or writing on the computer using the qwerty keyboard.

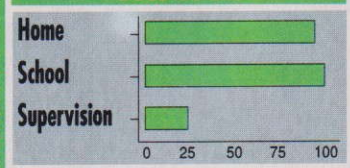
Although lacking in the sophisticated graphics/animations we almost come to expect these days, Goldilocks is easy to use, and if the reactions of the five-year olds I tried it out on are anything to go by – completely enjoyable.

● *The activities explore matching, counting, sorting and matching*



SUITABILITY

GOLDILOCKS



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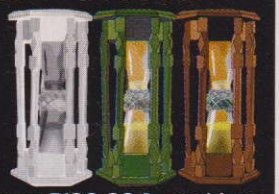

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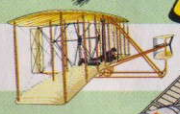

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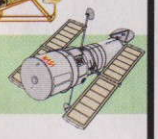

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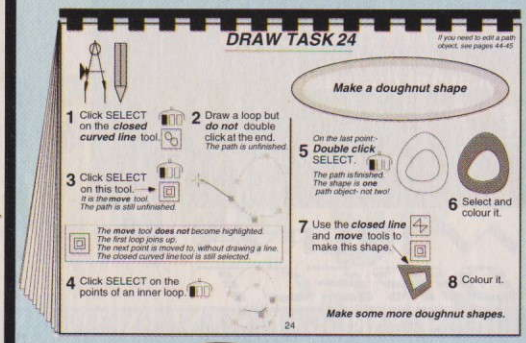

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The game comprises 36 stages, spread across six zones: The Woods of Flub, Sweet Shop, The Fun Park, Ghost House, Frozen Forest and Outer Space.

On each stage you must recover all the collectable objects – such as foodstuffs and keys – before your time expires, otherwise you lose one of your three lives.

Some objects are free-standing though most are encapsulated inside a block and accessed by pushing the block elsewhere. Blocks cannot be moved in a direction where another is found immediately adjacent, or outside the area of play. Some have further restrictions on the directions they can be shunted in.

The arrangement of the blocks usually forms a logic puzzle, with the order they are moved in proving significant if all the collectable objects are to be reached.

In the first three zones, disposing of the Alien Pepperpots by pushing blocks over them is not necessary. However, doing so enhances your score and is good practice for later. Colliding with an Alien does not cause the loss of a life, but instead consumes some of your precious time.

Speed is of the essence as bonus points are awarded for time not used completing a stage. Some of the more difficult levels incorporate collectable clock objects which increase the time available for completing the stage. Saving collection of these until your normal time is almost up will provide the greatest benefit.

Things really start to become difficult when the Ghost House is reached. In this and later zones, all the Alien Pepperpots need to be eradicated.

Blocks which become immovable a short time after entering the stage are introduced, requiring priority attention if the objects they contain are to be retrieved.

I have to admit to getting stuck on the first stage of this zone. Although I've managed to move all the timed blocks – of which there are more than plenty – an Alien or three always seem to avoid my efforts to flatten them. However, as I had been supplied with the passwords for the Frozen Forest and Outer Space zones, I was able to take a look at them.

The former introduces blocks which can't be moved until a code has been entered using four special switch blocks.

These switches make sounds of increasing pitch when pushed in the correct order – so don't turn the volume to a minimum if you want to succeed. In the final zone, plugs which require pushing to sockets of matching colours to mobilise another class of block are inaugurated.

The animation and vertical parallax scrolling are smooth and the sprites generally well defined – with the Aliens dressing appropriately for the climate of each zone. Spobbleoid himself remains remarkably straight-faced throughout proceedings, never quite managing a smile, though his eyes convey motion well.

Some of the foodstuff icons are a touch small for my liking as they can easily blend into the backdrops. If fact, if they didn't flash white at regular intervals, some would prove very difficult to find.

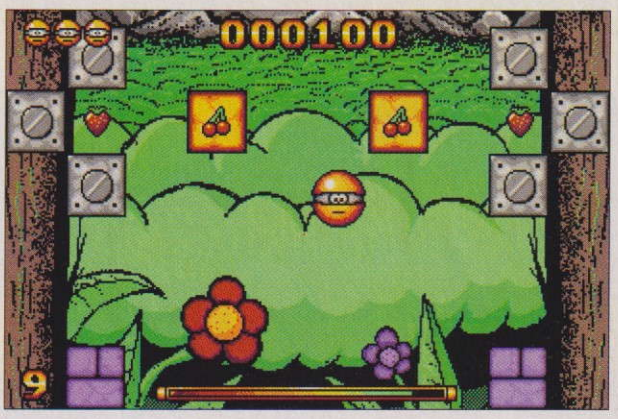
Spobbleoid is fun and combines fast arcade action with lateral thinking. Although not the most addictive game I've played, there is a definite temptation to go back and try that awkward puzzle again. And that's exactly what I'm going to do now.

Stephen Wade

PRODUCT SPOTLIGHT

Price: £24.95
Extra levels and designer: £19.95
Supplier: Cybernation, Microguide Services, Churchill House, 12 Moseley Street, Newcastle-Upon-Tyne NE1 1DE.
Tel: 091-230 0000

● *Ghostly and dangerous*



● *The woods are a pleasant introduction*

Lemmings

...the green haired army returns – with a desktop residence order

MY early impressions of this re-release of *Lemmings* and *Oh No! More Lemmings* reminded me of my first encounter with the mighty Risc PC itself – you know there's a fundamental difference from what came before, yet nothing much seems to have changed.

The one modification you will notice is that the game runs in a desktop window, in unison with any other RISC OS application. What you don't see is that, to achieve this, the game has been almost completely re-coded.

For the benefit of those among you who haven't come across the game before (where have you been?), here's a quick resumé of the plot. Lemmings are cute little creatures, who have a fetish for blue clothing, and possess a range of skills – climbing, floating, blocking, building bridges, digging diagonally, horizontally and vertically... and self-destructing.

Their primary aim in life is to survive. However, they are pretty stupid beings, capable of walking into fatal situations completely obliviously.

Your task is to save as many of them as possible from their doom by encouraging them to put their skills into practical use. This is done by selecting a skill from the control panel, then clicking on the Lemming whom you wish to exercise it.

Sometimes it is, regrettably, necessary to force some to self-destruct to ensure the safe rescue of their comrades – after all, the needs of the many outweigh the needs of the few.

The original game supplies you with levels spanning four categories of varying difficulty – fun, tricky, taxing and mayhem – while *Oh No* is spread over five – tame, crazy, wild, wicked and havoc. Each level is played against the clock, though you don't need to rush in the early levels as these are designed to acquaint you with using the various skills effectively.

A by-product of the multi-tasking environment is the greater the number of active applications, the slower everything operates. I'm informed that this issue has been extensively addressed in the coding, with the speed the game clock ticks at self-adjusting to account for such processing overheads.

Menu options allow you to suspend the game, turn the sound on/off and select full screen – which engages the previously standard mono-tasking mode.

Prior to the introduction of ARM610 machines, games such as Lemmings required almost the full capacity of the processor, so it wasn't really possible to produce a desktop version. Now we have additional power, it is feasible – but what's the point?

Well, almost everything else multi-tasks, so why not? There is a more valid reason, though. Imagine you are executing a background task which requires the desktop, for instance, providing some on-line services. If you decide to play a game, you can't afford to choose one which mono-tasks if there are any remote users logged on.

The conversion to multi-tasking status is mainly thanks to a 12k support module, *ClientMgr*. This can be found on the disk accompanied by full programming documentation and is likely to be used in many future Risc PC products from Krisalis.

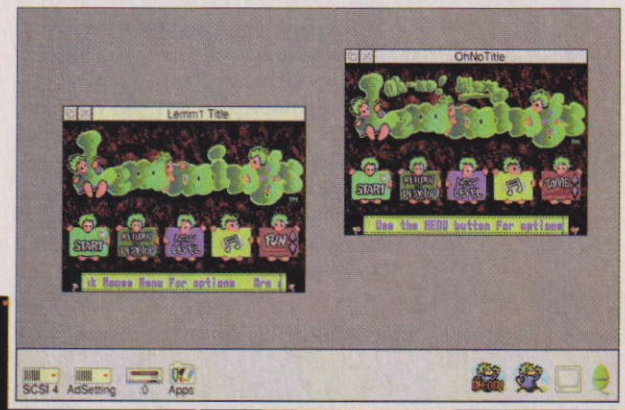
Other developers are also being encouraged to adopt it, free of charge, probably to avoid clashes when claiming the sound system and hardware vectors.

Plenty of thought has obviously gone into making this re-write a success. The game is still as much fun as it ever was and the whole atmosphere of the original remains – right down to the cries of *Oh No!* instilling a sense of guilt when the nuke option is selected. Full marks to Shaun Hollingworth and Krisalis on a job well done.

Stephen Wade

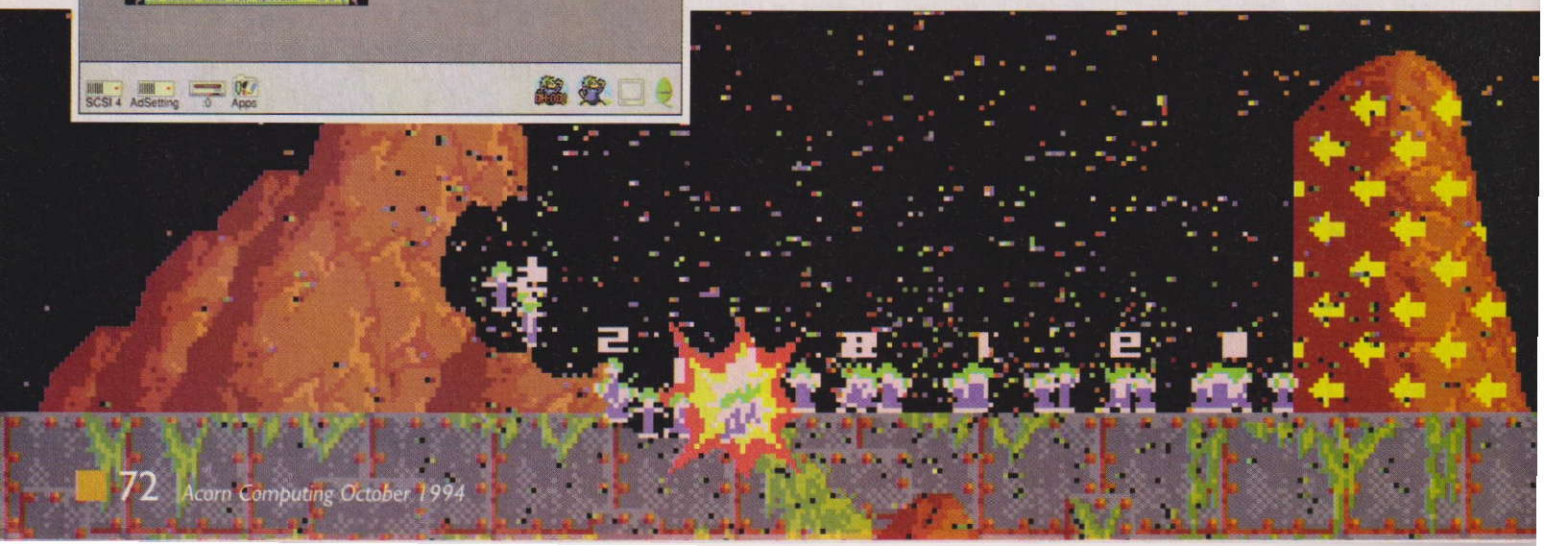
PRODUCT SPOTLIGHT

Price: £29.99 (both games on one disk)
Supplier: Krisalis Software, Teque House, Masons Yard, Downs Row, Moorgate, Rotherham S60 2HD.
Tel: 0709 372290
Requirements: Risc PC

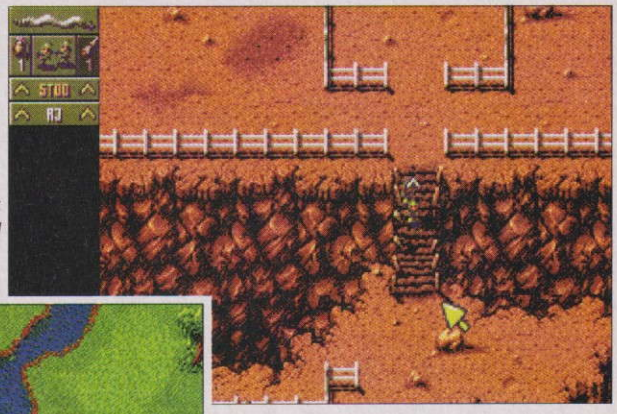


● *Lemmings on the desktop*

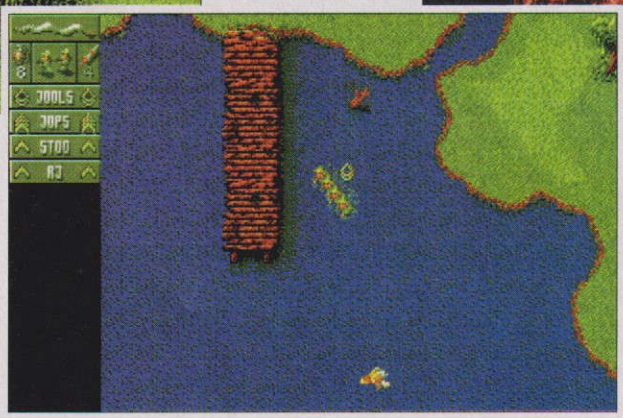
● *Oh No!*



● *Sneak then blast 'em*



● *This one is really hard*



● *A quick dip in the river Kwai*

EVER fancied wading chest deep through the swamp of a steamy jungle with your assault rifle over your head, getting bitten to death by the local fauna while the enemy tries to cash in your insurance policy?

No, me neither but that's what Cannon Fodder is all about. You are put in charge of a bunch of raw recruits and must guide them through the various phases of each mission, hopefully not getting them killed on the way – but they will be.

The manual is written in a very tongue-in-cheek way as are the mission/phase titles, but there's very little you need to know as the controls are quite simple: Apart from P for pause everything is mouse-controlled.

When you start the first mission a troop of 15 innocent volunteers comes running over the hill and the recruiting sergeant pushes the first two through the door. These are your heroes. The next sequence shows them being dropped off by the chopper and then it's over to them and you.

You have a slightly raised view of the terrain – scrolling in eight directions – with your chaps waiting around for your instructions – clicking with the left button selects a point for them to try to run to.

Apart from a small amount of intelligence they won't go round things and they will happily plunge into any water regardless of depth – but they seem to be very fit and can swim any distance without difficulty.

Then there are the enemy who seem a bit more intelligent than your hapless crew – if only because they can walk round things.

Now we get to the violent bit, you have to make your squad shoot the others. This is achieved easily by holding down the right button – the recruits fire at the mouse pointer and anything in the way gets shot.

The enemy fire back but it's not so bad, you can probably get through the first few phases with minimal losses. As you progress you find enemy buildings which have the unfortunate ability to continuously spew out more and more enemy troops – these must be destroyed but just shooting them doesn't help.

You must blow them up with grenades you can find or, later on, with bazookas. Throwing grenades or firing off bazookas is a simple matter of tapping the left button while pressing the right one. The advantage of bazookas is their range. Unfortunately the enemy have them as well and both grenades and bazookas can be fired over barriers.

To improve your chances of success you can split the squad into two (three or four) teams and guide them independently to their target. When you're not controlling a team it stays in one place, but shoot at any enemy that comes in range – using grenades and bazookas if available.

This means that you can leapfrog teams with one covering for the other, or have two teams providing crossfire over an entrance while a third does something else.

In various places you'll find vehicles and you can use them, and their weaponry. On the first level that contains a vehicle it looks like you're supposed to jump it over a stretch of water but I've never managed it – it's a quick way to drown your squad.

Other interesting things to turn up are natives – who you mustn't shoot – quicksand, mines and holes in the ground which also seem to hold a limitless number of enemy soldiers.

When you lose a member of your squad he is replaced on the next phase by one of the ones waiting back at the recruiting office – when you run out of recruits the game is over. If you lose all your men in a phase it's restarted with a completely new squad.

The hillside at the recruiting office slowly becomes filled with crosses and monuments to the fallen heroes – it's a wonder the rest don't take the hint and leave, then again perhaps it isn't.

You can load and save games so you don't have to run through it all again. The graphics are pretty good, the music is excellent and the game play is superb.

Sensible bit: Some people may find Cannon Fodder offensive but anyone who takes it that seriously has missed the point because there's certainly no glorification of war, on the contrary it's packed with irony.

It's a good, tough, game to play with the right balance for sustained interest.

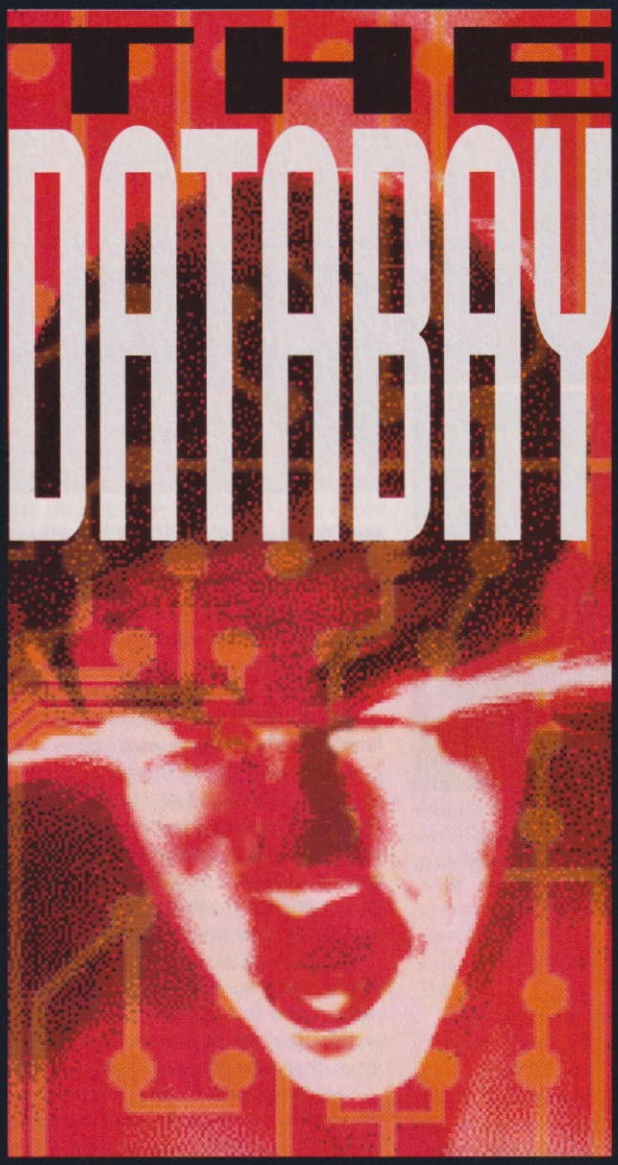
Steve Turnbull

PRODUCT SPOTLIGHT

Price: £29.99
Supplier: Krisalis Software, Teque House, Masons Yard, Downs Row, Moorgate, Rotherham S60 2HD.
Tel: 0709 372290

Cannon Fodder

...war! What is it good for?



HAL battles it out with the killer condiments

THE world's fruit resources are once again under attack – this time by relentless pepper pots from outer space. Not your ordinary arch-villains, you will agree, and the gallant hero also looks a trifle unusual.

A charming mechanical orange by the name of Spobbleoid, he leaps to the rescue of the stricken foodstuffs in Graeme Richardson's latest title from the realms of Cybernation.

A welcome change to the technostyling of Graeme's earlier games, Spobbleoid, reviewed this issue, is strictly in the cute vein and blends the essence of Repton with a squeeze of Pengo. There's a good mix of tactical play and arcade run-around, and the later levels are no pushover.

Graeme has several titles planned for the near future – first off the blocks is the Spobbleoid designer, which includes six challenging new zones.

The second title is Optics – a game combining the skills of Tetris and Pipemania. Optical fibres fall from the sky, and it's your duty to connect them up. This title boasts a simultaneous two-player mode to double the excitement.

The last one on the books right now is Empire League – a futuristic sport, violent as only futuristic sports can be, running at fifty frames per second in an overscan mode. If any of these take your interest, you can contact Cybernation on 091-230 0000.

Cast out your keyboards

If you're thinking of adding a joypad to your collection of auxiliary input devices read on – here's a summary of the ones on the market at the moment.

It's not quite as simple as buying the first one to catch your eye – everyone has a personal preference about the feel of a joystick, and it's well worth bashing a prospective purchase over a few levels of your favourite platformer to see how it handles.

My tastes lean towards microswitches, as they give a strong positive feedback which avoids any unwanted drift in your movements. At present, very few joypads are microswitched, but this may well change in the near future.

GamesWare's PowerPad is manufactured by Quickshot and is a well-rounded model with an intriguing colour scheme. The fire buttons respond well, although the movement wheel and the select/start buttons are a little stiff.

Setting the pad up can be somewhat complex but once you have mastered the technique, you can design a new layout in a couple of minutes.

If the idea of a joypad seems too *buttony* for your tastes, you could take a look at GamesWare's PowerStick, a basic Quickshot model that grips well and has a satisfying trigger-action fire button.

The Gamapad from Illusions is a Competition Pro pad and has a sleeker appearance than the GamesWare design. It also has adjustable hardware autofire on the six major fire buttons – a huge help when it comes to shoot-em-ups.

There is also a *slow motion* switch which rapidly toggles the start button, effectively giving you yet another autofire option. The software is much easier to use than GamesWare's, although this could be partially due to the fact that some of the more advanced features from the PowerPad do not appear.

I tested the pads with a number of games, including Flashback and Axis, which have a large array of key commands. Each performed well, although the Gamapad could be a little too sensitive at times.

Both plug directly into the parallel port and have full software support for joystick, keyboard and mouse emulation, allowing them to work with the majority of games – although they both have their problems when it comes to emulating keypresses.

They are available in single and twin-pad configurations with generous leads, the prices being £29.99 and £39.99 for the PowerPads and £24.95 and £36.95

for the Gamapads.

If you want to find out more, you can contact GamesWare on 0703 456523 and Illusions at 22 Wray Close, St. Anns, Nottingham, NG3 2FS.

Hacking with confidence

For those of you that enjoy sneaking past a program's outer defences and tinkering with its internal organs, I am honoured and delighted to announce the all-new Desktop Hacker suite.

Masterminded by Andrew Clover of Doggysoft (0494 431916), it takes the ideas behind his original creation and streamlines them, producing a neater version that operates entirely from the desktop.

This modification allows you to effectively run a game in a multitasking environment – if, for instance, you happen to be playing a relaxing game of Zool and you're suddenly come over with the urge to calculate your monthly expenses, simply interrupt the game and you are immediately returned to the desktop.

After your cravings have been satisfied, clicking on the Hacker icon will transport you back to the game.

This is not the only improvement – most of the external code supplied with the original has now been incorporated into the main program, making the task of comparing data dumps and grabbing graphics much easier.

The cheat module creator is now a stand-alone application and enables you to reload old modules so that you can modify them.

In short, this must be my favourite *game enhancer* on the market, and represents superb value for money. If the idea of wholesale cheating, hacking and general messing about appeals to you, Desktop Hacker is the answer to your wildest dreams. Well, quite a lot of them.

Passcode corner

Nathan Atkinson has written in with the passwords for each of the difficulty levels of Flashback. If you're having problems, here are the codes for the easiest set of levels:

EASY
ASTRAL
COMEDY
STINKS
LEGACY
WARILY
FIXATE
AFRESH
PYKNIC

If Carnage Inc is your nemesis, try typing *SATAN IS YOUR MATE* on the main menu screen – this allows you to choose your starting level, and gives you infinite energy.

Exile escapades

Now it's time to continue the ongoing solution written by Dan Doran – as always, if you would like to see the complete solution or the map, write to me with an SAE, and I'll see what I can do.

Last time, I left you to find the jetpack booster. Now you have safely retrieved that item, we can fly deeper into the world of Triax.

Fly back to the transporter room in Eriadnus. Make sure the button there is out, and enter the right-hand transporter. Arriving in Lyre Tunnel, you must activate the transporter there with the RCD and step inside. You are now in Sarawak Cavern, which you must leave by flying through the wind tunnel and up to Amaranth.

Collect the boulder there and use it to fly down the wind tunnel, stopping at the first passage on the left. Remember your position before flying through Askance Tunnel and to the tile door at Diapason Cave.

Waiting for the monkeys to open the doors for you, nip inside and collect the whistle. As soon as this is done, transport yourself back to the boulder.

Continue down the wind tunnel and drop the rock off in Palermo Cave. Remember your position before boosting down and left into Eyre Cavern.

Destroy the piranha nest there, which by doing so deactivates a bush in the Antipodes Tunnel, and fly across the wind tunnel again, pressing the button in the piranha-filled pothole near Pascal Cave.

Fly to the Antipodes Tunnel and enter Hydra Cave, avoiding the floating fire by jumping in the water if necessary.

Remember your position underneath the pier formation there and collect the pass. You might find this a little difficult – try jumping on the monkeys and crawling through the gap in the wall.

Once you have the pass, transport yourself back to Palermo and fly up the wind tunnel, leaving the boulder. Collect Fluffy and return to the Eriadnus transporters.

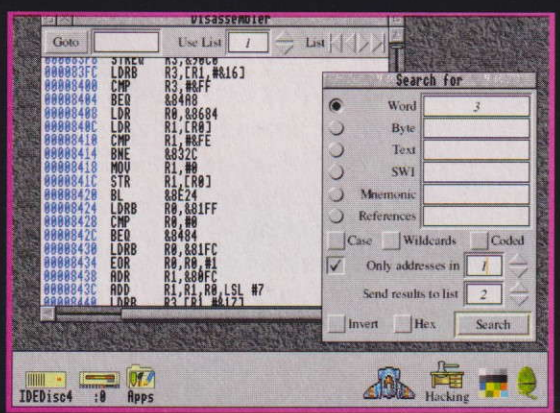
Enter the right-hand one with the button pressed in, then fly to the top of the Waters network, destroying the lightning balls and throwing Fluffy through the gap there.

Make sure he has pushed the button on the right, then collect him and drop him to the bottom of the network. Unlock the door to the second whistle and go inside. The burger there has been deactivated by Fluffy, so you can crawl through the gap and collect your prize.

You can write to HAL at the following address:
The Databay,
Acorn Computing,
Europa House,
Adlington Park,
Macclesfield
SK10 4NP

Out of memory

I'll have to leave it there for this month, but I'll be back soon with more news, information and gossip. See you then.



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Red sky at night

This month Mike Cook builds a solar magnetic storm telescope

DID you know that the Earth's magnetic field varies? I am sure you know about compensating for magnetic north when taking map readings, but did you know that its strength can vary over time periods as short as one hour? The reason for this lies far away, on the surface of the Sun.

Now the Sun sends out a continuous stream of charged particles known as the solar wind and when these reach the Earth they can have measurable effects.

The charged particles get caught up in our magnetic field and causes a current to flow in the ionosphere. This current, among other things, causes small variations in the magnetic field we experience on the surface.

This ionospheric current has other effects as well, the most spectacular being the auroras usually seen at the poles – although large auroras can be seen as far as the south coast of England. The other major effect of ionospheric current is the altering of radio propagation.

What happens is that the ionosphere will reflect radio signals at higher frequencies than it normally does. This leads to the disruption of local services as distant stations that normally can't be heard come through loud and clear.

It also gladdens the hearts of radio amateurs and CB enthusiasts, as it means that they can contact stations much further away. There are other factors that affect radio communication, the main one being *tropospheric ducting* due to high pressure weather fronts.

So, if we could monitor the variations in the Earth's magnetic field we could be warned of these happenings, as well as giving an indication of Solar magnetic storms.

Storm warnings

Traditional equipment sensitive enough to measure magnetic fields is quite expensive, but with a computer and a good junk box we can make a very sensitive magnetometer. The whole project hinges on the use of a compass needle – a cheap, sensitive indicator of the Earth's magnetic field.

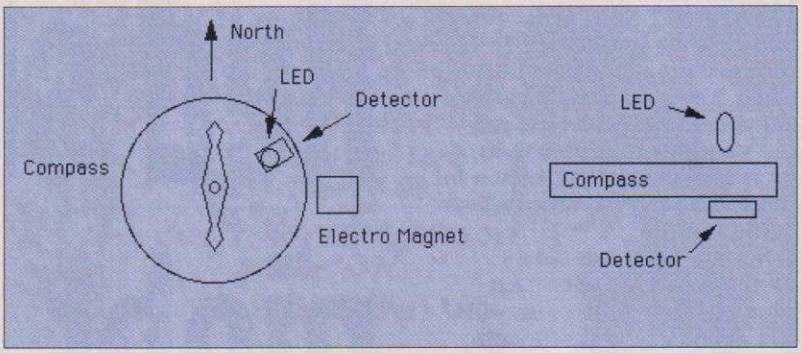
Imagine another magnetic field placed at right angles to the Earth's by means of an electromagnet. As we increase the current in the electromagnet its strength increases.

When it matches that of the Earth, the compass needle will be pulled equally in two orthogonal (at right angles) directions. The result is that the needle will sit exactly between the two at 45 degrees.

At this point we can measure how much current we have to put into the electromagnet to achieve this field, and hence we have a measure of the field itself. There are some further complications but I will come to them later.

The basic setup is shown in Figure I. This uses a compass in a perspex mount filled with oil, which is for damping. At 45 degrees a photo-diode is placed under the compass and an infra-red LED placed directly above on the other side.

To the east of the compass I placed the coil out of a 5 volt miniature relay, removed the plastic cover and snipped off the moving parts to ➤



● *Figure I: Mechanical setup of the Magnetometer*

just leave the coil.

The whole arrangement was placed on a piece of vero board with a small square hole cut out so that the photo-diode could be mounted flush to the board. Hot melt glue was used to fix the compass to the board. I used the flexible type so that I could recover the compass after the project.

Due to stray light affecting the reading from the photo-diode, it is best to place the whole thing in a non-metallic box, although it can be set up in the daylight.

The idea was that I would feed the electromagnet from the output of a digital to analogue converter (D/A) and measure the output from the photo-diode using an analogue to digital (A/D) converter.

These two devices are conveniently situated on the Body Build I²C interface we built in June '91, or you can use the Andi-Odule from Ian Copestake Software.

Adding control

However, initial tests showed that I did not have much control just using the D/A, as the needle swept through the detector with just a change in D/A output of one value.

Therefore, I had to reduce the size of each D/A step. I did this by feeding the bulk of the current to the magnet from a fixed source and a small part of it from the D/A. This meant that the magnet was always on but I had fine control over its strength.

The electrical circuit is shown in Figure II. Note that the A/D converter is working in differential mode – this helps nullify any mains pickup from the connecting leads.

As the compass needle did not fully cover the photo-diode, light was always leaking round the side. This meant I needed to adjust the LED current so that the diode was not swamped with light while the needle was over it.

Do this by monitoring the detector voltage with the needle out of the way and getting to the point where the voltage has just reached its minimum, then back it off a little so that it is just a few values larger.

Note here that as we are using the differential inputs of the A/D, you will get a reading of 128 when the detector is shorted out or the two inputs are at the same potential – as the needle covers the detector this value will rise. If it falls you have got the two inputs the wrong way round so just swap them over.

The standing current in the relay coil should be adjusted such that you get the needle over the detector when the D/A is feeding in half power. Don't forget to align the whole arrangement north/south first, with no current flowing.

Twin peaks

What makes an instrument like this possible at all is the fact that we have a computer not only monitoring it but controlling it as well. The program MagMon is on the MegaDisk and is split into a setup part and a measurement part.

The measurement part of the program does quite a simple job. Sweep the range of magnet strength and note the number you are sending to the D/A at the peak. This takes a few seconds but it is not possible to track the peak.

You will see from the screen shot that there are in fact two peaks – one when the field is being increased and the other when the field is being reduced. This is because you don't get the same magnetic field from the coil for the same current, it depends on where the current has been.

If nothing else, this experiment is a perfect illustration of hysteresis. Certain types of material have different hysteresis characteristics

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this could be shown if you changed the coil's core. If you have an air core there would be no hysteresis, so it would be possible to track the peak and get field readings more rapidly.

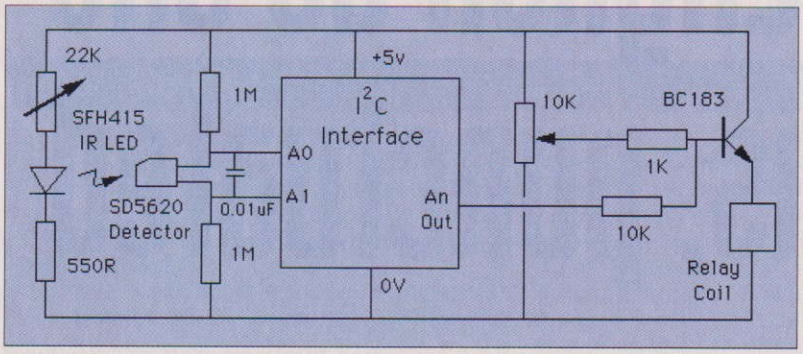
There is another cause of these twin peaks and that is a bit more complicated. The relay is very close to the compass needle so the magnetic field is not linear – it turns out that you can get two equilibrium points for any one coil current.

You can try this out yourself. Just set the current to give a half-way deflection of the compass needle and use a magnetised screwdriver to disturb it.

You will notice that when this is removed the resting point is different depending on whether you moved the needle towards north or the relay. Nevertheless this does not distract from the validity of the readings you get when sweeping the field.

The curves obtained are very repeatable, so much so that I have made each pass plot the curves in a different colour so that you can see something is happening.

To minimise noise I take each reading nine times and average the results – well I don't really take the average but let the computer's graphics drivers do it. Each reading is summed and that gives a number big enough to use as graphics coordinates.



● *Figure II: The electronic circuit of the Magnetometer*

Note that this just gives a smooth plotted value for the screen – the real field is indicated by the power being put into the magnet at the peak. Either of the peak values can be used as a measure of magnetic field and I have found it quite sensitive.

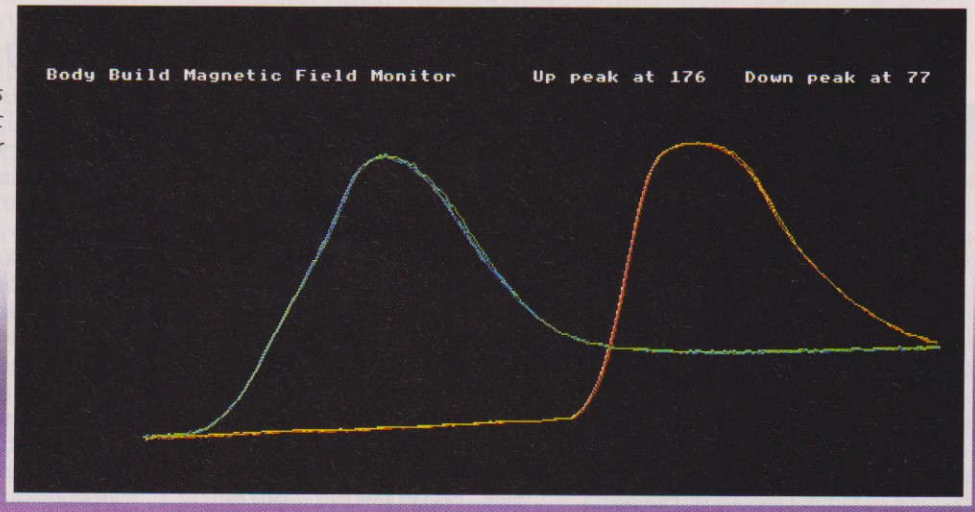
While working on the project I found that there were sudden large shifts in the curves. I finally realised that this was due to the different positions of my computer chair.

Calibration of the magnetometer would make an interesting addition to this project so you could tell exactly what variations in field you could detect.

Remember over the short term the Earth's field is constant, so you can use the instrument to measure weak fields as well. For example, you can plot the effect of a magnet at various distances and see the inverse cube law that magnetic fields have.

Due to its sensitivity to modern electronic equipment, if you are using this for field monitoring you need to site it away from any source of interference, a good place might be in the roof space of your house or school.

If you do any modifications or changes I would love to hear from you, but until next month I will say goodbye.



● *The twin peaks of the magnetic field monitor*

English as she is, punctuated

GOOD punctuation exercises seem to have disappeared from textbooks and I was wondering if there is a program which would give me what I need.

I need a program in which I could type in some text with the correct punctuation, discuss it with a pupil, remove the punctuation marks and capital letters, then print out the text for the pupil to correct.

There is an old BBC program that removes the text and leaves the punctuation and this can be useful. In fact, if the two ideas could be incorporated in the one program this would be a bonus.

As a programming atheist, I am dependant upon some believer to redeem me from my failings to address basics skills in programming. If any such believer out there could help me, I promise to give up fractal gazing for a week.

Ken Knight, Downe, Kent

There is a program called Punctuate from Topologika (0326 377771). But if anyone else would like to help drop us a line, we'll pass your letters on.

Time for tea

WHENEVER I try to load a file from a floppy disk or access the hard drive on my A4000, an error message appears: *Teatime not found.*

I looked in some Boot file and found <Obey$Dir>.Teatime with the command Basic – Quit. I deleted this and it seemed to be okay. But it comes back. I thought it could be a virus so I used my virus checker and scanned the hard drive. It found many of them and deleted them.

Then I realised it had not deleted them out of the Boot file. So every time I clicked on everything it said Teatime not found. What should I do as it is spreading fast.

Den Danter, Gloucester

This certainly sounds like a virus. As a general rule, virus killers/checkers are only as good as their last version, so make sure you have the latest version of the software. Pineapple's Killer is provided on a subscription basis, so you're automatically updated and can check all your disks.

You should also make sure that VProtect is loaded all the time so that each floppy disk is checked. If you have any problems, ring the supplier of the software.

Basic adventures

I HAVE had my A3000 for about four years and it has worked well.

Recently I have had 2Mb and RISC OS 3 installed and have found that the power indicator light tends to flicker and dim from time to time. Sometimes it is fine. Is this serious or can I just ignore it?

I like to program in Basic and enjoy writing small text adventures with the occasional graphic and animation thrown in. Is there any – hopefully easy – way of fading out the entire screens instead of just blanking and bringing up the next screen?

Many months ago you said you were going to have a demo of Simon the Sorcerer on the MegaDisk. This never happened and the game hasn't appeared either.

Will this *ground breaking* game, which was labelled *the quickest conversion from another platform ever* actually see the light of day on an Acorn?

Simon Jones, Dunkirk, Kent

It is possible that your upgrade deliberately flashes the power light when the hard disk is being accessed, but without knowing which one you have we can't say.

On the other hand the drive might be putting excessive drain on the power supply, but again it's impossible to tell. Contact the company who did the upgrade and ask them.

There are two ways of fading a screen. If you're using 256 colours, you have to access every byte on the screen and change its value to a dimmer version – check your manual for how 256-colour pixels are stored. In 16-colour modes it's much easier – you can adjust the colour directly with the VDU19 command.

Gamesware are still working on Simon and I am reliably informed that he should be on the shelves this autumn. Needless to say, they ran into more difficulties converting the code than they imagined. You could say that they were tempting fate by the "quickest conversion ever" claim, but I couldn't possibly comment.

Remember, there's many a slip between cup and lip. However, we still plan to have the demo on the MegaDisk when it finally arrives and we'll let you all know when – we hope nobody was holding their breath.

Font access

I HAVE a Seikosha SL-95 colour printer connected to my A3000. The printer has a number of built-in fonts which I cannot access, as the computer always overrides anything set up in the printer.

A. Potter, Mersham, Kent

Unless you use a primitive word processor such as EasiWord from Minerva, you will not be able to use the built-in fonts. The whole point of the RISC OS print system is that you have wysiwyg *printing regardless of your printer type or make – this precludes the use of built-in features.*

Spotting colours

I AM a professional graphic designer using an A5000, Publisher and Artworks – yes there are a few of us out there not using Macs.

I have no problems with jobs using spot colours, as I can get them played out on to separated film as an EPS file at a local bureau. If the job requires full colour involving a repro house, I can produce the job in Artworks, save as Illustrator and have the files converted to Quark XPress – as this package seems to be the industry standard – so that they can scan in transparencies at high resolution.

However, when producing work involving large amounts of text and full colour pics, a full colour multi-page booklet for instance, my problems begin.

If I put the text through Artworks then Illustrator I get huge files. What I really need is a utility

program to allow transfer of files from Publisher directly to Quark XPress.

When looking back through my February 1994 copy of *Acorn Computing* I spotted a review of Larger. To my joy the screen shot showed an icon for ImpQuark.

Was this the program that can do all I require? Is it available? Your answers may save me from being driven to the ubiquitous Apple Mac.

Allan Esplen, Great Waltham, Chelmsford

Sorry to disappoint you but ImpQuark is a small utility which allows us to prepare the text for the magazine in Impression with all the styles we want to use, and then ImpQuark converts the Impression styles into codes understood by Quark XPress.

We have had similar problems to the ones you're experiencing with some of the adverts and magazine covers produced on our Risc PC. The solution for us has been MacFS with a Syquest drive, so that the disks can be transferred directly between Acorn and Mac.

Mountain or molehill?

I READ with interest the recent letters and viewpoints about Acorn's Risc PC. Everybody thinks it's superb and all loyal Acorn users will go out and purchase the machines so the small loyal Acorn world is happy.

But what about new users who wish to buy a PC, PowerMac or want to upgrade their current technology? Why should these people even consider a Risc PC? Of course they should, but they can't consider it because they haven't seen or heard of it due to the pathetic marketing boys at Acorn.

Having access to all the "mainstream" computing magazines, I have seen one advert – or rather one which was slipped into the pages and ended up on the shopfloor missing its objective.

So Acorn, why don't you promote and justify this terrific machine and get into the very markets you're trying so desperately to break into.

As one magazine quoted, "This British machine should create tidal waves in the computing scene, but it's unlikely to make even a ripple."

Brian Ferris, London

PC or not *PC?*

I REFER to the article on page 71 of the August issue of *Acorn Computing* and in particular the sentence "These characters are superbly politically correct" and the two paragraphs which follow it.

I have read and re-read the whole article several times and still cannot make up my mind as to whether Mr Keeling is joking, being sarcastic or being serious.

I do not see that the ancestry of the lifeboat skipper has any importance whatsoever, The person could be an Eskimo, a Pygmy or anything at all for all the difference it makes. So long as they do a good job in saving lives, that is all that matters.

The sex of the person is, to a lesser extent, just as unimportant, and for the same reasons. A female lifeboat captain might cause children some surprise at first but that should be where the matter ends. As for the bag of buns, well that's just silly.

How long are they likely to last in a raging sea, I ask myself? Unnecessary padding such as this is totally unrealistic and would surely be loudly ridiculed by the more outspoken members of a group of children using this package. These little points are not important and detract from the overall value of the software.

In any case, if Mr Keeling's comments are meant seriously, surely the Asian lady should also have been a single lesbian unemployed mother, a drug addict, with some form of physical disability or deformity and a criminal record (but now reformed). Now that would have been a really politically correct character.

I'm sure that, in common with the vast majority of your readers, I do not wish to have political correctness rammed down my throat in magazines for which I pay good money. We get enough of that sort of nonsense in many areas of our daily lives.

Please ask Mr Keeling to keep his politically correct views to himself in future, or if he must inflict them on his readers, limit them to magazines like Child Education.

I believe that they will be just as unimportant there, but at least the readership will be half-expecting them and will know what to do.

Political correctness has no place in Acorn Computing.

C. F. Beesley, Cheadle, Staffordshire

Whether the principles of political correctness have been taken too far is not really within the brief of a computing magazine. However, for teachers in the majority of British schools it is a fact of life that they must live with, and for software developers wanting to sell their products into those same schools it is something they must address as well, regardless of its rightness, unfortunately.

Our education pages are aimed at both teachers and parents and for the former positive role models *are something which must be considered before any purchasing decisions can be made.*

Dead, but not buried

AROUND two months ago, I decided to put away my SNES and buy a BBC Micro. Good, I thought, all those games ready for me to play at cheap second-hand prices. Games like Holed Out, Icarus, White Magic, UIM, Exile and Elite.

Who wants to pay £50 for a cartridge that has an advanced graphics style BBC imitation gameplay on it? Not me anymore.

Two months later and I have a Master with Elite and Play it Again Sam 18 among others. But where are the cheap games? Superior Software sell the games at the same prices and Fourth Dimension no long have any BBC games. Why? Can anyone help me out with any bargains?

Damian Jones, Rhyl, North Wales

If you can help, write to him c/o the magazine and we'll pass your letters on to him.

PC access

IS THERE a PC card for the A3010? I hope that there is and I would most definitely buy one if the price was right.

When I bought my A3010 it came as a floppy disk system. Now I want to add a hard disk and upgrade the ram from 1Mb to 4Mb.

Kenny Cheung, Glasgow

The A3010 was marketed as a games/home machine. With the expansion you want – and would need if you want to run PC software – I would sell the A3010 and buy a new or secondhand A4000.

These come with a hard disk and 2Mb of ram as standard and a PC card is available.

Want to write to us? The address is: Letters, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

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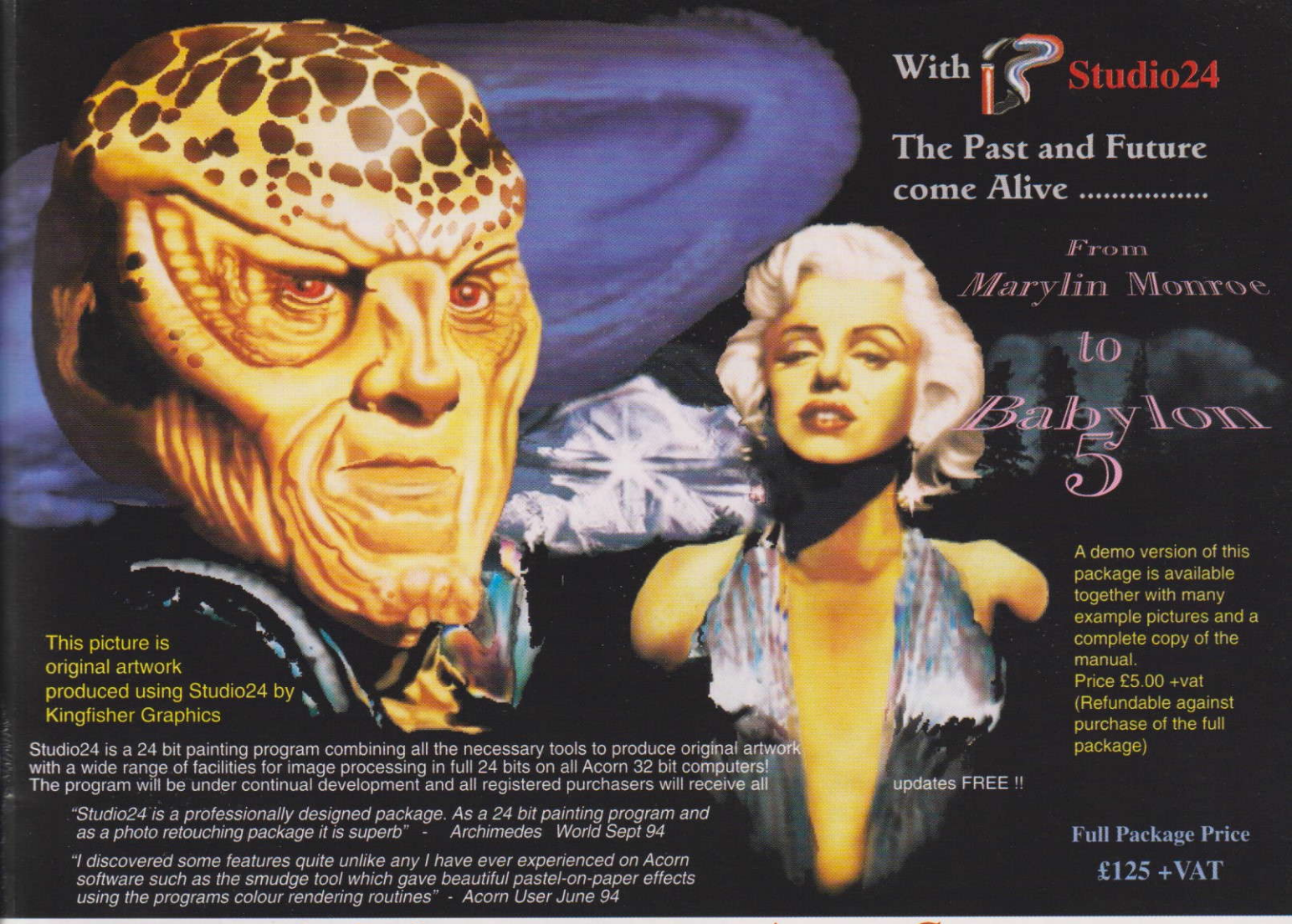

This picture is original artwork produced using Studio24 by Kingfisher Graphics

A demo version of this package is available together with many example pictures and a complete copy of the manual.
Price £5.00 +vat
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Studio24 is a 24 bit painting program combining all the necessary tools to produce original artwork with a wide range of facilities for image processing in full 24 bits on all Acorn 32 bit computers! The program will be under continual development and all registered purchasers will receive all updates FREE !!

"Studio24 is a professionally designed package. As a 24 bit painting program and as a photo retouching package it is superb" - Archimedes World Sept 94

"I discovered some features quite unlike any I have ever experienced on Acorn software such as the smudge tool which gave beautiful pastel-on-paper effects using the programs colour rendering routines" - Acorn User June 94

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The Pineapple Software Virus Protection Scheme provides the most comprehensive protection available against computer viruses. !Killer together with VProtect will detect and remove all of the currently known 64 families of virus (96 viruses in total). Because new viruses are being discovered all the time our virus protection scheme will provide you with 3-4 updates of the software each year. We can also offer immediate advice by 'phone. !Killer can scan any filing system or device including floppies, harddiscs, networks, even CDRoms. All types of compressed file can also be scanned. All infected files are fully restored without having to reload from master discs or backups.

Don't wait until you discover you have a virus! Use the software that Acorn themselves use to check for viruses.
A years subscription costs just £24.00 + vat
Low cost school and county licences available

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We are fully authorised Acorn dealers and we can supply all Acorn computers and upgrades at very competitive prices, usually by return of post.
Please 'phone for more information and details of special package deals which may be available. If you are undecided as to what hardware you really need then we can provide professional advice and assistance.

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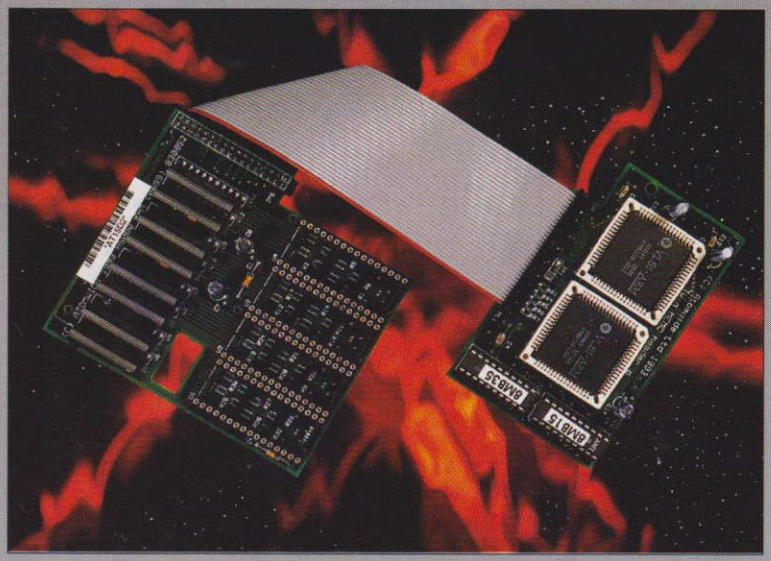
A5000 - 8Mb memory upgrade



With the release of the 33MHz A5000, which has its memory controller fitted in a socket, it is now possible for an end user to upgrade their computer to 8Mb of memory.

Installation takes only 30 minutes and requires no soldering or special technical knowledge. An installation service is offered for users with old style 25MHz A5000s which require a MEMC socket to be fitted to the motherboard.

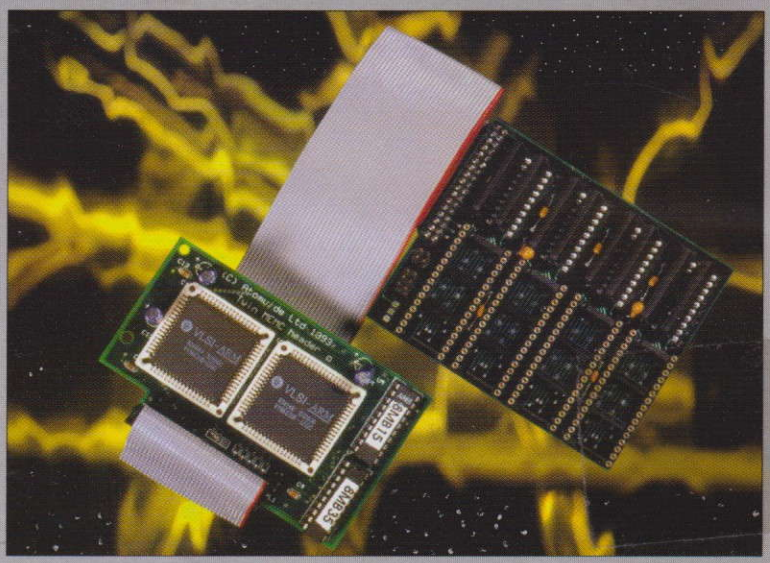
The A5000 memory upgrade has been designed to be compatible with any third-party, 4-layer memory card. So there is no need to discard your existing upgrade.

A310 / A440 / A440/1 - 8Mb memory upgrade

The A310, A440 and A440/1 memory upgrades are all designed to enable fitting by the end user. All upgrades are simple plug-in devices and require little or no soldering or special technical knowledge.

Each upgrade consists of a dual-MEMC header card and a RAM card. The RAM card includes full-size ROM sockets enabling RISC OS3 ROMs to be fitted without the need for a special ROM header card.

For those with RISC OS 2 in their machines, a special combination deal exists which consists of the 8Mb memory upgrade, plus a full RISC OS 3 kit from Acorn.



Thousands of users around the world have experienced the advantages of 8Mb of memory. These upgrades have been sold as far and wide as Hong Kong and Australia as well as into Europe. They have a proven track record of reliability. Each upgrade is fitted with a pair of matched MEMC1a devices that have been tested as a pair to ensure perfect operation. Gold plated connectors are used throughout the product range along with 4 layer PCBs. The interconnecting cable interleaves the electrical signals and a ground signal to ensure correct performance. Machined turn pin sockets are used to fit the operating system ROMs to the OS motherboard sockets and still leave all expansion slots available.

Pricing and installation

Atomwide offers a fitting service to both callers (by appointment) £30.00 (£35.25inc) and by courier service £50 (£58.75inc). A5000 8Mb upgrade's are priced at £259.00 (£304.33inc) all other machines are £249.00 (£292.58inc).

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