

# AMIGA SHOPPER

The top-selling serious Amiga magazine

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Is this neat solution the easiest way to learn how to play? .....page 29

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We'll help you master your Amiga

## AMIGA ANSWERS

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- We'll solve it! 39-76

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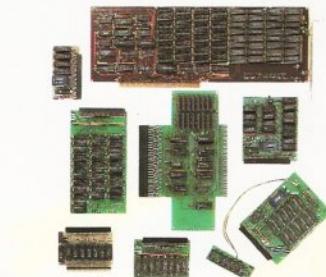
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# AMIGA SHOPPER

## AT A GLANCE GUIDE

To help you find what you want quickly and easily, this is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. The subjects covered in *Amiga Answers* are detailed on page 39; the many PD programs covered on page 146 are listed there. The page numbers given are for the first page of the article in which the product is mentioned.

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**Are there any products or subjects you'd like us to take a look at? Well, just drop a line to: Amiga Shopper, 30, Monmouth Street, Bath BA1 2BW.**

# WELCOME

**A**nd congratulations to you all. You're all living proof! Living proof the Amiga's more than just a games machine – for you're just one of the many readers who've taken our monthly circulation figures from zilch to well over 45,000 in twelve short months.

So, by way of a little thank-you, we decided to present you with a small, but perfectly formed, freebie on this month's issue – the delightful and quite delectable Tracey. Now Tracey's dead handy when it comes to any 2D artwork you might want to import into your DTP, graphics and animation packages. As you'll soon find if you give her a whirl by following the instructions on page 16.

Otherwise, there's loads of meaty stuff to get your teeth into this month. The start of an everything-you-wanted-to-know-about-memory-but-forgot-to-ask two-parter for starters. And then there's a look at the new RocTec hard drive, Miracle's ingenious Piano Tutor and all the usual columns there's too little space here to mention.

But the page to turn to if you're *really* serious about your Amiga – well, serious enough to stay up half the night tapping its keyboard – is page 127.

Yep, Listings. Now this could be the start of something big. We want all your self-penned lists of demos, utilities, applications, neural networks, missile guidance systems – the works. And

besides fame and err... more fame, we'll give you four blue beer vouchers for any we print. So get coding!

And finally, but, as it happens, for the first time ever, we've run a Product Locator on pages 160/161 detailing every piece of Amiga hardware we can think of. Any bets on how many pages this'll be by this time next year?

*Andy Stoner*

Editor



## PUBLIC DOMAIN WORLD

### WORD PROCESSOR SPECIAL

There are thousands of Amiga programs which are available for little more than the price of a disk. And many more which allow you to try the software free before you buy. Each month in **Public Domain World** we examine the best of these programs and explain how to get hold of them.

This month our resident PD sampler, Ian Wrigley, scans through his latest batch to pick out the top PD and shareware word processors that'll give commercial packages a run for their money:

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**BUT NOT LOST FOR WORDS...STARTS ON PAGE 146**

## AMIGA ANSWERS

### 21 PAGES DEVOTED EXCLUSIVELY TO ANSWERING YOUR QUESTIONS

Every month in *Amiga Answers* our panel of experts answer more genuine reader questions than any other Amiga magazine. And for beginners our starter page will help you get to grips with your Amiga, and understand the other features in this month's issue.

We answer questions every month on Workbench • The CLI • Comms • Programming • DTP • Video • Business software and more.

**THE ANSWERS START ON PAGE 41  
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**FOR A FULL LIST OF CONTENTS, TURN THE PAGE**

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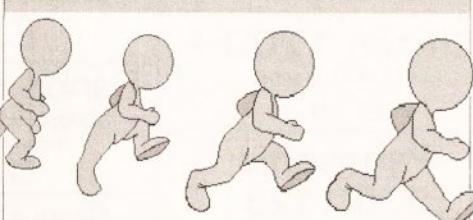
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# Video value from Germany

Genlock junkies will be interested in the range of products available from the German-based company Electronic Design.

Among the products the company sells are the Sirius Genlock (DM 1598, about £570), the Y/C Genlock (DM 1050), the PAL Genlock (DM 698), the Y/C Colorspliter (DM 498), the Video Converter (DM 298) and the Flicker-Fixer (DM 498). Electronic Design is on **010 49 2262 6446**.

## INNOVATIONS ON TRUSTED PRODUCTS

New from Inovatronics is an updated version of *CanDo*, the application generator. Version 1.6 boasts a number of new features, many suggested by users of the original product:

- Gameport support, such that applications can now interface to joysticks, mice and trackballs.
- Proportional sliders on windows. The contents of windows can now be scrolled both horizontally and vertically.
- Support for hexadecimal file input/output. Non-textual files can now be manipulated.

In addition, *CanDo* 1.6 comes with improved ARexx support, an improved on-line help facility, new tools and new scripting language commands. Upgrades to registered owners of version 1.5 cost £5, while upgrades for owners of earlier versions cost £45. *CanDo* 1.6 sells for £99.

Continuing the update trend, Inovatronics is shipping the latest release of *Directory Opus*, the disk management program.

Among version 3.41's new features are improved Workbench 2 support, enabling the use of multiple fonts, the use of a middle mouse button as a hotkey, and obviating the need for the arp.library. In addition, the program has improved recognition of file types, including *PowerPacker* crunched IFF files.

*Directory Opus* runs on any Amiga with a minimum of 1Mb of RAM. It costs £39. Upgrades for existing users are free. Inovatronics' products are distributed in the UK by Checkmate Digital **071 923 0658**. Inovatronics is on **010 1 214 340 4991**.

Amigas set for lift-off with new processor accelerators

# ROCKET POWER FOR AMIGAS

A flight of new processor accelerators comes screaming to these shores from American-based Computer Systems Associates.

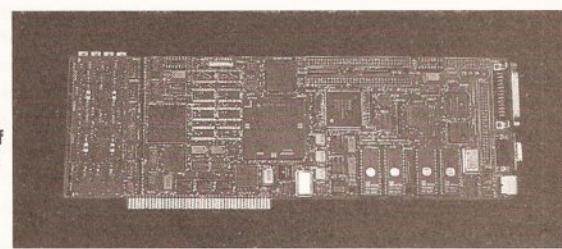
The first is an upgrade for owners of Commodore's A2630 accelerator board. The Rocket Launcher consists of a 68030 processor (with memory management unit) and 68882 maths co-processor, both clocked at 50MHz. The two chips simply replace the old chips on the board, immediately doubling the speed and providing complete compatibility with existing hardware and software. The Rocket Launcher uses proprietary logic to remove the synchronisation delays typical with such accelerators, keeping CPU to DRAM access constant. It costs £595, which includes a trade-in on the A2630's old chips.

Also new is the 38 Special, a 68030 accelerator clocked at 38MHz for the A500 and A2000. Like its little brother, the Mega-Midget Racer, the 38 Special replaces the standard CPU inside the Amiga. It comes with its own separate maths co-processor

(clocked at 50MHz), and can have 2, 4 or 8Mb of 32-bit Dynamic RAM. There is also room for an optional 512K of Static RAM. In either case, it is possible to remap the Kickstart operating system into 32-bit RAM to greatly speed up operation. The 38

Special costs £850; or £1000 with 2Mb, £1250 with 4Mb, and £1550 with 8Mb of Dynamic RAM. The 512K Static RAM upgrade costs £99.

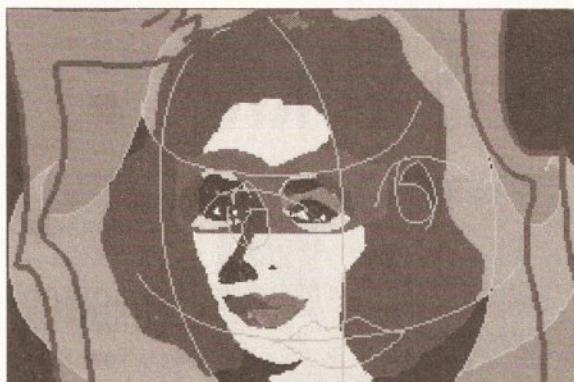
The biggest, fastest and best is the 40/4 Magnum, described by CSA as no mere accelerator but a 'Single Board Computer'. Its key component is a 68040 processor with built-in Floating Point Unit. This gives a speed which is claimed to be three times that of the fastest 68030-based Amiga. Performance is further increased by the inclusion of a Direct Memory Access SCSI card, one parallel port and two serial ports – all optimised to work with



Go on boost your Amiga to more than triple the speed of an A3000 with CSA's 40/4 Magnum the processor's blistering speed. The board comes with 1Mb of Static RAM, and can take up to 16Mb of Dynamic RAM in the form of plug-in SIMMs. A price for the 40/4 Magnum is yet to be announced.

All of CSA's products are distributed in the UK by Omega Projects **0925 763946**. CSA is on **010 1 619 566 3911**.

Andy Warhol's Elizabeth Taylor meets Amiga-power courtesy of thoroughly post-modern Julie Myers. Richard Burton was not available for comment...



## BEAUTY IS SCREEN DEEP

Amiga computers will be used at the National Portrait Gallery to demonstrate the effects of computer graphics on the perception of portraits.

Artist Julie Myers will be working with the computers in the Gallery's Education Studio, demonstrating in particular how society's conception of beauty is contingent on cultural values. She will be working with two pairs of portraits. The first two, by Andy Warhol (who helped launch the

Amiga), will be Elizabeth Taylor 1967 and Mick Jagger 1975. The second pair will be John Wilmot, 2nd Earl of Rochester, after Jacob Huysmans c1665-70, and Nell Gwyn, studio of Sir Peter Lely, c1675.

Members of the public are welcome to turn up to watch Julie and discuss her work on Fridays and Saturdays until April 30 between 16.00 and 17.00. The National Portrait Gallery is on **071 306 0055**.

## TOWER POWER

Turn your Amiga 500 into an Amiga 2000 with Checkmate Digital's HiQ A500 Tower.

The system comes as a kit to turn a humble A500 into a fully expandable machine, fitting the innards into a 24" tall tower cabinet and giving a detachable keyboard. The tower contains seven expansion slots: three A2000 100-pin slots, one A2000 86-pin accelerator slot, two PC-XT compatible slots and a video slot.

A key and lock is provided for security access (!). The tower also sports an LED speed display and a sliding panel door to protect the floppy disk drives. Its steel case has an external enamel coat and is nickel plated internally. The HiQ A500 Tower costs £449 from Checkmate Digital **071 923 0658**.

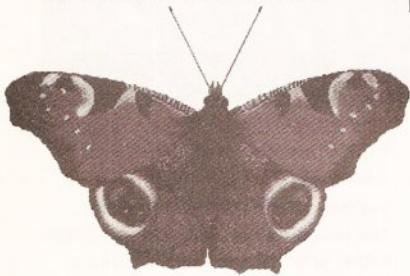
## CITIZEN CAN

Owners of Citizen printers will be pleased to hear of a custom-made printer driver giving much improved graphical results.

Based on the Irseesoft Turbo Print Professional package, the Citizen Print Manager is available to all Amiga owners free until the end of June. After that it will retail at £14.10.

The driver is said to offer the following benefits: removal of banding; image smoothing to give sharper images; ease of use, overriding application settings; image scaling; colour and gamma correction.

The driver can be used with any of the printers in the Citizen range. It can be obtained by ringing the Freephone number 0800 444276. Citizen Europe is on 0895 272621.



**Delicacy of tone and vibrancy of colour become a reality with Citizen's very own printer driver for the Amiga, the Citizen Print Manager**

A spot of star gazing reveals the future vision of printing – the new LC24-20, for home business and education

## ANOTHER STAR IS BORN

Those on the lookout for a new printer will be interested in Star's new offering, the £300 LC24-20. The 24-pin printer replaces the LC24-10 and is aimed at education, home and business users. Its new features include a panoramic LCD control panel which aids user operation and set-up procedures, and Auto Emulation Change, which enables the printer to automatically change to one of the industry standard emulations depending on the control codes it receives from the computer.

At its fastest, the LC24-20 outputs text at a claimed 210 characters per second, with a choice of ten fonts. It comes with a 16K print buffer, expandable to 48K. The interface is a Centronics parallel one; a serial interface is available as an option. The LC24-20 costs £304.33 from Star 0494 471111.



**The Star LC24-20 really is the business. With a maximum print speed of 210 cps, those letters will be flying out**

# GRAPHICS GALORE

A high-end graphics system has been launched by American company Progressive Peripherals and Software.

Called Rambrandt, the system provides two 32-bit screen buffers each with a maximum resolution of 1024x1024 pixels. The two buffers may be linked to provide a maximum scrollable work area of 1024x2048 pixels. Rambrandt has a palette of 16.7 million colours, plus a 16 colour overlay and an 8-bit alpha channel for genlocking.

It is based around the Texas Instruments TMS34020 graphics processor and 34082 graphics

processor, which provide hardware bit-blitting, zooming and panning, and three-dimensional rendering. Over 200 graphics functions are provided in 2D and 3D libraries. The video industry compression standard, JPEG, is supported.

In addition, the board has the capability to digitise a 16.7 million colour frame in 1/30th of a second.

Both RGB and composite are supported for input and output. 8Mb of Video RAM is supplied, plus a further 8Mb of Dynamic RAM for the storing of resident applications. Rambrandt costs £1500.

Also new from PPS is a 68040

accelerator card for the A1500/2000/3000 family of computers.

The card is clocked at 25MHz and provides processing power of 19.2 million instructions per second. It contains a Floating Point Unit as well as a 4K data and a 4K instruction cache. The card costs £1499 without RAM, or £1569 with 4Mb of 32-bit RAM. It is expandable up to 32Mb. Distribution of both products in the UK is by, amongst others, Power Computing 0234 843388. Progressive Peripherals And Software is on 010 1 303 825 4144.

## MORE COMPUTERS THAN KIDS

A survey carried out by Texas-based Channel Marketing Corporation estimates that US households will have an average of 2.2 computers.

Since that's more computers per home than children, we can only assume computing is more fun than err... not computing.

## FRESH MEMORIES FROM POWER

**Power Computing is launching a whole series of new RAM expansions, starting from £19 in price.**

The Miniature 512K uses just four chips and fits any Amiga 500. It is available with or without a battery backed clock. A disable switch and a disk of utility software is included. It costs £29, or £24 without the clock.

The sixteen chip 512K board also fits any A500, and comes with a disable switch. It costs £24, or £19 without a battery backed clock.

The Power 1.5Mb expansion fits standard 1.3 A500s to give a total of 512K of Chip RAM and 1.5Mb of Fast RAM. It comes with a battery backed clock and costs £79.

The PC501+ is an eight chip 1Mb board specifically for the A500 Plus, bringing its memory up to 2Mb of Chip

RAM. It costs £49. The 32-Chip expansion performs a similar feat, but using 32 chips. It costs £39.95.

The 1Mb board with throughport fits into a 1.3 A500's trapdoor expansion, enabling a further 512K board to be plugged in afterwards. It costs £49.95.

An 8Mb expansion is also available to fit in the A500 or A500 Plus's side expansion slot. It includes a throughport for the further addition of a hard drive. The board is available with 2, 4 or 8Mb of RAM, costing £129, £189 and £299 respectively.

Finally, the Aries board offers up to 8Mb of expansion RAM for the A1500 or A2000. It costs £129, £169, £209 and £249 with 2, 4, 6 and 8Mb respectively. Power Computing is on 0234 843388.

## WORDWORTH WORRIES

**Grey imports of Digita's Wordworth have been returning to these shores at greatly reduced prices.**

These versions were originally intended for sale in the USA, and are not officially supported in this country. They do not contain valid UK support registration cards, meaning that owners are neither eligible for technical support or future upgrades. Furthermore, the imports are an outdated version of Wordworth.

Digita recommends that customers check with dealers that the copy they purchase is a genuine UK version. To avoid this in future, exported versions will be marked "Export only, not for re-sale in the UK". Digita is on 0395 270273.

## Diary Dates

**April 12:** All Formats Computer Fair. Northumbria Centre, Washington. 0225 868100.

**April 18:** Computer Technology Fair. The Corn Exchange, Brighton. 0273 607633.

**April 26:** All Formats Computer Fair. National Motorcycle Museum, Solihull. 0225 868100.

**May 15-17:** Amiga Shopper Show. Wembley, London. 051 356 5085.

**May 16:** All Formats Computer Fair. Horticultural Hall, London. 0225 868100.

**May 17:** All Formats Computer Fair. Brunel Centre, Bristol. 0225 868100.

# Wordworth

## *a writer's dream*

The graphical nature of Wordworth® makes producing documents faster and easier. The WYSIWYG display shows exactly how your printed document will look, different fonts, styles and sizes, headers and footers, graphics and so on.

Commands are grouped under a series of pull-down menus, accessible either by the mouse or keyboard. Frequently used commands have on-screen icons, including Help, should you need it.

Experience the look and feel of the new and exciting WB2 (even if you use WB1.3). Each document is a separate multi-tasking window, which means you could for example, print one document while editing another.

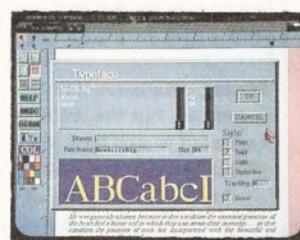
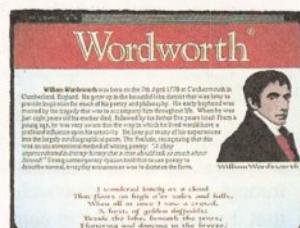
Digitas® innovative *Human Interface Protocol*™ is incorporated setting a new standard in speed, style and elegance. "It *HIP*™ system is intuitive and a pleasure to use." – thank you Amiga Shopper, it's nice to be appreciated.

Graphics have always been the Amiga's strong point. Now it's better than ever. Pictures from Deluxe Paint can be placed in a document, and then sized, scaled and dragged (text automatically reformats around the image).

Wordworth's enhanced fonts will give you the very best printed quality. You can also print special symbols, such as boxes, arrows and so on. Better still, you can mix graphics, Wordworth's enhanced fonts, Amiga fonts, Colorfonts and your printer's own internal fonts, all on the same page. There's even a driver for Postscript printers.

You needn't worry about your existing information – Wordworth will let you open documents from most word processors, including Kindwords, Protext and Wordperfect (you can also mailmerge with Superbase).

When Amiga Format said "a new word processor that will give the rest of the world a run for its money" they weren't joking.



v1.1

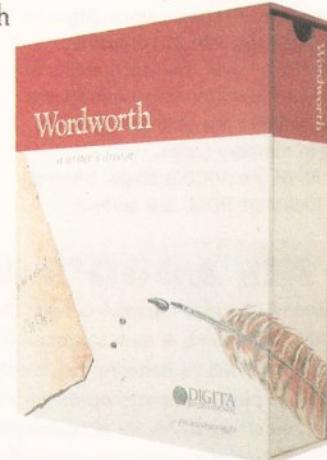
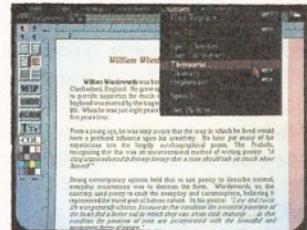
Wordworth is written in the UK by Digitas. Which means you'll be using an English Collins spelling checker and thesaurus, and you'll know where to come for professional support.

The only way to really appreciate Wordworth is to use it. Phone 0395 270273 for more information or, write to Digitas, FREEPOST, Exmouth EX8 2YZ.

Wordworth costs £129.99, which includes VAT, postage and packing; and when purchased from Digitas, comes with a 7 day money-back guarantee.

If you already own a word processor, for a limited period only, you can trade-up for just £89.99 by returning your original disks to Digitas with your order.

Summing up, Amiga Shopper said: "Pounds-per-feature no other Amiga word processor comes close. Wordworth is what every owner of Kindwords would wish they had." Dreams become reality with Wordworth.



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# Secretly unveiled to select developers, there's a new

# New A600 all set for

**C**ommmodore is to launch both the A570 CD-ROM drive and a brand new Amiga at May's Amiga Shopper Show at the Wembley Exhibition Centre.

The A600 is the vanguard in a new generation of Amigas from Commodore. The machine is very much aimed at the home user. Unlike all previous Amigas, it has a built in RF modulator for direct connection to a TV. It is also smaller, missing a numeric keypad.

The main innovation is a slot for accepting memory cards, a possible new medium for software houses, particularly games producers, which may help to reduce piracy. The A600 comes with Workbench and Kickstart 2, the enhanced chip set and 1Mb of Chip RAM. An IDE hard disk controller is fitted as standard; a model will be available with a hard disk fitted internally.

The choice of an IDE rather than a SCSI interface seems peculiar on the face of it. It can probably be explained by both the simplicity of the interface and the huge amounts of 2.5 inch IDE drives being manufactured for the PC market.

## NEW GAYLE CHIP

A new custom chip, named Gayle, is also included with the machine. Gayle takes over the functionality of the older Gary (memory control) and also handles the addressing of the plug-in memory cards.

All of the A600's chips, barring the Kickstart ROM, are surface

***The first of Commodore's new generation of Amigas, the A600, is to have its public launch at the Amiga Shopper Show. This, plus the first unveiling of the A570 CD-ROM drive, means the show looks set to be the most exciting since the Amiga's launch***

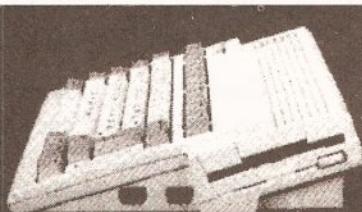
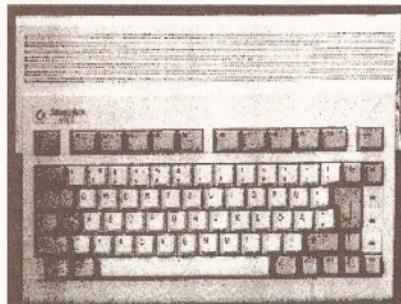
mounted. Commodore has been intending to do this for some time, the prime reason being economy.

Unfortunately, it means that it is no longer a simple matter of unplugging chips from the motherboard and replacing them. Thus, many internal add-ons for the A500, such as accelerators, graphics adaptors and internal memory expansions, will not work with the A600. This is exacerbated by alterations in the trapdoor expansion, so existing memory boards and PC emulators will be incompatible.

## THE A570'S DEBUT

The other main launch of the show is the A570 CD-ROM drive. Previewed in last month's *Amiga Shopper*, the A570 will plug into the side expansion slot of an Amiga 500 to give CDTV compatibility. In addition, it can be used in a similar manner to a huge, read-only hard disk. The Fred Fish collection of PD programs is already available as a single CD for just this purpose.

There has been some criticism of the A570 because of its lack of a



The first shots of the new A600 – grainy but nevertheless worth printing as they show off its unique design

throughport, which effectively means that it cannot be used in conjunction with the A590 hard drive. The A600, with its internal hard disk controller, will not suffer from this problem, which may explain Commodore's apparent lack of concern over existing A590 owners. At any rate, hard drives that have a throughport, such as Supra's 500XP, are compatible with the A570. No doubt

some enterprising hard drive dealers will soon be offering part exchange deals on A590s for compatible drives as the CD-ROM drive sells in the enormous quantities which it surely must.

## OTHER SHOW STARS

The Amiga Shopper Show is the UK's only 100% Amiga event this year. It's on at Wembley from May 15-17, and

## WHAT NOW FOR THE A500 PLUS?

Pricing details are not yet confirmed, but the A600 is expected to sell for £399 – the official price of the A500 Plus.

In reality, the price of the A500 Plus dropped to the region of £350 shortly before Christmas as dealers attempted to increase sales. The price has failed to climb back up. The big question is: if the A600 sells for £399, what will happen to the A500 Plus?

There is already evidence to suggest that Commodore will be limiting further production of the A500 Plus, which was surreptitiously introduced last November. Those remaining will probably be sold at current prices, if not discounted even further.

A sensible move would be for Commodore to bundle the two machines' different selections of

software in a bid to attack two different markets: one as a games machine pure and simple, the other as an education/home productivity package. Quite which would be which is unclear. Although the A600 is a technically superior machine, particularly with its on-board hard disk controller, aspects such as its built-in RF modulator and its lack of a numeric keypad suggest that Commodore intends it to be a games machine.

It could well be that the A500 Plus will be dropped altogether, with two A600 models (one with an internal hard disk) being targeted at these two areas. When asked about this, Commodore's Andrew Ball refused to comment.

## THE A600'S MEMORY CARDS

Instead of a side expansion port, the A600 sports a slot for a plug-in RAM/ROM card. A new custom chip, Gayle, takes care of the addressing of this as well as handling the functions of the older Gary chip.

The plug-in memory cards are credit card sized devices that can contain either RAM, for temporary storage of data, or ROM for the distribution of pre-written applications and games.

In the PC world, these cards range from 16K to 4Mb in capacity. There is an interface standard, known as PCMIA, already in place. It is likely Commodore will use this standard rather than opting for its own.

The advantage the cards offer is that segments of code can be executed on the card without being loaded into the computer's conventional memory. This would mean that copying the program would be very difficult. It is likely that, for games, the cards could be used as a software lock or 'dongle'. Serious applications could be supplied on a single card, providing access times believed to be in excess of 300 times quicker than a hard drive.

# Amiga in town. And here are the EXCLUSIVE details!

# Amiga Shopper Show

it's your chance to see just how vibrant the Amiga market really is.

As well as the exciting new A600 and the new A570 CD-ROM drive, Commodore will be demonstrating CDTV with its wealth of new software.

## US GIANTS

Stateside hardware giant GVP will be there too, showing off its impressive range of hard drives, accelerators, sound boards and graphics cards.

Supra, the other major player in the peripheral field, is to attend with its fine array of high quality, low cost hard drives, memory expansions and modems.

Progressive Peripherals and Software will be there to show its amazing Rambrandt graphics system. Rambrandt, as revealed on page 8, combines high resolution 32-bit colour with dedicated processing power to produce graphics capabilities of undreamt of speed and power.

A number of other big names have also booked space already: Checkmate Digital, Cortex, Digita, HiSoft, Power, Precision, Rombo, Silica, WTS and Zone are just some of those who will be present.

As well as all of this, there'll be plenty of opportunity to run away with some amazing prizes and loads of bargains. Check out our form on page 75 to see how you can win a free memory expansion.

## ANSWERS SHOW PANEL

The infamous Amiga Answers panel are swotting up at this very moment, preparing to solve your problems – we'll be holding question and answer sessions throughout the show, so if you've got a problem, any problem, bring it to us, and watch it disappear in a puff of logic.

There will also be seminars running by prominent developers for you too. Come along and learn how to get the most out of your hard and software. Turn to page 138 to find out exactly who is going to be there, and why you ought to be too.

Phone our ticket hotline 051 356 5085 to book your place in advance and receive a free show guide.

Interested exhibitors should call Mike Jennings on 0225 442244.

## THOSE NEW AMIGA RUMOURS RATED

**S**peculation has been rife in the last few months over the exact specifications of Commodore's new machines. That a new range of machines is planned is certain, but exactly what they are is something Commodore is at pains to keep very, very quiet.

Nevertheless, a large body of rumours has escaped: leaks from developers who have early access to prototype machines and are bound by Non-Disclosure Agreements; educated guesses from industry pundits; and leaks from Commodore itself.

Here *Amiga Shopper* looks at the most popular predictions for the new Amiga range, and gives each of them a plausibility rating out of ten.

### • The A300

The machine first revealed in *Amiga Shopper* issue 11, said to be a cut-down version of the A500. The main differences are the lack of a numeric keypad and only 512K of RAM. It was rumoured that the machine would be priced under £300 as a games machine to compete with the increasingly popular console systems. Now, it seems that these rumours were caused by some confusion over the A600, which has many features in common.

**Plausibility 1/10**



The A500 Plus – only just launched but already being threatened by rumours of an A600 Plus

### • The A600 Plus

Unconfirmed reports from the USA suggest further enhancements to the new A600. These include the new Extended Chip Set and Workbench 2, as used in the A500 Plus, and 2Mb of RAM as standard, with 1Mb devoted to Chip memory and 1Mb to Fast. Although the machine will use the usual 68000 processor, this will be clocked at 14.3MHz, nearly doubling the speed of most applications.

Finally, it will come with Commodore's new high density floppy drive, providing 1.76Mb of storage space. Although not yet announced, the high density drive has been found lurking in some A3000 models.

**Plausibility 6/10**

### • The A800

First reported in *Amiga Shopper* issue 11, the A800 is a mid-range Amiga, supposedly coming with a Motorola 68020 processor and 16-bit CD quality sound. The machine would fill the current gap between the A500 Plus and the high-end A3000 machines.

**Plausibility 4/10**

### • The A2200

This is another version of the A800 rumour, billed as a scaled down version of the A3000 and a replacement for the ailing A2000, which many expect Commodore to cease producing.

With a 68020 processor clocked at 14.3MHz, space for a 68881 maths co-processor and a true 32-bit memory bus, the A2200 would make an excellent mid-range machine to compete with the likes of the Apple Mac and 386 PC.

The A2200 will come with 1Mb of Chip RAM (expandable to 2Mb) and 1Mb of Fast RAM (expandable to 8Mb on the motherboard). A flicker fixer is built-in.

There will be plenty of expansion possibilities, including an accelerator slot, a 32-bit SCSI controller and two 32-bit bus slots. It will come with either two high density floppy drives or one floppy and a hard drive.

**Plausibility 7/10**



King of the Amigas – the A3000. Soon to be deposed by a 68040-based workstation?

### • The A4000

Or the AmigaStation – This is the rumoured top of the range Amiga based around the powerful 68040 processor and first reported in *Amiga Shopper* issue 11.

The A4000 will come with the Enhanced Chip Set, 2Mb of Chip RAM and either 4 or 8Mb of Fast RAM, expandable to 32Mb on the mother board.

It will also have 16-bit CD quality sound, and a graphics card with a co-processor providing a 1280x1024 pixel display.

This will be in 256 colours from a palette of 16.7 million; the addition of extra video RAM will provide a full 16.7 million colours at once.

**Plausibility 5/10**

# Home Accounts 2

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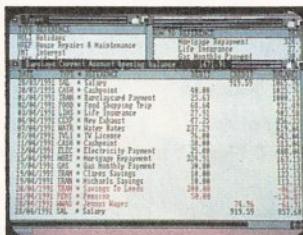
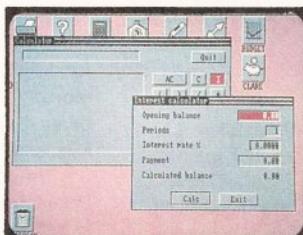
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Investment accounts, net worth statement, password, cheque numbering, custom reports, flexible year period. And (to save you disturbing them on our support hotline) an on-line help system, should you need it.

They also added our acclaimed *Human Interface Protocol*™, which first appeared in Wordworth®. As you can see, it sets a new standard in speed, style and elegance for Workbench. (It also contains a screen saver, *Playtime* games and a few other goodies.)

Amiga Format said, "Digitas have made great efforts to listen to their customer comments and the result is a package which will suit any household. Everything the home user needs has been included—and more".



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Home Accounts2 costs £54.99, which includes VAT, postage and packing; and when purchased from Digitas, comes with a 7 days money-back guarantee.

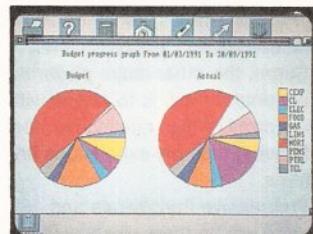
If you already own a home finance program, for a limited period only, you can trade-up for just £29.99 by returning your original disks to Digitas with your order.

Amiga Computing concluded, "A completely functional, very useful and amazingly easy program to use. If you're a wary newcomer to accounts packages then cast off your doubts and splash out on Home Accounts2."

As it turned out, listening to Home Accounts users was a pretty good way to write software.

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**NEW AMIGAS**

Time has moved on since the A2000 and 500 were produced, and the success of these models has greatly enhanced CBM's presence in the computer market.

But the release of a machine with a 68020 CPU will take away the 2000's and 1500's market, leaving them for dead in terms of raw power.

The question is, is CBM going to beef up the 2000's or just leave them at their present spec? The mid-range Amigas deserve to be enhanced if they are to be taken seriously in the business sector in the next few years. With PC power on the increase in both graphics and CPU stakes, and their price doing a skydive, a new rethink is needed.

Perhaps an Amiga 2000 Revision C is needed with: A 68020/688881 processor combination to place it just below the A3000's power. A major update in GFX resolution and colour (the HCS chips are like a halfway effort), maybe 8-bit plane (256 colours) and 16-bit colour (65536 colour palette) selection as opposed to 12.

16-bit Sound 8 channel stereo. And a built-in hard disk controller like the 3000's.

Along with some minor but important things such as space for 8 meg on-board memory (32-bit with a 68020) making it easy to upgrade with just the cost of the chips and the memory on existing cards eg GVP HD+, going on the end in case you run out of 32-bit.

These enhancements would once again place the 2000 in the league of the new SVGA 386 PCs. I am not knocking the Amiga but as I said – time moves on.

Marc Kelly  
Dyfed

Indeed it does... and it looks as though some of your suggestions are already being implemented if the news feature on pages 10 and 11 of the issue is anything to go by.

**KICKSTART CARDS**

Why doesn't Commodore bring out the Kickstart 2 upgrade for the Amiga 1500/200 on a card?

It could put the new ROM chip and the full ECS (including the Super Agnus) on it and have a switch sticking out at the back to turn it on or off, giving a true compatibility with Kickstart 1.3 – unlike the current ROM sharers that don't really live up to their claims.

If a PC emulator can be put on a tiny card that fits in an Amiga 500, then it must be much easier to put Commodore's own chips on a card for the 2000.

The present upgrade options available to owners of all 1.3 machines are nothing short of

disgraceful. To upgrade to the current A500 Plus costs £80 for the ROM and manuals, £50 for the new Denise chip and a staggering £200 for the Super Agnus – which isn't even an official option!

For owners of 1.3 Amiga 500s it is hardly worth paying the best part of £350 to upgrade when they could buy a brand new A500 Plus for much the same price.

I can't help but feel that we owners of older machines have subsidised new owners by paying higher prices for our computers while they were still in need of serious improvement. Still better machines can now be bought for substantially less, although we don't get any benefit from the developments we funded.

For instance, I bought a 1.3 Amiga 1500 in November after being told by Commodore that the 1500 Plus wouldn't be released until Spring. A few weeks later the 1500 Plus was released unannounced for £80 less than I had paid. Even if I'd bought one I would still have to pay £200 for the Super Agnus!

Although you may say that no software currently requires any of the ECS to run, it won't be long before owners of 1.3 machines are left out in the cold. How much software released today works on a 1.2 machine with an old Angus?

PE Browne  
Bradford

A good point about the trap-door upgrade card and one which I can see no obvious problems with. Maybe such a card will be made available at some point but who can say? As for CBM's attitude about upgrades – I agree again – it does seem to be somewhat ambivalent towards existing owners.

**STUDENT DISCOUNTS**

The price of soft and hardware in this country is too much for us students. Why can't we be given discounts? I remember a few years

**HOW DO I GET TO WRITE FOR AMIGA SHOPPER?**

I have been reading your magazine, *Amiga Shopper* for some time and enjoy it immensely. I find it very informative and congratulate you on being first with most products.

At the moment I am taking exams in English Literature and language as well as typing classes. I plan to take a course in Desktop Publishing later this year.

Can you possibly inform me of the necessary qualifications and experience needed to enter your line of work, perhaps staff writing or reviewing?

R A Jenkins  
Bracknell

# Talking Shop

Welcome to your letters page – the only place to be if you're serious about your Amiga. If you've got a view then send it to: Andy Storer, Talking Shop, Amiga Shopper, 30, Monmouth St, Bath, BA1 2BW

ago seeing the store price list for a computer shop. The shelf price was about three times as much!

Let me give you an example. I recently bought *Wordworth* 1.1 for £79.99 from an independent retailer. This is £50 cheaper than Digita would provide it for – ironic isn't it?

Why can't companies give a discount if students buy direct from them? Proof of student status could be found in the Community Charge discount certificates that we are issued with.

If educational establishments can get discount – not necessarily for bulk purchases – why can't students if the item is going to be for an educational use?

Simon Griffiths  
London

I'm afraid this is one of those issues, like the plea last month for companies to offer hire purchase schemes, that can only be resolved by publicity. Hopefully advertisers

reading this might be first on the block to offer student discounts. I'm sure they'd do good business.

Meanwhile, have you tried lobbying your Student's Union? – I know that they once managed to tie up discount insurance deals.

**READERS' PANELS**

A friend of mine recently bought *Wordworth* and was kind enough to let me borrow it. Having read nothing but good things about it, I was disappointed to find that, for the money, it was very average.

I could not understand this, as all the reviews raved on about it – then the penny dropped.

Going back through my back numbers of *Amiga Shopper*, I noticed that the reviews of most software seem to assume that we all have hard drives and very quick printers, not to mention vast amounts of money to spare.

As an example, one of the major problems with *Wordworth* (and probably most other word processors) is that the machine "locks up" when printing something. This may not be a problem if you have a state-of-the-art laser or 24-pin printer, but with a simple 9-pin it's most annoying.

The point I am trying to get across is that the articles now appearing in *Amiga Shopper* seem to be aimed at the wrong level – how about bearing in mind that most people who are attempting to use their Amiga seriously are doing so without accelerator boards, hard drives and 8Mb upgrades, having to cope instead with just two drives and a monitor?

If sinking to such depths of realism is beyond you, then how

continued on page 14

continued from page 13

about instigating a 'Readers Panel' of reviewers - you have the details of what hardware/software we have from those of us who have replied to the surveys; why not pick out two or three readers at random to add their comments - after all, if hi-fi and car magazines can do it, I see no reason why a serious computer magazine can't.

Peter Brook  
Southport

Readers Panels eh?... mmm, I'll have to give that one some thought. In the meantime, I'll have a word with our contributors to bear your points in mind. I'm sure they're aware of the 'bias' you refer to but that doesn't mean they don't need reminding of it from time to time. I'll also pass your letter on to *Amiga Answers* to help sort out your 'lock-up' problems.

## COME ON DOWN

Please find enclosed my £14.95 cheque for 12 months' subscription to *Amiga Shopper*.

I think your magazine is excellent in dealing with a variety of subjects. However I would like to suggest that more tutorials on Amiga Basic would be of great interest to a large number of readers. I have what could be described as a smattering of Basic, ie a bit above beginner stage but not enough to write fairly complicated programs. I have in mind sorting, cursor positioning,

## FEEDBACK

The KCS Power Board - this is an excellent device, and over the past couple of years I have upgraded to version 2.0 then 2.83 of the software, KCS has been advertising version 3.0 of the software in your magazine since the November issue (ie in October 1991). However requests for the new software have brought no reply from England, and the response from the local importer that this is "vapour ware" - I could understand it if the advertiser withdrew his advertising after a month when they could not supply the goods, but it has been there for the past five months.

Mike Simpson  
Whalan  
Australia

Pity about the cricket as well, eh Mike? Sorry... KCS's V3 software is readily available over here. Try Bitcon Devices at 88, Bewick Rd, Gateshead, Tyne & Wear NE8 1RS. If any other readers have doubts about hardware or software hype then let us know at: 'Watch it!', *Amiga Shopper*, 30, Monmouth St, Bath BA1 2BW.

buffer, artificial intelligence etc.

My complaint with the Amiga is that the whole industry seems geared to make owners buy ready-made programs. There's not enough encouragement for Amiga owners to learn programming for themselves.

I have bought several books which are fine for graphics but fairly useless for utility programming. You could redress this balance perhaps with an on-going tutorial starting with a database including creation, view, sort, search, print etc, following up with some application programs such as selection, probability and artificial intelligence.

There will be complaints from experts that such articles are beneath them, but they are already catered for. In the main I would say that the majority of your readers are not experts, do not have bottomless pockets and will welcome the chance to further their knowledge without more expense.

Your thoughts in this matter will be appreciated.

W Evans  
Emsworth, Hants

I can only offer that we're always running series on programming and AmigaDOS; in fact we just finished a long series on Basic in December.

We also have new ones in the pipeline - next month for instance we're starting a series on artificial intelligence - including how to program a neural network in AMOS! But point taken and be prepared for more tutorials galore.

## PLAIN BATTY

I tried making pancakes with the CD-ROM drive in my CDTV.

Unfortunately laser beams don't seem to agree with batter. I can laugh about it now.

Mark Smith  
Liverpool

I had a similar problem using my disk drive as a toaster. Any readers who can help either of us should send their advice to 'All machines should multi-task', *Amiga Shopper*, 30, Monmouth St, Bath, BA1 2BW.

## A CYBORG WRITES...

I am a regular purchaser of AS and get a great deal of information about using the Amiga and products available.

A major problem I have is that I am usually so totally engrossed by the editorial pages that I skip over the advertising that is discretely interspersed within it. The nature of my problem is that I seem unable to transfer all the data from magazine to brain within a period of a month ie before the next issue comes out.

This situation is further compounded when I am seduced by the lure of a useful utility on the

coverdisk of *Amiga Format* and end up having to read that magazine as well. Obviously, this does not take as long because I have a cerebral game filter utility (CGFU) written in C which I developed twenty years ago on an Atari 2600.

Do you think that it would be possible to develop an opto-data exchange system based on interleaved memory? A further enhancement could be to increase the baud rate on the Eye to 25 hours/day. How about multiplexing the Eye and reading two pages at once?

A totally original approach to the problem would be to reduce the volume of data requiring transfer. How about a magazine of say, 140 pages with no colour editorial or advertising pages selling for 99p? I have returned many of your reader questionnaires but this never seems to be an option. Any suggestions would be appreciated from yourselves or your readers.

Deryck Lawrence  
Kent

Err... yes Deryck. I think it's probably more realistic to build yourself an off-line OCR scanner with direct neural hook-ups which you can use while you're asleep than expect to see a 140 page magazine, with no advertising, selling for 99p. Thanks for the idea though - I like your style.

## SCANNER RIVALS

In the March edition of *Amiga Shopper* you carried a review relating to hand scanners written by Jeff Walker.

The article claims that the M-105 is used by all the rival scanner manufacturers and implies that the M-105 Plus produces better results.

We wish to point out that this is totally incorrect since the same scan head, the so called M-105 Plus is used by Pandaal, Evesham Micros and Datel.

The M-105 Plus scanner head, which is manufactured by Marstek, has been in existence since July 1991 and has been available to all its customers, including ourselves, since that date.

The reason that it is called a 105 Plus is to differentiate the software bundled with the PC version; this, of course, has no relevance whatsoever to Amiga users. We can only conclude that the scan head that was being used as a comparison was improperly set up, or that it was a very early or faulty model.

Furthermore, the article claims that the Pandaal Daatascan professional software was not licensed because what was wanted was "something with more features". The real reason that the software was not licensed was political. Indeed our scanner software and hardware is licensed

## IF ONLY I'D REALISED...

CONTINUING OUR SERIES OF HANDY TIPS BRINGING YOU THE BENEFITS OF HINDSIGHT...

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I have a Star LC200 colour printer which I use with *Kindwords 2*. Yes I know everyone harps on about *Kindwords* being slow and archaic but I only need a word processor for the odd letter or report so its does me fine.

Anyway to the point, *Kindwords* does not allow embedded commands. So, to use the in-built fonts and styles of my printer using the DIP switches and combine colours, styles and fonts was a nightmare. It meant running the paper through the printer more than once after altering and deleting text.

Then one day with nothing better to do I read the printer manual and guess what? That's right! The Star printer does allow you to send commands to it through the word processor even if the software does not normally allow for them.

On page 96 of the manual it states how to embed printer commands using capital letters enclosed in double parentheses followed by a number. This will allow you to access the printer's built-in fonts, colour and sizes. Whether it works with other word processors I do not know, but when in doubt read the manual.

I hope this tip is of as much use to others as it has been to me. By the way, great mag, it's amazing the little tips you can pick up in it.

Ken Price  
Port Talbot  
Wales

Ahhh... manuals - I too am one of those people who only read them when I encounter a problem. A fiver's on its way to you Ken and any other reader with a handy tip, no matter how embarrassing.

Just send it to: "I can laugh about it now", *Amiga Shopper*, 30, Monmouth St, Bath BA1 2BW

for distribution in Europe by Marstek itself and also by Evesham Micros.

We have been designing scanning software since 1988 and believe in continued product development and support. This is why we are now supplying version 2.02 for the Amiga which supports 16 true grey scales. We will of course continue to improve the specifications.

Abb Pandaal  
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| STAR LC24-10...  | £219 |
| STAR LC200 ..... | £209 |
| STAR LC24-200.   | £269 |

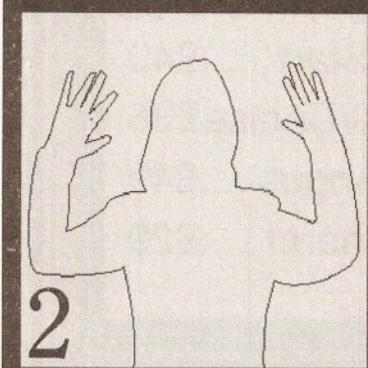
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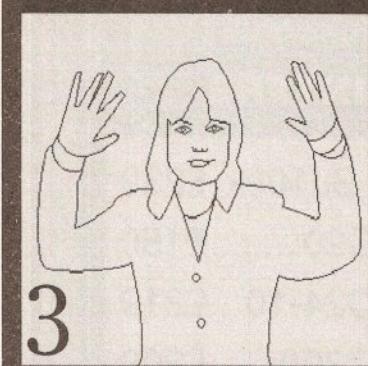
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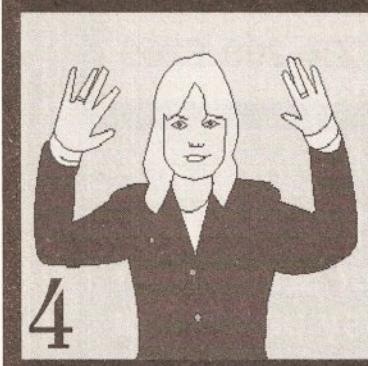
**Baffled by the bit of plastic stuck to the front cover of Amiga Shopper? Jason Holborn shows you how this seemingly simple gadget can turn you into a pixel Picasso**



2



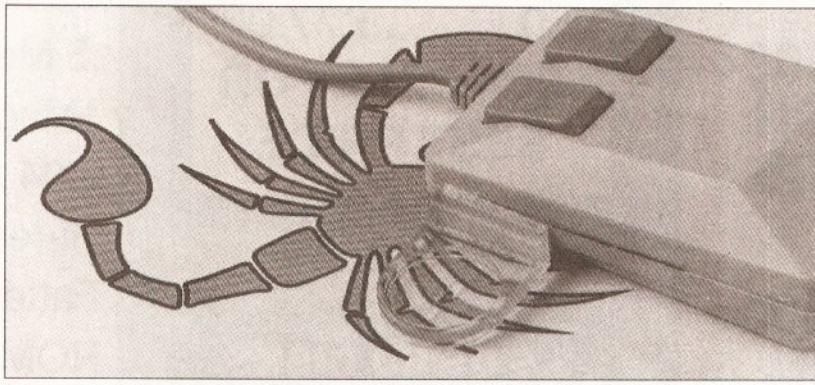
3



4



5



**Who would have thought it? Such a simple idea, so easy to use and such effective results. The Tracey is ideal for budding Botticells or modern day Monets**

**T**he Tracey supplied with this month's issue of *Amiga Shopper* is a superbly simple, yet effective, tracing tool (hence the name) which is ideally suited to graphics and especially animation. If you're the kind of person who has about as much artistic talent as a half-eaten bag of salt and vinegar crisps then you'll find Tracey a real godsend.

Fitting Tracey to your mouse is such a simple task that even your grandmother could do it with one arm tied behind her back. Supplied with your Tracey is a set of velcro pads which are used to stick Tracey to the side of your mouse whilst still allowing you to remove it between sessions with *DPaint*. If you're right-handed, then stick Tracey on the left-hand side of your mouse. If you're left-handed, then you'll probably want to attach Tracey to the opposite side of your mouse.

Before you can start tracing away, you must first alter the sensitivity of your mouse pointer using the Preferences program on your Workbench.

If you've got a 2.0-based Amiga, then boot up the Preferences program 'Input' and select a mouse speed setting of '4'. For 1.3-based Amigas, you'll find the necessary setting in the first screen of the main Preferences program. Either way, this should result in a much slower mouse pointer.

Once all this is done, your Tracey

will have been successfully installed (now that didn't hurt a bit, did it?). Now let's get down to some serious tracing...

**1.** Here's the image that we're going to trace in all its beauty. Before you start tracing though, it's important to ensure that the image will fit on to your computer screen. To do this, boot up your paint package (we'll assume you're using *Deluxe Paint* from now on) and move the mouse pointer so that it sits in the centre of the screen.

Now pick up your mouse and place it on to the image which you intend to trace so that Tracey's crosshairs are in the centre of the image. Now move the mouse across to the far right of the image and then to the far left. Does it fit? If so, then do a similar check for the vertical height of the image.

If the image doesn't fit, then you could try reducing the image using a photocopier. Most public libraries have photocopiers these days, so there's no excuse for giving up at this early stage.

**2.** Tracing in a complex image like the photograph of Diana Taylor, our layout-sub, (*all fan mail to the usual address, but she does have a rather large boyfriend - Ed*), is a real test of anyone's artistic talents; so it's always best to start by getting the general shape first. So, before you even start to think about adding detail, it's a good idea to trace

around the boundaries of the image to form an outline.

Once you've got your outline, adding details will become considerably easier.

Getting used to Tracey can take some time but you'll find things a lot easier if you follow a couple of very simple rules. Always keep the mouse in contact with the image when tracing and try to keep the mouse pointing directly forwards at all times. If you don't, your traced image will come out looking a bit strange to say the least! A steady hand would come in handy too!

**3.** Once we've got our basic outline, we can start to add in some detail. Once again though, don't try to be too adventurous - as long as the image is recognisable and you can see what goes where, then this is good enough. Once this is completed, you can add in more minute detail by eye.

**4.** The outline is there - all that now remains is to start adding colour. At this stage we're not too fussed about such things as shading, so just add in basic colour using *DPaint*'s 'Flood' tool.

Once all the individual sections have been coloured in, you'll have a sort of "posterised" version of the final image. If you've got a lot of frames to draw, you could quite easily stop here, but your animation will look rather flat, so it's time to start adding in the real detail...

**5.** Now for the time consuming bit that unfortunately requires just a little bit of artistic talent. As you can see, we've made our traced image look rather more human by adding in a bit of subtle shading to break up what was a rather flat image.

Completing a single frame for your animation will take time, so don't give up after the second or third. Just think, once all your frames are drawn, you'll have an animation to be proud of! For more tips, see our feature on page 18... **AS**

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If you followed our beginner's guide to graphics in issue 10, the next step forward for you could well be animation. So if you long to produce the kind of animation which would put Walt Disney to shame, this feature is for you!

# Animation made

**W**hen the hardware engineers at Los Gatos-based Amiga Inc started work on their Lorraine games console, the fore-runner of the machine we now know and love, they prepared the machine with the future in mind. Back in those days, such things as Desktop Video and computer-based animation were nothing more than silicon dreams, but Jay Miner and his team of engineers were forward-thinking enough to produce a machine that eventually developed into the all singing and dancing Amigas we have today.

One area to which the Amiga is particularly well suited is that of animation. Thanks to the Amiga's powerful graphics hardware and its ultra-fast blitter chip which allows large sections of screen to be moved around almost instantaneously, animators worldwide have taken the Amiga on board.

Computers such as the Amiga are being used increasingly more for professional animation in films and cartoons. Little more than a few years back, animators had to draw and then paint every frame by hand. However, since the advent of powerful computer systems boasting very fast and colourful high-resolution screen displays, animators have swapped their paint brushes for the mouse and touch tablet.

Even such great names as the Walt Disney Studios in the USA use Amigas extensively for training purposes. There have also been many examples of the Amiga being used in blockbuster feature films. Take *RoboCop 2*, for example. The Amiga was used almost exclusively to produce the computerised face of 'Nuke' lord Kane, a drug-crazed killer whose brain was implanted into a deadly robot.

The animation of Kane's computerised face in *RoboCop 2* was produced on an Amiga running

Sculpt 4D and there are many other sequences in the film which were only made possible thanks to the Amiga.

## AMIGA MOVIES

The kind of complex animations which we see in cartoons and feature films take many, many man hours to produce, but it is possible to achieve similar results on your Amiga in a fraction of the time. Better still, you don't even have to be a particularly talented artist to produce some quite acceptable results. With a little bit of know-how and a few tricks of the trade tucked up your sleeve, you too could well be

the next Eric Schwartz.

So what do you need to get started? Well, an Amiga equipped with some extra RAM would certainly be a good place to start. Whilst you can produce animations on a machine with just a megabyte of memory, you'll soon start to feel rather held back and you'll almost certainly run out of memory once you start to work on larger projects. If you can afford it, then treat yourself to at least 2Mb of extra RAM. This will give you a much more usable system.

A hard drive is also a worthwhile

investment. Because you'll be working with a large number of individual frames, storing all these files on to floppy disk will soon become very laborious. Not only that, but animation files can be rather large, so the faster speed of operation which a hard drive offers can save you a lot of time, time which would have previously been wasted waiting for your diskdrive to load a file.

## DRAWING FRAMES

In the world of professional animation, each and every frame that makes up the animation must be drawn and then painstakingly painted by hand.

These days most animators use computers but the techniques involved have remained relatively unchanged. For every second of animation, the animator must draw 25 individual frames. Technically 50 frames (or 60 for NTSC television systems) are needed for every second of motion, but this is cut in half using a technique called 'Frame Doubling' whereby each frame is played twice before moving on to the next one.

As you can probably already start to appreciate, drawing all the frames required for even a short animation sequence can take a very long time. After all, if 25 frames are needed for every second of motion, you'd need 250 frames for just 10 seconds of animation. That amounts to a lot of drawing!

There are ways of cutting down on the number of frames you need though. One method is to use some frames over and over again by increasing the number of times that the frame is repeated before moving on to the next. If you think about it, if the character or object that you are animating stops moving for a couple of frames, why draw a series of

**BEGINNERS**

**HOW DOES ANIMATION WORK?**

Most of us have tried our hand at animation at one time or another. When you were at school, perhaps you remember drawing a series of tiny pictures on the corners of pages? By making each picture progressively different and flipping the pages, the illusion of movement was created. Most of us treated this as an ideal way to while away a boring lesson, but it's actually a great demonstration of the theory behind animation.

Just like our text book doodles, animations are nothing more than a series of static frames. They're pretty useless on their own, but flip through them rapidly and the human brain can be fooled into seeing motion. This is exactly the same technique used for traditional movies. You may well think that *Terminator 2* was just one continuous recording, but Arnie's antics were really nothing

**BEGINNERS**

**START HERE**

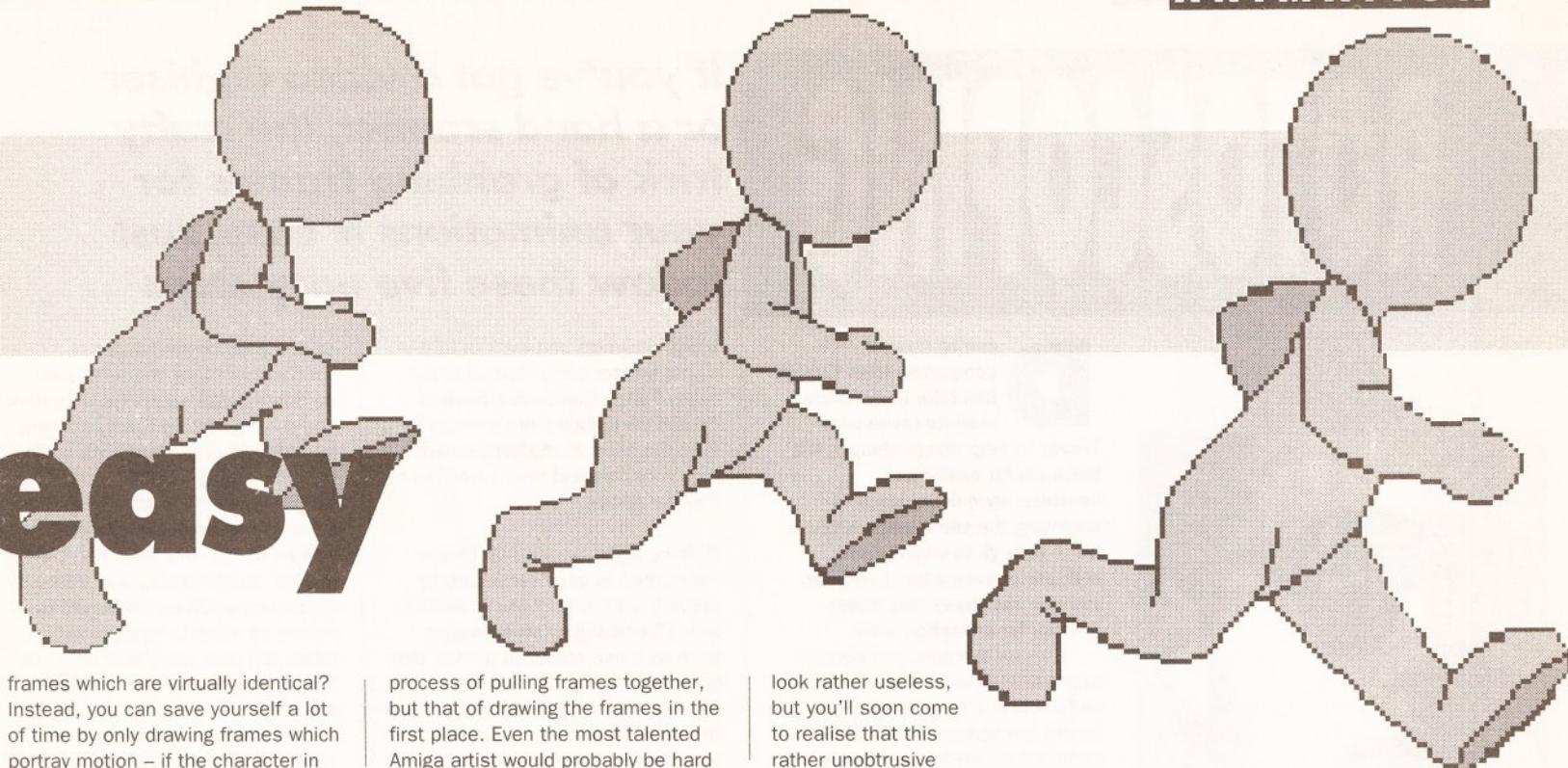
**BEGINNERS**

more than hundreds of thousands of static images. Obviously the cameraman didn't shoot every frame individually, but the technique used to reproduce the live action is exactly the same as an animation.

**WHAT IS ROTOSCOPING?**

Pioneered by Max Fleischer, the creator of *Betty Boop* and *Popeye the Sailor*, Rotoscoping is a technique whereby the movement of animated characters is based around real life actors who act out what the characters should do, therefore making the task of making a life-like animation a faster and easier proposition.

Rotoscoping has been used extensively in animated feature films such as Walt Disney's *Snow White and the Seven Dwarves*, JRR Tolkien's *Lord of the Rings* (a film which possibly demonstrates the technique best) and Fleischer's own *Gulliver's Travels*.



# easy

frames which are virtually identical? Instead, you can save yourself a lot of time by only drawing frames which portray motion – if the character in your animation starts to walk, falls over or gets blown up by Semtex, for example. If the object then stops moving for a few frames (or, in the case of the Semtex, has been blown into smithereens), you can just repeat the last frame in the sequence over and over again until the character starts to move again.

Sounds like common sense, but you'd be surprised just how many people waste time drawing each and every frame from scratch!

One of the most difficult aspects of animation is not the actual

process of pulling frames together, but that of drawing the frames in the first place. Even the most talented Amiga artist would probably be hard

look rather useless, but you'll soon come to realise that this rather unobtrusive little piece of plastic

is one of the most useful animation tools that you're ever likely to own.

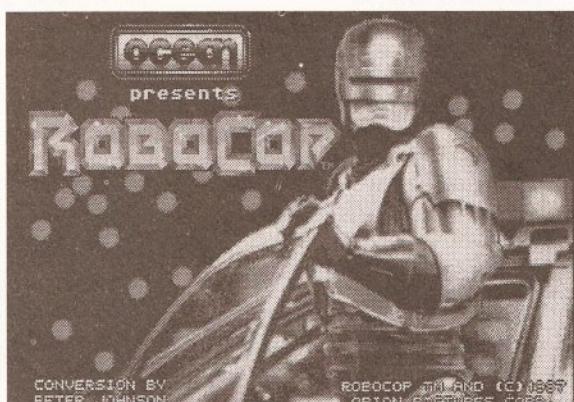
Tracey can be used in a number of ways. If you don't feel too comfortable with a mouse and would rather sketch out your frames in the time honoured fashion with pencil and paper, then Tracey can be used to accurately trace your sketches into your Amiga using just about any paint package. (If you're still at a loss as to how to use this little device, turn to page 16, where we've come up with a short tutorial to help you bring photos to life with a little help from Tracey).

Another very useful addition to any animation set up is a video digitiser or even a hand scanner. Video digitisers are particularly useful because they can be used to grab action from the real world which can then be used as the basis for your animation. Let's say, for

example, that you wanted your character to walk across the screen. Unless you feel confident enough to draw the frames yourself, you could cheat by simply pointing a video camera at your best friend and then grabbing a series of digitised stills which show how people walk in real life. These could then be turned into a true animation using a technique called Rotoscoping. (Want to know more, just turn the page for a full tutorial on this technique?).

Over the next few pages we'll be showing you just how to put these techniques to work to produce an animation. Don't worry if you think you're about as artistic as the average monkey – follow the tutorials on rotoscoping, animated brushes and merging the frames and I think you'll be amazed just how easy it is to get started in animation.

continued overleaf



Animations are part and parcel of games, but how many of you knew that the humble Amiga was responsible for animated sequences in the blockbuster film, *RoboCop 2*

pushed to create a lifelike animation. Included on the cover of this month's issue of *Amiga Shopper* is a very useful little gadget from SideWise Ltd called Tracey. It may

on a 512k machine, but Eric's animations have become so complex that many of his more recent works require at least 2Mb just to run. His latest production, *Amy vs Walker 2*, requires at least 3Mb!

Eric has produced over 30 animations over the past couple of years using a variety of software packages running on a hard disk-based Amiga 2000 with just 3Mb of RAM. At the moment, Eric uses Electronic Arts' *Deluxe Paint 3* and *4* to draw all the frames of his animation by hand. Once all the frames have been drawn, these are then pulled together to form the final animation complete with sampled sound effects using Gold Disk's rather ageing *MovieSetter* package.

Eric has already produced several animations under commission for several US-based software houses and it seems certain that we'll be seeing a lot more from Schwartz in the future. In the

meantime, why not check out Eric's work for yourself? They're available from most public domain libraries including Seventeen Bit Software who can be contacted on 0924 366982.



**Amy the Squirrel**, star of many Schwartz animations. Follow our tutorials, and maybe you'll be the next animation whizz-kid

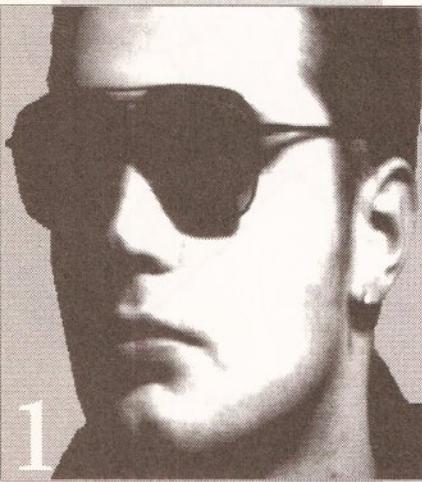
## ERIC SCHWARTZ

One of the most famous Amiga animators has to be 20-year old Eric Schwartz, a student of art and illustration at the Columbus College of Art and Science in Ohio USA. Famous for his Aerotoons and Anti-Lemmings demos and several others featuring the antics of a certain female squirrel called Amy, Eric works exclusively on the Amiga producing animations in his spare time.

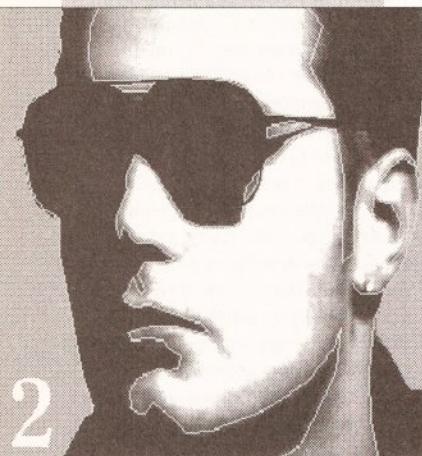
Eric spends between one and five weeks on each animation depending upon its complexity. Anyone who has monitored the works of Schwartz will probably already have noticed that Eric's animations are becoming progressively more complex and demanding, requiring more and more RAM just to run them. Most of his early work ran

# ROTOSCOPING

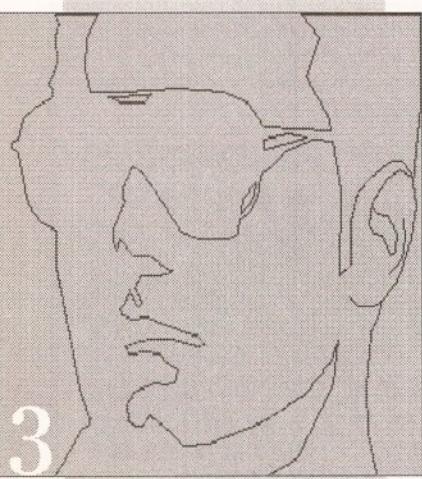
If you've got a video digitiser or a hand scanner, the crafty trick of grabbing frames for your animations is easy. Just follow these five easy steps



1



2



3

**D**rawing frames completely from scratch can take an absolute eternity (even with Tracey to help things along!), but there are far easier and considerably quicker ways of achieving the same ends. If you're lucky enough to own a video digitiser or even a hand scanner, you can use these very handy devices for animation work.

Say, for example, you wanted to produce an animation of a cartoon character walking across the screen. As you will probably already know, drawing such an animation by hand is by no means a simple task, but plug in a digitiser, rig up your video camera and it becomes an absolute breeze. Instead of drawing the frames yourself, you could digitise yourself walking and then use the sequence of digitised frames that you have as a guide for your cartoon character, therefore

**"Rotoscoping is used within the film and TV industry to produce lifelike animations."**

ensuring that he walks convincingly. This technique is called 'Rotoscoping' and is used extensively by non-animators within the film, TV and even Amiga games industry to produce life-like animations.

Using a realtime digitiser like VidiAmiga makes the process of producing frames for an animation so much easier simply because you can act out what you want your animated characters to do in front of a camera, safe in the knowledge that your characters will walk, talk and act in a lifelike manner. Read on and I'll show you how it is done.

1. First we start with a digitised frame. In this particular case, the very handsome chap that I digitised – ok, it's me! – (send all fan mail to "You lying barst!" – Ed) was grabbed

using VidiAmiga and the Vidi RGB colour splitter connected up to my trusty Philips Camcorder. Several frames we grabbed into memory to form the short animation sequence that I required and then saved out to disk for editing.

2. Once again, we load up *Deluxe Paint* which is used exclusively to prepare the frame. If you're working with 16 colour grey scale images such as those produced by Vidi, then boot up *DPaint* in 32 colours. Although the image itself doesn't use the extra 16 colours we now have at our disposal, they're going to come in very handy later on.

Now we need to draw an outline around the digitised image. Before we can do this though, we need a highly contrasting colour which won't blend in with any of the colours used within the digitised image. I used a nice shade of yellow (although unfortunately you can't see that here) simply because it stands out well against the grey scale backdrop image.

Pick one of the spare sixteen colours and then draw an outline around the digitised image so that all the main detailing within the image is shown.

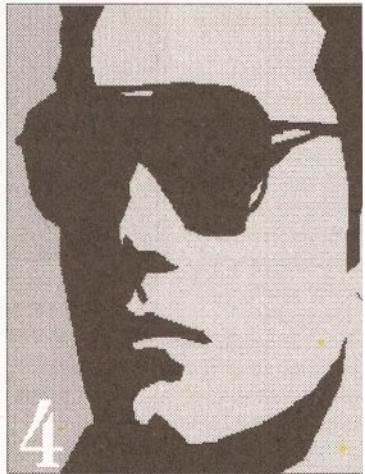
3. Now we have our outline, we no longer need the digitised image so it can therefore be removed. This is achieved by setting up a Stencil within *DPaint* with the only colour marked being the colour that we used to draw the outline. Once the stencil has been defined, click on the 'CLR' gadget within the *DPaint* toolbar and the digitised image will be removed leaving our outline in place. The stencil can now be turned off.

4. After changing the colour of the outline to black, the next step is to add in some basic colour using the *DPaint* fill tool just like we do with the picture of Diana we trace in overleaf. Once again, it's not important to add in too much detail at this stage as long as it is quite obvious what the image is supposed to be.

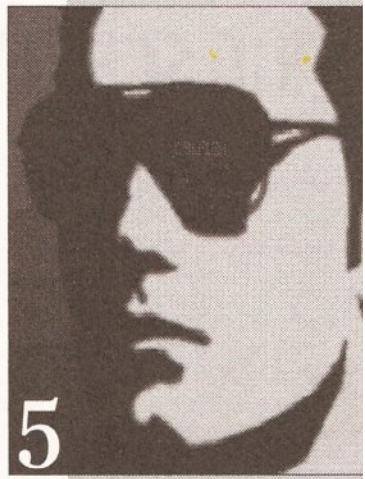
5. The final stage in the preparation of our first frame is to add in a little detail. The animation sequence that I produced using the image you see

on this page needed a sort of Terminator-looking character and therefore detail wasn't too important. You could go totally overboard here by adding in every detail, but you'd end up painting frames for the next two years, so it's best to keep things as simple as possible. Obviously I wanted to stop the animation looking too flat, so all I added was a little bit of shading which was achieved by setting up a colour range of skin tones and then applying them to the image using the *DPaint* 'Smooth' operator.

We now have a cartoon-like image which looks very life-like indeed thanks to our original digitised image. You could just use the digitised images that you grabbed as they are, but you can let your imagination run wild using rotoscoping.



4



5

# ANIMATED BRUSHES

**D**rawing each and every frame for even the simplest of animations can be a very time consuming task, but good old *DPaint 3* has a few tricks up its sleeve which will take this laborious task away from you almost completely. By taking advantage of its powerful brush animation facilities, very complex animations can be built up from just a single hand drawn frame.

For example, say you wanted to produce an animation of a car moving from one side of the screen to the other. Under normal circumstances, you'd have to draw all the necessary frames yourself, but *DPaint* allows you to cheat using its very powerful AnimBrush and BrushMove facilities. By simply

defining a single brush and telling *DPaint* where you wish the brush to move to on the screen, it'll automatically generate all the frames for you. Let's put our example to the test.

**1.** First of all we need a picture of a car. It's best to draw one by hand, but if your artistic talents couldn't even handle this, then a digitised image will do the job perfectly well as long as it is a side on view.

**2.** To make things a little harder, the car illustrated has 4-spoke alloy wheels. If we just picked up this car and moved it from one side of the screen to the other, it would look very naff indeed simply because the wheels wouldn't appear to turn.

To make them turn, we must first cut out one of the wheels as a brush and then clear the screen (make sure you've saved the car first!). Now go up the Anim->Frames menu and select Set #... and then type in the number of frames that the wheel will rotate in. Now

paste the brush down onto the screen, pick it up again as a brush (*DPaint* requires you to do this so it knows where to start drawing) and

then Select the Move option from the Anim menu. Because the wheel is completely symmetrical, we only need to rotate it -90 degrees, so enter this into the Z Angle box. *DPaint* will automatically draw the animation across 10 frames, so click on the DRAW gadget and *DPaint* will do its stuff.

**3.** Once the frames have been drawn, we need to pick the rotating wheel up as a brush. This is done by selecting Pick Up from the Anim->Anim Brush menu. You now have an anim brush of a rotating wheel.

**4.** Load your original car image back in and then proceed to paste each

frame of the rotating wheel on to the wheels of the car, advancing one frame each time by pressing the 2 key on the Amiga keyboard. Don't forget to do this for the front and back wheels.

**5.** Press 4 and you should see a perfect animation of the wheels turning on your car. Good, eh?

**6.** Now we need to make the car move from one side of the screen to the other. Once again, we need an anim brush, but this time we need to pick up the entire car. Pick up the car using the same procedure detailed in step 3. Once you've done this, clear all frames by clicking on the CLR gadget.

**7.** Because we want the car to be partly obscured when it first appears, we need to change the brush handle position. Select Place from the Brush->Brush Handle menu and then press the left mouse button and drag the onscreen crosshair until the mouse pointer is near the front of the car. Let go of the left mouse button and the operation will be complete.

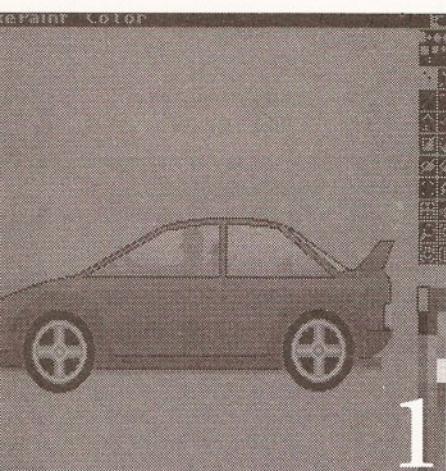
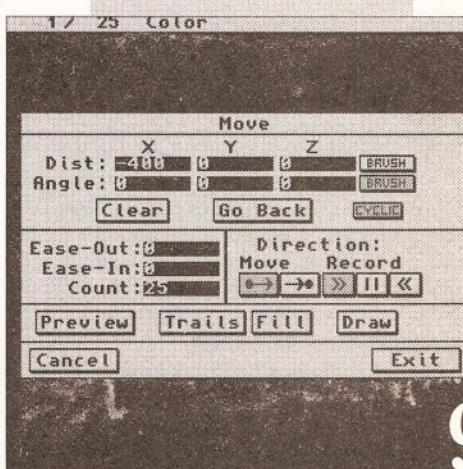
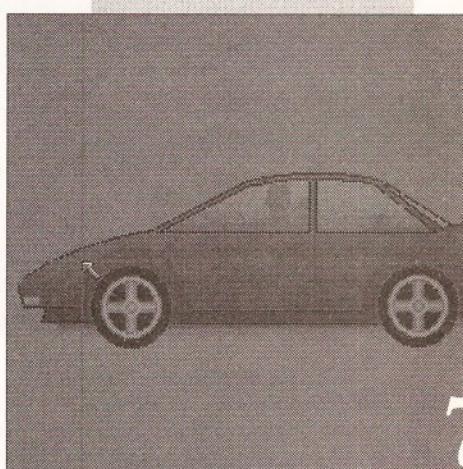
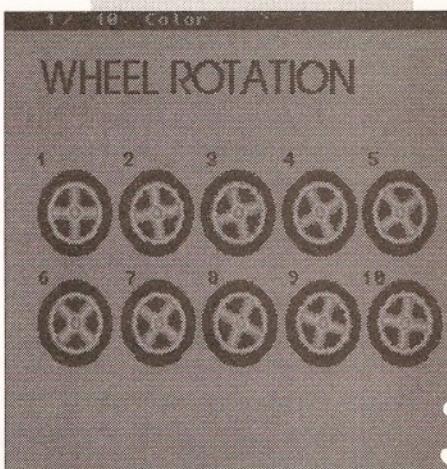
**8.** Now we have our anim brush car, we need to increase the number of frames that the animation will fill up. So, using the same

technique detailed in step 2, increase the number of frames to 25. Making sure that you're on frame 1 (the frame counter in the top left hand corner of the screen will tell you this, paste the car down in the right hand side of the screen so that only the bonnet is showing.

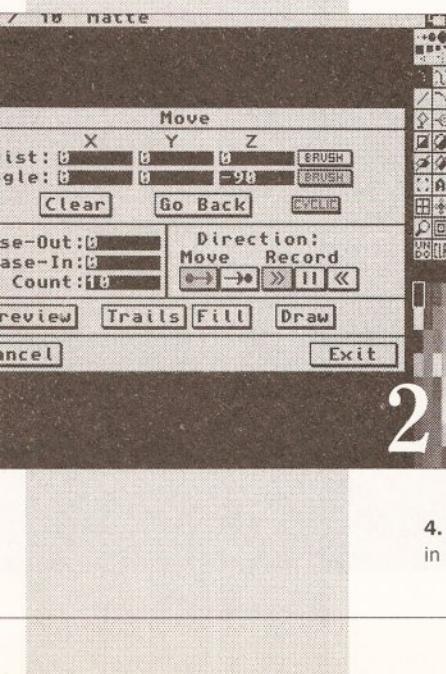
**9.** Go up to the Anim menu and select Move again. Clear the -90 value we entered into the Z Angle box and enter -400 into the X Dist box. You'll also have to change the Frame Count box so that it reads 25 instead of 10. Click on Draw and the frames will be rendered.

**10.** We now have our completed animation! Press key 4 to view it in all its animated glory!

**If your frame drawing talents won't even stretch to Rotoscoping, *DPaint* has a few clever tricks up its sleeve...**



1



2

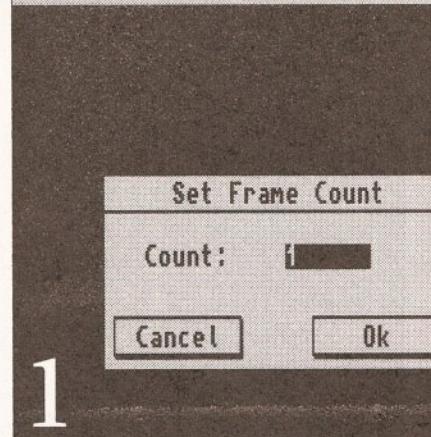
4. Load your original car image back in and then proceed to paste each

# AND FINALLY...

Once the very time consuming task of drawing all those frames is complete, all that remains is to merge them all together in the correct format to produce your animation.

Quite a few packages are available both commercially and in the public domain that will allow you to do this, but by far the simplest and undoubtedly the most commonly used package is *Deluxe Paint 3* (or 4). If you've recently bought yourself either an A500 Plus, an Amiga 1500 or even an Amiga 3000, then you'll already own this superb piece of animation and paint software.

## DeluxePaint Color



1

We'll assume that you are using *DPaint* for the sake of this tutorial. If you aren't, then just check in the manual for your program's equivalent commands. Anyway, let's get on with the serious task of breathing life into your animation...

1. Upon loading *DPaint*, the first thing you must do is to tell the program how many frames your animation uses. This is achieved by selecting the 'Set #' option in the Anim->Frames pull down menu. Once selected, a requester will appear containing just a single text field. Just enter the number of frames that you'll need, press <RETURN> and *DPaint* will do the rest.

If you've got the menu bar activated, you'll notice that in the top left hand corner an extra display will be shown which tells you which frame is presently being displayed. This will come in particularly handy once we start to load in frames.

2. Now that the correct number of frames have been allocated, we can now start to load in our frames.

It's well worth devising some form of filename convention when you're drawing your frames so that you know instantly in which order the frames should run. If you don't do this, you'll waste a lot of time loading up frames which you don't need before you find the correct frame. Worse still, you could end up with frames being placed in the wrong position within your animation.

A much better bet is to number each frame as it is drawn. You could, for example, call the first frame

'FRAME1.IFF' and then save the next as 'FRAME2.IFF' and so on. This way, you'll be in no doubt whatsoever which frames are which. This brings us neatly on to another point which you must consider when drawing frames – always stick to the same colour palette for all frames.

Despite the fact that animations consist of many different frames, they must all share a common colour palette. If you start changing colours halfway through an animation, programs such as *DPaint* will think that the colour palette for the entire animation should be taken from the last frame that you loaded. As a rule, choose a colour palette and stick to it!

Before you start to load any frames, check to make sure that you're on frame 1. You can tell this

Once you've got your frames, all that remains is to pull them all together to form an animation. Jason Holborn brings still shots to life

at a glance by reading the value of the frame counter which is on the left hand side of the menu bar. If everything is ok, you can load your first frame.

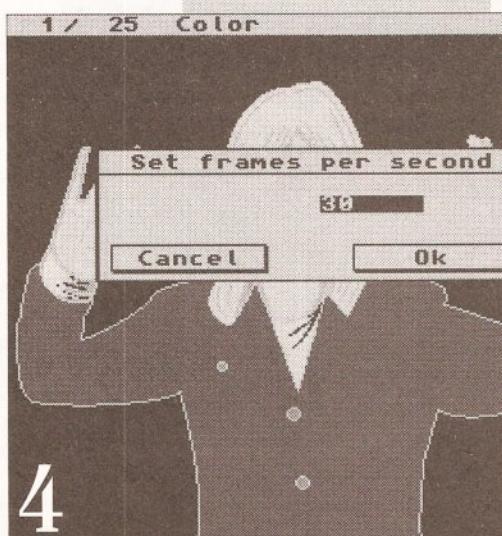
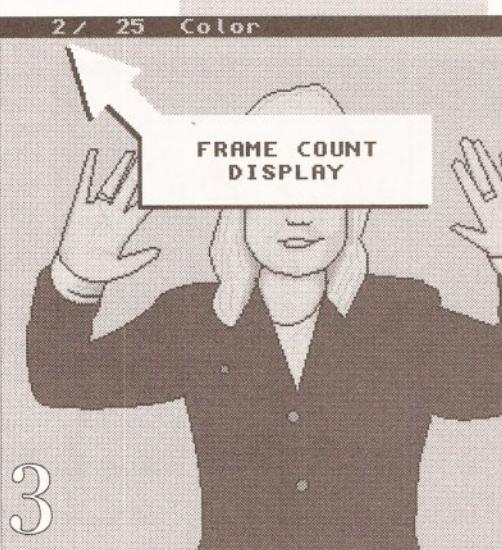
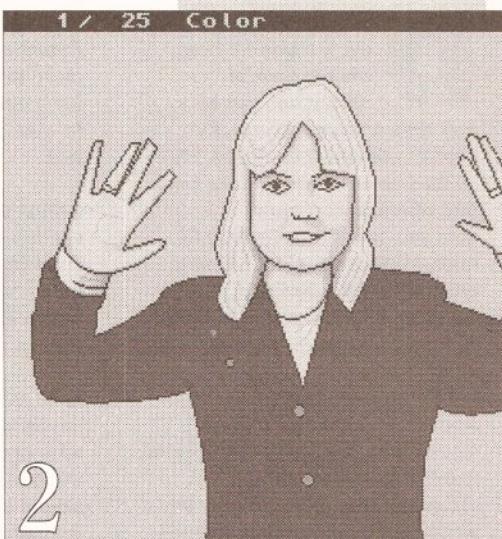
3. Once the first frame has been loaded, press key '2' on your Amiga keyboard. This will advance you forward by one frame.

If everything is going ok, the screen should clear. Don't worry – this is just *DPaint*'s way of telling you that you've moved on to a clear frame. Load up the next frame and then repeat this process until all the frames for your animation have been loaded.

4. Now for the fun bit – it's time to test your animation. To replay your animation, press key '4' on your Amiga keyboard and your animation should spring to life.

If it's going too fast, you can slow down the speed at which *DPaint* replays animations by selecting the 'Set Rate' option from the Anim->Control pull down menu. By default, *DPaint* plays animations at 30 frames per second, so just change this figure to a lower value to slow things down a bit.

Well, there you go, pictures in motion at last. If you're not happy, keep practising for next month, when we're going to add music to the motion. **AS**



## NEXT MONTH • NEXT MONTH

As well as a detailed look at the various animation packages available for the Amiga, we'll be taking our animation one step further with the addition of sound effects and music. In the meantime though, have fun with your new animation skills and don't forget to remember us when you get that top job at Disney!



# Total recall

*In the first of a two-part series, Mark Smiddy explains all you wanted to know about memory but forgot to ask*

**T**he concept of memory has to be one of the most complex issues to come to terms with. In this two-part series, the mysteries of memory will be unravelled, as we answer your queries on the intricacies of RAM and ROM.

Consider for a moment how we remember? Hypnotists have repeatedly proven we can rewind our lives and re-live past events. This means the human mind must be capable of storing colossal amounts of information. Assume one snapshot per second. At one year old, a child has stored a movie of over 21,000,000 frames long (not counting sleep). Not 21 million bits of information, but 21 million colour pictures; the associated stereo soundtrack; plus the tastes, smells and sensations of the world about them. Think about that...

## ● WHY DO COMPUTERS NEED MEMORY?

Computers use memory for all manner of things from the screen display to the programs. But in the end it all boils down to a single common denominator. Computers work on numbers which are stored in memory. When you double-click an icon on the Workbench, a program is loaded (transferred, copied, etc) into part of the Amiga's memory. Now two things will happen:

- The program will be executed by the CPU.
- The program will grab a certain amount of memory for itself.

This memory is used for all the 'housekeeping' jobs, jottings and so on. Think of the way we use a pen and paper to keep notes on and you'll get the idea.

## ● WHAT IS RAM?

RAM is an acronym for Random Access Memory. This is the sort of memory we think of when a program complains "Not enough memory" or "out of memory". RAM can be read from and written to so it is very versatile.

## ● WHAT IS ROM?

ROM (Read-Only Memory) on the other hand, can only be written once; it's used to hold the program

code which makes the machine what it is.

In the early days (before ROM was introduced), every time a computer was switched on, the bootstrap operating system loader had to be entered manually using switches. On the Amiga, the bootstrap and most of the operating system is always there when you switch on.

## ● DO I NEED MORE RAM?

How long is a piece of string? The answer, most probably, is yes.

For serious use, an Amiga needs a minimum of 2Mb, although it would be best to go for 3Mb.

Given 3Mb of RAM, the Amiga is capable of great things. Multi-tasking becomes a dream and you can use decent sized RAD disks to avoid having to boot from floppy disks. Better still, this will give you access to programs such as *VistaPro* or use *Wordworth* to its full capability.

## ● WHAT'S THE DIFFERENCE BETWEEN FAST AND CHIP RAM?

For the average user there is no difference whatsoever, all you really need to know is that there are xMb of memory fitted to your machine and that the more megabytes you have, the better.

Put more succinctly, Chip RAM is memory which can be accessed by the custom chips which are called Paula, Agnus and Denise. These clever little devices look after things such as the audio-visuals, the disk drives and the system DMA.

Some programs will run more slowly (fractionally) in Chip RAM because the custom chips can stop the processor's natural access to it by taking over the data bus. When a custom chip has hold of the data bus, the CPU has to wait until it has finished.

Programs running in Fast RAM do not have to suffer the indignation of being unable to access their savings (liquidise their assets, if you like) so they run marginally quicker. For this reason, RAM which is unavailable to the custom chips is called Fast RAM.

On the Amiga this Fast RAM lives on the expansion bus, in the case of the A500, or Zorro slots on the A1500 and above.

## JARGON BUSTING • JARGON BUSTING

**Address** – A number which defines a unique memory location just like the house numbers on a street. The exact number of bits at that location depends on the width of the data bus usually 8 or 16.

**Bi-directional** – A bus (data path) is said to be bi-directional when the lines can act as inputs or outputs depending on what is required. The data bus is bi-directional, but the address bus is not.

**Bit** – A single binary digit - Binary digit.

**Byte** – Eight bits or an eight-bit wide memory location.

**CAS** – Column Address Strobe. Signal which informs the RAM to load the column address from its address lines. The bar indicates the signal is active low.

**CS** – Chip Select. When this line is LOW, the RAM is active and its output is available on the data bus. If this line is high, the data and address lines are high impedance and the chip does not appear on the bus.

**D-type** – An electronic circuit the input of which is copied to its output when a second input (clock) is activated.

**DMA** – Direct Memory Access. Memory reads and writes performed while the processor is engaged.

**DRAM** – Dynamic RAM. Normal memory found on Amiga computers. DRAM is based on an array of tiny capacitors which need to be refreshed every two-thousandths of a second.

**DTL** – Diode-Transistor Logic.

**ECL** – Emitter Coupled Logic. Also called CML or Current Mode Logic.

**FET** – Field Effect Transistor.

**Gate** – A logic circuit.

**I2L** – Integrated Injection Logic.

**Latch** – Another name for an S-R (Set-Reset) flip-flop. Some applications use D-types latches instead, since their behaviour can be controlled by a separate line.

**Logic 0** – Represented in electronic terms as a line at ground OV.

**Logic 1** – Represented in electronic terms as a line at Vcc; usually 5V for common TLL logic.

**Longword** – A 32-bit wide memory location or address.

**MMU** – Memory Management Unit. A device for controlling how memory is accessed by the CPU. An MMU will have complete control over the data and address buses and can provide virtual addressing in multi-tasking systems.

**MOS** – Metal Oxide Semiconductor. An alternative material to silicon or germanium

**MOSFET** – Metal Oxide Semiconductor Field Effect Transistor. See MOS.

**NAND** – Not AND. A logic function which reverses the effect of AND.

**NOT** – A logic function which reverses the value of a logic line. Therefore: 1 becomes 0, and 0 becomes 1.

## DO I NEED MORE CHIP OR MORE FAST?

Many Amigas are restricted to 512K Chip RAM anyway, so every extra byte of memory added will automatically become Fast memory. This also applies to A1500/2000

memory request which asks for either type of memory is allocated Fast memory if enough is available. FastMemFirst is not found on Kickstart 2 machines because it's inherent in the allocation routines anyway.

NoFastMem does more or less

transfer of information.

The number of lines on a bus is called the "bus width". Most Amigas have a data bus 16 bits (lines) wide; this means the processor can gather a complete word of information in one fetch. High-end machines and processor accelerators feature a 32-bit data bus.

The width of the address bus determines how much memory can be accessed. The Amiga 500 has a 24-bit address bus or 16Mb ( $2^{24}$ ) of ROM, RAM and memory mapped peripherals.

## ● SO WHY CAN I ONLY HAVE 9MB?

As I've already mentioned, the total addressing capability of a 68000 CPU is 16Mb and some of that is reserved for use by the system: 7Mb of it! 256 or 512K goes on the ROM, and the rest is used for memory mapped peripherals, the system hardware (CIA's, and the PAD), and some is reserved for future

expansion and the Autoconfig™ system.

## ● WHAT ABOUT AUTOCONFIG™ THEN?

Autoconfig™ is a rather clever idea developed by Commodore which automatically allocates peripherals to a free area of the address map.

On the A500 system, Autoconfig™ appears on the left-hand expansion connector, but on the A1500 models upwards the whole thing appears on a set of female edge-connectors: Zorro slots.

The basic idea is as follows. During the boot sequence the Amiga sends a signal (mapped initially at address &E80000) to the first slot on the bus. Configuration information is read from the board and the Amiga sends it an assigned address somewhere within the primary Autoconfig™ space starting at &200000 which is latched by hardware. This effectively makes the board disappear from the

## A typical (theoretical) memory map generalised for 68000 Amigas

|               |   |
|---------------|---|
| 000000-03FFFF | 256K Chip RAM                           |
| 040000-07FFFF | 256 Chip RAM                            |
| 080000-0FFFFF | 512K extended Chip RAM (fatter Agnus)   |
| 100000-1FFFFF | 1Mb extended Chip RAM (super fat Agnus) |
| 200000-9FFFFF | 8Mb primary auto-config space           |
| A00000-BEFFFF | Reserved                                |
| BFD000-BFDFO0 | Complex interface Adaptor B             |
| BFE001-BFEFO1 | Complex Interface Adaptor A             |
| C00000-D7FFFF | Chip RAM                                |
| D80000-DBFFFF | Chip RAM                                |
| DC0000-DCFFFF | RTC                                     |
| DFF000-DFFFFF | PAD registers                           |
| E00000-E7FFFF | Reserved                                |
| E80000-E8FFFF | Initial Autoconfig™ map                 |
| E90000-EFFFFF | Secondary Autoconfig™ space             |
| F00000-FBFFFF | 256K ROM                                |
| FC0000-FFFFFF | 256K ROM                                |

machines. Later, 1Mb 1.3 machines came with a 1Mb Fatter Agnus chip and they too will only support extra Fast RAM. The A500 Plus will take either an extra 512K or 1Mb of Chip RAM and this is probably the cheapest way to upgrade the machine.

Generally speaking, the amount of Chip you have is limited by the Agnus you have fitted. Although upgrading to a 1Mb Agnus is feasible and straightforward for most machines, the 2Mb unit is very expensive; the current third-party upgrade boards retail at a ludicrous £200 – half the RRP of a complete machine! The majority of boards add Fast RAM and, when the chips are down, it's all the same to most applications.

## ● JUST WHAT ARE FASTMEMFIRST, MERGEMEM AND NOFASTMEM FOR?

The amount of memory the custom chips have access to is limited by the width of their address buses (see below). On the original machines, the first 512K of RAM was accessible; later machines had 1Mb; the newest models including the A500 Plus have access to 2Mb.

Because of these limitations, Chip memory is very precious. Every screen display you have and every sound sample you are playing requires valuable Chip RAM. It would therefore be lunacy to allow a program's first byte (byte) at the Chip RAM cherry when it really doesn't need it. For this reason, a small program patches part of EXEC (Kickstart's memory overlord) so a

the opposite; it switches Fast memory off. This is not however strictly true; because if the Fast memory suddenly disappeared, so would any programs which happened to be using it and the Amiga would crash. NoFastMem patches memory requests so programs only receive Chip memory. This is for compatibility with very old programs which expect to find Chip memory and attempt to access graphics and sound samples in Fast memory. When such applications send the address to the custom chips, part of it is chopped off and the effective address ends up somewhere in Chip RAM. At best, this causes Intuition's special DISPLAY\_FIREWORKS mode; at worst, it will crash the machine.

MergeMem is used on older machines which have more than one RAM expansion card. As each card is mounted by AutoConfig™, it appears at an address determined by the Autoconfig™ software. However, EXEC sees the cards as separate chunks of xKb large even if they actually live at contiguous (sequential) addresses. MergeMem attempts to patch the address list so that 4Mb (for instance) looks like a chunk of memory 4Mb long, rather than eight chunks of 512K each.

## ● WHAT IS A BUS?

The bus is a collection of common electrical pathways, usually the tracks on a circuit board, but sometimes used more loosely as in: the data bus is bi-directional. There are two main buses in any computer system: the "address" bus handles all the memory addressing and the "data" bus looks after the

## JARGON BUSTING • JARGON BUSTING

**Nibble** – Four bits or half a byte. Sometimes written Nibble.

**Page** – A chunk of memory usually 256 bytes long.

**Propagation Delay** – The time it takes for an electronic signal to travel through an electronic circuit, usually logic gate.

**RAD disk** – A RAM disk which retains its contents after a reset.

**RAM** – Random Access Memory. Any memory which can be written to and read from.

**RAS** – Row Address Strobe. Signal which informs the RAM to load the row address from its address lines. The bar indicates the signal is active low.

**ROM** – Read Only Memory. A type of memory which retains its contents even when the power is turned off.

**RTL** – Resistor-Transistor Logic.

**SCRAM** – Static Column RAM. A very fast type of dynamic RAM which uses a special row-only addressing mode.

**SIMM** – Simultaneous In-line Memory Module. A set of SMT memory chips pre-mounted on a small PCB with an edge connector. By their nature, SIMMs are very simple to fit.

**SRAM** – Static RAM. Very fast memory, based on thousands of gates.

**Transistor** – An electronic switch.

**Tri-state** – A line which can have three states: On, Off, or high-impedance.

The third state is used so that many lines can be connected together without interfering with each other. A chip is made active on the bus by pulling its not chip enable (-CE) line low.

**TTL** – Transistor-Transistor Logic.

**Vcc** – Volts Collector-Collector. The supply voltage: commonly 5 volts for TTL logic circuits.

**VLSI** – Very Large Scale Integration. Lots of components on a single chip.

**WE** – Write Enable. If this line is HIGH the RAM loads the contents of the current location on the data lines. If this line is LOW, the data is read from the data lines and stored.

**Word** – A 16-bit wide memory location or address.

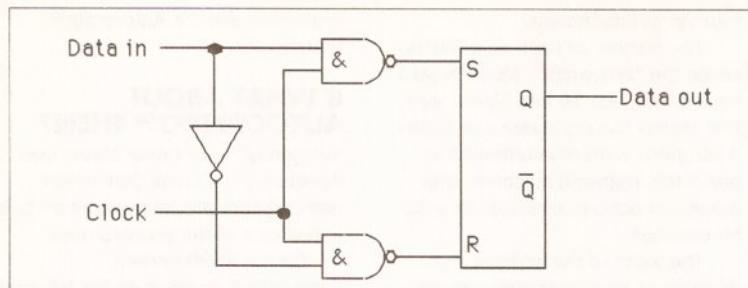


Figure 1: the D-Type or data flip-flop typically found in static RAM in expanded schematic form, showing the extra gates added to the basic S/R flip-flop

Autoconfig™ space, whereupon it passes a CONFIG-OUT signal to the next slot along thus enabling it to join the system.

In this way the Amiga handles the location of where boards appear in the memory map and, since the signals ripple through board-by-board,

separately because the amount of electronics involved is greatly reduced. If you just buy the memory expansion it should have a through-port which supports Autoconfig™ otherwise you will not be able to add a hard disk (or other auto-configuring peripheral) at a later date.

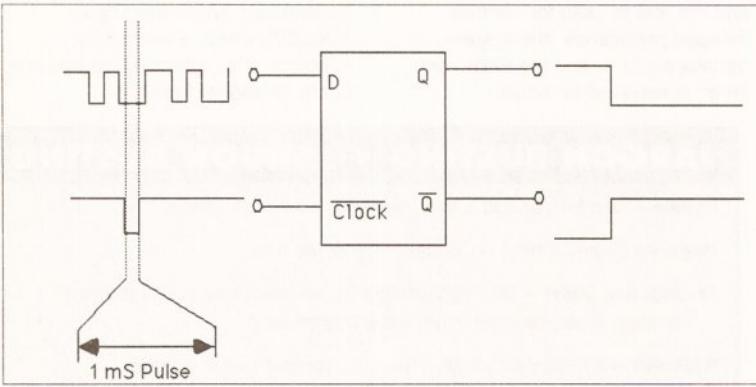


Figure 2: this simplified timing diagram shows the effect of a clock pulse. The output (Q) mirrors the logic level at D when the clock is active (low)

there is never any chance of two peripherals appearing at the same address.

Interestingly, since the Autoconfig™ space is 8Mb wide and this is used for Fast RAM only, the Amiga 500 Plus has a memory limit of 10Mb.

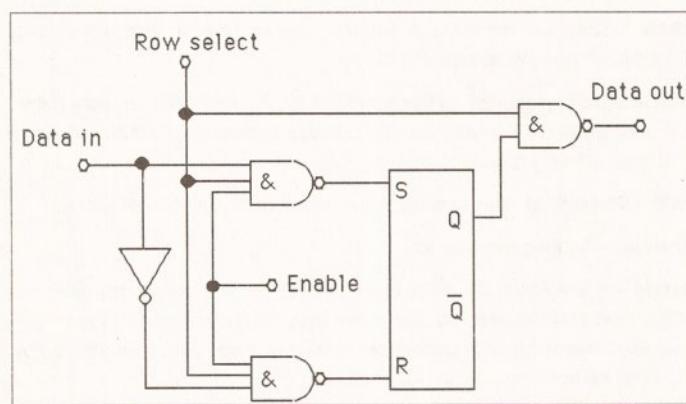


Figure 3: the complete SRAM memory cell. More complex and larger than its DRAM cousin

## • SO WHAT IF I WANT A HARD DISK TOO?

No problem. Autoconfig™ (which should be supported by all peripherals) handles those too. It's worth pointing out that, if budget permits, a combined RAM and hard disk expansion system is far more cost-effective than buying the items

## • I'VE HEARD OF STATIC RAM, WHAT IS IT?

Static RAM or SRAM was a fairly early development in LSI memory chips and is still in wide use today. Its primary advantage over DRAM (see below) is that data remains

The design has two major flaws...

Every gate is constructed from several transistors and the whole thing requires at least five gates more in practical terms. In comparison to DRAMs, far more material is used to produce one gate, which means less memory cells per square millimetre of chip. The cost per byte is therefore higher, and more chips are required to satisfy system demands. More chips mean larger boards and cost becomes too prohibitive to use this construction in modern designs.

A basic SRAM cell (Figure 1) requires additional processing to provide the bi-directional data bus. By definition, this system requires separate routes for data in and data out. It also requires extra logic to handle the select line. One solution is shown in Figure 3.

## • SO WHAT ABOUT DYNAMIC RAM?

The most common type of RAM used in micro-computers is DRAM or dynamic RAM and is notable because it is internally an analogue as opposed to a digital device. Compare that to static RAM which is entirely digital. Now take a look at Figure 4; don't worry if electronics gives you a headache, it's very simple.

By applying a voltage to the data line, current will charge the capacitor C1. This causes a logic one to be stored. By connecting data to 0V, the charge leaves the capacitor. This stores a logic 0. Reading from this circuit is accomplished in a similar fashion. The transistor is turned on, and the voltage level held on the capacitor is read from the data line.

## • SO WHAT ABOUT REFRESH?

The DRAM memory cell is not without its problems. The difference between ON and OFF is in the order of millivolts (thousandths of a volt) – logic circuits required a difference of

several thousand times. Before data can be read by the outside world, it must be converted to a digital signal by a differential amplifier.

Capacitors are like tiny rechargeable batteries; they store charge in the form of free electrons.

This is measured as current when the electrons flow through a circuit. However, this simple cell suffers with a problem caused mainly by the physical size of the components.

In a perfect world a capacitor will retain its charge until something discharges it. In practice though, the charge (and the information

stored) leaks away through the substrate, through the capacitor and through the source-gate junction on Q1; see Figure 5. This behaviour has led to memory cells in DRAMs being compared to leaky buckets.

The actual time taken for a single bit to drop from logic 1 to logic 0 can vary dramatically from cell to cell even on the same chip.

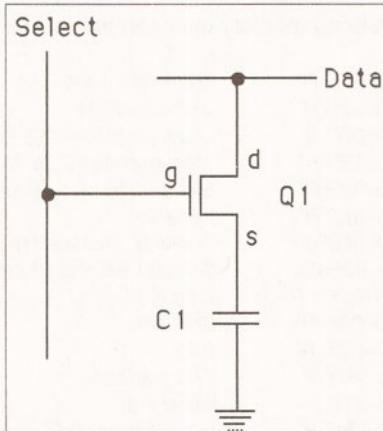


Figure 4: one leaky bucket bit from a Mostek 4096 dynamic RAM

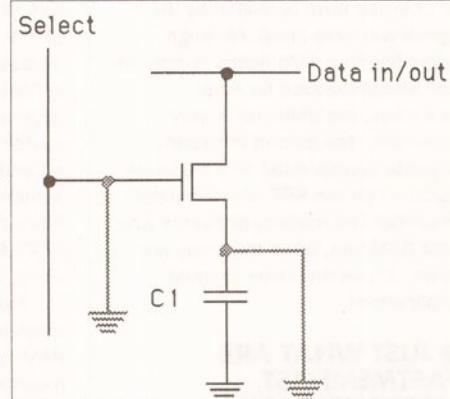


Figure 5: C1 loses charge through the paths of comparatively low resistance

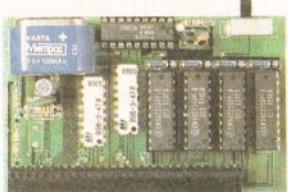
Therefore another circuit constantly checks each bit and tops them up a sequence called RAM refresh. Typically, a refresh time of 2ms is quoted for modern devices. Nevertheless, some DRAMs can retain their charge for up to 45 seconds which is partly the reason a 30 second power down is usually quoted to rid a system of memory resident viruses. **AS**

COMING NEXT MONTH • COMING NEXT MONTH • COMING NEXT MONTH

Next month there's even more on memory. Tie a knot in your hanky or make a note in your digital diary, to make sure you don't forget your copy of *Amiga Shopper* – out on the first Thursday in the month. Oh, and look out for the *Amiga Answers Special* on RAM.



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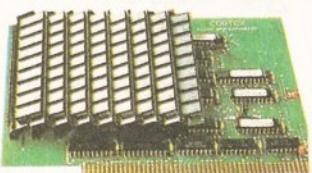
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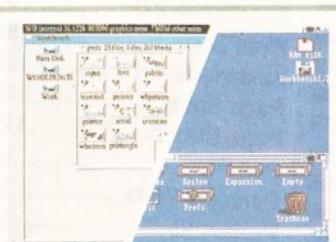
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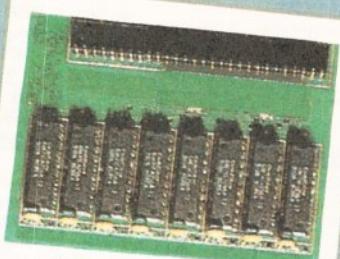
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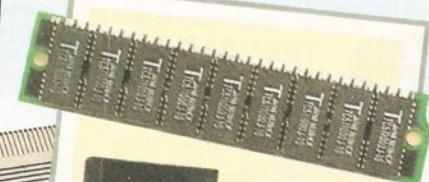
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# The pianist they didn't shoot

**N**intendo's market research has shown that just under 40% of adults would like to play the piano. As such it has launched the Miracle Piano Teaching System - a computer-based piano teacher. How does it work and is it any good?

What you get is a keyboard with four octaves which has MIDI and customised interfaces, built-in speakers, 128 sounds and can be played on its own or become part of a MIDI sequencing system.

The Miracle System is both innovative and fun and is one step nearer the world of home entertainment and education which computer market analysts have been telling us is 'just around the corner'.

The first thing to realise is that you will need at least 1Mb of memory and twin disk drives. It requires access to all three disks and with just one drive it is a real pain to keep swapping disks. Even



Let your fingers do the walking with the Miracle Piano teaching System. The keyboard comes complete with four octaves and built-in speakers

twin disk drive owners could become a mite cheeze off at the loading and waiting time. Since there are many facilities contained in this package and the aim is to teach you to play without tears, a hard drive is really the only way to get a positive benefit from this program; an expanded memory would also help, as with 1Mb it has to keep clearing out data to load up new facilities.

While loading up it plays a slightly quirky version of the American hymn 'Tis a gift to be simple'. You are then presented with a Music Conservatoire with the lid off (literally!). There are various rooms to 'visit' - these correspond to the various functions of the overall course. These are Classroom, Arcade, Studio, Administration, Performance Hall and Practice Room. We'll visit them in turn.

## IN THE CLASSROOM

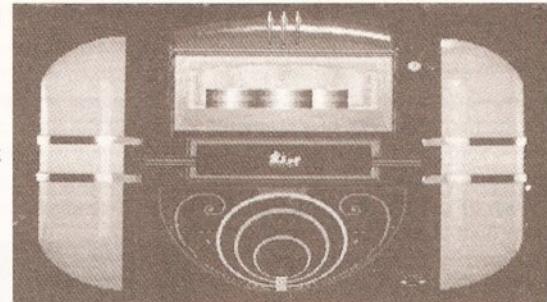
This is the area which will get most use, as this is where the actual teaching takes place. The course is set out in 40 chapters; each chapter can have up to 25 lessons/teaching points all of which are fully explained. You are directed to practise and play games to improve yourself with the program acting as teacher and adviser at every stage.

The pieces are well chosen and

vary in style from Classical and folk to popular tunes. Before each lesson, the piece is demonstrated and often a small piece of historical background is thrown in. This is

linked to the Arcade section which plays music games to reinforce aspects of pitch, rhythm and fingering. Points such as 'posture at the keyboard' have a jolly picture of a baroque performer playing a synth plus a close-up of the fingers on the keys - all useful stuff. As you learn new notes, the on-screen keyboard is also 'played', showing the note you are playing, although the notation which is on the screen at the same time is not.

For the most part this interactive system is excellent. However, there were certain areas of doubt. I was a bit puzzled by the repetition of finger numbers on notes that are tied - this is rather misleading as it encourages the learner to restrike the note. Also, when there are fingering jumps, these are not indicated on the screen, as is usual with keyboard



No-one need know you can't play a note. With the jukebox, you can take your pick of the tunes

the user has had lessons on other instruments. When I first saw the preliminary system, I was led to understand that this would be corrected for the UK market.

During the lesson, flashcards appear to test your understanding of what you have learnt and you have to answer correctly before the lesson can continue. At any point you can pause from the lesson and either restart the lesson again or continue onwards. At the end of each session it logs the number of mistakes and the nature of them - this is handled by the administration department. What is clever is that it adapts itself to your faults and will come up with exercises to improve areas where you are weak. This is excellent and I'm sure is a pointer to the way in which this system can be developed.

## ADMINISTRATION

Any time that you log on or off, the Administration department informs you of your progress in all the departments, ratings and overall average score to date. This is kept

## JARGON BUSTING • JARGON BUSTING

**MIDI** - Musical Instrument Digital Interface; a universal digital language which connects instruments both to other instruments and computers/other MIDI equipped devices.

**Chord** - Three or more notes played simultaneously that create a harmony.

**Multi-Timbral** - The ability of an instrument to play more than one sound simultaneously; usually several different musical parts in one go.

**Weighted Keyboard** - A keyboard that requires more pressure to play each note. A piano has a weighted keyboard, most synthesizers do not.

**Velocity Sensing** - The faster you play the note, the louder the note sounds, just like a piano.

**Legato/Staccato** - Two Italian musical terms meaning smooth and short respectively.

**Sequencer** - A device that records the data generated by performance, usually MIDI data. It can then play the instrument using this data to repeat the performance.

**Quantize** - The ability of a sequencer to 'round up' notes so that they are played back in time.

under your own progress chart and on each log in it tells you where you were on your last lesson. It will even print out a certificate of merit when you pass certain stages! Its ability to cope and keep track of multiple users makes it a serious contender for the classroom.

### DOWN THE ARCADE

Arcade plays a selection of shoot'em up games designed to improve your skills. There are three games which help you with notation, rhythm and fingering and these are generally amusing and exacting. Scores are logged and count towards your final and overall rating; a form of continual assessment.

'Aliens' is quite exacting and demands that you play and read notes correctly

within a certain time limit. The notes relate to sections of the piece you are working on and if you go wrong you are told about it in no uncertain terms! You cannot pass over this game until your score is good enough. 'Ripchord' has parachutists which float to the ground happily if you correctly hit the three notes of the chord towed along by a helicopter. 'Ducks' is a notation trainer which shoots down ducks on a stave if you hit the correct key. This sort of thing makes learning fun.

### PERFORMANCE HALL

On entering the performance hall the piece you perform is matched numerically with the lessons: the piece you learn in lesson 3 is performance piece level 3. Here the multi-timbral aspect of the hardware is used with an 'orchestrated' accompaniment and a lead voice which can make any instrumental sound. You can opt to play left or right hand or both - the default tempo of the piece is also adjustable.

The way in which it sums up your performance is good with advice about the accuracy of the notes. However there seems to be no advice about the touch you use on the keys, which is surprising as the instrument is velocity sensing. Part of acoustic piano teaching is concerned with the pressure applied when striking notes to produce different tones within the piece and this seems to be something that the system has not addressed. This could also be applied to the basics of touch - Legato and Staccato

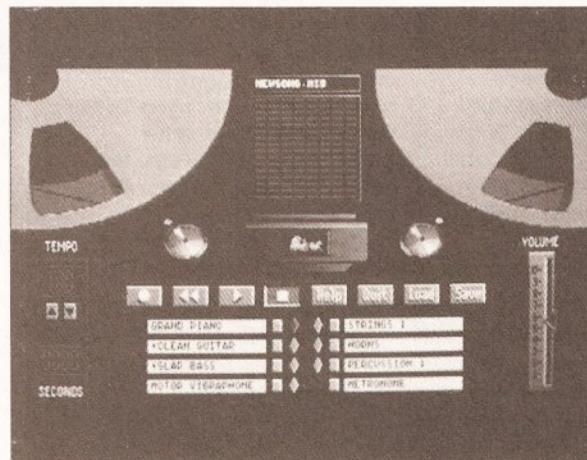
playing (smooth or spiky notes, if you like) as well as playing loudly or quietly. Definitely areas that the system can cope with but something that it fails to address.

The accompaniments to some pieces could be more faithful to the originals. They quite often use incorrect chord inversions for no particular reason, since it won't affect the playing of the piece and some have unsatisfactory sounds to



**Ever wanted to be the pianist they didn't shoot? In the shootin' arcade, maybe the Amiga can save your life**

work with. For example 'The Swan' is a well known 'cello solo and uses the sustained sad tone of the 'cello to put the piece over. Why therefore does this version use a tinkly vibraphone? At times the accompaniment misses out notes



**Once you've mastered the keyboard, you don't have to stick with the piano, a range of instruments are at your fingertips**

and appears to stumble in places for some pieces.

After each performance you are given a pitch and rhythm assessment which is extremely perceptive and useful. It points out where you played incorrect notes (in measure so and so) and what they were. All is logged on your progress chart.

### PRACTICE ROOM

At the end of each lesson, the 'teacher' recommends various practice routines and pieces to try. Unlike Performance you can practise

parts on their own, with or without a metronome rhythm and demonstrations of the piece are given on request. Again an accurate analysis of your faults and suggestions on how to improve are plus points for the system.

### STUDIO SOUNDS

This is a simplified sequencer. There are no quantize facilities but you can record on up to 7 tracks although you can't delete any of the tracks at all. The purpose is to give you a taste of multi-tracking using different sounds for each track. It's fun, but basic. The keyboard has 128 voices and you can assign these to any of the tracks. The hardware does not output MIDI until the serial connection with the Amiga is unplugged, therefore data created by the Miracle system cannot be copied, at least not directly.

### MIDI MAGIC

MIDI is well catered for but voices do not obey pitch bend and modulation commands and the note range is limited to the four octave keyboard - there are no extra 'hidden' notes that are found on many MIDI instruments. The keyboard can be split with two sounds spread across the instrument, but the only way to do this is using Systems Exclusive data - if you fancy a few hours entering hexadecimal code, be my guest!

Generally The Miracle Piano

Teaching System is very good. However since the hardware is bundled in with the package and there is no way you can use it with any other MIDI keyboard as a teaching aid, it does rather limit the entire scope of the package. I can see that the developers would be wary of putting it out as a set of disks as the pirating opportunities could blow

the idea out of the water. But is a four octave unweighted keyboard sufficient to qualify as a good instrument to learn on?

Although it is a MIDI multi-timbral module, it is not in itself a self-contained instrument. If it had auto features such as drums, bass and chords it might be a little more attractive. If it was purely a MIDI based teaching system, its scope would be tremendous but it could be cloned easily: if you protect the disk you can't, by the nature of MIDI as a common language, protect the

transmission of the data. A keyboard with self-accompanying features could make the system more versatile and stand a higher price.

The manual lists helpful suggestions and points out that there is no substitute for a good teacher. However as a practice aid it is very intelligent and well thought through. It picks up on your weaknesses and encourages you to work hard at them, stressing the need for regular practise. As a sight reading trainer, it is also very useful. The final pieces are about Grade 1 or 2 standard, although the preset tempos may be hard to achieve first time.

This concept could be adapted to teach different styles, improvisation, jazz, rock as well as the basics. There could be theory sections, orchestration exercises and with the prospect of CDTV, the concept could take off in rather a big way with real images, as opposed to graphics.

It has a great future in schools as it can cope with a large roster of pupils and keep tabs on their progress - a bonus for the hard pressed teacher. All it needs is to be able to tie in the practice times to a built-in clock and you will have a record of the pupils' practice time and effort for the week - the Big Brother of all music teachers! **AS**



### SHOPPING LIST

**The Miracle Piano..... £299**  
**Teaching System**  
 By Mindscape, The Coach House  
 Hooklands Estate,  
 Scaynes Hill,  
 West Sussex RH17 7NG  
 0444 831761

### CHECKOUT MIRACLE PIANO

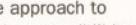
#### Ease of Use

Simple and intuitive.



#### Features

Excellent and innovative approach to learning an instrument; has possibilities beyond those on offer.



#### Documentation

Well written and full of useful advice.



#### Hardware

Sounds could be improved on, although it can be used on its own.



#### Software

Great, as long as you have a hard disk; twin floppy drives are a necessity.



#### Overall rating



One or two small points hold this back: once the minor musical idiosyncrasies are ironed out it should do very well. If there was a way to make it work via MIDI it would clean up totally.

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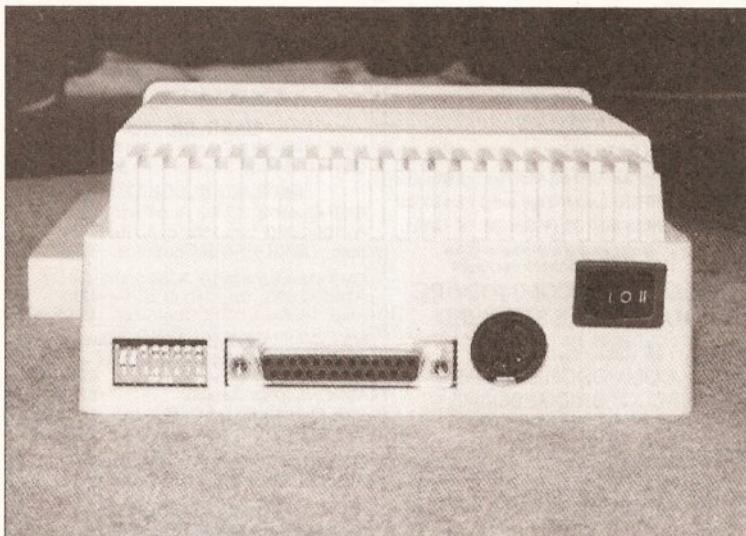
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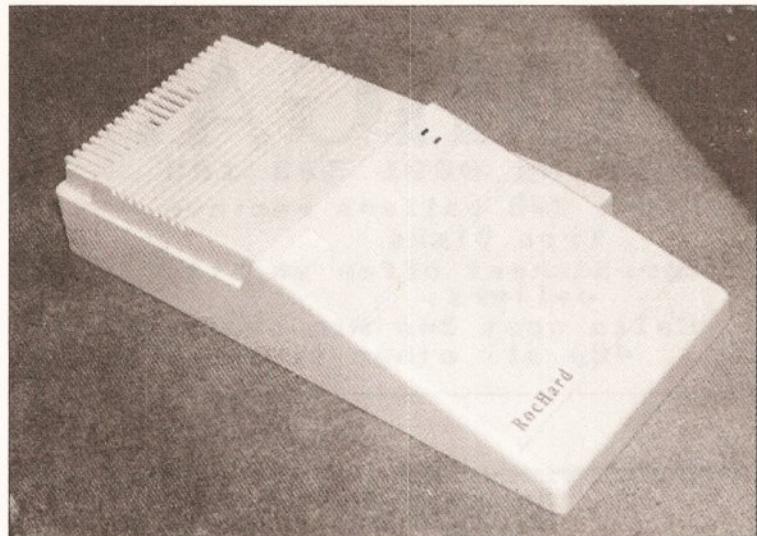
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A side view of the RocHard hard drive showing the SCSI port. The manual gives clear instructions on fitting it to your Amiga



What the well dressed Amiga 500 will be wearing this spring – in familiar Amiga cream, this style would be a welcome addition to any Amiga wardrobe

# Solid as a rock

**Ian Wrigley tests the RocHard hard drive which looks a likely contender for one of the best value drives around**

**A**s far as the Amiga is concerned, RocTec is a fairly new company. It is, however, already beginning to make quite a name for itself as a manufacturer of high-quality, low-cost peripherals for the Amiga: the RocLight floppy disk drives have gained good reviews, and the RocGen Plus genlock was reviewed in *Amiga Shopper* a couple of months ago, when Gary Whiteley gave it a rating of four out of five. So it was with interest that we took shipment of the RocHard (lose points for the dreadful name, boys) hard disk drive for the Amiga 500 and 500 Plus.

## FIRST IMPRESSIONS

The RocHard is attractively packaged in a colourful, well-cushioned box. Opening up reveals the drive itself, in the familiar Amiga colour scheme (drab off-cream), a separate power supply, a utilities disk and a thin, 32-page manual.

The drive connects to the Amiga 500 in the usual fashion, by plugging into the expansion port on the left-hand side of the Amiga. The power supply connects to the drive via a DIN plug, and that's all there is to it. It was surprising to find that the drive's power supply has no on-off

switch of its own. Instead, according to the manual, "RocHard automatically senses the Amiga's power," in other words, it switches itself on when you power up your Amiga. Now, there's no reason to think that this is anything other than a good idea, but I must admit that I would have preferred an external power switch as well. I tend to find that I unplug the drive when I'm not using the Amiga, which is a pain to do. The addition of a simple, 10p switch would have given me much more peace of mind.

## THE WRITTEN WORD

The manual is clearly written, and explains exactly how to plug in your RocHard. Because the unit can come either ready-assembled or as a kit with you supplying your own disk drive, much of the beginning section is taken up with instructions on how to disassemble the casing and fit a hard drive. There is none of the dodgy English which you often find when manuals have been prepared in a foreign country, and the procedure is explained clearly and concisely.

You can install any of a wide range of hard disks in the RocHard – six different manufacturers and disk models are listed as being

supported. The drive must be a 1-inch, IDE-HDD model. IDE drives tend to be cheaper than SCSI, and are also claimed to be fractionally faster.

As far as the normal user is concerned, there will be no noticeable difference in speed, whether you use an IDE or SCSI drive. If you really want SCSI, an extra module is available as an upgrade to the RocHard, which will allow you to chain SCSI drives, CD-

The unit has two sets of switches on its back panel. One to enable and disable the hard drive and/or RAM, for full compatibility with games, and a set of dip switches which tell the unit whether you're using Kickstart 1.2 or a later version. (If you're using Kickstart 1.2, you won't be able to auto-boot from the hard drive). For some reason the dip switches also determine whether the RAM and disk

## The system on test

The system we tested was fitted with a 52Mb Quantum hard drive and 4Mb of extra RAM. However, a range of options are available with more (up to 8Mb) or less memory, and a larger hard drive, if required.

ROM readers, tapestreamers, or whatever, off the back of your Amiga; the actual 25-pin D-type SCSI connector is present in the unit but the driving hardware must be bought separately (although an already-upgraded version will also be sold). You can also add up to 8Mb of RAM, via SIMM modules. Again, the unit is sold in various configurations with none, some or all RAM already installed.

drive are enabled or not, which means that they perform exactly the same job as the other switch. Why? Don't ask me.

## INSTALLATION SOFTWARE

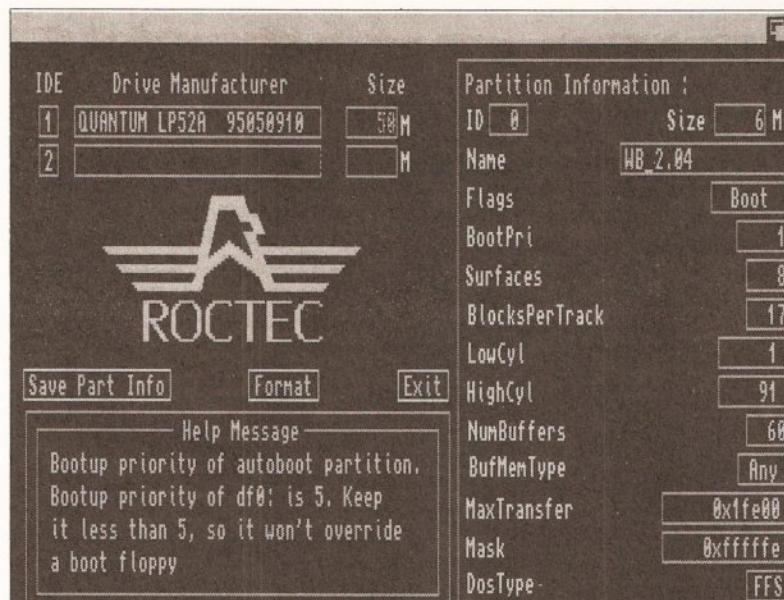
The software which comes with the RocHard allows the user to format and partition the hard drive. Partitioning splits the drive up so that it appears as two or more

separate disks on your Workbench; whether you do so or not is entirely up to you, but it can be useful to have a separate boot partition. For example, my hard disk is set up with three partitions: one for Workbench 2.0, one for Workbench 1.3 and one for my files, applications and so on. Because I'm running an A500 Plus, I can determine whether to boot from WB 2.0 or 1.3 by holding down both mouse buttons when rebooting – useful if I want to test programs for compatibility or if (heaven forbid) my Workbench 2.0 partition becomes corrupted and won't boot properly. You can have a maximum of 10 partitions, named DHO: to DH9:, regardless of how many actual hard disks you have. The manual goes through the arguments for whether to partition or not, and explains the advantages and disadvantages clearly.

## SOFTWARE ON TEST

The supplied software works reasonably well, although it's not the most intuitive I've ever used. The manual takes you through its usage, and will be adequate if you're reformatting from scratch. However, it becomes rather less helpful if you're reformatting and partitioning an already installed disk; I wasn't content with the way my unit was set up when it was supplied, and it took me a good 30 minutes to sort it out to my satisfaction. Of course, this might just have been my obtuseness, but I don't think so. On the plus side, however, you'll probably only ever use the formatting software once, so you'll only have to wrestle with it once.

When setting up partitions, you are given the option to decide



The formatting utility provides on-line help as the cursor moves over a user-alterable setting, the help window displays information on what that setting does

whether each one is bootable or not. If you select 'yes', the formatting procedure includes the copying of Workbench to the hard disk – a far neater solution than expecting the user to manually copy the files across afterwards.

Power users are given the option to get right down into the nitty gritty of partition information, to hack the very best performance out of the disk; the majority of us, though, can happily leave such things as "the number of sectors per track" and "the maximum number of bytes to transfer in one AmigaDOS I/O request" for the software to sort out.

Finally, the software includes the ability to create a special boot disk for Kickstart 1.2 owners which makes the Amiga recognise the hard

disk after it's booted from the floppy. This is about the only way to use a hard disk on a Kickstart 1.2 system, and anyone who hasn't upgraded to 1.3 or 2.0 is strongly recommended to do so (whether you are intending to buy a hard drive or not).

## UP AND RUNNING

Once all the formatting and partitioning has been done, all that remains is for you to switch on your Amiga and be amazed at the speed with which it boots up. If you've never used a hard disk-based Amiga, it will be a revelation to you, and you'll wonder how you ever managed with a floppy disk-only system.

My system has more than its fair share of extras to contend with in the startup-sequence, but it still boots up in under 20 seconds. And, of course, you get to use things such as the outline fonts (on a Workbench 2.0 machine) which are such a pain on a floppy-based system that you've probably never bothered to try.

I do have a slight complaint with the unit when booting: occasionally, when turning on for the first time in the morning, the extra RAM fitted in the RocHard isn't recognised. Rebooting solves the problem, and it only occurs when the drive is turned on for the first time in the day, but it does suggest that perhaps power isn't getting to the chips as soon as it should. RocTec has been notified of this glitch, and is working to find a solution and I must admit that hitting Control-Amiga-Amiga as soon as the machine has powered up has become a habit which is no hardship. Still, this is a problem and one which should be addressed.

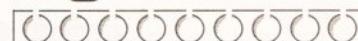
The unit is also fairly noisy – the fan's whirring can be a bit obtrusive at first, although you soon get used

to it. Whether a fan is actually necessary or not is open to debate; the front of the unit does get slightly warm to the touch, but the fan is actually at the back. The vents are situated at the top rear of the RocHard, rather than on the back panel, which means that one spilled cup of coffee could ruin things for good.

## CONCLUSIONS

As this is a one-off review, there isn't much point in quoting actual speed figures as they tend to be rather meaningless without a range of other options to compare them with. However, the RocHard is certainly up there with the faster models – it took less than two seconds to launch *DPaint III*, for example. In general performance it rivals any of the other drives and makes my Macintosh at work seem positively sluggish!

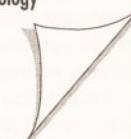
Although RocTec isn't the best known company in the Amiga arena yet, products like the RocHard should soon change that. If you're looking for a hard drive for your Amiga, this should be high on your list. **AS**



## SHOPPING LIST

RocHard hard disk drive ..... £379  
With 52Mb drive ..... (approx)  
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## CHECKOUT

### RocHard

#### Construction



RocHard matches the Amiga perfectly; however, it would have been even better if the fan vent wasn't on the top of the machine.

#### Speed



As far as speed is concerned it's up there with the best of them.

#### Documentation



Nothing special – it's adequate, and that's about it.

#### Usage



Would have got the whole 5 blobs if it wasn't for the RAM problem on initial startup.

#### Price Value



Pretty damn good, actually.

#### Overall rating



In my opinion the RocHard hard drive should be high on your list when shopping for a hard drive.



## With Commodore's new A570 CD-ROM drive due in May, Andy Storer looks at the hardware options and spins some of the latest releases...

By now, many readers will be wondering whether buying an A570 CD-ROM drive is a viable addition to their Amiga system. But, given the investment involved, you may also wish to consider some other possible alternative CD systems.

Expected to pitch in at just under £300, the A570 certainly looks good value for money compared to CD drives for the PC-compatible market where Sanyo and Philips are introducing similar specified drives at the same price. But the key to sound purchasing involves more than just the price of the hardware in question. And more than the price of the software if it comes to that. What prospective buyers should bear in mind is continuing software availability. No point in buying a white elephant, is there?

So can we expect to see a flood of non-games CDTV titles? A look through Commodore's most current list of CDTV applications shows the following breakdown of titles by category:

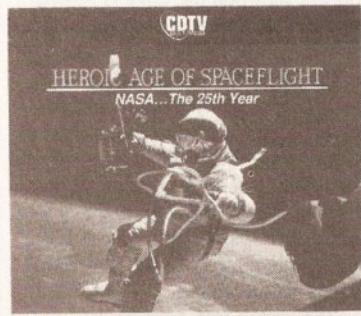
|                  |           |
|------------------|-----------|
| ● Arts & Leisure | 13        |
| ● Education      | 25        |
| ● Entertainment  | 38        |
| ● Music          | 8         |
| ● Reference      | 15        |
| ● Total          | 99 titles |

So, we can safely say that approximately 60% of CDTV disks can be deemed to be of 'serious'

interest. Whether this ratio remains the same is open to question. But are CDTV titles the only disks you can run on a A570?

### OTHER WORLDS

There are now well over a thousand CD-ROM titles available for the burgeoning PC CD market and within



TroiKa's innovative NASA - the first Amiga CD-ROM to offer moving video

certain constraints it will be possible to run them on the new drive. There are three determining factors:

- The disk must be mastered in either the High Sierra or ISO-9660 standard formats. Fortunately most PC disks are formatted to the latter.
- The disk must contain data your Amiga can read - that's ASCII for text and TIFF, GIF or EPS for graphics. Of course, many Amiga image packages, such as *Art Department Professional*, and PD utilities offer handling of other graphics formats.
- The data on the disk must be freely accessible and not dependent on custom retrieval software or compression algorithms.

These golden rules aside, it's still best, if possible, to try before you buy - compatibility has always been the bugbear of computing.

Another option is to run a PC

Amiga though so all these options have yet to be thoroughly tested. Rest assured though, in *Amiga Shopper* we'll be bringing you the results of definitive testing just as soon as it's completed (and we manage to get hold of an A570!).

### CD-ROMS SET TO SPIN

New Horizons Pro-Write CD-ROM is scheduled for release in Spring. The single disk contains version 3.2 of this leading word processor plus *Flow 3.0*, *Design Works 1.0* and *Profonts 1*.

No price is set as yet but along with Texan company, The Station, New Horizon is to offer the disk, along with CDTV unit, 1084s monitor, printer, external floppy drive, modem, mouse and keyboard for the all-in price of \$1995 (approx. £1140). Dubbed The Odyssey, the



The new A570, Commodore's CD-ROM add-on for the Amiga, expected to sell for £300. Even without a PC emulator it should be able to run PC CD titles

emulator board like KCS's, find some PC CD-ROM driver software and run the PC files direct. Since PCs recognise an attached CD-ROM drive as a networked logical device and not a DOS device this should be possible. We know of no-one who has had a chance to test this on an A570 yet though.

### SCSI PATHS

However, if you own a PC, or plan to at some future date, or simply manage to come across a good deal, there's another solution to building a vast collection of CD-ROM titles without even considering an A570 drive. Buy a PC drive and hook it up to your Amiga!

The key here is that the device in question must be a SCSI drive and you must have a SCSI hard disk interface. Apart from the linking SCSI cable, you'll also need some CD-ROM driver software. Canadian Prototype Replicas on 0101 519 884 4412 offers its *CDROM-FS* to do just this. For \$50 you get driver software which will work with hard disk controllers for the A590, A2091, and GVP series II and CD drives from Sony, Hitachi, Pioneer and NEC.

It's still early days for CD on the

bundle is being advertised as an 'all-in-one personal workstation'.

### NEW CD-ROM RELEASES

Easily the most exciting CDTV release of the year so far, Troika Multimedia's *NASA...the 25th Year*, is the first interactive motion picture available on any CD-ROM platform. Using Commodore's new CDXL format, *NASA* is a 50 minute overview of the early decades of space flight and can be viewed as a movie with the user able to jump directly to an index of a dozen different subjects supplemented by icon-driven text and still graphics.

The digital motion picture, replete with stereo sound, is the most innovative feature of the disk though. The CDXL format produces a quarter screen, 10 frames a second window in the middle of your TV or monitor at surprisingly good resolution. You can watch movies of early aeronautic research, and excerpts from the Apollo, Voyager and Viking missions along with Space Shuttle sequences. The disk is compatible with the A570 drive but will require at least 1Mb of Chip RAM to run the new CDXL format. All this for only \$24.95. Troika is on 0101 703 841 5160. We'll be running a full review next issue. **AS**

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Amiga CDTV is a revolutionary new concept in home entertainment and education, representing leading edge technology. The CDTV player combines a high quality performance CD audio system, advanced Amiga technology and infrared remote control to offer a huge range of interactive applications, from Mega games to music and educational applications, e.g. languages (French, German and Spanish).

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|---------------------------------------|---------|
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| CDTV Tracker Ball (infrared)          | £79.99  |
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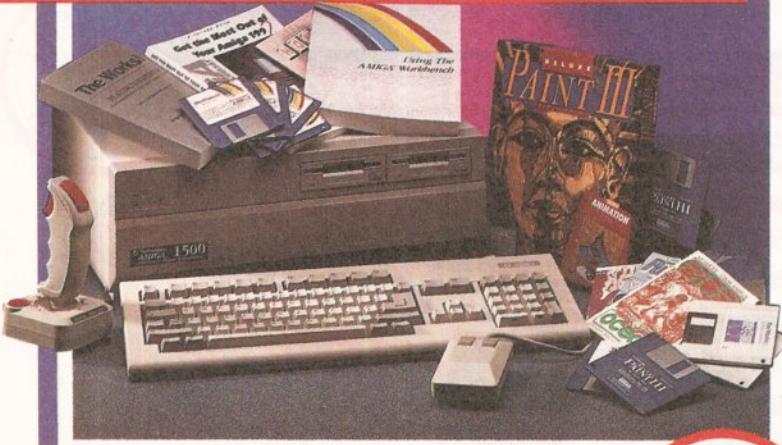
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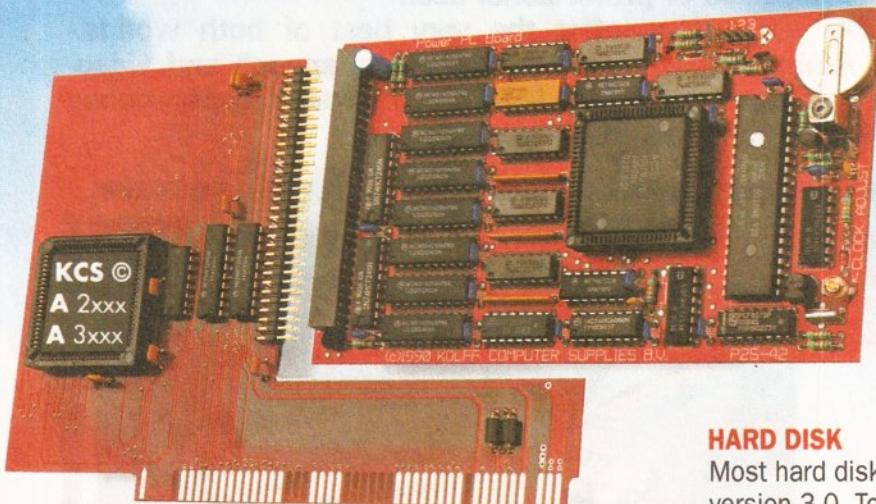
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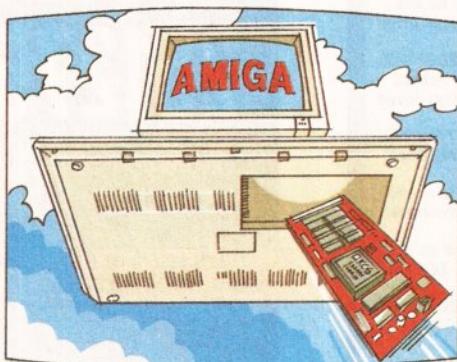
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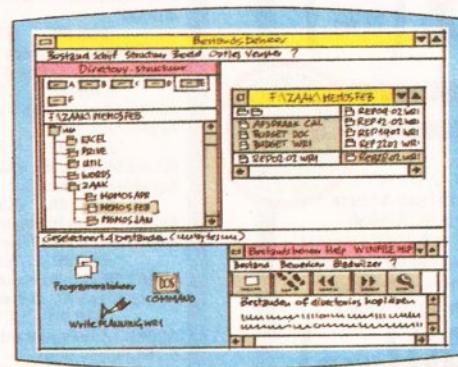
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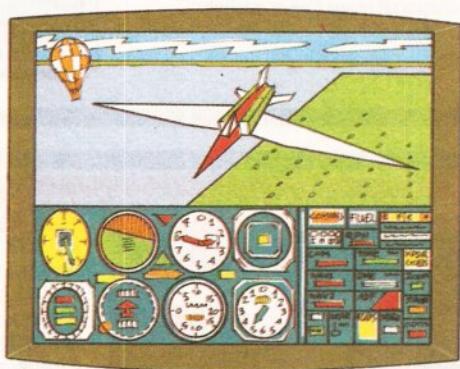
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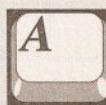
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next to any  
questions which are  
'basic' in content.



General:  
this icon is  
used for  
any  
general Amiga-related  
queries.



Caution:  
be sure  
that you  
fully  
understand the answer  
before trying it out.



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could well invalidate  
your warranty – or you!



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denote  
questions relating to  
general hardware.



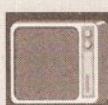
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question  
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**WHATEVER YOUR PROBLEM WITH THE AMIGA, WE ARE HERE TO SOLVE IT**

That's the task we have set ourselves in giving you the best possible support for your Amiga. We are confident that our experts can cope with any technical questions you can throw at them. If they don't already know the answer to your problem, they will find it out for you.

We are prepared to deal with any problem you have with the Amiga, from general enquiries about AmigaDOS or Workbench, through questions about specific pieces of software and hardware, to advice on what you need to buy to do a particular task. If it's to do with the Amiga, we will help out. What we cannot do is offer this service over the telephone – do not phone us with your enquiries, but write to us at the address below.

We also cannot enter into personal correspondence – all enquiries will be dealt with in the pages of the magazine. This does mean a bit of a delay in solving your problem, but you'll just have to be a little patient and wait for it to appear in print. You won't get a personal reply even if you enclose an SAE with your letter, so please don't bother.

Send your question on the form below to: Amiga Answers, Amiga Shopper, Beauford Court, 30 Monmouth Street, Bath BA1 2BW.

The Amiga Answers panel consists of our consultant editors

Mark Smiddy and Jeff Walker – and, of course, our resident deputy editor Cliff Ramshaw. We will also be calling on the services of all our other contributors, so you won't be able to catch us napping whatever the subject of your query.

Each panelist will be dealing with queries in their own specialist area(s) so it would help us greatly if, when writing, you label your query envelope with the name of the expert who can solve your particular problem.

Below is a list of areas of expertise. It's a list that we will add to and update every month, so you will know who to write to about any subjects not mentioned here.

|                        |  |
|------------------------|--|
| <b>Gary Whiteley</b> – | Video  |
| <b>Paul Overaa</b> –   | Programming, music   |
| <b>Mick Draycott</b> – | Hardware, programming, MIDI  |
| <b>Jeff Walker</b> –   | Desktop publishing, programming  |
| <b>Mark Smiddy</b> –   | AmigaDOS, business, CDTV, hardware projects, hard and floppy disk drives |
| <b>Jason Holborn</b> – | Public Domain, AMOS  |
| <b>Jolyon Ralph</b> –  | Programming, hardware, CDTV  |
| <b>Cliff Ramshaw</b> – | The really hard stuff that no-one else can answer                        |

If you send in a question for the Amiga Answers experts, please fill in and include the form below (or a photocopy if you don't want to cut up your magazine). And please also make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: Amiga Answers, Amiga Shopper, 30 Monmouth Street, Bath BA1 2BW. Sorry, but we cannot personally reply to any questions – even if you include an SAE.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Your machine:

A500  A1000  A1500

A2000  A3000

Approximate age of machine: \_\_\_\_\_

Kickstart version (displayed at the 'Insert Workbench' prompt)

1.2  1.3  2.x

Workbench revision (written on the Workbench disk)

1.2  1.3  1.3.2  2.x

PCB revision (if known). Do not take your machine apart just to look for this! \_\_\_\_\_

Total memory fitted (see AVAIL in Shell for 1.3 Workbench) \_\_\_\_\_

Chip memory available (see AVAIL in Shell) \_\_\_\_\_

Agnus chip (if known) \_\_\_\_\_

Extra drive #1 (3.5"/5.25") as DF: \_\_\_\_\_ Manufacturer \_\_\_\_\_

Extra drive #2 (3.5"/5.25") as DF: \_\_\_\_\_ Manufacturer \_\_\_\_\_

Hard disk: \_\_\_\_\_ Mb as DH: \_\_\_\_\_ Manufacturer \_\_\_\_\_

Extra RAM fitted – type, size in Mb and manufacturer \_\_\_\_\_

Details of any other hardware which could help us to answer your question:

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Now, use this space to describe your problem, including as much relevant information as possible. Please continue on a separate sheet if necessary.

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# NO PROBLEM!

Hi, and welcome to the biggest ever *Amiga Answers* section to appear in *Amiga Shopper*, or, for that matter, any Amiga magazine. Rest assured that it will only get bigger. We receive something like 100 queries a week, so as you can see there's plenty of room for expansion.

It's my job to co-ordinate the whole thing: sorting through the questions and sending them off to the relevant chappies for the kind of in-depth answers you've come to expect; and compiling them into the lovingly crafted pages which you see before you.

I call on a wide variety of expertise to make sure you get the answers you need, which is why *Amiga Answers* is so successful. There's Mark Smiddy, industry guru, AmigaDOS-tamer and business applications wizard; Jeff Walker, probably the most knowledgeable Amiga desktop publisher there is; and Jason Holborn, long-time AMOS explorer and PD sampler, as well as good

all-rounder (or should that be all round good guy?).

If it's a question about video, then I'll pass it on to Gary Whiteley, our professional videographer for whom the word 'genlock' means 'mixing Amiga graphics with video for magical results' and for whom the word 'snipwirral' means nothing at all.

Programming queries are dealt with by Paul Overaa, who's not afraid to code in any language, and who doubles as a MIDI maestro to solve your sequencing slip-ups.

Our hardware guru is Jolyon Ralph. This man knows just about everything about disks, both hard and floppy, and what he doesn't know about memory he's probably forgotten.

All in all, a formidable team, supplemented by my own not inconsiderable Amiga suss. Let's face it, if we can't answer your question, it's probably one of the *Mysteries of the Universe*.

This month we've got plenty of goodies for you to have a look at.

The mysteries of *IconX* are revealed; the creation of a multimedia astronomy presentation is outlined, we explain how to link your Amiga to Lego robots, what you need to add titles to your own videos, how to get started writing assembly language games. Furthermore, we tell you just who (or what) is Lazarus, why you need more cache to run *Professional Page*, and how to read printed text into your Amiga. There's also a dynamite tip from Paul Howlett about playing consecutive *Noisetacker* modules.

So, if you have a problem, send it to us and watch it disappear!

Cheers,

Cliff Ramshaw

## GREEN FINGERED AMIGA



Can you tell me if there is a program available for the Amiga for landscape gardening design. If not, what would you recommend?

Paul Madden  
Wellingborough  
Northants

As far as I'm aware, no-one has yet come up with a dedicated landscape gardening design program either commercially or in the public domain.

A CAD package such as *X-CAD* would be your best bet, but you'll probably find *Deluxe Paint* more than adequate. *JH*

## NO COMPRENDO



I am having trouble using the *Translator* program on the Dictionary disk of the *KindWords 2* word processor.

I've tried various ways to run the program but to no avail.

Michael Ashcroft  
Fulwood  
Preston

The operation of *Translator* is quite straightforward. You double click its icon and a window appears with two options – Supplemental to ASCII and ASCII to Supplemental.

The 'Supplemental' is your 'user dictionary', the one to which new words get added when using the spelling checker in *KindWords*.

If you add a wrong word and want to remove it, you first have to use the *Translator* program to convert the Supplemental file to ASCII, then load

that ASCII file into *KindWords*, remove the offending word and save it again.

Finally you use *Translator* to convert the ASCII file back to the Supplemental file format. *JW*

## PREFERENCE-LESS



Using the startup-sequence supplied on the Workbench 2.04 distribution

disks for hard disk users, I get the following error when attempting to save any new preference settings: "Could not find ENVARC:SYS:nnn.xxx". Where nnn.xxx is the name of the prefs file I'm trying to update. The explanations of the commands in the A500 Plus manual are very brief compared to the original, so can you also explain the following commands?

```
makedir ram:T ram:..  
Clipboards ram:env ..  
ram:env/sys  
copy >NIL: ENVARC: ram:env ..  
all quiet noreq
```

Finally, I've seen CD-ROM drives advertised for as little as £299. Would a standard CD-Audio player be suitable?

Chris Aldred  
Farnborough

The answer lies not in the startup-sequence, but in the way your Workbench 2 software is installed on your hard drive. I'll explain why in a moment, but you can fix the problem quite simply like this...

Insert your original Workbench 2

disk in DFO: and double-click its icon. Double-click on the Prefs drawer. Now select Show/All Files from the window menu. You will notice an extra drawer (Env-Archive) appears. Perform the same steps on the Workbench 2 partition of your hard drive and you'll probably see Env-Archive is missing. Drag (copy) the Env-Archive drawer from the original disk into the Prefs drawer on your hard disk. Remove the original disk, re-boot the machine and you should find everything is now back to normal.

To explain: ENVARC: is an automatic assignment new to AmigaDOS 2. When the machine boots, AmigaDOS looks on the boot disk and assigns ENVARC: to Prefs/Env-Archive. Since this was missing (or incomplete) on your machine, the assignment does not take place, and therefore the preferences are set to default.

Those commands work as follows: Makedir, as you probably know, creates new AmigaDOS directories. In the new revision it uses the multi-argument parser and one command can create many directories. Under AmigaDOS 1.3 the equivalent series would look like this:

```
makedir ram:T  
makedir ram:Clipboards  
makedir ram:env  
makedir ram:env/sys
```

It's the last two commands we are interested in here as they create the environment handler directory (assigned to ENV: later in the script) and the new ENV/SYS directory reserved for system variables, such as the preferences settings.

The next command line appears somewhat more complex, although in essence it is quite simple. A

## JARGON BUSTING • JARGON BUSTING

**ASCII** – American Standard Code for Information Interchange. It is the data storage method commonly used when we type text files and enables text data to be exchanged between different computers.

**CAD** – Computer Aided Design applications provide designers with the graphical facilities to design buildings, circuit boards, and so on.

**CD-ROM** – Compact Disc Read Only Memory is the latest technology in storage devices. A CD can hold over 550Mb of data, compared to around 100Mb for a hard disk and 880K for a floppy disk. The big disadvantage is that users cannot store information on a CD, only retrieve it.

**Startup-sequence** – A program which is executed every time the Amiga is switched on and after every reset. It sets up the system so that it is usable from Workbench, and may be customised by those who have unusual hardware or software requirements.

simplified version of the command looks like this:

COPY SYS:Prefs/Env-Archive ↳  
TO RAM:env ALL

and copies the entire contents of the env-archive directory – including the Env-Archive/Sys sub-directory – to the ENV: assignment (still RAM:env at this stage). The Sys sub-directory containing the preferences settings is held in RAM so it can be accessed by the IPrefs daemon (preferences manager) at any time.

Three other extras are notable to this command line:

● >NIL: Output redirection to NIL:, as opposed to the screen. (In other words, 'Shut up COPY'.)

● QUIET Don't print any messages. (Really shut up COPY.)

● NOREQ Don't ask for volume. ENVARC: if the assignment doesn't exist. (Look COPY, keep quiet or else.)

The net result of all this is that nothing short of a nuclear explosion would make an error show up. The last switch (NOREQ) is what has caused your problems. Since the ENVARC assignment is automatically connected to SYS:Prefs/Env-Archive, if that directory is not present, COPY would normally throw up a request: "Please insert volume ENVARC: in any drive", but the NOREQ switch suppresses that so you had no hint that something was missing. Since this is not the only problem with AmigaDOS 2, I will be running further tutorials on it in future instalments of *Cracking The Shell*.

As far as CD-ROMs go, you might as well wait for the A570. Audio CD players are good, but nothing like good enough; besides which, the interface is very complex. As an example, CD-ROM for the Commodore C-64 is treated like a tape deck, not a disk drive! **MS**

### CITIZEN OR STAR?



I am going to buy a colour dot-matrix printer and am getting all sorts of conflicting advice from shops, which are biased towards selling me the most expensive printer they have.

Essentially I have narrowed my choices down to two types of printer – Citizen and Star. I read a review in *Amiga Shopper* last August which recommended the Citizen Swift 9 as a good quality, robust 9-pin printer, but I have not seen it advertised anywhere near as much as the Star range of printers has been. This leads me to think that maybe Star is better supported, even if it perhaps isn't as good as Citizen.

My local shop only sells Star printers and tells me that it stopped selling Citizen due to the continual trouble which it had with faulty machines being returned to it. It has had no such trouble with Star printers.

I intend to spend between £200 and £300 and am desperate not to make the wrong choice. I have been looking at the Star LC24-200 Colour but was told that another review some months back stated that although 24-pin printers give excellent text, graphics output is worse than 9-pin printers.

I have not been given a

satisfactory explanation as to why this should be the case, but if true, should I be looking at the Star LC200?

Derek Dodson  
Southend-on-Sea  
Essex

Put simply, when used for graphics output 9-pin printers suffer less from the dot-matrix banding effect than 24-pin printers; a technical explanation of exactly why they suffer less would only confuse you further. If you want your printer primarily for printing coloured pictures from art programs, then I recommend you go for 9-pins, not 24.

I can't comment on the return rate your local shop claims for Citizen printers, other than to say that I have had a little 9-pin Citizen 120-D for six years which has had to suffer continual and heavy use, and it has never let me down once.

As far as I can ascertain, the Citizen Swift 9 is basically the same printer as the Star LC200, but with a different case around the outside. The best place to check out printers is at computer shows. Why not pop along to the *Amiga Shopper Show* at Wembley on May 15-17 where I'm sure you'll find many stands able to demonstrate them and show you graphical output from both printers? **JW**

### GERIATRIC AMIGA



There has been much controversy recently concerning software compatibility (or rather, the lack of it!) between 1.3 Amigas and the new 2.0-based Amiga Plus. However, as an owner of an even older Amiga 500 based

around the 1.2 release of AmigaDOS, I was wondering if there will be incompatibility problems between my 1.2-based Amiga and software which is written specifically for 1.3/2.0-based machines.

Secondly, I am considering upgrading my machine to an A1500, but I was wondering whether – now that the A500 is 2.0-based – all new A1500s will be 2.0-based. Should I wait for the new 2.0-based A1500 or should I just buy a current A1500 and spend out £80 for the 2.0 upgrade?

Mr T Finn  
Dyfed  
Wales

The differences between versions 1.2 and 1.3 of the Amiga's operating system aren't really that great, so you don't have to worry about any software written to run under 1.3 not working under 1.2. When 1.3 was first launched, there were a few incompatibility problems, but developers were quick off the mark to rectify these incompatibilities and I would be very surprised indeed if you could find a single item of post-1.3 software (commercial, not PD) which does not work under Workbench 1.2.

If a program is written specifically for 2.0, then it definitely won't work under 1.3. Some developers are starting to write for Workbench 2.0-based machines, but such programs are few and far between.

What you must realise is that something like 99 per cent of all Amigas are still either 1.2 or 1.3-based, so developers are highly unlikely to develop specifically for Workbench 2.0 until it establishes itself as the defacto-standard. After all, 2.0-based Amigas are still very much in the minority, so it would be financial suicide for a developer to produce a mass-market product if only one per cent of Amiga users could actually use it!

What you'll start to find is that developers will take one of two possible paths. The first path would be to write their applications so that they can take advantage of the extra facilities which Workbench 2.0 has to offer whilst still being compatible with 1.3 (Both *New Horizons*, *ProWrite 3.2* and *Gold Disk*'s new *Professional Calc* are very good examples of this).

A second route which developers could follow is to issue two different versions of their programs. This is exactly what HiSoft has done with the latest release of *Devpac*.

If you buy *Devpac*, you'll actually find three disks in the box – one generic, one for 1.3-based Amigas and one for 2.0-based Amigas. **JH**

## NURSE PASS THE SCALPEL



I'd like to transplant the innards from my A500 Plus into a new casing. Could you please tell me where I could obtain either an empty A1500 case or a PC case. I have heard that such a conversion kit already exists for the Amiga, but I haven't actually seen it.

Simon Gordon  
Derker  
Oldham

Rescasing the A500 isn't just a case (heh heh) of opening up your A500, removing the innards and putting them into a new case – there are other factors to consider. For example, how are you going to line up the connectors from the A500 with those on the A1500 casing? In terms of positioning, the A1500 connectors aren't that much different from the A500, but try to use a PC case and you'll encounter no end of problems. You could extend these using a ribbon cable connected to extra connectors mounted onto the PC casing – this will require a fair bit of soldering. Do you feel up to the job?

Then you have to worry about the problem of what to do with the keyboard. If you were taking the innards from an A1500 and placing them into a PC case, this would not be too much of a problem, but the A500 doesn't have an external keyboard, so you'll need to recase the existing A500 keyboard or make up an interface which will enable you to use an Amiga A1500 keyboard.

Your best bet is to leave this kind of work to the experts, in this case Checkmate Digital. It produces a range of A500 upgrades including the A1500 kit. Not to be confused with the 'real' A1500 (which was launched after Checkmate's unit), Checkmate's A1500 includes a sturdy metal casing and a kit which enables you to mount the A500 keyboard into an external case (which is also made of metal). If you're after a very sturdy system that can take a few knocks, then the A1500 is for you.

A more attractive option is Checkmate's new Hi-Q system which is based around a PC free-standing tower casing. This still wasn't available at the time of going to press, but Checkmate claims that its arrival is only a matter of weeks away. We'll be taking a look at it as soon as it is available, but in the meantime you can find out more by phoning Checkmate ↳ 071 923 0658. **JH**

## PICTURE THIS!



I would like to know if any software exists which will enable me to convert

TIFF Images from an Apple Macintosh to Amiga IFF format so that I can load these images into Deluxe Paint.

Chris McFarlane  
Walmer Bridge  
Preston

I've got some good news and some bad news for you. First the good news. The two packages that you'll need are ASDG's *Art Department Professional* and the add-on for *ADPro, The Professional Conversion Pack*. Now the bad news - *ADPro* needs lots of RAM (at least 2Mb) and it doesn't come cheap (*ADPro* costs £199 and the conversion pack costs £69.95). If you haven't already fainted, then give ASDG's UK Distributor Silica Systems a call ☎ 081 309 1111.

Another option is a program called *RasterLink* which is bundled free of charge with the Amiga Centre Scotland's Harlequin 24-bit card. *RasterLink* fully supports TIFF format files but doesn't have the kind of image processing power that *ADPro* boasts. It used to be called *ImageLink*, but I don't think it's available separately any more. You could try phoning ACS though ☎ 031 557 4242. **JH**

## RGB OUTPUT OUT



I have just purchased a Rocgen Plus genlock from Silica Systems because it has an RGB through port and won't spoil the games for the children. I have connected the Rocgen to the Amiga 500 using the genlock's built-in cable and connected my original RGB cable to the SCART socket of my Sony Trinitron TV/Monitor.

The problem is that I get no picture from the RGB output, but I can get composite video output from the genlock which I can connect to the monitor - although this is at reduced quality. If I have both the RGB and video out connected at the same time I get two Amiga displays which fade up and down at the same time.

Silica says that I need a cable with individually grounded RGB signals, though I am not sure. What do you think?

Could you please tell me how the "Key In" line works on the Rocgen Plus? What does it do and how do I operate it?

Douglas Fielder  
Whitehaven  
Cumbria

Starting at the top, I too spoke to Silica to clarify the question of connectors - the people there are still of the opinion that it really is necessary to procure a properly constructed RGB cable to connect from the Rocgen to the monitor.

Having heard their explanation I tend to agree with them - so perhaps you should contact Videk ☎ 081 204 6690 for details of the cost of such a cable. The reason for the reduced quality of the Rocgen's Video Out signal on your monitor is simply that it is a composite video signal, which is actually of lower quality than the regular RGB signal.

I've also found out something about the Key In connector, although unfortunately all I can tell you at the moment is that it is provided for inputting a signal to enable the Rocgen Plus to provide a Chroma Keying function. This will require a new add-on module which is currently only at the prototype stage.

I've also heard that the Rocgen Plus is being updated to provide a better output, amongst other things. So watch this space, as they say.

**GW**

## PAPER CHASE



I bought an Amiga 500 a year ago, along with a monitor and a Star LC200 colour printer. An accompanying leaflet gave the printer driver to be used as EpsonX[CBM\_MPS-1200]. The one on the Extras disk is called EpsonX[CBM\_MPS-1250] so I used that. Right or wrong?

I am using 11.66in by 9.25in fanfold paper. In Preferences I have set the paper length to 66 lines and the width to 80 characters. The EDS settings in all cases are ON.

I commenced printing with *Protext 4.3*. This I accomplished, but it all came out in one continuous stream. I was under the impression that having set the paper to the top of the paper position and having commenced printing that I would receive the complete documentation in page form; that is to say, after 66 lines were printed the printer would skip over the perforated line and recommence printing at the top of the next page.

Is that the idea, or do I know even less about the business than I thought?

J O'Rourke  
Cheadle  
Stoke-on-Trent

*Protext* doesn't take an awful lot of notice of your Workbench printer preferences settings, it uses its own rules, set up by using the Config program.

If you type 'config' at the *Protext*

## JARGON BUSTING • JARGON BUSTING

**Genlock** - a way of slaving one video source (eg Amiga) to another (eg video tape) in order to synchronise their signals to allow stable wipes, mixes and other effects including overlay between the two sources.

**Operating system** - a collection of programs always running which control the basic operations of the computer, such as disk accesses and so on.

**Printer driver** - a program that sits between any applications program producing output and the printer. It converts any codes describing text and graphics format into a form suitable for a specific printer.

**9-pin** - a kind of dot matrix printer, which forms a dotted representation of characters on the page. A 9-pin printer has a printhead with 9 vertical pins arranged vertically, so that a vertical slice of the character is printed at once, and the head moves horizontally 9 times to complete the shape.

**24-pin** - similar to a 9-pin printer, but with a printhead containing 24 pins. The textual output of such a printer is of a higher resolution.

command line you'll be presented with a menu of options. Select the Main Configuration option, and in the next menu that appears select the Layout Options. In this section you'll find all the details pertaining to page length and margins. After setting it up as you want it, press the [Esc] key a couple of times to get back to the first menu, and then Save your new configuration.

The Config program is covered comprehensively in the *Protext* manual, and I suggest you read it through a few times and have a good muck around with all the different settings. I also recommend you upgrade to a later version of *Protext*; version 4.3 is ancient and nowhere near as good as version 5.5. Speak to Arnor about upgrade prices on ☎ 0733 68909.

As for the printer driver, I would imagine that the MPS-1200 bit in the leaflet which came with the Star is a misprint. The MPS-1250 driver should work, but not perfectly. There is a driver called Star9Plus, written specifically for the LC200, on Jamdisk 5. Available for £2 from *Just Amiga Monthly*, 75 Greatfields Drive, Uxbridge UB8 3QN. **JW**

## A GAMER WRITES...

10110101 01111110 11011001 00101010  
How do I transfer icon-less games from floppy to hard drive and give them icons so I can run them from Workbench?

Graham Smith  
West Yorkshire

As the saying goes Graham, "If a man was meant to fly, God would have given him wings." The same is true (more or less) for games which are supplied on self-booting disks: they just aren't designed to be run from Workbench. Technically speaking, running a CLI/Shell program from Workbench 1.3 isn't possible without extra help.

Some programs can be forced to

run from Workbench by running them from a script using *IconX* (icon-execute); however, you must first be able to start them from the Shell. I'll illustrate this with an example:

Open a Shell and enter the following commands (see the AmigaDOS series for more help on how to do this):

```
COPY SYS:Prefs/Serial.Info ↵
TO SYS:DirMe.Info
COPY C:DIR TO SYS:
ED DirMe
```

When the ED screen appears enter this:

```
DIR SYS: ALL
```

Now press the [Esc] (escape) key, the letter "X" and [Return]. That exits ED and saves your little script.

Close and re-open the Workbench window. You will notice you now have a new icon which looks like a telephone, but has the name DirMe. Select that icon and select Info from the Workbench menu. You should now notice a box which states the default tool:

SYS:Prefs/Preferences.

Click just after the letter "s" in Preferences and delete everything back to the ":". Now enter C/IconX. The line should now read:

```
SYS:C/IconX
```

Now click the save gadget to save your changes.

Double-click the new icon; you will see a window appear and the entire contents of your Workbench partition will scroll past. Exactly the same technique can be applied to many CLI/Shell-only programs.

Before you try creating an icon, make sure you can run the program from Shell on your hard disk in the first case. **MS**

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|                      |                   |         |
|----------------------|-------------------|---------|
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| AMIGA PRINTER PORT SWITCH - 3WAY  | £27.99 |
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Above Printer port switch prices include cable worth £10.99 to connect switch to Amiga. These switches are fitted with sockets identical to the Amiga's printer port - so your printer cables & other peripherals just plug straight in.

|                                     |        |
|-------------------------------------|--------|
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#### AMIGA PRINTER LEADS

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Decode this correctly & we will give you a free Trilogic pen when you place an order..

continued from page 43

## ANIM PLEASE



**Do you know of an animation player which will enable me to play animations**

produced using *Deluxe Paint III* and *IV* and release them into the public domain? Also, do you know if an editor is available within the Amiga PD libraries for the range of Yamaha 4-operator synths?

Gavin Wylie  
Carnoustie  
Angus

Both versions of *Deluxe Paint* come with freely distributable animation players which will do the job perfectly well. If you want a more compact player program though, then any player program which supports ANIM-format files should be fine. I'd personally recommend Aegis/Sparta's excellent *PlayAnim* tool which can be found within the Fish collection of disks.

As far as I'm aware, there are only two fully-functioning synth editors available within the PD libraries (*CZED* and *K1EDITOR* on Fish disks 323 and 223 respectively) but neither of these will work with Yamaha 4-operator synths such as the DX-100. If you want to actually pay for a synth editor, then the people to talk to are MCMXCIX ☎ 071 253 3454. **JH**

## HE'S MY BROTHER



**I am just about to order an Amiga 500 Plus for my daughter.**

**We have a Brother HR5 printer which we have used with a Dragon and a BBC. At present the budget won't run to a new printer.**

**As my daughter loves to design and print pictures I wondered if the HR5 would work with the Amiga 500 Plus. Having read your article on printing it seems we need a printer driver. Do you know of one?**

**We do have trouble with the Brother and the BBC, getting line feeds between the graphics.**

Pauline Hampson  
Lawton Heath  
Stoke-on-Trent

The Brother HR5 emulates an Epson FX printer and should work with

**Because of the width of the columns, we occasionally have to break listings across two or more lines. Where this has occurred, and you should enter two or more lines without a [Return] between them, we have used the following symbol: ↩**

either the EpsonXold or EpsonX(CBM\_MPS-1250) driver on the Extras disk. You might need a new lead for it. Speak to your dealer about this when you buy the Amiga 500 Plus. **JW**

## MONITOR THE RANGE



**I have the opportunity to buy a Commodore Ranger 15 multisync monitor and**

**I would like to know:**

- Is this monitor compatible with my Amiga 500's standard de-interlaced output? I know it works fine in all resolutions with a flicker-fix fitted.**
- Is this monitor capable of displaying the new ECS screen modes (in particular Productivity)?**
- The monitor has TTL and RGB analogue inputs. Is it possible to connect my VCR to the monitor (as is possible with the 1084 or 8833 monitors) so that I can also watch TV? If so, will I need an RGB switcher? I am a student and do a small amount of DTP work, hence my interest in buying a monitor, as I do not have space for both a TV and a monitor.**

Andrew Kydd  
High Wycombe  
Bucks

After getting some help from Commodore Technical Support I can give you the following information: the Ranger will display both normal interlaced (ie 15.6KHz) and de-interlaced or flicker-fixed (31.2 KHz) Amiga signals, depending whether you use the output from the standard RGB port or a Flicker Fixer-type de-interlacer.

With WB2 there is a problem with the Productivity mode on the Ranger which causes the screen to go dark. There is a patch to cure this but it has to be done when Productivity mode is already in operation – making it a little difficult to see what you're doing – though a hot-key setup might help.

You will also need to make up a cable to correctly connect the Amiga to the monitor, unless it already has one supplied. It is important that you check this.

Finally, I'm sorry to tell you that there's no way to connect a VCR to the Ranger, as it has no direct composite video input and the others are unsuitable.

Surely your best solution would be to buy a new TV/monitor with both SCART and video/audio inputs (unless the Ranger is too cheap to refuse). Then you've got a reasonable compromise which doesn't take up too much space and, if you take care with your screen colours, you won't have too many problems with flicker. **GW**

## JARGON BUSTING • JARGON BUSTING

**ANIM** – a method of storing animation frames developed by Spartafilm, whereby only the changes between successive frames are stored, thus saving significant amounts of space, and considerably speeding up the rate at which the animations can be played back.

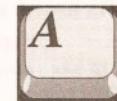
**Interlace** – a method used to double the apparent vertical resolution of the picture by alternately refreshing the screen at a slight vertical offset, thus squeezing an extra line between each of the lines of a non-interlaced screen. This is exactly how a TV display works but, because of the fine detail in an Amiga display, it results in an unsightly flicker on images with sharp edges.

**Multisync monitor** – a monitor which can accept its signal at a variety of frequencies, usually ranging from 15 to 32 KHz. A multisync is useful for displaying signal produced by a flicker fixer or from the VGA graphics card used in many IBM PCs.

**PC emulator** – a software or hardware addition to the Amiga which will enable it to run programs written for the IBM PC. This can be useful because there is a far greater range of business programs available for that machine. Most emulators are hardware based, and are essentially PC computers in their own right, interfacing with the Amiga.

**4-operator synth** – a synthesiser which has four independently controllable digital sine-wave generators. The outputs from each of the generators can be mixed and modulated by each other to create a wide variety of richly textured sounds.

## MULTIMEDIA MARVEL



**I am thinking of making up a multimedia presentation of the solar system which will provide the user with information on the planets and moons using digitised images, space probe history and some animation sequences. Could you please answer the following questions:**

- I have my eye on Gold Disk's *HyperBook* (mainly for price reasons). I carried out a small test run using a demo version of *HyperBook* with Mercury as a test planet, clicking a button here to see a digitised image of Mercury, clicking a button there to read some text. If I use *HyperBook*, will I be able to produce a stand-alone version of my application which can be freely distributed?**
- The version of *HyperBook* that I have seems to run in NTSC mode only. Is there any way of getting around this so that I can use the full PAL resolution?**
- I found the information that I have used for this test sample from various publications, digitising images from books, copying out data and condensing some of the text into notes. Will I infringe the copyright of these books if I reproduce some of the information? Most of the information is issued courtesy of NASA so I'm worried about possible copyright hassles.**
- If I pursued this project it would obviously take a long time to produce (9 planets and over 50 moons!). What do you think would be the response of publishers or the**

**producers of *HyperBook* if I were to charge something like £5.00 for the set of disks?**

Paul Matthews  
St Leonards-on-Sea  
East Sussex

**a) *HyperBook* is a great little program, but it is perhaps rather too limited for the application you have in mind. For starters, it doesn't support animation, so you'd have to use an external ANIM file player to play your animations.**

**You said that you chose *HyperBook* simply because of its price (£99). I personally feel that you'd be much better off with something like INOVAtronics' *CanDO* 1.5 which costs only £25 more than *HyperBook*. *CanDO* is a very powerful multimedia system which will handle just about any task that you care to throw at it. *CanDO* is handled in this country by Checkmate Digital ☎ 071 923 0658.**

***HyperBook* does come with a stand-alone 'player' program which can be freely distributed, but *CanDO* goes one step further. Using its powerful *DeckBinder* program (which is basically a compiler), you can produce *CanDO* applications which are completely independent of the main *CanDO* program.**

**b) *HyperBook* can display IFF images in PAL resolution, but the main workscreen is restricted to NTSC mode only. *CanDO* doesn't suffer from any of these restrictions, so go for *CanDO* instead!**

**c) If you start to copy text directly out of a publication, then you will almost certainly be infringing the copyright of the publishers of the books that you**

have mentioned. However, as long as you are only using these publications as a source of raw facts and figures, then I can't see anyone objecting.

Digitising images is a slightly more complex issue. Technically you are infringing NASA's copyright by digitising them, but I'd be very surprised if it was to take any action. Just play it safe by acknowledging NASA's copyright within your application.

d) Once again, I can't see you running into any problems with either NASA or the vendor of the multimedia system which you finally choose. Before you try to sell your application yourself, why not try to sell it to a software publisher which specialises in educational software? If the company takes it on, then it'll handle the job of marketing your program therefore giving it a lot more exposure. If this fails, then why not issue it as shareware? Shareware doesn't guarantee you a return from every copy of the program sold, but I'm sure you'll make something out of it. **JH**

## COLOUR DESKJET DRIVER



At Christmas my son bought an Amiga 500 and I bought him a Hewlett-

Packard DeskJet 500C colour printer to go with it.

It has proved impossible to print colour accurately, therefore the printer is useless. I spoke to Hewlett-Packard in Bristol, which told me that the printer is very new and Commodore has not yet written a printer driver for it.

Have you got the answer to our problem?

**R Curtis**  
Brentwood  
Essex

Yes. Send £2 to Just Amiga Monthly, 75 Greatfields Drive, Uxbridge UB8 3QN and ask for Jamdisk 8. There is a driver for the Hewlett-Packard Deskjet 500C on said disk. I know it works because a few people have recently sent me some pretty pictures output by the Amiga on the DeskJet 500C. **JW**

## HARD FAX



I am the proud owner of an Amiga 500 (expanded to 2Mb) which I use for word processing and my children use for games and education. I also have a MicroWriter AgendA which I use as an electronic filofax.

I want to be able to transfer ASCII files from the AgendA to the Amiga and vice-versa. If I can successfully link the two machines together I will be able to use the

excellent MicroWriter keys on the AgendA to input text (faster than handwriting or typing).

MicroWriter Systems produces an AgendA PC pack which links the AgendA to a PC clone, but unfortunately a similar pack is not available for the Amiga. I contacted a third party supplier of the AgendA PC pack and the people there suggested that I get my hands on a program called *A-Term* and run the PC software pack under that. What is *A-Term*? I've never seen it mentioned in *Amiga Shopper* before.

The AgendA has a fully programmable terminal, therefore in theory it should be possible to connect the AgendA to the Amiga via the serial port. Is this correct?

**Mark Allen**  
Belfast

I'm not quite sure what the people to whom you spoke were quite trying to say. The *A-Term* program which they mentioned is simply a terminal emulation program like the one you have on your AgendA. However, if they are saying that you should use *A-Term* to run the PC software, then they're barking up the wrong tree altogether.

If you do need to run the PC software to get your Amiga to interface with the AgendA, then you'll need a PC emulator like the Bitcon KCS Power PC Board. This will basically transform your Amiga into a PC clone, so the AgendA PC pack should work fine under that.

However, if they are saying that all you need is a terminal program such as *A-Term*, this will be considerably cheaper. All you'll need is a PD terminal program such as *NComm* and a PC null modem cable to connect the Amiga to the AgendA via the serial port. Simply connect the two up and then set the terminal programs on both the Amiga and the AgendA so that the protocols are the same and you'll be in business.

The KCS Card will definitely do the job but I'd advise you to call the company which you spoke to again and try to establish precisely what it was advising you to buy before handing over any cash. Just ask whether you need a terminal program or a PC emulator and take things from there. **JH**

## LIKE A ROBOT



I wish to use my Amiga 500 to control some very simple robots built from Lego. I had this up and running on an old Spectrum, but I'd like to use my Amiga instead, thereby teaching my young son how to write programs and not just play games as has previously been the case.

Unfortunately I cannot find the

## WIDE FIELD BLUES



When I try to print a line longer than shown on the screen using *Superbase Personal 2 3.02*, the printer stops at the end of the carriage. According to the readme file on the disk, *Superbase* should apply a carriage return to wrap the output when this occurs.

**Alan Hunter**  
Blackpool

This problem seems to be endemic with *Superbase*, because it has been fixed in *Pro 4* by the addition of the *Format\$()* command that automatically word-wraps fields up to 4000 characters long. That doesn't help *Superbase 2* users such as yourself, but there is a solution: *MID\$()*. This function slices apart chunks of string and prints them, so all you have to do is slice the string into 70 character chunks. Just add the following to your query line:

```
MID$(Details.Invoices,1,70) NEWLINE SPACE$(9)
MID$(Details.Invoices,71,70) NEWLINE SPACE$(9)
MID$(Details.Invoices,141,70)
```

This splits your 200 character field into three lines of up to 70 characters apiece. You may need to experiment with the values a little, but that should be enough to get you started. In the meantime you might find the *Superbase Personal 2* tutorial on Page 132 of some use. **MS**

circuit diagram needed to build an interface unit. Please could you publish or tell me where I could find such a circuit. I would rather build my own, but if I have to pay for one then I will.

**Allan Smith**  
Obingdon  
Oxon

What you need is the new Input/Output Port Interface from Switchsoft. It costs just £26.95 and comes complete with 8 outputs and 13 inputs. What's more, it can be easily programmed from Basic, so this certainly sounds like the answer to your dreams. To find out more, give Switchsoft a call **0325 464423**. **JH**

## WHICH PRINTER?



Using the likes of *Professional Page* and *Pen Pal* to output letters, billheads and leaflets, which type of printer should I go for?

I require only mono output, but I'd like the graphics to be almost or as good as the letter quality. I have managed to short-list three printers: the Star LC24-200, the Canon BJ-10ex and the Hewlett-Packard DeskJet 500.

Do I really need to buy the most expensive of the three printers I have listed to get the results I need? Will I have trouble finding printer drivers? How reliable are all three in comparison to each other? What are the running costs in comparison to each other?

**CR Thorpe**  
Wallasey  
Merseyside

Forget the Star LC24-200, it's an 24-pin impact dot-matrix printer and graphics will suffer from the banding effect.

The BJ-10ex is a portable bubble jet printer capable of 360 by 360 dots per inch graphics. The quality of the output is quite stunning considering it only costs around £200, especially from programs (such as *Professional Page*) which use Compugraphic fonts.

Reliability is a difficult one to appraise as the BJ-10ex is not even one year old yet, but the ink cartridges (about £16, I think they are) are actually ink cartridge and print head in one, so there's absolutely no danger of the print head failing, which is 'the big one' as far as printer repair costs go.

There are firms which will sell you cartridge refill kits, which are obviously cheaper than new cartridges, but Canon advises against this as the print head on the BJ-10ex cartridge wasn't designed to last for ever.

The paper is friction fed, so there is an inevitable amount of banding, but nothing like the stripey effect from a 24-pin impact dot-matrix.

The DeskJet 500 is bigger and more expensive than the BJ-10ex. The ink cartridges for it cost more and last about the same time. The difference in output quality between the DeskJet 500 and the BJ-10ex is something people argue about. Deskjet owners say their output is better, even though it is a lower resolution of 300 by 300 dots per inch. BJ-10ex owners say their output is better. Which probably means there is little or no difference worth talking about.

Although both printers can be used with ordinary bond paper, for best results they require special (and quite expensive) 'coated' paper that causes the ink to dry immediately it touches the paper.

There are good drivers available for both printers from Just Amiga Monthly **0895 274449. JW**

### HEART PROBLEMS



How do I run the demo program *Heart.ILBM* which is in the Amiga Basic demos drawer on the 1.3 Extras disk? I have tried absolutely everything but without any success. I realise that the program is for entertainment value only, but I am irritated to think that it is there but I can't use it.

I have *DPaint IV* running from my A590 hard disk equipped with the extra 2Mb of RAM but the only fonts that I can use are the Karafonts supplied with *DPaint* on Art disk 1. However, when I try to select them, the font names flash and the font list then displays only a single font – topaz. I phoned Electronic Arts but the people there couldn't figure out what was going on either!

M. Staples  
Rustington  
West Sussex

I'm afraid you're getting things a little mixed up. The file *Heart.ILBM* is a picture file in IFF format which is used as a demonstration of the *LoadILBM* program that is in the same directory. It is not an Amiga Basic program.

Hmm, I'm slightly perplexed by your second problem. It may be worth checking that you've got a couple of files installed on your system. To use any diskfont other than the standard Topaz font (which is actually held in ROM), the file *diskfont.library* must be installed within the *LIBS* directory on your hard disk.

You didn't actually specify whether you have a 1.3 or 2.0-based Amiga. If you have a 1.3-based A500, then you'll also have to run the ColorFonts patch program that is included with *DPaint* to make the program handle ColorFonts correctly. ColorFont support is built into 2.0, so this patch program isn't required.

If all else fails, why not copy the ColorFonts into your *FONTS* directory? This way, you'll be able to access all your fonts without having to change directory. **JH**

### WHICH VERSION?



Can you please tell me how to get and show the Kickstart version/release numbers within a C program. I am using *SAS C 5.10* and have tried using *UWORD SoftVer* within the *ExecBase* structure but my program tells me that the version is 2318. I have a 1.3 A500 and know that the version number is 34.5. I also know that the A500P is 37.175, but again *SoftVer* tells me that it's 2782. This is really frustrating as I can easily show the Workbench version and ID numbers.

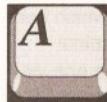
C Brown  
Croydon  
Surrey

One simple, though admittedly messy, solution which comes to mind is to have your program make an AmigaDOS 'Execute' call to perform the system 'version' command and re-direct its output to a temporary file (which would be readable by your program).

There doesn't appear to be any documented routines for getting the Kickstart version/revision data via C, assembler or any other language. All we've got to go on then is the fact that the system's 'version' command works (and must, therefore, be collecting the necessary data from somewhere).

I've had no success finding a more direct approach firstly because of the distinct lack of documentation and secondly because the path I was being led to would have kept me occupied for months. **PAO**

### DIY CG FONTS?



I have recently bought *PageSetter II* and would like some more outline fonts to use with it. I cannot afford the sets of Compugraphic typefaces produced by Gold Disk.

I have access to a large range of Archimedes outline fonts (the format of which I know) and I am quite prepared to write a program (in C) to convert them to Compugraphic fonts usable by *PageSetter II*. However, to do this I need to know the format of a Compugraphic font. Where can I get this?

Also, do you know if Commodore has yet released the *Libraries and Devices* programmers' reference manual for version 2 of Kickstart and Workbench? I have the version 2 include files but don't know how to use them.

JP Travers  
Wirral  
Merseyside

The Compugraphic format belongs to AGFA and is not public domain. You would have to pay AGFA quite a lot of money to license it. We're talking telephone numbers here. It would be a lot cheaper to stump up about £80 for the Outline Fonts Pack.

Alternatively you could consider buying *PageStream* or *Saxon Publisher*, which support Adobe Type 1 fonts, as well as Compugraphic fonts and Soft-Logik's own outline fonts. There are thousands of shareware and public domain Adobe Type 1 fonts. Alternatively, wait for *Professional Page 3.0*, which will also support Adobe Type 1 fonts.

Any way you look at it, it means spending money.

Speak to HiSoft **0525 718181** about the new version 2 Amiga programmer reference manuals. **JW**

### BLIND DATE



I do not have a battery-backed clock so I would like to add a couple of lines to

the startup-sequences of programs like *DPaint 4* so that they ask for the correct time and date every time the program disk is booted up. How do I do this?

Also, I bought a 2Mb SupraRAM RX memory expansion at the World of Commodore Show. I explained to the Supra representative exactly what was connected to my system (a Roctec second drive and Datel Action-Replay Mk2 cartridge), but he assured me that I would not need an extra PSU to drive the RAM. However, when everything is connected up, my Amiga doesn't always recognise the Supra RAM expansion (about 1 in 10 times).

When I disconnect the Action Replay and switch off my driver though, the RAM expansion works fine. Do I need an extra PSU or is the Supra RAM broken?

Paul Rose  
Radlett  
Herts

The answer to your first question is very easy indeed. Just add the line 'DATE ?' to your startup-sequence and the Amiga will ask you for the current date and time every time the machine is rebooted.

The answer to your second question is slightly more difficult. As far as I'm aware, you shouldn't have any power supply problems with the set-up that you own simply because the SupraRAM RX uses ZIP chips which drain very little power from your Amiga. The Roctec drive drains very little power too, so this only helps to make the situation that bit more confusing. You might want to try investing in a beefier power supply for your A500 anyway – even if this doesn't solve your problems, at least you'll be taking a lot of strain off your Amiga.

If the beefier power supply doesn't work, then try using the three hardware add-ons that you have in various combinations – Roctec and SupraRAM, Roctec and Action Replay, SupraRAM and Action Replay. If you encounter problems with one of these combinations, then get the offending add-on checked out. **JH**

### TITLING REQUIREMENTS



My interest is in a computer to put colour titles and graphics on to S-VHS video. At the moment I use a character generator to add black and white titles and my BBC B computer to add graphs,

continued on page 52

FIRST CHOICE

1

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continued from page 48

which I video directly from a monitor I have had contradictory advice from Amiga dealers regarding the transfer of graphics to video – some state that the A500 is adequate for the job, others that I should get an Amiga 2000. Some say that a £120 genlock is suitable, others that it would cost £400.

I would appreciate any information you may wish to give me, as my only interest is to buy another computer for the above purposes.

Tom O'Callaghan  
Mallow  
County Cork

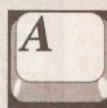
There is no reason why an Amiga 500 and a low-cost genlock should not serve your needs – so long as you are happy with the results. Whilst the Amiga 1500 (and 2000) are still seen as the mid-range machines with most potential for expansion, there are now many add-ons for the Amiga 500 which will bring it up to a high level. The main problems with the A500 are an overall shortage of space for expansion and the lack of a video slot.

However, I would suggest a compromise consisting of the cheaper Amiga 500 Plus and a more expensive genlock. With the Amiga 500 Plus you'll get the benefits of the new operating system, though you should seriously consider adding an external hard drive with at least 2Mb of RAM expansion memory on board and possibly a second disk drive. You'll need the RAM to make the most of the graphics capability of the Amiga and the hard disk will both increase your loading and saving speeds and help keep your system tidy. A second disk drive is not absolutely necessary but will be very useful when copying disks and making backups.

You may also want to buy a dedicated monitor, and here I would recommend going for an RGB (SCART connector) model, as this will provide superior quality to an ordinary composite video monitor. Something along the lines of the Commodore 1084 or Philips 8833 or TV/Monitor models with SCART socket will be suitable.

Your other major hardware purchase is going to be a genlock for S-VHS use. These aren't particularly cheap, but you'll need one to get the best out of your video set-up. One that I can recommend is the Electronic Design Y/C Genlock (around £450 from Genlock Ltd ☎ 0257 472887), though you should obviously shop around. A scan through magazines such as *Amiga Shopper* and *What Video* should give

## ALWAYS TRY BEFORE YOU BUY



Could you recommend a good combination of printer and DTP or word processing software? My uses would range from neat, good quality letters to multi-column DTP work.

I am currently thinking of buying either *Wordworth* or *PageStream 2.2*. The cheapest I have seen these is £77 and £125 respectively. Around £130 would be my price limit for the software.

As for the printer, I am interested in the Canon BJ-10ex bubble jet, and I have seen it advertised for as little as £230.

Patrick Walsh  
Langley  
Berkshire

The current version of *Wordworth* doesn't do multiple columns, so you can forget that idea. Before you rush out to buy *PageStream 2.2* you might consider *PageSetter II*, which will almost certainly fit all your needs and costs less than £50.

You'll need extra cash because I notice from your query form that you have only 1Mb of memory. While *PageStream* and *PageSetter II* will run with 1Mb of memory, you'll have little room left for your documents. You should consider another 2Mb of memory.

I've seen the BJ-10ex (highly recommended) selling for under £200 at shows, and as you live quite close it might be worth a trip to the Amiga Shopper Show at Wembley on May 15-17. JW

you some ideas.

You'll also be needing some software. A paint and animation program such as *Deluxe Paint III*, or the more recent *Deluxe Paint IV*, will fulfill most of your graphics and animation needs, though you'll also need to buy some disks of typefaces to supplement those which come with your Amiga. There is a great choice available nowadays. You may also want to get hold of a dedicated titling package – there are a good number now available ranging from the appalling to the superb. Unfortunately the price doesn't always reflect the quality. You might consider *BAS* (from Alternative Image ☎ 0533 410044) for a low cost scroller, or something more upmarket along the lines of *Scala 500* or even *Broadcast Titler 2*. GW

### CARTESIAN DOUBT



I had a go on my friend's BBC machine which was very good as it had the ability to use true Cartesian co-ordinates, and to plot the origin. Unfortunately, as you've noted in previous articles, Amiga Basic lacks this facility. I then read your reviews of other Basics but nowhere is this point mentioned so... do other Basics allow for Cartesian co-ordinates and the ability to plot the origin? Having plotted a graph how can I save it as an IFF file? I have used the Amiga graphic dump facility but this is not the prettiest of sights.

How can I access the graphics of *Deluxe Music*? I would like to insert sections of my scores into my DTP if possible. Also, when using MIDI with *Deluxe Music* it invariably hangs up – is this due to lack of memory? (I have a standard 500

with 0.5Mb expansion) or is the program inherently unstable?

Ken Moyler  
Faversham  
Kent

BBC Basic is, in many ways, unusual in that it provided more than one coordinate system including a screen-centred Cartesian grid. Most Basics, and that includes those available on the Amiga, do not provide these facilities but they are very easy to implement yourself. To plot the origin of a screen-centred Cartesian system you need to identify the point half way along and half way down the screen.

If your horizontal and vertical screen resolutions are *hres* and *vres* respectively then the origin, the point which you will be regarding as (0,0), the centre spot, will be identified by the real co-ordinates  $x=0.5*vres$  and  $y=0.5*hres$ .

To translate the *x* component of an (x,y) pair on your hypothetical screen-centred Cartesian grid you add the value of the *x* component to that of the origin just mentioned:

$x=0.5*hres+x$   
real Cartesian

For the *y* component you need to reverse the scale using:

$y=vres-y$   
real Cartesian

and then subtract the value of the origin's *y* component like this:

$y=vres-y-0.5*vres$   
real Cartesian

By collecting the *vres* terms this can be rearranged as follows:

$y=0.5*vres-y$   
real Cartesian

In short, this means that as long as the vertical and horizontal screen resolutions are known you can work with screen-centred (x,y) Cartesian co-ordinates and then use these equations to translate your x and y values before they are actually used in the Amiga graphics calls.

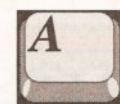
An easy way to do this is to create user-defined functions like this:

DEF FNxreal(x) = .5\*hres+x  
DEF FNyreal(y) = .5\*vres-y

With Basic you are stuck with whatever graphics dump facilities the interpreter/compiler provides – writing your own routines to save generated screen data as an IFF file is not really a feasible option.

*Deluxe Music* provides no inbuilt facilities for saving its graphics and about the only thing I can suggest is that you try using *Grabbit* or some similar screen stealer program, read the resulting IFF file into *DPaint*, and then save the portion you want as an IFF brush ready for inclusion into your DTP package. To be honest it is years since I've seen the *Deluxe Music Construction Set* package but as far as I remember, although it had very limited MIDI capabilities, it was not particularly prone to crashing. Without more details it is difficult to suggest a cause but, to be honest, I would be surprised if it was due to insufficient memory. PAO

### LIFE IN THE FAST LANE



In the Amiga column of *New Computer Express* (page 18, issue 109) there

was an article written by Jason Holborn concerning a 16 MHz upgrade for the A500. According to the article, the upgrade was to be distributed in this country by a 'well known PD supplier in Scotland' for just £25, but it seems to have disappeared off the face of the Earth! What has happened to it?

P Meofis  
Burwall  
East Sussex

I'm afraid the upgrade you refer to never actually made it onto the market.

The PD supplier in question was actually George Thompson Services which was then based in Darkest Arran (a small island off the coast of the mainland). Unfortunately the chap that used to run GTS, Tony Thompson, has emigrated to the good old US of A, leaving GTS in someone else's hands. As a result, the upgrade has dissolved into vapourware. JH

## PAGESTREAM PROBLEMS



When I print DTP on PageStream 2 I often get full lines of graphics missed, usually when the document has a lot of small point text. The printer stops, pauses, then gives a line feed, missing out the required graphics.

I use either the EpsonQ or Nec\_Prinwriter driver, but I have read that neither is such a good driver. What is the best driver I can use? Would a custom driver be an improvement?

Peter Clark  
Wigan  
Lancashire

Compugraphic fonts and bitmap graphics take up an awful lot of memory when printing at high resolutions. The missing graphics problem with PageStream is almost certainly down to shortage of memory. Try printing the same document out at a lower resolution – say 180 by 180 dots per inch – and see if the problem goes away. If it does, you need more memory to print the document at 360 by 360 dots per inch.

I see from your query form that you've got 1.5Mb of memory. I recommend at least another 1.5Mb.

The Star LC24-200 works fine with the EpsonQ and Nec\_Prinwriter drivers, but these are old and very slow. There's a driver called EpsonQPlus on Jamdisk 2 which is (the author says) 2,000 per cent quicker than EpsonQ, plus it supports the 360 by 360 dots per inch resolution, which EpsonQ doesn't. You can get Jamdisk 2 from Just Amiga Monthly ☎ 0895 274449. JW

## CAD CONCERN



I'm having problems finding a suitable CAD package which could be used for printed circuit board design on my 1Mb A500. I've seen many CAD packages advertised for the PC (Board Maker 1, Easy-PC, Vultrax 7 and so on), but I can't find any for the Amiga. I wondered if you could you suggest any?

David Micallef  
San Gwann  
Malta

About the best Amiga CAD package available is X-CAD from Computech (☎ 0702 523966). X-CAD is available in two forms – X-CAD Designer and X-CAD Professional. X-CAD Pro is perhaps a little beyond your needs, but I'm sure you'll find X-CAD Designer more than satisfactory. It costs £115. JH

## JARGON BUSTING • JARGON BUSTING

**Assembler** – a program which converts an assembly language program written in words (well, almost) into the machine code numbers that the Amiga's 68000 processor understands. Writing programs in assembly language ensures that the best possible speed and memory efficiency is gained from the machine.

**Cartesian co-ordinates** – a system of mapping space devised by the French mathematician and philosopher René Descartes. One axis (straight line) is needed for each dimension of space to be measured, and all axes must be at right angles to each other. The position of any point in space can then be defined by its distance along each of these axes from the origin (the point where all the axes meet).

**DTP** – Desktop Publishing, the process of producing documents for print on a micro computer.

**Library** – the Amiga has many special features, and programs are already present in the operating system to make use of these features. These programs, or library functions, may (and should) be used by applications programs, obviating the need for each programmer to write a similar set of routines.

## DISAPPEARING MEMORY



Before double clicking on a program's icon I record the available memory in the

Workbench title bar. If I double click and start the program several times rapidly one after another and wait for them to terminate there is always a memory loss. I'd like to know where the memory goes. Is it a bug in the operating system? I am aware that after the first execution the free memory may be reduced due to libraries being loaded.

Niall Davis  
W-7528 Karlsdorf  
Germany

Without knowing what program you are talking about it is impossible to give you a detailed answer although I think I can safely say that anything which is happening will be due to a flaw in the memory allocation and deallocation routines of the program concerned and not to bugs in the Amiga's operating system.

The memory doesn't actually 'go' anywhere. It is simply that your program asks the system for some memory (the Exec system maintains lists of memory that is not in use) but does not free it (return it) to the system after use. Any memory that is 'lost' is still there but Exec cannot re-allocate it because it thinks it is still required by the program which originally asked for it. PAO

## PROGRAM CONCERN



I currently write budget games for the Commodore 64 and I am looking to upgrade to the Amiga. However before I spend out any money, could you please answer the following questions.

a) What books should I buy?

Bearing in mind that I will have to go from novice to quite advanced programming. These books should also cover both sound and graphics.

b) A mouse is not the ideal drawing tool so I will probably need a graphics tablet. I already know about the Podscat and Genitizer tablets, but which would you recommend?

c) Which graphics, sound and programming utilities would you recommend? I am not a composer so something simple on the sound front would be great. What do you recommend for generating sound effects? I assume that most games are written in assembler, but if I do have to write in C, could you please include a list of available C compilers.

d) Which machine should I buy? After much deliberation and counting of pennies, I decided to opt for the A1500 but then Commodore brought out the A500 Plus, making the lower end machine more powerful than the mid-range machines (nice move Commodore!). Presumably this means that the A500 Plus and the A1500 are not completely software compatible. I've also recently heard that the current A1500 and 2000 will be dropped. Is this true? I can't really afford to be left with an obsolete machine, so your advice would be gratefully received.

S Metcalf  
Middleton  
Leeds

a) If you only intend programming games, then I'd recommend three books – Abacus' *Amiga Assembly Language Programming* (which will teach you how to program in 68000 assembly language), Abacus' *Amiga System Programmer's Guide* (which will teach you the basics of

programming the Amiga hardware in 68000 assembly language) and the *Amiga Hardware Reference Manual* from Addison-Wesley. These are the only three books which I bought and they certainly taught me everything I needed to know!

One thing that you should know before you get stuck into the Amiga is that there are basically two ways of programming it – through the Amiga operating system routines or by hitting the Amiga hardware directly. If you're intending to write fast arcade games, then forget the Amiga operating system and hit the hardware directly. Not only will your programs be faster, but programming the hardware is considerably easier than programming the OS.

b) I think you'll probably find that the mouse will do the job perfectly well. My guess is that the only reason why you don't think the mouse will be up to the job is because you're not used to using one, but buy yourself an Amiga and I'm quite sure you'll change your view. If you do still need a tablet though, I'd recommend the Genitizer.

c) For writing code, you'll need only one package – Devpac 3 from HiSoft. This is a very powerful 68000 assembler/debugging system that is available for £69.95 from HiSoft ☎ 0525 718181 (Or check out our reader offer on page 140, where you can get it for the reduced price of £65.95). Virtually all games are written in assembler (usually using Devpac!) simply because of its raw speed.

For producing the graphics for your games, once again a single package will do the job perfectly. What you need is Deluxe Paint.

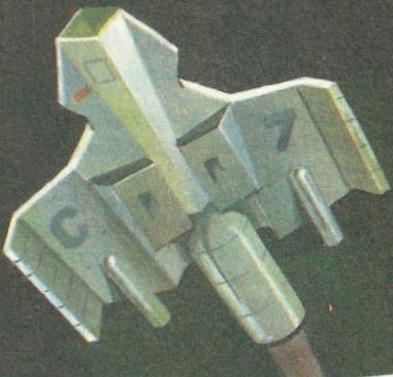
Version IV is the latest release, but you'll find that DPaint III will do the job just as well (not only that, but it comes free with the A500!). DPaint is available from Electronic Arts ☎ 0753 549442.

For music and sound effects, you're going to need two packages. The first is a Sound Tracker such as ProTracker. These very simple to use utilities will allow you to produce music for your games. The best news of all though is that virtually all Sound Tracker utilities are PD, so it's unlikely to cost you more than £2 to obtain a decent one. There's absolutely loads of Sound Tracker utilities available, but I'd advise you to go for ProTracker.

What's more, most Sound Tracker clones come with full source code in assembly language to allow you to incorporate the 'modules' (tunes) that you create into your games with a minimal amount of hassle.

Lastly, you're going to need a

continued on page 56



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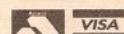
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continued from page 53

sound sampler such as StereoMaster (available for £39.95 from MicroDeal 0726 68020). A sound sampler will allow you to 'grab' sounds from real life (explosions, gun fire, speech and so on). Don't worry: using samples on the Amiga is absolute child's play simply because the Amiga's sound hardware is sample-based anyway. d) There are rumours that Commodore will drop the A1500 and the B2000, but I personally feel that what the company will actually do is upgrade the specification of both. In the case of the A1500, this will probably take the form of a doubling of the available RAM with all this RAM put over to Chip (giving 2Mb of Chip RAM). It will also undoubtedly come fitted with both the enhanced chip set and AmigaDOS 2.0.

In the case of the B2000, I've heard rumours that Commodore plans to redesign the machine to bring it more in line with the A3000. No specification-type details (or the machine's existence!) have been officially announced, but it wouldn't surprise me if the new 2000 machine came with 2Mb of RAM (once again, all of it Chip RAM) and was fitted as standard with a hard disk and 68020 processor inside an A3000-like case. These are still only rumours of course, but I'd be very surprised if Commodore didn't come up with a machine along these lines.

Choosing between the A500 Plus and the current A1500 is really a matter of taste. You don't really need Workbench 2.0 if you're programming games, so the Plus' enhanced operating system isn't really that tempting.

Despite the fact that it is still 1.3-based, the A1500 is a more expandable and tidier system that comes as standard with a detachable keyboard, so you'll probably find it a more comfortable machine to work with. Even if Commodore doesn't upgrade the A1500 to run Workbench 2.0, a 2.0 Enhancer pack (for about £90) will be released which will enable you to fit the upgrade yourself, so you don't have to worry about the machine becoming obsolete. **JW**

## DESKJET COLOUR DRIVER



I enjoyed your article on printers in the March 1992 issue. You mentioned that

you have a collection of Amiga printer drivers. Do you have one for the Hewlett-Packard DeskJet 500C?

David Spence  
Belfast  
N Ireland

Yes. Send £2 to Just Amiga Monthly,

## JARGON BUSTING • JARGON BUSTING

**Agnus chip** – The custom chip dedicated to graphics. The first three versions – 8361, and the 8370 and 8371 Fat Agnus – can access 0.5Mb of Chip RAM. A later version, 8372a, can access 1Mb; while the ones used in A500 Pluses and A3000 can access 2Mb.

**Blitter** – part of the Agnus chip which can move and alter areas of memory (specifically graphics memory) at very high speed, without intervention from the central processor. It is used extensively for animation.

**Logo** – a program language designed for educational purposes. It is especially suited to the drawing of geometrical shapes. Some versions are used in conjunction with robot 'turtles'.

**Sample** – A digital – computerised – representation of a sound. A sample can be sent through a digital to analogue converter (the Amiga has four of these) and be heard as sound. Changing the speed at which the sample is played back changes the frequency (or pitch) of the sound.

**Sprite** – a graphical shape, moved as a whole around the screen. The Workbench pointer is an example. Some sprites are manipulated by the Amiga's blitter, meaning that they can move very smoothly.

75 Greatfields Drive, Uxbridge UB8 3QN and ask for Jamdisk 8. **JW**

### BLITTER IS ALL MINE



I enjoy programming both direct to the hardware and by using the operating system routines and have some questions. Firstly, how do I get exclusive use of the blitter when running under Intuition. Secondly, I've noticed that programs like DPaint put a 'Wait' sprite in place of its normal pointer – how is it done? Lastly, when programming direct to the hardware can I, for example, use the maths libraries for 3D rotation?

Dan Sheppard  
Norwich  
Norfolk

There is a pair of graphics routines – called OwnBlitter() and DisOwnBlitter() – which can be used to steal the blitter from, and return the blitter to, the operating system. This usage is documented in the ROM Kernel Manuals but you need to remember that on the few occasions where this might be necessary you have to be quick – the system uses the blitter extensively and when your task takes control of the blitter in this fashion it locks out all of the system processes, including Intuition.

Most programs which change the pointer do so by setting up a custom sprite definition followed by a call to an Intuition routine called SetPointer(). The Intuition call has this format:

SetPointer(window\_p, ↓  
data\_p, height, width, x, y)

where the registers used are: A0, A1, D0, D1, D2 and D3 respectively and

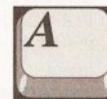
where window\_p is a pointer to the window that gets the pointer definition, data\_p is a pointer to the chip-memory sprite data, height and width are the sprite dimensions and the x/y values are offsets from the current pointer position.

There is a corresponding routine called ClearPointer which resets the default pointer image:

ClearPointer(window\_p)  
register A0

As far as your last question is concerned – providing you make provision for properly loading and using the maths libraries within your programs there is no reason at all why you cannot use them for coordinate calculation (or anything else) prior to hitting the hardware directly. **PAO**

### LAZARUS MYSTERY



I understand through my manual that my machine is fitted with the Fatter Agnus chip. To get my machine to recognise the additional 0.5Mb from the A501 I have to solder or alter one of the boards inside. This will invalidate my warranty, which still has nine months to go; is there any company which will do this cheaply for me?

Alternatively, if I got an expansion board populated as Fast RAM, could 512K of this be used as Chip or do I need special memory chips?

Secondly I have just had a disk corrupt on me and have no idea why. It started off when I booted the disk under Workbench and displayed its contents. At this point it appeared that only one file was corrupted, but the problem seems to have spread and the computer

claims this is not a DOS disk.

I checked through the disk with **Master Virus Killer 2.1**, which did not detect anything.

Next I tried **Diskdoctor**, which found two hard errors on the upper surfaces of cylinders 40 and 45 and finally said **Lazarus Key 838** already set. What is this? The disk has also been renamed as **Lazarus**.

I have managed to salvage some of the files to another disk but the Lazarus key 838 message appeared again. I have tried putting the original disk through **Diskdoctor** again but to no avail. Can you help me?

**S Griffith**  
London

This confusion with Chip and Fast RAM is quite common, and as far as the RAM chips themselves are concerned there's absolutely no difference.

The difference between Chip and Fast RAM is determined by where they appear in the physical address space. Chip RAM always appears first as it is accessed by the custom chips to create things like screen displays, sound effects and so on. Fast RAM is not accessed by the custom chips and a program running there will work slightly faster – we're talking in terms of micro-seconds here; a fraction of one per cent in real time.

Extra Chip RAM will enable some programs to store larger sound samples; graphics programs can have more screens open and an A570 requires it, but that's all the difference the extra Chip RAM makes. Quite frankly, unless you actually need the upgrade, which can be carried out by competent specialist dealers for about £20-£30 it's not worth the expense in my opinion.

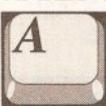
The problem with **Diskdoctor** is common enough. Cylinder 40 contains some special information called a root track. Every file and directory on the disk links back to that track; and if it fails, you're in trouble.

**Diskdoctor** searches the links and patches the root track's structure back together again. It isn't a mind reader though – the root track also contains a disk's volume name and if this is corrupt the disk gets renamed **Lazarus**.

The message Key 838 already set comes from the disk validator and refers to a bit in the disk's bitmap (block allocation table). Every block on the disk – all 1760 of them – owns a bit in the bitmap; and by examining this information, AmigaDOS knows which blocks are free and therefore, how much space is available. Key 838 in this case has already been allocated and the

validator is complaining that it shouldn't be. **MS**

## SHARED DEVICES



a) Can Amiga 500s be networked together to share a hard drive? A

company called ASG produces a file sharer, but this isn't quite what we're after. We need to be able to boot up eight Amigas from a single hard drive and then use the drive for spell checking and fonts.

b) Can an 8Mb RAM expansion be shared between eight machines with each being allocated 1Mb?

c) Can Amiga Logo (from Commodore) be linked to TechnicLego? If not, is there a way of controlling TechnicLego models from the Amiga?

d) Using *Protext 4*, I cannot write more than one page of text on my 1Mb A500 without the machine crashing. This also happens on all the school's A500s although it doesn't happen when I try to run *Protext* on my brother's 1Mb A500. When I turn off my RAM expansion though, the problem goes away.

A Pickering  
Knighton House School  
Blandford

a) Networks are jolly expensive things, but about the best one I've seen to date is the *SuperLink* system from Nine Tiles Computer Systems. It doesn't actually enable you to boot up each machine from the hard drive, but connecting each node to the network is achieved using just a

single CLI command. Give Nine Tiles a ring on 0223 440099.

b) The simple answer to this is: not yet. Commodore does intend to build support for true 'public' memory into a future OS version, but it's going to be a long time coming.

c) Commodore's *Logo* cannot control TechnicLego models, but it's not that difficult to interface such devices to your Amiga. All you need is the Input/Output Port Interface (£26.95) from Switchsoft 0325 464423.

d) Were you using the same RAM expansion when you tested *Protext 4* on the A500s belonging to your school? If so, then it seems more than likely that you've got a faulty RAM chip. If this is the case, then I'd advise you to send it back to the company that you purchased it from and they'll either repair it or send you a new one. **JH**

## MORE CACHE NEEDED



When using *Professional Page 2.0*, unless I print my document as soon as

I've finished the damn thing, it won't print it with the Compugraphic fonts.

If I have saved the document on a previous occasion and then at a later date return to try and re-print it, a requester appears saying 'Unable to start Compugraphic font task, characters not already in cache will not be displayed'. It will still print the document, however this is without the Compugraphic fonts.

I appreciate that 1Mb of

memory isn't exactly a vast quantity for such a program, and being honest, with Compugraphic fonts I only manage a single page most of the time, but why will it print when I first create a page but not when I exit the program and return to it later?

I have tried creating another page by using the characters in the original document, and the hard drive (A590) loads the Compugraphic characters in as I hit the keys, but as soon as I try to delete the extra page and send the original page to the printer, it still won't print with Compugraphic fonts.

I'm sick of trying to switch on the CG task in the Compugraphic Font Control requester. It stays on until I try to print, then promptly switches itself off.

I never had this problem with *PageSetter II*. Perhaps I shouldn't have sold it and bought a second-hand *Professional Page* from an ad in the mag, even if I did get it for £80.

*Professional Page* may have more bells and whistles than *PageSetter II*, but it's a bloody sight more temperamental and I'm not really convinced that it's all down to memory. I hope that you can help me out.

Dave Brandwood  
Derker  
Lancashire

The 'Compugraphic font task' in question is actually a separate program named *CGT* and

*Professional Page* will look for this program in the CGFonts: directory. If it's not there, it can't render Compugraphic fonts to the screen or the printer.

So why does it do it when you first create the document, and then refuse to render Compugraphic fonts upon re-loading *Professional Page* and the document?

Well, it's because upon re-loading the document *Professional Page* cannot find, or cannot load, the *CGT* file.

You plainly have CGFonts: assigned correctly, and the *CGT* file is obviously in there, otherwise you wouldn't have been able to use the Compugraphic fonts in the first place. So it must be that *Professional Page* cannot load the *CGT* file because there is not enough memory left to load it.

Now, before I go any further I should point out that we're talking *Professional Page 2.0* here; the latest version (2.1) has done away with the CompuGraphic Task (*CGT*) and the font caches.

Pre-2.1 versions of *Professional Page* only need to load the *CGT* file if the characters you want to use are not already in a font cache. While you are working, these caches are held in memory, but upon quitting *Professional Page* they get saved to disk in the CGCache: directory.

It would seem that your font caches are full to the maximum size specified in the Compugraphic Font Control requester, so *Professional Page* is 'throwing away' the extra data. One way around this is to increase the maximum disk cache size in this requester, but this needs to be done every time you run *Professional Page* and is a pain in the bum.

A better way is to edit the font caches, and create new ones, using the supplied *CacheEdit* program. Clear out all the unwanted characters and fonts – remember that large point sizes take up large amounts of memory, so clear these out unless you really need them – and save new caches that contain only the characters you require of the typefaces you require in the point sizes you require, in the resolutions you require.

Remember that your printer's (Star LC-10C) top resolution is 240 by 216 dots per inch, so create a cache for all the fonts you require in this resolution as well as the screen resolution of 75 by 75 dots per inch. There is a section in the manual on using *CacheEdit*. Read it.

After creating all these caches *Professional Page* will only need to load the *CGT* file if you want to render a character that isn't in one of

continued on page 59

## THERE'S MORE TO C THAN MEETS THE EYE

**101 10101 0 1011 1 101 10 0010101** Having read the *Compiling The PD Cs* article in Issue 11 I was delighted to find two programs which addressed the problems of Intuition and graphics.

As I am just starting to scratch the surface of C, these little pieces of code gave me two hours of eager typing.

Unfortunately neither piece compiled first time, although, being new to the language, I rather expected this. I spent the next five hours checking the mistakes the compiler spat out and, all in all, there were five errors in program one. Two were due to my typing but the other three were as follows:

```
line 37 - error bin-op expr syntax
line 49 - error bin-op expr syntax
line 60 - undefined INTUITION_VERSION
```

By pure guesswork I added an extra '-' to lines 37 and 49 but trying to solve line 60 was a nightmare. I checked the listing 3 times and couldn't find a problem anywhere, so I started to muck around with the #defines at the beginning of the listing.

All I did was move the #defines down 1 line to leave a clear line between them and the #include statement and hey presto – it worked. Can you tell me

whether these problems are quirks of *NorthC*?

David Goodall  
Sunderland  
Tyne & Wear

The listings given in the article you mention were actually taken directly from tested source code. I'll admit that it is not that obvious in the listing but if you look closely at the '-' signs in lines 37 and 49 you'll see that they were in fact decrement operators which are of course written using a pair of minus signs, ie written as '---'. Presumably you had typed them as single minus signs which is why the first two errors occurred.

*NorthC*, like most non-commercial compilers, has many quirks and its error messages leave much to be desired but, as far as I know, having to move lines around in the fashion you mention isn't one of them and I couldn't get this error in my source code. Much would depend on the exact contents of the final source file you created and this could depend on both the editor used and on what was actually typed (as opposed to what you thought had been typed).

The end result is that it is difficult to say what caused this problem without having a copy of the file in question. **PAO**

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68000 socket on board for FALBACK compatibility  
Gives you more power than the A3000  
Optional DRAM expansion up to 8Meg 32 bit ram  
Fits INSIDE A500/1500/2000 easily and quickly  
Creates a monster machine for progs like FALCON etc  
Cuts Ray Tracing times 30x - 60x for SCULPT etc  
Speeds up screen refresh and overall performance  
Lowest price 68030 THAT WORKS!!!!

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|                     |        |
|---------------------|--------|
| 25mhz EC68030       | 349.95 |
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| 25Mhz MC68030       | 449.95 |
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| 25MhzEC + 68882     | 499.95 |
| 33MhzEC + 68882     | 599.95 |
| STATIC RAM (512K)   | 99.95  |
| 2Meg 32Bit ram      | 199.95 |
| 4Meg 32Bit ram      | 399.95 |
| 8Meg 32Bit ram      | 699.95 |
| 25/25 + SRAM + 2Meg | 749.95 |
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Also coming soon from CSA is a BRAND NEW idea to enable people that own the Commodore A2630 Accelerator to increase its speed to a full 50MHZ while retaining full original compatibility. So don't even think about swapping your original card for a faster one until you have seen the performance of

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**1799.00**

Panasonic MULTI-SYNC Monitor

+  
ICD Flicker Free Video  
**499.95**

continued from page 57

them. With careful planning it shouldn't need to load CGT at all.

Ultimately the answer to your problem is either buy more memory or upgrade to version 2.1 of Professional Page; or, best of all, do both. JW

## SOUND QUESTIONS

 I currently use MasterSound for making jingles for a local Hospital's audio service. I have just bought a MIDI keyboard and MIDI interface. What I need to know is if I buy an 8Mb RAM expansion, will I have extra sampling time? I have heard that samples are stored in Chip RAM, so can I sample into Fast RAM?

Also, which RAM expansion would you recommend? The Cortex or the SupraRAM? Will my PSU be able to cope with 8Mb of RAM? Finally, is AudioEngineer better than Sound Master?

Tuhin Dasgupta  
Chiswick  
London

You're right in saying that sound samples must be stored in Chip RAM or the Amiga sound hardware to access them, but most modern Amiga samplers get around this limitation by using the 68000 to copy the sample data held in Fast RAM to Chip RAM as it is needed. MasterSound too will allow you to grab samples limited in size only by the size of your RAM expansion, so you already own a sampler that is up to the job.

Both the Cortex and the SupraRAM RAM expansions are jolly fine products with little to separate them, so my advice to you would be to buy the one that you can get the cheapest.

If you were installing no more than 2Mb of extra RAM in your machine, then an external power supply wouldn't be necessary, but you'll undoubtedly need one if you're adding the full 8Mb. The Cortex unit comes with a power supply as standard, but you'll have to pay extra if you want to use a power supply

Because of the width of the columns, we occasionally have to break listings across two or more lines. Where this has occurred, and you should enter two or more lines without a [Return] between them, we have used the following symbol: ↵

## JARGON BUSTING • JARGON BUSTING

**Chip RAM** – the area of the Amiga's memory directly accessible by the custom graphics and sound chips. Originally a maximum of 512k, newer machines fitted with the faster Agnus graphics chip can access 1Mb, enabling smoother animations and more screens to be displayed at once. The new A500 Plus comes with an Agnus chip capable of addressing 2Mb of Chip RAM.

**Fast RAM** – any extra memory which is not Chip RAM. The custom chips cannot access it, and because such accesses to Chip RAM can block out the central processor and slow down its access, Fast RAM is faster.

**MIDI** – Musical Instrument Digital Interface is a standard devised by electronic instrument manufacturers, allowing a number of synthesisers to be controlled by a single keyboard or sequencer.

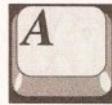
**Path** – the group of directories that the Amiga will search through automatically when a command is typed in at the Shell.

**16-bit sampler** – a device which converts sound to digital information suitable for processing by the Amiga. Standard Amiga samplers use 8 bits; a 16-bit sampler has a much higher quality, equivalent to the sound produced by a CD player.

with the SupraRAM board.

Technically AudioEngineer is better than Sound Master, but it's not really worth the £200 asking price, especially when you consider that quite a few developers are bringing out 12 and even 16-bit samplers soon which won't retail for that much more (I've been sworn to secrecy by the company involved, but expect to see a very cheap 16-bit sampler soon!). If you really do want a new sampler, then I'd personally go for Sound Master. JH

## SPANNER IN THE WORKS



I bought Protext 5.52 for my Amiga 1500 and up until last week I was delighted

with it. Then I tried to install The Works! Platinum for comms use.

Following the hard disk install instructions given with the software, after a short time of activity a message came up on the screen indicating a fault in the procedure.

Due to inexperience on my part I had no choice but to start from the beginning, and after newly installing the hard disk I again followed the instructions to re-install Protext.

The process went OK, all disks installed correctly, so I thought I could use all the facilities. But when I came to print out my correspondence a message signalled that it had 'failed to open printer device'.

I contacted Arnor and after a lengthy discussion the people there said that I had a fault in the devs directory. They might as well have spoken in a foreign language. I do not understand.

K Wynn  
Mottram Hyde  
Cheshire

First of all, Mr Wynn, I strongly suggest you buy a book about the Amiga and read it. Dabs Press publishes one called *AmigaDOS – A Dabhand Guide* which, although it doesn't cover the new operating system (which you don't have anyway), is a nice gentle introduction to the Amiga for beginners. And it's only £14.95. Computer Manuals Ltd 021-706 3301 should be able to sell it to you.

Now to solve your problem. Looking at the DataFlyer hard disk startup-sequence you sent me, something appears to be seriously amiss because there is only one Assign command, and this has spurious data following it that appears to be part of the parameters for the Path command, not the Assign command.

Furthermore the LoadWB command has somehow had a space inserted between 'Load' and 'WB', and the endcli command has had a space removed after it. All in all your startup-sequence is in a bit of a mess.

Use Protext to edit the 'DHO:s/startup-sequence' file. Remove the lines that say:

```
assign ENV:c: sys:system ↵
s:add
Load WB delay
endcli>NIL:
```

and replace them with the following lines.

```
assign ENV: ram:env
assign SYS: DHO:
assign C: SYS:c
assign L: SYS:L
assign FONTS: SYS:fonts
assign S: SYS:S
assign DEVS: SYS:devs
assign LIBS: SYS:libs
```

```
sys:system/setmap gb
path ram: c: sys:utilities ↵
sys:system s: sys:prefs add
loadwb delay
endcli >nil:
```

When you save the altered file (as 'DHO:s/startup-sequence' again) use the Protext ASCII Save option from the File menu.

Cross fingers, everything should work as normal now. JW

## POOR PICTURE



I recently purchased an Amiga 500 Plus but I am disappointed with the graphics. I have connected the Amiga to three different TV sets and every time the picture sits high and to the left of the screen. Not only that, but the definition is poor – I find it very difficult to read some of the Workbench screen characters and on Lemmings it's almost impossible to identify the different characters on the menu!

Is this something I'm doing wrong because I'm a pathetic novice or do I have a computer problem?

Chris Allan  
Bradford  
W Yorks

No, I doubt the problem is something to do with you being a pathetic novice, as we all have to start somewhere.

From your letter I guess we are dealing with two separate problems here – screen positioning and picture quality.

The screen positioning problem should be easy to solve, as it is most likely caused by the Preferences screen position being set badly. The usual way to sort it out would be to make adjustments to the screen position by using the Overscan program in the Prefs drawer of your boot disk.

Use a COPY of your original Workbench Disk, open the Prefs drawer, double click on Overscan, then click on Edit Standard Overscan. A new screen will appear which has 9 squares on it. If you position the mouse pointer over the centre square and hold down the left button you will be able to drag the position of the screen around.

Watch your TV and decide when you've got it where you want it. Then press the [Return] key and you will go back to the requester. Make sure that the disk is not write protected and then click on Save. The screen should now jump to the position you've just set and remain in the correct place. From now on, every time you start your Amiga with this

continued on page 66

**CARTOON  
CLASSICS MEGA**  
AMIGA A500 PLUS

# New GORDON

## 31\* MEGA GAME 1M

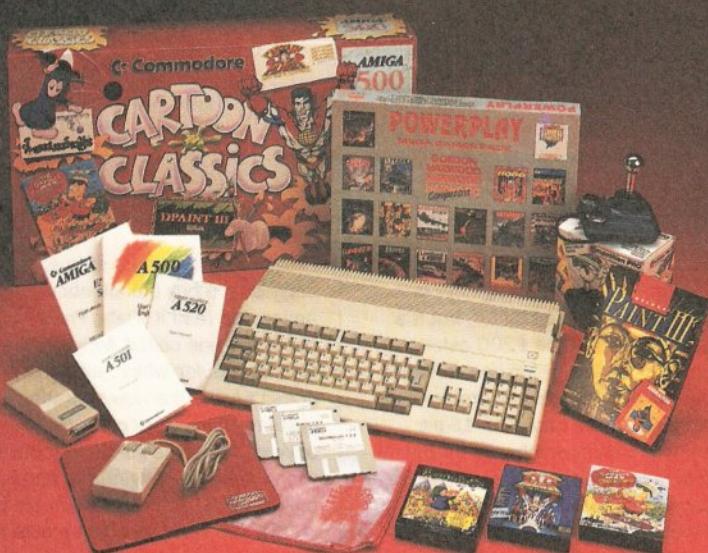
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- EDUCATIONAL BASIC LANGUAGE FOR CREATING YOUR OWN PROGRAMS
- DELUXE PAINT III GRAPHICS PACKAGE WITH ANIMATION
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CLASSICS**  
AMIGA A500 PLUS

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(ie. 1Mb RAM Expansion)

See page  
overleaf for  
details

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All our packs contain the new Amiga A500 Plus.  
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# SOUND AND VISION

## Words and Pictures

# CDTV



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(Same spec as CAX 354 on page 4 of this advertisement)

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### NEW LOWER PRICE



PROFESSIONAL QUALITY GENLOCK FOR COMPUTER AND VIDEO MIXING AT A DOWN TO EARTH PRICE!!!

Please note the above photograph shows Spectracolor which has now been replaced by Photon Paint 2.0

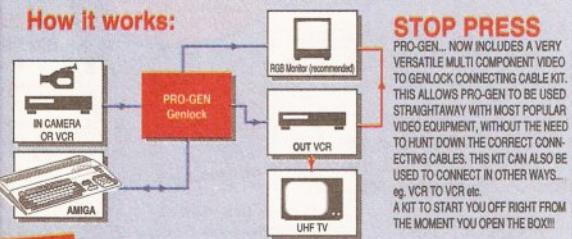
### PRO-GEN Amiga Genlock

The Pro-Gen AMIGA Genlock allows you to mix your Amiga display with any PAL video signal whether it is from a VCR, Laserdisk player or a Camcorder. In fact any item of video equipment which outputs a PAL composite video signal. Combined with the Amiga computer the Pro-Gen gives you the facilities of a special effects & video titling suite. Take your own films & give them a professional look by OVERLAYING TITLES or by SUPER IMPOSING YOUR OWN GRAPHICS created in packages like Photon Paint 2.0 or Deluxe Paint. Pro-Gen is supplied with micro illusions superb Photon Paint 2.0 package.

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- ★ Connects to sidecar bus on L/H side of A500/A500 Plus
- ★ Autoboots with Kickstart 1.3/2.0, boot enable/disable switch
- ★ Sockets for up to 8 Mb of RAM expansion
- ★ SCSI Port allows up to 7 other devices to be connected
- ★ Supplied with easy to use software
- ★ 2 Year Warranty Complete with dedicated PSU
- ★ Mini slot for future expansion capabilities
- ★ PC-AT Emulator planned to be available for 1992

GVP PRICES

| RAM SIZE | CAPACITY |         |
|----------|----------|---------|
|          | 52Mb.    | 105Mb.  |
| 0Mb.     | £359.95  | £549.95 |
| 2Mb.     | £429.95  | £629.95 |
| 4Mb.     | £509.95  | £749.95 |
| 8Mb.     | £699.95  | £929.95 |

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**UPGRADE  
PRICES!**

All our packs contain the new  
Amiga A500 Plus.  
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Enquiries & Order Line:  
Finance Facilities Available\*  
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## EDUCATION SOFTWARE DON'T JUST PLAY GAMES WHEN YOU CAN LEARN WITH YOUR AMIGA TOO!

|   |        |
|---|--------|
| MICRO MATHS - 24 easy to use programs for GCSE ('O' Level) revision or self tuition                                       | £21.95 |
| MEGA MATHS - A 9 level step by step tuition course. For mature beginners, 'A' Level studies & Micro Maths users           | £21.95 |
| MICRO FRENCH - GCSE French tuition or revision course. Covers both spoken & written French                                | £21.95 |
| MICRO ENGLISH - A complete programme of self-tuition up to GCSE standard  | £21.95 |
| PRIMARY MATHS COURSE - Ages 3 to 12, Complete 24 Programme Course.  | £21.95 |
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| PROF: Hunts for Words - With clues for Prof. and his young audience, children can hunt for words and complete a story.    | £24.95 |
| PROF: Looks at Words - You direct Prof. around the screen searching for letters to complete the words. 17 levels of play. | £24.95 |
| PROF: Makes Sentences - Children help Prof. make up sentences by unjumbling sequences of words - great animation.         | £24.95 |
| PROF: Plays a New Game - Comes with a story disk, audio tape, and an illustrated reading book.                            | £24.95 |

## HARWOODS AMIGA 1Mb PRO-RAM PLUS

ADD MORE POWER TO YOUR AMIGA 500 PLUS  
WITH A FULL 1Mb. MEMORY UPGRADE!!!

- ★ 1Mb. RAM expansion for the Amiga 500 Plus
- ★ Gives a total of 2Mb. of RAM
- ★ Easily fitted without any dismantling in the trapdoor expansion slot underneath Amiga. DOESN'T invalidate your warranty!
- ★ Low power consumption 2 Yr Guarantee!

A GREAT NEW OFFER FROM HARWOODS

Only...  
**£44.95**

### 0.5 Mb PRO-RAM

- ★ Compatible with Amiga 500 and 500 Plus
- ★ Gives A500 a total of 1Mb Memory + Clock
- ★ Gives 500 Plus a total of 1.5Mb Memory

Only...  
**£29.95**

## AMIGA SOFTWARE

**Music-X:** The ultimate software for professional MIDI sequencing. The software includes a configurable librarian and a synthesiser patch editor. All you need to recreate a song can be recalled from one performance file including sequences, MIDI routing, sync setup, keyboard maps & synthesiser or drum machine patch libraries. **NEW LOW PRICES - £84.95 or just £74.95 with midi-interface!**

**MIDI INTERFACE (5 Port):** In, Out, Through plus 2 switchable thru/out. Includes cable. £24.95

**AMOS: AMOS** allows you to access the power of the Amiga with ease. 500 different commands make AMOS a sophisticated development language. The AMOS animation language allows you to create complex animation sequences. 300 page manual and over 80 example programs. £49.95

**Amos Add on Modules: (BOTH require Amos prog.)**

Amos Compiler Amos 3D

**SuperBase 4:** Most powerful database available for the Amiga. Combines the ease of use of SuperBase 2 with a versatile programming language so that you can tailor your data to your own specific needs for club/business/library records etc.

**Lattice C:** An ideal tool for the C programmer whether experienced or a novice. The best way to create applications for the Amiga. Fully supports Motorola chipset. Nearly 300 functions optimised to help the user write the tightest possible code. Includes screen editor. Most Amiga C books are based around lattice. (Requires either 2 floppy drives OR a hard disk drive) £199.95

**Deluxe Paint IV:** Latest version of the Amigas first, and still the best, paint and animation package, now including HAM mode. (1 Mb. minimum memory or more recommended) £79.95

**Vidi, The Complete Colour Solution:** Vidi with RGB Splitter, Frame Grabber & Digitiser. Grabs moving colour video into 16 grey scale frames (up to 16 frames in 1Mb. Amiga) and digitises from still colour video source in up to 4096 colours in less than 1 second! Requires home VCR or video camera for grabbing. Requires video camera or VCR with perfect pause for digitising. Now comes with Photon Paint 2.0 ABSOLUTELY FREE OF CHARGE!!! £179.95

**MASTERSOUND:** High quality "mono" sampler (best for sampling instruments etc.)

### Pen Pal V.1.3

WORD PROCESSOR/DATABASE  
With Pen Pal you can mix text, 4096 colour graphics & data in ways no other w/p can! It's handling of graphics is unsurpassed: Pen Pal is the only word processor I tested that will automatically wrap text round graphics.

Amiga World,  
July '90



**£79.95**

PEN PAL complete  
WITH 512K Amiga  
RAM Expansion  
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THE ABOVE IS JUST A SMALL SAMPLE FROM OUR EXTENSIVE RANGE OF THOUSANDS OF SERIOUS, EDUCATION AND RECREATION TITLES. WE CAN'T LIST THEM ALL HERE SO PLEASE CALL US IF YOU CAN'T SEE THE PROGRAM YOU REQUIRE, IT'S PROBABLY IN STOCK!

FREE...  
Fully Tailored  
Dust Cover with all  
Dot Matrix Printers

# PRINTERS

All printers in our range include a standard Centronics/Parallel Port for direct connection to Amiga, PC's, Atari ST's, Archimedes etc.

We supply a connection cable to YOUR computer plus a Quality Dust Cover with ALL Dot Matrix Printers

## NEW FREE ACCESSORIES



When you are comparing our prices to others make sure that the same essential items are included eg. Printer Lead, Dust Cover, Postage and VAT etc.

### GORDON HARWOOD PRINTER STARTER PACK

ALL our Dot Matrix Printers are supplied complete with...  
200 Sheets of Continuous Printer Paper  
100 Useful Self Adhesive Continuous Labels  
Amiga Printer Drivers Disk

FREE  
FREE  
FREE  
FREE

### CITIZEN 120D+ 9 PIN MONO - Up to 120/25 cps

Very reliable low cost printer with interchangeable interfaces for Centronics/RS232/serial type (C64 etc.)  Full 2 Year manufacturers warranty

£149.95

### NEW FASTER STAR LC20 9 PIN MONO - Up to 150/38 cps

Replacement for our most popular Mono Dot-Matrix at a super low price

£159.95

Multiple font options easily accessible from front panel  
 Excellent paper handling facilities

Simultaneous, continuous and single sheet stationery  
 240 x 240 dpi Graphics

### STAR LC200 9 PIN COLOUR PRINTER - 185/40 cps

This is the one in our pack!

80 Column Dot Matrix  
 240 dpi - 9 Pin COLOUR  
 16K Buffer, 8 Resident Fonts  
 Push/pull tractor & rear/bottom feeds  
 Reverse paper feeds

Micro paper feed, Max. paper width 11.7" Supplied with colour & mono ribbons  
 Paper park with auto single sheet loading  
 Programmable from front panel.  
 12 month warranty

£209.95

### CITIZEN SWIFT 9 PIN COLOUR - 180/40 cps

New super high spec 9Pin colour printer

8K Buffer 4 Fonts  
 Push and pull tractor built-in  
 Feed for labels/multi part stationery

240 x 240 dpi Colour Graphics  
 Best text quality in our 9Pin range  
 2 Year Citizen warranty

£219.95

### STAR SJ48 INKJET PRINTER

New super high quality bubble ink jet printer

64 Nozzle ink jet  
 Emulates Epson LQ and IBM ProPrinter for full compatibility  
 Complete with AC adaptor

Large 28K Buffer  
 360 x 360 dpi near laser print quality  
 Optional Ni-Cad battery for mains free operation

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### STAR LC24/200 24 PIN MONO - 220/55 cps

Mono version of LC24/200 Colour, same spec except for a smaller 7K buffer

£249.95

### STAR LC24/200 24 PIN COLOUR - 220/55 cps

Colour version of the LC24-200 Mono.

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### NEW 24 Pin CITIZEN 224 COLOUR - 180/53 cps

Brand New, lowest cost colour 24 Pin printer, anywhere!

80 Column Dot Matrix with 4 Fonts  
 360 dpi - 24 Pin COLOUR  
 8K Buffer expandable to 32K  
 Easy to use from panel controls

Paper park with auto single sheet loading  
 Micro paper feed, Max. paper width 11.7" Supplied with mono ribbon  
 Faster than the old LC24-10 Extra font cartridges available  
 Program from front panel, No DIP switches  
 12 month warranty

£259.95

### NEW 24 Pin CITIZEN SWIFT 24E COLOUR - 180/60 cps

Brand New, superb specification colour 24 Pin printer.

80 Column Dot Matrix with 7 Fonts  
 360 dpi - 24 Pin COLOUR  
 8K Buffer expandable to 32K  
 Easy to use LCD panel controls

Push/pull & bottom tractor feeds  
 Complete paper parking facilities.  
 Supplied with mono & colour ribbons  
 Full 2 Year Citizen Warranty

£319.95

### NEW FASTER STAR XB 24 PIN COLOUR RANGE XB24-200 & XB24-250 - 275/80 cps

These NEW top of the range Stars replace the XB24/10 & XB24/15, & offer the best possible quality dot matrix printing

Exceptional print quality  
 4 x 48Pin super letter quality fonts  
 14 x 24Pin near letter quality fonts

Buffer: 29K(XB24/200) & 76K (XB 24/250)  
 360 x 360 dpi Colour Graphics  
 12mths on-site warranty (UK Mainland)

£399.95  
24-200 Colour

£499.95  
24-250 Colour

### HEWLETT PACKARD PAINTJET COLOUR A4 INKJET

Our best quality full colour printer at a realistic price

£599.95

Parallel/Centronics or Serial RS232 I/F (specify with order, MAC option available)  
 For presentation graphics/DTP, CAD and technical/scientific applications  
 A full page of colour graphics in 4 minutes (typical)  
 Non impact printing,  Will print transparencies  
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### STARSCRIPT - 4ppm POSTSCRIPT COMPATIBLE LASER

A4 Laser Printer, will connect to PC, Amiga, Atari ST, Macintosh etc.

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300 DPI, 2Mb. Upgradable to 5Mb.  
 Emulations inc: HP Series II, Epson EX800, IBM ProPrinter & Diablo 630  
 Complete with "StarScript" (Stars postscript language emulation)

Serial and Parallel Interfaces  
 12month on site warranty (UK Mainland)  
 49 quality fonts built-in  
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 Every desktop publishers dream

SEE OUR LIST OF ACCESSORIES FOR BOTH STAR AND CITIZEN PRINTERS, ALL AT COMPETITIVE PRICES!

All the characters Per Second speeds quoted above are Draft/LQ at 10cps

# PRINTER ACCESSORIES

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Citizen 120D+ Parallel Interface £49.95  
Citizen 120D+ CBM C64 Serial Interface £49.95

Citizen 124D 32K Buffer £13.95  
Citizen 124D Semi-Auto SheetFeeder £39.95  
Citizen 124D Automatic Sheet Feeder £79.95  
Citizen 124D Printer Stand £24.95

Citizen Swift 9 Semi-Auto SheetFeeder £39.95  
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Citizen Swift 9 Printer Stand £24.95

Citizen Swift 9X Printer Stand £34.95  
Citizen Swift 9X Automatic Sheet Feeder £139.95

Citizen Swift 24 32K Printer Buffer £13.95  
Citizen Swift 24 Semi-Auto Sheet Feeder £39.95  
Citizen Swift 24 Automatic Sheet Feeder £79.95  
Citizen Swift 24 Printer Stand £24.95

Citizen Swift 24X Auto Sheet Feeder £139.95  
Citizen Swift 24X Printer Stand £34.95

## HEWLETT PACKARD PAINTJET PRINTER ACCESSORIES:

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Black Ink cartridge £25.95  
Colour Ink Cartridge £31.49  
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Z-Fold Printer Paper £15.95  
Transparency Paper: Pack of 50 Sheets £52.95

## STAR PRINTER ACCESSORIES:

Star LC-20 Mono Printer £74.95  
Automatic SheetFeeder £74.95

Star LC24-10 Mono Printer £67.95  
32K Buffer £67.95  
Automatic SheetFeeder £74.95

Star LC-200 Colour Printer £74.95  
Automatic SheetFeeder £74.95

Star LC 24-200 Mono/Colour Printers £34.95  
32K Printer Buffer £34.95  
Automatic SheetFeeder £74.95

Star SJ48 Printer £54.95  
Automatic Sheet Feeder £54.95  
Ni-Cad Battery £39.95

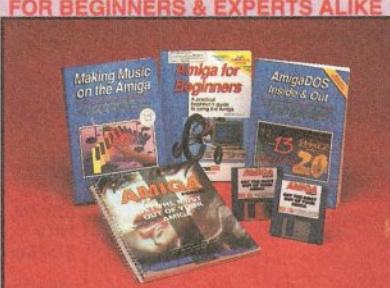
Star XB 24-200 Colour Printer £34.95  
Pull Tractor  
Font Cartridges - Styles To Be Announced £29.95  
128K Centronics Printer Buffer £89.95  
Automatic SheetFeeder £114.95  
Dual Bin SheetFeeder £429.95



| PRINTER                 | PRINTER TYPE | BLACK RIBBON  | BLACK RIBBON 'SIX PACK' | COLOUR RIBBON | COLOUR RIBBON 'SIX PACK' |
|-------------------------|--------------|---|-------------------------|---------------|--------------------------|
| CITIZEN 120D+           | BLACK ONLY   | £4.95   | £24.95                  | N/A           | N/A                      |
| CITIZEN 124             | BLACK ONLY   | £4.95   | £24.95                  | N/A           | N/A                      |
| CITIZEN SWIFT 9         | BLACK/COLOUR | £4.95   | £24.95                  | £16.95        | £99.95                   |
| SWIFT 24/24E/224        | BLACK/COLOUR | £4.95   | £24.95                  | £16.95        | £99.95                   |
| STAR LC10/20            | BLACK/COLOUR | £4.95   | £24.95                  | £6.90         | £36.50                   |
| STAR LC200              | BLACK/COLOUR | £6.95   | £36.95 ZX9              | £12.95 ZX9CL  | £69.95 ZX9CL             |
| STAR LC24/200           | BLACK/COLOUR | £8.95   | £49.95 Z24              | £14.95 X24CL  | £74.95 X24CL             |
| STAR XB RANGE           | BLACK/COLOUR | £8.95   | £49.95 Z24              | £14.95 X24CL  | £74.95 X24CL             |
| STAR SJ48 INK CARTRIDGE | BLACK ONLY   | Also compatible with Apple Stylewriter and Cannon BJ10E Bubblejet |                         |               |                          |
|                         |              |   |                         |               | £14.95ea.                |

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A complete set of tricks and tips that enable you to do MORE with your Amiga and as simply as possible. (Includes Free Disk).

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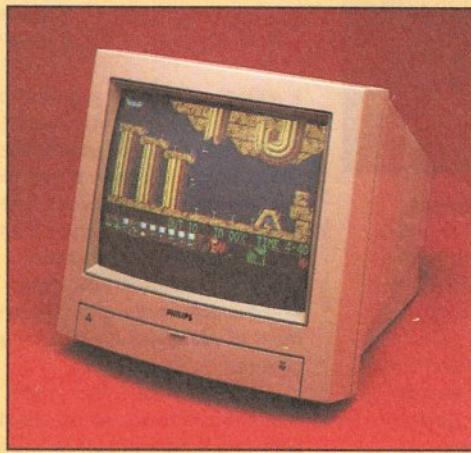
From Future Publishing, the producers of Amiga Format Magazine and fully updated for 1992 OR...

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NOW  
INCLUDING  
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# MONITORS & MONITOR TV's

Harwoods stock a complete range of both Monitors & Monitor TV's to give you your perfect solution to the type of display to buy.



## PHILIPS CM8833/II Stereo High Resolution Colour Monitor

The ever popular 14-inch Philips CM 8833 MkII. Its versatility means you not only get excellent colour graphics & text performance with a wide range of personal computers, but when connected to a VCR, you get an amazing 600 pixel TV picture. With the 8833 MkII, Harwoods give you the complete set up, to get you going straight away... Monitor, RGB picture and Stereo Audio Cables,

Tailored dust cover, and a full 12 Months on site service warranty.

★RGB/AD, TTL, Composite, Video & stereo audio inputs Can be used as a TV with VCR or Tuner Also as a Video Camera display monitor Retractable stand

★Twin Stereo Speakers Headphone Jack Socket FREElead for your computer FREE 12 Month on site service warranty.

**THE MOST VERSATILE STEREO COLOUR MONITOR AVAILABLE**

**£249.95**

## CBM 1084S STEREO COLOUR MONITOR.

Commodore's Own Stereo High Resolution Colour Monitor with...

★RGB/AI/TTL, Composite, Video/Audio Inputs Can be used as TV with VCR or tuner. Twin Speakers for stereo output Supplied with cables for A500, CGA PC, C16-64-128.

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It's important to remember that most TV Monitors, are still first and foremost televisions, meaning that their average 400 pixel tube display (50% lower resolution than a monitor) cannot be guaranteed to display 80 column text clearly without risking eye strain. If choosing a Television Monitor ensure it has the latest 2000 character tube capability, meaning it can handle the Amigas' 80 characters, by 25 line output clearly.

## NEW!! PHILIPS 15" FASTEXT TELETEXT REMOTE CONTROL 60 CHANNEL MONITOR TV. BRAND NEW

SUPERB DEFINITION PHILIPS MONITOR TV. IDEAL FOR AMIGA OR CDTV USERS, GIVING FOR THE FIRST TIME TRUE MONITOR QUALITY FROM A FULL FEATURE TELETEXT TV AT AN AFFORDABLE PRICE!!! JUST LOOK AT THE FEATURES... Direct Scart Connector for Amiga, CDTV, VCR or SATELLITE RECEIVER RGB/AD, Composite Video & audio inputs FULL TELETEXT FACILITIES (FOR THIS FACILITY EXTERNAL AERIAL SHOULD BE USED) Headphone Jack Socket FULL TWO YEAR GUARANTEE 2000 CHARACTER HIGH DEFINITION FST TUBE SUPPLIED WITH LOOP AERIAL REMOTE CONTROL FREE lead for YOUR computer (IF YOU WOULD LIKE THE MONITOR TV IN OUR PACKS 2, 3, AND POWERPRO, AT NO EXTRA COST, TO REPLACE THE 8833/II, SIMPLY ADVISE US AT THE TIME OF ORDERING)

**ONLY...  
£269.95**

10 FREE GAMES WITH YOUR TV OR MONITOR WHEN PURCHASED SEPARATELY (i.e. These games are already included within Harwoods Amiga Packs 2, 3, & Powerpro...see details on pages 1 & 2 of this advertisement!!!)

## AMIGA ACCESSORIES

**MIDI INTERFACE (5 Port):** In, Out, Through plus 2 switchable thru/out. Includes cable. **£24.95**  
**Vidi, The Complete Colour Solution:** Vidi with RGB Splitter, Frame Grabber & Digitiser. Grabs

**£149.95**

moving colour video into 16 grey scale frames (up to 16 frames in 1Mb. Amiga) and digitises from still colour video source in up to 4096 colours in less than 1 second! Requires home VCR or video camera for grabbing. Requires video camera or VCR with perfect pause for digitising. Now comes with Photon Paint 2.0 FREE!!! (see Pro-Gen fature for full software details)

**KCS POWERBOARD IBM PC EMULATOR** ★Allows you to run many popular IBM PC compatible software — **£219.95**  
titles on your Amiga or Amiga A500 Plus Hercules, CGA & Monochrome Video Support, Supports Both 3.5 Inch & 5.25 Inch Diskettes

★Fits Into A501 RAM Slot, 8088 XT Processor, Clock/Calendar Included, Acts As 512K RAM Exp. When In Amiga Mode, Includes MS-DOS 4.01, Shell & GW-BASIC, DOS-Help, & On-Board Memory Supports A590 Hard Drive, Mouse Driver Software Included.

**KCS POWERBOARD AS ABOVE BUT WITHOUT: MS-Dos 4.01, GW-Basic, Shell,** **£189.95**

### NAKSHA 400dpi SCANNER

**£114.95**

Switchable between 200dpi and 400dpi

Supports up to 32 grey shades with adjustable contrast

Supplied with EXPRESS-IT! software, image utility allows you to save in the format best suited to your favourite package.

### SUPRAMAR RX 500 (512K to 8Mb. RAM Expansion)

The RAM expansion giving massive memory WITHOUT dismantling your Amiga, thus avoiding the possibility of invalidating your warranty. Easily connects to sidecar with bus 'pass-through' for HD's etc.

2Mb. RAM Version **£199.95** 4Mb. RAM Version **£329.95**

8Mb. RAM Version **£549.95**

### NAKSHA MICROSWITCHED MOUSE

**£24.95**

### GOLDEN IMAGE OPTICAL MOUSE

**£32.95**

### COMPETITION PRO JOYSTICK 5000 Black

**£7.95**

### ZIPSTICK JOYSTICK

**£12.95**

### COMPETITION PRO STAR JOYSTICK

**£14.95**

The ONLY joystick to obtain a 100% rating from a magazine review!

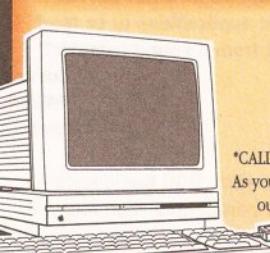
3.5" DISK HEAD CLEANER **£2.99**



### BLANK DISKS with labels

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50 Genuine SONY 3.5" branded  
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200 Unbranded 3.5" certified

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**ORDER BY POST:** Make cheques, bankers building society drafts, or postal orders payable to GORDON HARWOOD COMPUTERS. (Personal/business cheques take 7 days to clear from day of receipt whereupon your order will be despatched). Please send Name, Address, and most importantly if possible, a Daytime Telephone Number along with your order requirements. Please check you are ordering from one of our latest advertisements before posting (phone if you require confirmation). Please remember that for example many September publications appear during August, therefore prices you see may have changed (either up or down).

**FREE POSTAL DELIVERY:** FREE within 14 working days. UK Mainland only, OR COURIER SERVICE Add £5.95 per major item for next working day delivery, UK Mainland most regions.

**EXPORT ORDERS:** Most items are available at TAX FREE PRICES to non UK residents when visiting / export shipment. Please contact us for ordering information.

**REMEMBER AFTER YOU'VE BOUGHT FROM HARWOODS, WE'LL STILL BE HERE...**

**TECHNICAL SUPPORT:** You will be given our Exclusive Technical Support Phone Number to call should you require any help or advice on any aspect of the system you have purchased.

**12 MONTH WARRANTY:** Items proving faulty within 30 days of purchase are replaced with NEW UNITS unless otherwise stated. For the whole guarantee period, warranty service will be completely FREE OF CHARGE.

**COLLECTION FACILITY:** Any computer, monitor or printer requiring warranty service can be collected from your home FREE OF CHARGE during the guarantee period (UK Mainland only) and a FAST turnaround is GUARANTEED by our OWN ENGINEERS!

**FULL TESTING PROCEDURE:** All computers are tested prior to despatch, and all items are supplied with mains plug and leads as required - just connect up and use straight away.

**REMEMBER WE'RE NOT JUST ANOTHER MAIL ORDER COMPANY...**

All listed prices are what YOU PAY, and there are NO HIDDEN EXTRAS. VAT and postage are included, and prices are correct at time of going to press (Pack details may vary from time to time). Offers are subject to availability and to being the latest advertised packs and prices. Our offers are NOT supplied on a trial basis.

E&OE.

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tailored to suit your needs. Written details on request.

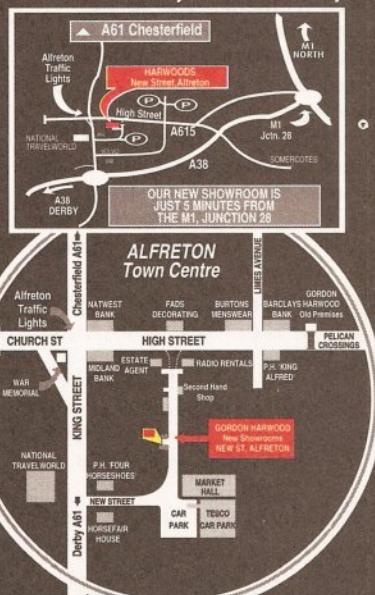
Gordon Harwood Computers offer facilities for purchasing our budget account scheme. APR 36.8% (Variable). Available to most adults of eighteen years or over, subject to status. Simply phone or write and we will send you written details along with an application form. Applications, required in advance, available to full time U.K. mainland residents and overseas British forces personnel. Showroom visitors, please ask for details of our in-store 'Instant Account'. Written quotations on request.

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Please pay us a visit where our full range of advertised products, at the SAME COMPETITIVE PRICES, & MORE, is on sale. 'ALL UNDER ONE ROOF', in pleasant surroundings at our purpose built showroom (See notes below map). There's plenty of FREE parking close by.

**OPENING TIMES:** 9.00 until 5.00 Monday to Saturday  
9.00 until 1.00 Wednesday. Closed on Sundays



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DEPARTMENT **ams** /G3, NEW STREET,  
ALFRETON, DERBYSHIRE, DE5 7BP  
TEL: 0773 836781 FAX: 0773 831040

continued from page 59

disk you'll always have the screen where you want it.

You don't say how you were connecting the Amiga to the various TVs, so I'm assuming that it's via a modulator. Whilst many people find this method acceptable (on cost grounds) it's not really the best way of viewing your Amiga's picture, as you have discovered.

You may get better pictures if you make adjustments to your TV's contrast, colour and brightness controls, or use the modulator's Composite Video output into a VCR connected to your TV instead of using the RF output direct to the TV set.

If you can't make any of these improvements then I recommend you consider buying a proper RGB monitor if you can, for example an Philips 8833 or Commodore 1084S, or a TV/monitor with a SCART input, as this will vastly improve your picture quality. **GW**

### CHARACTER WITNESS



I have typed some documents which I would like to scan into my Amiga

500 Plus using a fairly cheap hand scanner. I require some sort of optical character recognition to take place and would like to know of any and all ways of doing this on my Amiga.

At the end of the day these typed documents will have to be in my computer in ASCII format.

Alexander Kerr  
Downton, Wiltshire

### JARGON BUSTING • JARGON BUSTING

**Database** – an applications program that enables information to be stored and retrieved in a structured manner. Information can be categorised according to a user's preference, and searched for according to user-specified criteria.

**Hand scanner** – a hand-held device which will convert an image on paper into the IFF graphics format on the Amiga for subsequent processing.

**Optical character recognition** – a process whereby text can be scanned in from a page and converted to a form suitable for the computer. Normally, images scanned using a hand-scanner are converted to the IFF graphics format. In order for the computer to be able to interpret the data as text, this must be converted to ASCII format, a complicated process whereby the software has to recognise the patterns of each letter, being aware of the different patterns inherent in different typefaces.

**SysEx** – System Exclusive is a category of MIDI message containing information specific to a particular type of synthesiser. It is usually used to perform such operations as modifying the parameters of a voice on a synthesiser.

**Virus** – a small program that can lie hidden in memory or on a disk, duplicating itself on to any disks inserted in the machine, and generally causing havoc. There are many virus killers available in the public domain designed to deal with this menace.

### COMING NEXT MONTH • COMING NEXT MONTH

Watch out next month for another Amiga Answers special. As an addition of our two part feature on RAM, which starts this month on page 24, we will be answering everything you've ever needed to know about memory. Don't forget now, will you?

In a nutshell, Optical Character Recognition (OCR) software turns a scanned image of text into a text file readable by a word processor. And yes, it does exist. The best OCR systems on the PC typically cost about £750.

An American company called Migraph has developed some OCR software for the Amiga, called, funnily enough, *Migraph OCR*. It will read any standard black-and-white Amiga ILBM file created by any Amiga hand scanner or flatbed scanner, plus it can import TIFF and IMG format files created on other computers.

After 'reading' the image it converts and exports the text to a normal ASCII text file.

I've not managed to get my hands on a review copy yet, but the specification sheet makes for impressive reading. Migraph OCR is pre-trained on more than 20 typefaces, including Courier, Helvetica, Times, Bookman, Letter Gothic and Artisan.

Additional typefaces can be learned and it can be taught to recognise defaced characters and special symbols such as Greek characters or maths symbols.

It recognises proportional and

non-proportional fonts; typeset, typewritten, laser printed and NLQ dot-matrix quality text; and point sizes from 10-18pt – smaller point sizes can be recognised when scanned at 400 dpi.

It supports American and foreign characters and includes lexicons (linguistic databases) for English, German, French and Dutch.

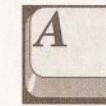
On top of all this it will enable you to save any graphics on the scanned image as ILBM or TIFF files.

As you've seen from the PC price of OCR software, this kind of power does not come cheap. The good news is that *Migraph OCR* will run on any Amiga, work with images created with any Amiga hand scanner, and costs only £265, a third of the cost of equivalent software for the PC. The bad news is that it requires at least 2Mb of RAM and a hard disk.

If you want to scan A4 pages with a hand scanner you might also need to buy a scanning tray to make the job of scanning the two vertical halves of the page a lot easier. There is a Migraph scanning tray that comes complete with *Merge-It* software, and this will set you back another £99.

Speak to the UK distributor, Golden Image ☎ 081-365 1102 for more details about Migraph products. **JW**

### DISK PROBLEMS



I recently bought a copy of your sister magazine *Amiga Format* for the twin coverdisks containing *Sequencer One* and *The Graphics Workshop*. I managed to run *Sequencer One* after successfully copying the disk by using the *Shell Diskcopy* command.

I then tried to use *The Graphics Workshop* but all I got was a requester informing me that the disk had a read/write error. I then tried to repair the disk using the *Diskdoctor* command but – although the machine told me that the files on the disk had been saved – when I tried to use the disk all I got was a 'NDOS' (Not DOS) message from the system.

Later I tried to copy a program disk of my own, but although *Diskcopy* started, the machine just seemed to hang. After resetting my machine, I tried to copy a different

disk but exactly the same thing happened again. I've had this problem for quite a while now. Can you help?

**Joe Hedley**  
Tyne & Wear

It sounds to me as if your Workbench disk is infected with the *Lamer II* virus. This is a very nasty little fellow which seems to interfere with the operation of the Workbench Diskcopy command. Like most viruses, *Lamer II* also enjoys writing spurious read/write errors all over disks, which could, I believe, explain why so many of your disks are becoming corrupt.

Thankfully the *Lamer II* virus is pretty simple to kill. All you need is a copy of a decent virus killer such as *KDVIII* (*Kill Da Virus III*) which is available from all good PD suppliers.

When you get your virus killer, turn off your machine before using it and then boot from the disk which it arrives on – don't try backing up this disk first with your Workbench disk as you could well infect the *KDVIII* disk as well.

Once it's up and running, go through every disk that you own, removing any viruses that you find. Don't put commercial game disks through a virus killer, though – the vast majority of games use their own custom bootblocks, so if the game works then there's a 99% chance that the disk isn't infected anyway.

**JH**

### 'ALLO TOSH

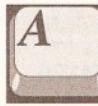


I have been offered a Toshiba P351 24-pin printer. Could you tell me which printer driver to use and whether this printer will print graphics using *Professional Page 2.1*?

**JR Harris**  
Horder  
Co Durham

On the Extras disk, in the 'devs/printers' drawer, you will find drivers for both the Toshiba P351C and P351SX. Try the Toshiba with *Professional Page* and both these drivers and see if it works. **JW**

### PORT CONTROL



Are there any control words which I can use from Basic to turn the printer

port into an input port, ie turn any output pin into an input pin for controller applications or to read the input from a sound sampler?

**C Savage**  
Millom  
Cumbria

If you are after 'BBC Basic style' hardware port control then forget it

because none of the Amiga Basics offer anything similar. Having said that I ought to point out that parallel port control from Basic is an area that is quite poorly documented and I must admit it is not something which I have ever had reason to experiment with. Such things are bound to be possible, for example by using a mixed code Basic/assembler approach, but unless you are used to 68000 coding and the Amiga's O/S this wouldn't be a particularly easy thing to become involved with. PAO

## AUDIO ANGST



I have a problem concerning audio playback from my A500 and Fidelity CTM monitor. In TV mode both audio and vision are fine, but in monitor mode I get no audio. Whenever I connect the A500 to a stereo system the sound ports check out OK, so that's not the problem.

The continuity on my Trilogic AL1 lead check out fine – pins 2, 6 are the audio pins and pin 4 is the common.

Can you tell me which pins the audio leads should be connected to in order to reach the CTM audio circuit?

Lee Bailey  
Preston  
Lancashire

contacted Trilogic, which assured me that if the AL1 lead was all OK then it would definitely work with the Fidelity CTM, as this is one of the monitors they used to test the leads with. So the problem may lie with a faulty cable.

A possible alternative is that an C chip near the SCART connector on your monitor has gone faulty, though this would apparently cause the monitor to be usable only in the RGB mode – which doesn't apply in your case.

You've already proved that the audio output of your Amiga is OK, so the only possibilities are that either the cable or the monitor is faulty (or in the worst case, both).

You could contact Trilogic (0274 691115) with a view to replacing your cable. If this doesn't do the trick then you will have to consider getting your monitor looked at.

I have tried to track down the audio connections but unfortunately I was not able to come up with anything, because Fidelity closed down around three years ago and it no longer has a Technical Department (obviously) to fire such questions at.

I should think that Trilogic would be able to help with this information too. GW

## DATABASE ON THE CHEAP



I write loads of letters and I like to keep in contact with everyone whom I converse with.

Retaining everyone's details in a book is a real pain for numerous reasons so I've decided that I'd like to use my computer instead. Could you recommend a PD or commercial database program that will allow me to store and printout names and addresses.

Stuart N. Hardy  
Sheffield

Just about any PD database program would be more than suitable for your particular requirements although I'd recommend *Ami-Base II* which is available from 17-bit Software (0924 366982). JH

## PRO-24 PROBLEMS



In *Amiga Shopper* issue 9, you reviewed the public domain ST emulator

for the Amiga. According to the article, the ST version of Steinberg's *Pro-24* ran on it. However, when I tried it myself, I couldn't get *Pro-24* to send anything down the serial port. I want to be able to use data disks with bank loaders for a DX-7 and Roland D110, but they presently don't work under the ST emulator. I've tried running the emulator under both 1.2 and 1.3. What am I doing wrong?

Another problem I've found is that the emulator seems to crash when I change resolutions. Is this a problem with my Amiga?

Mark Granger  
Crawley  
Sussex

Although quite a few ST programs will load fine under the PD ST emulator, very few of them seem to run exactly how they should.

In the case of *Pro-24*, you've found the one big fly in the ointment which stops the emulator being particularly useful. Because the ST's MIDI ports are separate from the machine's serial port, you'll find that the vast majority of ST MIDI software won't run.

My advice to you would be to treat yourself to a copy of a PD program called *MIDICom*. This little gem of a program will enable you to both receive and transmit SysEx dumps from just about any MIDI device and store them on standard Amiga disks.

I too had quite a few sound banks for my Korg M1 on an ST disk for use with Steinberg's *Satellite* utility (bundled with *Cubase*). Unfortunately, *Satellite* wouldn't run under the ST emulator either, so I thought I'd try a little experiment. What I did was to copy the *Satellite* banks across to an Amiga disk and then I tried to transmit them to my M1 using *MIDICom*. To my surprise, they worked fine!

As long as the bank loading

utility that you use doesn't add its own data to the dumps that it receives, you should find that your DX-7 and D110 dumps will work fine with *MIDICom* too (after all, the SysEx information transmitted by your synths will remain the same no matter which computer is receiving it).

For a copy of it, contact the PD library AmigaNuts United. It's at 169 Dale Valley Road, Southampton, SU1 6OX. JH

## TROUBLE WITH TEXAS



My printer is a Texas Instruments Omni 800 model 850XL. I bought it second-hand, without an instruction manual, however on writing to Texas Instruments I received a manual by return post.

I have tested the printer and the DIP switches and it is all working. My problem is getting a printer driver to use with it. The only ones which give me any kind of understandable response are EpsonQ and generic, but these are limited in that they only give basic print – that is to say, no italics, no underline, no bold, and graphics are a non-starter.

Can you help?

James McGough  
Townhead  
Strathclyde

Hmm. Tricky one. The Omni 800 model 850XL has its own set of escape codes designed by Texas Instruments. These escape codes are 'almost but not quite' totally Epson compatible. In other words, the majority of the escape codes are the same, and only a few are different.

The 850XL is actually a 9-pin printer, so you'll not get much sense out of EpsonQ, which was written for 24-pin printers. Try the EpsonXOld or EpsonX[CBM\_MPS-1250] drivers. There's a good chance that you'll get bold, italics and underline out of these.

Graphics output is difficult because the 850XL has mostly

different resolutions to Epson 9-pin printers. However its two lowest resolutions are 60 by 72 and 120 by 72 dots-per-inch. The EpsonXOld driver uses 60 by 72 resolution when set to Density 1, and the EpsonX[CBM\_MPS-1250] driver uses 120 by 72 on Density 1, so you might get some joy there.

But the 850XL's highest resolution is 144 by 144 dots per inch, and Epson printers do not support this resolution, so the Epson drivers won't work. Nor will any other driver on the Extras disk, and I'm afraid I know of no specific driver for the 850XL. JW

## FLIPPING IMAGES



I have just bought an Amiga 500 Plus and would like to connect a video signal to it to do special effects such as mirror image, multi-image, picture flipping and so on. I have been told that it can only be done on an Amiga 1500 or 2000 with the

## SAMPLER SCARCITY



I have just purchased an Amiga and would appreciate any information you could give me regarding the possible existence of professional quality samplers for the Amiga. I know of such products for the Atari ST, priced between £250 and £450, but so far I have been unable to locate such samplers for the Amiga.

Anon

When you say 'professional quality' I presume you mean either 12-bit or 16-bit sampling. The good news is that a company called SunRize Industries has produced both 12-bit and 16-bit sampling cards for the Amiga. Neither are available yet in the UK but they should, with luck, be arriving within the next few months.

The 16-bit board is however likely to be relatively expensive because it is a stereo unit which supports MIDI, SMPTE, DAT and CD hook up. With a signal-to-noise ratio as good as a compact disk it is likely to attract a lot of professional interest. If you contact Zone Distribution 081-766-6564 the people there should be able to give you additional technical details.

PAO

**CORNER TIP**

This piece of advice comes from Paul Howlett of Southampton. It comes in response to R Price's letter in AS10 asking if there was a program to play *Noisetacker* modules so that the second module loads as the first one plays, thus being ready to play straightaway. Paul writes:

"I have just the program: it's called *IntuTracker*. It has a feature called Musique non-stop which does just what Richard asks. As well as that, it can run in the background in Workbench and it can display a spectrum analyser, volume, speed and tape-player like controls. It can even play your modules in a random or pre-programmed order."

*IntuTracker* can be found on Amiganuts United disk 974, which also contains other good Soundtrackers and Rippers.

Thanks for the tip-off, Paul, £5 will be on its way to you shortly.

Invision program. Is there any way I can do this with my Amiga 500 Plus? Also, how do I go about connecting my Super VHS machine?

Rambo Ragu  
Bradford  
W Yorks

I'm afraid that whoever told you that you could only do the video effects you require on an A1500 or 2000 was pretty much correct.

The Invision Plus hardware is one way of doing some of these effects, although there is no way of doing real-time flips and tumbles on a live image – the picture can be simply inverted, mirrored, recoloured and so on, all at reduced picture quality.

For further information you might like to see my review in *Amiga Shopper* Issue 8. The only other way I know of doing these things in real time with an Amiga is to use a Video Toaster – but this only fits Amiga 1500 or 2000s and does not currently work with the UK video system (known as PAL).

There are, of course, other ways of making a picture flip and tumble on the Amiga but you'll have to grab it in from video first (using a digitiser) and then manipulate it with a program like *Deluxe Paint IV*, *Animagic* or *EFX3D*, all of which produce an animation of the picture

for playback, none of which work in real time. And they all need lots of memory to work on large, hi-res or HAM images.

There are also other, non-Amiga ways of carrying out the effects which you require but you'll need extra video hardware such as a vision mixer and framestore with effects. I'm afraid this is beyond the scope of my answer here as it moves us into the expensive world of video production equipment.

To connect your Amiga to your Super VHS machine you'll require a genlock which can output S-VHS video signals. There are a number of these currently available and you'll see them advertised in magazines such as this one and others such as *Camcorder User*. GW

**ENLIGHTENED PEN**

I would like to write a light pen driver in C and have purchased a kit from Maplin

Electronics. I believe the two registers I need are somewhere in the Agnus chip and wonder if you'd be good enough to point me in the right direction.

AG Bowler  
Folkstone  
Kent

VPOSR (\$DFF004) and VHPOS (\$DFF006) are the two registers you are talking about – these provide the high-order and low-order pen position bits but you'll also need to write a 1 into bit 3 of BPLCON0 (\$DFF100) to enable the light pen latch. All the register and light pen connection/use details that you require can be found in the *Amiga Hardware Reference Manual*. PAO

**HARD DISK HASSLES**

I own an A590 hard disk and – like a good boy – I try to back it up regularly using

Lake Forest Logic's *The Disk Mechanic*.

My hard disk is three quarters full so it is of vital importance to me that my drive works correctly.

However, as I've inadvertently managed to wipe my hard disk clean several times (usually whilst trying to validate a floppy disk but forgetting to highlight it), I always seem to have great difficulty trying to put the information back on to my drive from my backups.

My question is this: can you recommend a much better hard disk backup utility? I've had no end of problems with *Disk Mechanic*, so I'd be grateful if you could suggest a more reliable backup utility.

Going Mad  
Wickford  
Essex

You're right, *Disk Mechanic* is a lousy program. I tried using it on my 90Mb SCSI drive but encountered pretty much the same type of problems that you describe.

The backup utility that I would recommend is called *QuarterBack* and is available from HB Marketing 0753 686000. *QuarterBack* is a pretty simple little program, but it gets the job done quickly and efficiently. JH

**BROADCAST NEWS**

I purchased *Broadcast Titler 2* for my A500, and it works perfectly well from the floppy disk. But when I installed it on my GVP hard drive and tried to run it from its icon it just crashed the computer. I did notice that the message "Newcon Mount Failed Code 16" was displayed.

I've made sure that the startup sequence contains the *FastMemFirst* command, as recommended.

Can you advise what the problem might be? My suppliers can't help and despite two faxes to Innovision Technologies (the makers of *BT2*) I have had no response.

RA Thorne  
Henley

Well, I've tried all I could think of to emulate your *BT2* crash on my Amiga 2000, but the only way I could cause this was to use *NoFastMem* to turn OFF the Fast memory – the opposite to *FastMemFirst*. I checked my startup-sequence and I wasn't using *FastMemFirst* anyway – but *BT2* still worked OK.

"Newcon Mount Failed Code 16" made me wonder whether your startup-sequence contained the command *Mount Newcon* – but I

removed this from mine, rebooted and still had no problems.

In fact, I stripped down my startup-sequence back to basics but all to no avail. The only other problem I could cause was to remove *IconX* from the *BTitler2* drawer – resulting in a message to the effect that there was an error whilst opening *IconX* (which is needed to load the program).

You don't have a shortage of memory, so that won't be causing the problem. Did you install *BT2* correctly by using the *HDInstall* program supplied, or did you do it by hand, as the program copies all the required files to the designated drive?

Check the *BTitler2* drawer contents and compare them with the floppy disk. Does everything look OK? You should also check that all the files in C:, Devs., Libs., and L: on the floppy are present in the corresponding places on your hard-disk. But don't copy the files from the floppy to the hard-disk unless you are absolutely sure what you are doing – you could end up replacing a vital file with a version unsuited to your current setup.

If none of this helps, delete the entire *BTitler2* drawer from your hard-disk and re-install from scratch using the *HDInstall* program, following the instructions if necessary. If this doesn't work you might have a defective copy of the program and should get it changed. GW

**MASTERING CODE**

I have owned an Amiga for eighteen months and have used it mainly for games. Now I want to learn machine code. I am fairly

continued on page 7

**JARGON BUSTING • JARGON BUSTING**

**HAM** – Hold And Modify is an Amiga graphic mode enabling all 4096 colours to be displayed at once, with certain restrictions.

**IconX** – a handy little public domain program which will enable a Shell script (a collection of Shell commands held in a file) to be executed via clicking on an icon via the Workbench.

**Light pen** – a pen-like device which can be connected to the Amiga and used on the screen as a pointing device. It works by detecting the blip of light produced on the screen as the display is created by a rapidly moving scanning dot (which traverses the whole screen every 50th of a second). By noting the time at which the blip is detected, the computer can calculate the position of the light pen.

**PAL** – one of the main TV colour coding systems (with the exception of France's SECAM system), which is in use around the world and was developed in Britain. PAL refers to Phase Alteration Line. In fact, there are several hybrid PAL systems in use, all of which are slightly different.

**SCSI** – Small Computer Systems Interface is the standard used for connecting hard drives, CD ROM drives, tape back-up units and so on to computers.

# POWER COMPUTING

## Optical Hard Disk



|          |  |       |
|----------|--|-------|
| External | Optical 128MB + 5 disks (eq. to 600MB) | £1275 |
|          | Optical 128MB + 10 disks (eq. to 1GB)  | £1450 |

A500 requires a suitable SCSI Host adaptor, not supplied

### Internal (A1500/A2000)

|  |       |
|--|-------|
| Optical 128MB + 5 disks (eq. to 600MB) | £1075 |
| Optical 128MB + 10 disks (eq. to 1GB)  | £1250 |

SCSI Controller Card for A2000/A1500

£199

## 24 Bit Colour Card

|                               |       |
|-------------------------------|-------|
| 16 million colours            |       |
| GVP Impact Vision             | £1655 |
| Rambrandt                     | £1500 |
| Harlequin 1MB                 | £1275 |
| Harlequin 2MB                 | £1399 |
| Harlequin 2MB                 | £1520 |
| Harlequin 4MB                 | £1599 |
| TV Paint 24 bit paint program | £899  |
| TV Record                     | £169  |
| TV Display                    | £79   |

## Power Scanner Packs

|                                       |      |
|---------------------------------------|------|
| Power Scanner, 512K of RAM with clock | £114 |
| Power Scanner + PC880B                | £159 |
| Power Scanner + Dual Drive            | £209 |
| Power Scanner, 512K of RAM + Pro Page | £249 |
| Power Scanner, 1MB of RAM + Pro Page  | £270 |

## Videon v3.0

Digitize and display all 4096 colours in high resolution

Digitize directly from colour video sources (VCR's, video cameras, video disc)

Dynamic hi-res without interrupting multi-tasking

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Videon v3.0

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Power Computing have teamed up with **Cachet** of Germany to bring you the **ultimate** in disk backup systems.

The **new PC880B** Drive can be used directly with the X-Copy Professional 'Cyclone' software without any extra cables or interfaces. This gives you the power and reliability of the proven 'Cyclone' backup software with the convenience of the **PC880B** floppy drive.

So now you can have two backup systems 'Blitz' and 'Cyclone' available at the touch of a button! and the **PC880B** still has our unique switchable anti-virus mode, preventing all write accesses to the bootblock of your floppy disks!

If you already own a **PC880B**, and the Cyclone copier, a hardware upgrade is available to take your drive up to the latest specification.

**New PC880B** with Blitz & X-Copy Professional software £99.95

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Cyclone Hardware Upgrade for existing **880B** owners £15.00

\*This drive is available only to REGISTERED owners of X-Copy Professional. You must provide proof of purchase of X-Copy Professional.

### SPECIAL UPGRADE OFFER!

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Power Scanner is compatible with most scanning heads.

## A500

|                                      |      |
|--------------------------------------|------|
| Amiga 500+                           | £399 |
| Amiga 500+, 2MB                      | £445 |
| Amiga 500+, 20MB Internal hard drive | £600 |
| Amiga 500+, 52QMB GVP hard disk      | £780 |
| A1500, A3000 also available          | £POA |
| Monitors and printers also available | £POA |

## Chips

|                         |     |             |      |
|-------------------------|-----|-------------|------|
| 256K x 4 DRAM           | £5  | 4MB x 8Simm | £150 |
| 1MB x 1 DRAM            | £5  | 1MB x 8Simm | £30  |
| 8372 Fatter Agnus       | £39 | 1 x 4 Zip   | £24  |
| A3000 Static Column RAM |     |             | £24  |

## Miscellaneous

|  |        |
|--|--------|
| Power Mouse                            | £15    |
| Optical Mouse                          | £29.95 |
| Replacement optical mouse mat          | £9.95  |
| A500 Dust Cover                        | £9     |
| Maxell multi colour branded disks (10) | £9.95  |
| Floppy disk                            | £POA   |

## Blitz Amiga

Back up disks at lightning speed  
Stops all external drives from clicking  
Contains anti-virus from being written into the bootblocker £25

## PC Emulators

|  |        |
|--|--------|
| KCS PC Power Board   | £235   |
| KCS A2000 Power Board, includes MS-Dos 4.01, GW Basic, Shell, Dos-Help & on-board memory | £209   |
| Without Dos  | £179   |
| Adaptor for A1500/A2000/A3000  | £69.95 |

## Progressive Peripherals 68040 Accelerator Board

25MHz Motorola 68040  
Built-in maths co-processor  
Expandable up to 32MB of RAM  
Software compatible with all 68040 family processors  
Many more features  
0MB RAM £1449 16MB RAM £2109  
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|             |      |           |      |
|-------------|------|-----------|------|
| 52 Quantum  | £199 | NEC 45MB  | £179 |
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(suitable for GVP Combo or GVP HC or Nexus HC)

Send your order to Power Computing Ltd, Unit 8 Railton Road, Woburn Road Industrial Estate, Kempston, Bedford MK42 7PN  
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competent in Workbench, and can work well with the Shell. Do I need any books on the Amiga's operating system or anything like that and if so which ones would you recommend?

When I load up some disks I get an error message saying "Can't find Disk Validator". I can get around the problem by copying the disk validator from Workbench into the disk's L directory. Is there anything wrong with my disks? Have they been infected with a virus?

Phillip Thomas  
Stevechale  
Coventry

You've not said whether or not you have any previous programming experience so I'll assume that you haven't.

I've got to be honest – I suspect that machine code on the Amiga is going to scare the hell out of you. This is not because the 68000 instruction set is particularly difficult to understand – it is because, in order to write 68000 code for the Amiga, you need to know about the Amiga's operating system, its library arrangements, and a million other things besides.

This doesn't however mean that it would be an impossible task but you really will need to put a lot of effort into it. As well as coming to terms with the writing of 68000 code itself you'll need to get hold of, and read, as much of the Amiga's technical documentation as you can find.

The Addison Wesley *ROM Kernel Manuals* are the official Amiga guides and these together with the Bantam Books *AmigaDOS Manual* (which contains in-depth AmigaDOS programming info) provide the most complete descriptions of the system. The trouble is that these books are written for users who are, to a large extent, already used to programming complex systems. Most Amiga users, however, do not fall into this category but fortunately a lot of easier-to-read, but less comprehensive, technical books (from Abacus, BSB Books and so on) have appeared which bridge this very gap.

It is impossible to recommend a single book (or even a few) without knowing quite how much programming experience you have, so I think the only useful advice I can give you is to get down to your local Amiga shop and look at the various offerings – then choose one that

## JARGON BUSTING • JARGON BUSTING

**AmigaDOS** – the most basic part of the Amiga's operating system – the collection of programs that take care of the general running of the machine. The acronym DOS stands for Disk Operating System. AmigaDOS concerns itself with device-handling: control of the keyboard, basic screen output, disk drives, printers and so on.

**Bitplane(bitmap)** – a bitplane is an area of memory where every binary bit corresponds to a pixel on the screen. One bitplane represents a monochrome image, several can be overlaid (a bitmap) to represent a colour image.

**Kernel** – the group of programs at the very centre of the operating system. Many useful routines are contained here which can be used by other programs. The name comes from the analogy of a nut – the Kernel is the centre, the Shell is the outside through which the user gains access.

**Library** – the Amiga has many special features, and programs are already present in the operating system to make use of these features. These programs, or library functions, may (and should) be used by applications programs, obviating the need for each programmer to write a similar set of routines.

**68000** – the Motorola-produced chip which acts as the Amiga's 'brains', more properly called the CPU or central processing unit.

seems reasonably understandable to you.

As far as your disk validator problem is concerned it is impossible to say what the problem might be without seeing the disks concerned.

There are some viruses which can affect the disk-validator but as far as I'm aware they re-write, rather than destroy it. This being so I suspect that the problem is simply that the validator was not on the disks concerned in the first place. PAO

### VIDEO WIPES



If I buy *Broadcast Titler 2* can I use it to perform video wipes and fades? If so, please explain how. If not, should I buy the Video Tech *VEC1060*.

Could you also please explain how to use Anglia PD fonts with BT2?

MI Pickering  
Scarborough

In the sense of true video wipes and fades, the answer has to be no, you can't use *Broadcast Titler* for this. But there are some things which you could do by using your Rendale 8802 genlock which might provide similar effects. For instance, you could start with a Colour 0 blank screen (which would be transparent to video when genlocked), then make a sliding transition to a new page with a non-colour 0 background – thus wiping out the video with a keyed graphic screen!

Wiping yes, fading no. The nearest you'll get to a fade is to dissolve the Amiga picture out dot by dot to a blank colour 0 image, thus eventually getting a full key through

to video. As you know, the 8802 cannot do fading, so you'll have to find an alternative solution.

According to the manufacturer's specifications (fade to colour, single wipe, picture processing and audio mixing) the VEC 1060 may fulfil this need, though I am not familiar with it so cannot comment further.

Alternatively, you may consider upgrading your genlock to a more recent one with fading (and perhaps wiping) facilities.

With regard to Anglia PD fonts, there is a utility called *Convert* provided with BT2 which lets you change any standard Amiga bitmap font (including Colorfonts) to the proprietary .btf format fonts used by BT2, though the results will not be anti-aliased as the supplied BT fonts are.

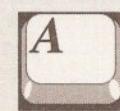
Alternatively, there are other programs, such as Innovision's *BT2 Font Converter* or ZEN Computing's *AntiA* (both reviewed in Amiga Shopper 8) which will anti-alias (smooth the edges) and convert all non-Colorfont Amiga fonts.

*BT2 Font Converter's* .btf fonts can be used directly with BT2 (but no other programs) whilst *AntiA's* Colorfont output can be used with any Amiga program which accepts them, and also converted to BT2 format using the standard *Convert* program. GW

### DATABASE TO DISK



At the moment I am writing a database program in Amiga Basic and for speed the records are located in RAM: but just before I quit the program I would like to copy the records from the ramdisk to d0: or d1:.



The ability of the Amiga to speak is one of its amazing qualities, but using SAY I can't manage to alter the voice. I type in 'f', 'm', and different pitches and speeds but nothing changes. I still get the same robot-like voice. Can you please give me precise details on what I should type to alter the voice?

Mark Holme  
London

There shouldn't be any problem in altering the voice characteristics and I suspect that if your options aren't working then it is simply that they are being ignored because you've not presented them properly. The basic format of the SAY command is this:

SAY [<options>] <text string> | <filename>

where the angle brackets indicate parameters that you are expected to type with the square brackets signifying an optional item. There are six possible options: m for male voice, f for female voice, r for a robot voice, p<num> for pitch, s<num> for speed and x for specifying that a filename, rather than a text string, is to be used. These options must be introduced by a dash and each option must also be delimited (separated) by spaces.

Here's a couple of examples:

SAY -m -p80 "this is your Amiga speaking"  
SAY -f -p160 "this should sound different"

Now if, with the last set of parameters, you wanted to SAY the words in a text file you'd need also to specify the x option like this:

SAY -f -p160 -x df0:sometestfile

PAO

**Can you tell me how to do it without leaving Amiga Basic.**

**Pierre van Heumen**  
Gorinchem  
Holland

Presumably you are using a random-access file which enables you to both read and write bytes from variables defined in FIELD statements.

The easiest way to copy the data from the RAM file is to open the real (the disk stored file) random-access file on df0: (or df1: whatever) and then use GET/PUT statements to transfer the records from the RAM version to the file permanently stored on disk.

You really only need to update those records which have changed (by the way, this to a large extent is the purpose of using random-access files in the first place) so your program should make an internal note of records as they are used and restrict its copy operations to changed records only.

It is possible however that you may be able to open your files directly on df0:/df1: yet still avoid the time penalties associated with lots of read/write operations. Try specifying a larger file buffer size when you open your files – the default buffer size is only 128 bytes but Amiga Basic allows you to specify a buffer of up to 32767 bytes using this syntax:

OPEN mode, [#]filenumber, ↴ filespec, [file-buffer-size]

I think you'll be surprised with the difference that a 32K file buffer size can make (relative to a 128 byte buffer size) – in theory it will reduce the number of time consuming 'real' read/write file operations by a factor of 256. PAO

## VIRUS CONCERN

**A** When I boot up my hard disk with the **KDVIII** virus checker installed in my startup-sequence, a message appears informing me that a **TTV/BGS9** Virus has been detected in RAM and killed. However, **VirusX 3.1** doesn't seem to spot it when I run that instead of **KDVIII**. Could you please tell me about this virus, its effect and how I can remove it from my hard disk?

**MT Seward**  
RAFO Masirah  
Sultanate of Oman

The **BGS9** virus is what is known as a 'link virus'. That is, instead of living in the boot block of a disk (this type of virus cannot infect a hard disk), the **BGS9** virus works by attaching itself to certain system files (usually

the disk-validator or AmigaDOS commands in your C directory)

This type of virus cannot be detected by a conventional bootblock virus checker (hence the reason why **VirusX 3.1** doesn't know about it, although later versions of Steve Tibbett's program can detect link viruses), so what you need is a virus checker that can hunt down and kill link viruses. By far the best I've seen is John Veldthius' **Virus Checker** version 5.26. JH

## AMSTRAD ACTION



Could you please show me how to wire up a lead which will allow me to use the colour monitor which came with the Amstrad CPC range of computers with my Amiga 500. As you can appreciate, converting my old Amstrad monitor to work on the Amiga could save me a lot of money.

**S Bassett**  
Lowestoft  
Suffolk

No sooner said than done. To connect your Amstrad monitor to your Amiga, you'll need four things – one male 23-pin D-style connector, a 6-pin DIN connector, a length of 5-way shielded cable and a soldering iron.

You'll have to contact a specialist Commodore parts supplier such as HRS (021 789 7575) for the 23-pin connector, but the other items should be readily available from all good electrical parts suppliers (Tandy and so on).

The wiring of the lead is fairly simple and is shown in the diagram above and to the right. JH

## FUNKY TELLY



I have an old(ish) Telefunken TV with a SCART connection. However,

I don't know which pins are which. Can you advise me so that I can connect my Amiga? Do the SCART pin uses vary from company to company and model to model?

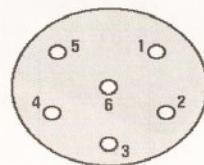
**Peter Alexander**  
Oxford

Regular readers may have started to think I'm being paid by Trilogic to keep mentioning it, but I can assure you that it's not true. What is true is that every time I call the company to check about problems like this the people are always very helpful and can give me an answer one way or the other. In this case they say that their AL1 lead should work with your Telefunken (though they didn't plan it that way – it just does). Why not call Trilogic yourself (0274 691115) and order an AL1?

Yes, SCART socket

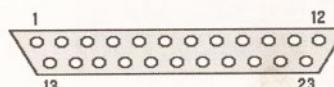
## Amstrad Monitor Socket

As viewed from the rear



## Amiga RGB Connector

As viewed from the rear



### AMIGA

|    |   |                |   |   |
|----|---|----------------|---|---|
| 3  | — | RED            | — | 1 |
| 4  | — | GREEN          | — | 2 |
| 5  | — | BLUE           | — | 3 |
| 10 | — | COMPOSITE SYNC | — | 4 |
| 20 | — | GROUND         | — | 5 |

### MONITOR

Connect up and use an Amstrad CPC colour monitor with your Amiga

configurations do vary from manufacturer to manufacturer – this is why some SCART cables won't work with some SCART monitors. GW

## SPECTRUM FAN



I recently obtained a PD ZX Spectrum emulator which I hope to use to run my large collection of Spectrum software. The emulator's documentation claims that I need an Amiga sound sampler like Omega to load games from tape.

Having little knowledge of samplers, I carried out a little research. Most samplers seem to cost at least £50, which is far too much for my purposes. Do you know of a much cheaper sampler that would work with this emulator?

**Robert Stringer**  
Godalming  
Surrey

There are samplers available for as little as £25, but I'd recommend you steer well clear of these budget units. The problem is that many use cheap components which keeps the cost down, but does nothing for the sound quality obtainable from the sampler. If you try to use a cheap sampler with the Spectrum emulator, you'll almost certainly encounter loading errors. The chances of this happening will be cut down substantially if you buy a decent sampler. I'd personally recommend MicroDeal's MasterSound for this task simply because of its low price (£39.95) and its exceptionally good sound quality. JH

## ROLLING SCREENS



When using my RocGen Plus genlock I have problems with some disks (such

continued on page 73

## JARGON BUSTING • JARGON BUSTING

**Boot block** – the first two sectors of an AmigaDOS disk, located at track 1, side 0. The bootblock is used to describe the filing system in use and can contain a special program to 'boot' (load and execute after the machine is switched on or reset) certain disks. This is how most simple viruses get into the system.

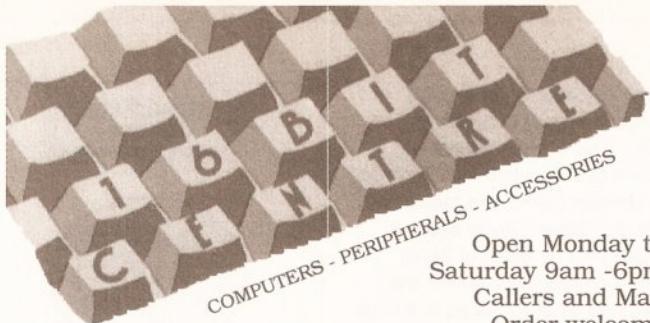
**RAM disk** – an area of memory that is treated as if it were a floppy disk. The RAM disk sizes itself so that it is never any larger than it needs to be, with the advantage that files can be stored and retrieved much more quickly, though all information is lost when the power is switched off.

**Random access file** – a method of storing information such that any item of data can be retrieved immediately. The alternative is a sequential file, in which all preceding information must be searched through before the required item can be retrieved. A random access file is like an LP record, where the needle can be positioned on any track instantly; a sequential file is like a tape which must be fast-forwarded to the track of interest.

**Sound sampler** – a hardware device which converts sound into a digital signal suitable for processing by the computer. The resulting sample represents the sound by taking a number of 'samples' of the sounds volume at various instants of time. The quality depends on the number of samples taken in a given period of time, and in the number of binary bits (usually eight in the case of the Amiga) used to store the volume of the sound at each instant.

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continued from page 71

as **Red Sector Demomaker** and the **Big Alternative Scroller Demo**) causing the screen to roll. Can this be rectified?

The rolling problem only occurs when the connected camera or video is turned on. Before that all the programs behave normally.

I intend to buy **Scala 500** (or a similar program) but this would be no use to me if the screen rolls during genlocking. Can you tell me if it will be as stable as, say, **Deluxe Paint III**?

Have you any experience of the chromakey attachment for the RocGen Plus?

Finally, when military aircraft fly by outside while I am using the genlock I have been getting **GURU** messages referring to 'abnormal conditions' on the screen. Do you have any ideas what causes these?

A Ross  
Castle Douglas

All the problem disks you mention are autobooting demos, some of which override the normal AmigaDOS environment (illegal clock timing and so on). This causes problems with some genlocks – and from what you say the RocGen Plus appears to be one of them. But don't blame the genlock, it's the software's fault for not following the rules.

One thing which is worth trying (and is, in fact, obligatory with most genlocks) is to have the genlock switched on and being fed with video before you boot up your Amiga. Otherwise the rolling problems you describe (caused by the Amiga being unable to sync to a stable signal from a genlock which is receiving no video timing information) will likely persist.

As far as I am aware, you shouldn't experience any of the rolling problems you mention with **Scala 500**, as it doesn't bend the DOS rules.

The RocGen Plus chromakey unit is still under development, though by now you should be able to get further information from Zye Technology ☎ 0293 538666, as this company will be distributing the device.

Have you tried asking the MoD about this? Sorry – just joking, it's probably top secret why your genlock conks out when aircraft fly by! Seriously though, perhaps the answer lies in some kind of mega electromagnetic field produced by radar or other hi-tech equipment in the plane.

Beyond that, I think there's not too much you can do beyond improvising some kind of electronic screening for your entire installation – which probably isn't at all practical!

GW

## JARGON BUSTING • JARGON BUSTING

**Assembler** – a program which converts an assembly language program written in words (well, almost) into the machine code numbers that the Amiga's 68000 processor understands. Writing programs in assembly language ensures that the best possible speed and memory efficiency is gained from the machine.

**Disassembler** – a program that does the reverse of an assembler – it converts machine code numbers back to assembler mnemonics, aiding programmers who want to see how a program works or, more likely, see why a program they have written doesn't work.

**Guru** – a message from the Amiga system saying that a fatal error has occurred. The message appears in a large, flashing red box and includes two numbers which are of use to programmers trying to ascertain why their programs have failed.

**Shell** – a method of communicating with the Amiga's operating system via the keyboard rather than the more usual mouse and windows method of Workbench. The Shell is the interface which 'surrounds' the Kernel, the central part of the operating system. The terminology comes from Unix-based systems.

### ASSEMBLING CODE

 I have recently purchased the **Ditel Electronics Amiga Action Replay Mark III**

which as you probably know comes with an assembler and a disassembler. I have done some assembly language (CESIL) work in school and didn't know whether this would work or not. Of course after trying it, it didn't! Can you help me by supplying:

- a) The instruction set for Amiga assembly language and an explanation of each instruction.
- b) Some information about the d0-d7, a0-a7, pc, and the sr (sequence control?), registers.
- c) Some small, simple examples programs and details of how to execute them using the Mark III.

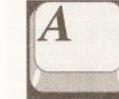
Andrew Kilgore  
Londonderry  
Northern Ireland

available. That will start you off as far as the processor and instruction set is concerned but you'll also need assembler orientated help with the Amiga's operating system and again all I can really suggest is that you read as many books/manuals as you can. You'll find assembler examples in a number of Abacus books, in the *Rom Kernel Manuals*, and of course you will find plenty of material available from public domain libraries. *Amiga Shopper* also provides a certain amount of assembler code (for a recent example see issue 9).

Remember however that the Mark III assembler is not a macro assembler and so all macros used within the code examples that you experiment with will have to be removed and the corresponding instructions written out explicitly.

PAO

### NO SENSE



I recently bought an external drive from Power Computing but I've encountered

a problem which I hope you can help me with. When I try to use the drive with games that come on two or more disks, the game doesn't seem to recognise the second disk when I place it in my external drive even when the game asks for the disk to be placed in any drive. What is going on?

Michael Ross  
Litherland, Liverpool

It doesn't sound to me that your software is at fault. If the game you are trying to run asks for a disk to be inserted into any drive, then you should be able to use your second drive. Does your Amiga always recognise a disk when it is inserted into the drive when you're using

Workbench? If it doesn't, then I'd guess that there's a problem with the drive itself. If this is the case, then send it back to Power and I'm sure the company will either repair it or send you a new one. If disks are always recognised from Workbench in your second drive, then you'll just have to put your problems down to poorly written games software. JH

### BEGIN PROGRAMMING

 I am new to the Amiga 500 Plus and wish to start programming. What book would you recommend on programming for beginners, and is it easier to use AmigaDOS or BASIC? Do you need any special software to do this or can you just use Shell?

AD Ormston  
Basingstoke  
Hants

Almost everyone starts by using Basic as their first language and I'd suggest you do the same because the AmigaDOS script language is rather specialised and not really suitable as a vehicle for learning about programming. Prior to the release of the A500 Plus, Microsoft's Amiga Basic interpreter was included as part of the system software – since the Basic manual had some beginners tutorials in it, you could have made a start without having to fork out any extra cash.

Unfortunately, with the A500Plus this is no longer the case and to program in Basic you will need to buy a Basic interpreter (and/or compiler). There are several available including HiSoft Basic, GFA Basic, and also AMOS (another Basic-flavoured language).

In your early programming days, though, you ought to stick with a Basic (such as the Hisoft offering) whose core facilities are 'Microsoft flavoured'. The reason is simple – Microsoft style Basic is pretty much a standard in the world of computers and what you'll learn will stand you in good stead not just with Basic on the Amiga but with Basic on most other machines.

Pop down to your library before buying any Amiga specific books. You'll find loads of beginners Basic books – these, though not Amiga specific, will provide explanations as to what Basic programs consist of, what variables are, how INPUT and PRINT statements are used to collect/display information and so on. I think that you'll be surprised at how much more sense the interpreter/compiler manuals themselves make afterwards. These manuals will also provide details of some Basic/Amiga-system books that are orientated towards, or suitable for, the Basic software that you've chosen to use. PAO

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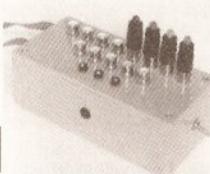
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SHOW TIME

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So what's it all about?

The Amiga Shopper Show, Wembley, May 15-17 that's what.

We want to make it the only place for serious users to be this year. So why not complete the form and tell us what you want to see...

Yes, the Amiga Shopper Show will be taking place at the Wembley Exhibition Centre on May 15, 16 and 17. As well as exciting new releases and unbelievable bargains, we'll have a whole load of seminars to help you get even more serious about your Amiga.

There will be opportunities to talk to the editorial team and have your say on where your magazine is going. Of course, our expert panel will be there too, providing solutions to all your technical queries. And we'll be inviting a number of guest speakers to come along to demonstrate specific items of hardware and software in use.

To help us make this the Amiga show of the year, why not take the time to fill in the form and tell us what you want to see?

On which of the following subjects would you like to see forums:

- Desktop publishing
- Video
- MIDI and music
- Programming

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- Education
- Workbench and AmigaOS
- Communications

Please list the three companies you would most like to see exhibiting new products at the show:

- 1) \_\_\_\_\_
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Now list the three products (hardware or software) you would most like the manufacturers to provide a Question and Answer forum on:

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At any rate, please fill in your name and address in the space provided below so that we can call your name and give you your prize during the show!

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## AMIGA SHOPPER SHOW SPECIAL QUESTION

Go on – ask us a question, any question, and you could win a prize. As part of our on-going bid to make this the best Amiga show ever, we're going to have our expert panel hosting *Amiga Answers* forums during all three days. But there's one thing that *Amiga Answers* needs, and that's a whole lotta questions – so get writing. We'll be drawing your submissions out of the Editor's extremely huge baseball cap at the show, and if you're there when we do you'll be walking away with a fabulous prize from WTS Electronics: there's four 2Mb AX500 expansions up for grabs, four 1Mb trapdoor expansions, and twelve 0.5Mb trapdoor expansions.

Oh, and don't be put off by the thought of your question becoming lost among the deluge – any which we don't get around to answering at the Show will be dealt with in the *Amiga Answers* section of forthcoming issues.

OK, I get the picture, what I'd really like to know from you chaps is...

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## AMIGA SHOPPER SHOW

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5

## TOP TIPS FOR GETTING THE MOST OUT OF THIS PAGE...

- Answer the questions
- Fill in your special Show section
- Tear out the page and fold it up
- Chuck it in the post
- Come to the Show. Job done

**2.** Fold back here

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**In this month's DTP column Jeff Walker gives you some expert tips on publishing your own newsletter. Forget the books on the subject, it's all here...**

# Press for service

**T**his month, we're going to discuss aspects of designing newsletters and fanzines. Producing a newsletter on your desktop can be as complicated or simple as you want. On the one hand you can fiddle about for ever, 'expressing yourself' and making adjustments until you consider it to be a perfect work of art, or you can work to a system and to produce it quickly while still retaining character and good design.

At the end of the day both techniques produce decent newsletters, but the second method is far quicker and has the beneficial side-effect of creating a 'style' that, once your newsletter has established itself, will become instantly recognisable as yours.

To save space I'll use the word 'newsletter' to mean both newsletters and fanzines as they are basically the same thing aimed at different types of readership. As usual, my choice of publishing package is *Professional Page*, although everything in this article could equally be applied to *PageStream*, *PageSetter II* and *Saxon Publisher* because for the most part we'll be discussing basic page design.

To start with, a newsletter needs a first page, the page on which you put the title of the publication. You have two choices – a magazine style front cover that is mainly illustration, or a newspaper style front page on which the main story is published. Both need special treatment. We'll talk about magazine covers first.

## GET NOTICED

The main job of a magazine style cover is to attract attention to itself and to tell the prospective reader what is inside. The odds are that it is sitting on a magazine shelf in a shop along with a hundred or more other magazines, so it has a lot of competition. OK, your newsletter probably won't ever make it into a

newsagents, but that is no excuse to produce bad front covers.

There are a number of elements that make up a front cover – the masthead (the name/logo of your newsletter), the illustrations, and the cover lines (the text that says what is inside).

The masthead needs to be unique and instantly recognisable, but you should not make it too intricate. While a lovingly crafted and clever logo might look great on a

the top of the page. On a newsagent's shelf you will have noticed that the magazines usually overlap one another so that only the left-hand side of the cover is visible. This is why most mastheads are positioned at top left. Alternatively, and for the same reason, the logo may run down the entire left hand side of the cover. Your newsletter won't suffer this problem so you needn't let it concern you. Having said that, Joe Public is so used to

will feel more comfortable if it looks the same on every issue.

Not strictly part of the masthead, but something that is always best positioned close to it, is the issue number and price of the newsletter. Again, decide on a style for it – keep it simple and make it easy to see so that readers don't have to search for it – and put it in the same position on every issue.

## ATTRACTING ATTENTION

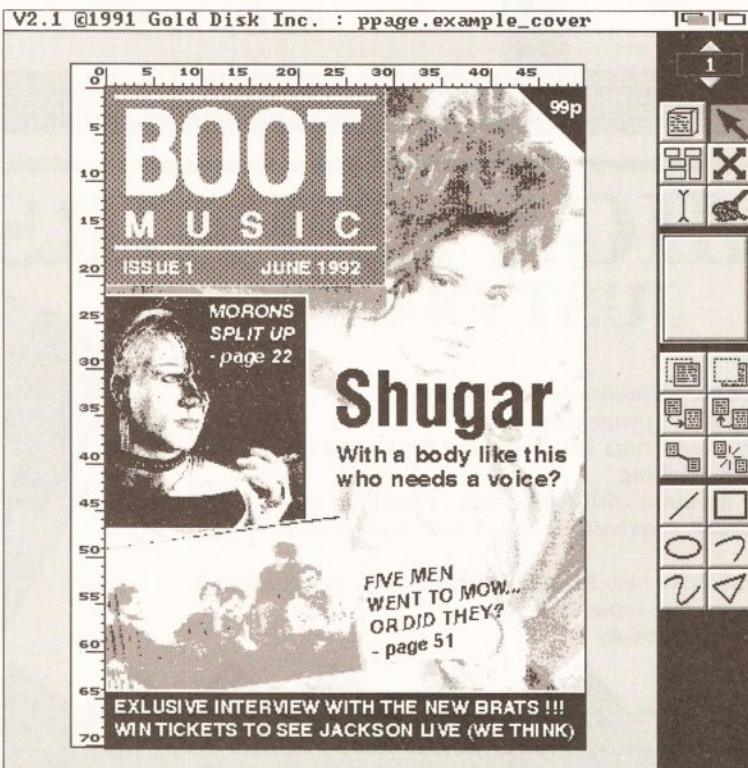
Now we come on to the main content of the cover, the illustration. Front covers should be easy to understand – readers should be able to take in the whole thing in one quick eyeful, you shouldn't force them to have to stare at the cover for 30 seconds or more to see what it is all about.

You will do yourself no favours by making prospective readers look longer; if they have to look at the cover for more than five seconds before understanding the message conveyed, there is a danger they'll begin to think that maybe they won't understand what's inside either.

The easiest way to achieve simplicity is to stick to one subject and one illustration. The illustration needs to be instantly recognisable; it's no good going for a simple design if the picture itself is confusing and difficult to understand.

The cover picture needs to reflect the content of the newsletter, and if you are having just the one illustration then this should be related to the main story inside. Don't be tempted to use an illustration for something that isn't the main story just because it is 'pretty' – if you must do this then turn that story into the main, or 'lead', one.

The chances are, however, that perhaps you don't have a main story in particular. Or maybe you have a number of stories which you feel are important enough to have on the front cover. In which case you'll want to have more than one illustration and some text on the cover about



The job of a magazine front cover is to sell the magazine, so use your best stories and most attractive pictures. But keep it simple to understand

T-shirt or hanging on the wall in an art gallery, on a front cover it is bound to clash terribly with the rest of the page, making it difficult to see. Keep to a simple design. Use a classic typeface in preference to a fancy one, and if you are using colour restrict yourself to two or three primary shades.

Mastheads always look best at

seeing mastheads in those positions that your publication will appear more professional if you put your masthead there.

Once you've decided where to put it, leave it there. Don't move it around every month or week or however frequent your newsletter is. And don't fiddle with it. Once it's designed, it's designed. Your readers

the other main stories.

You need to step carefully here because it is so easy to go over the top. The safest method is to choose one story as the main illustration and then have a box somewhere that encloses the secondary text and illustrations for the others. Or you could leave out the secondary illustrations and just have the text.

### THE COVER STORY

There's no need for me to go into any greater detail here as the cover on this magazine is a classic example of the 'many stories' technique. Although each *Amiga Shopper* cover is obviously different, the basic design remains fixed from month to month. At the top we have the masthead, at the bottom a special panel for attracting attention to special features.

Below the masthead we have a single illustration related to the month's main story. Running over the top of the illustration are two cover lines. The main one, in larger type, is there to attract attention; like a news headline it needs to say something about the subject while at the same time not giving the whole game away – it's the mystery that hooks the prospective reader and forces them to pick up the magazine for a closer look. When they've picked it up the cover line in the smaller typeface is ready waiting for them with a few more details.

As a general rule of thumb, the more detailed the illustration, the fewer cover lines should be used over the top of it – lots of detail in the picture and lots of cover lines will end up looking a right mess from a few feet away. A way around this is to put the cover lines into panels, although you have to be careful not to obscure too much of the illustration.

Down the left of the *Amiga Shopper* cover we have some panels that are designed so that they stand out and are completely readable even if the magazine is half obscured on the shelf. In this case it is like a mini contents page, but you could just as well use two or three illustrations here, with a cover line or two each. For 'many story' covers you could do a lot worse than copy this general design.

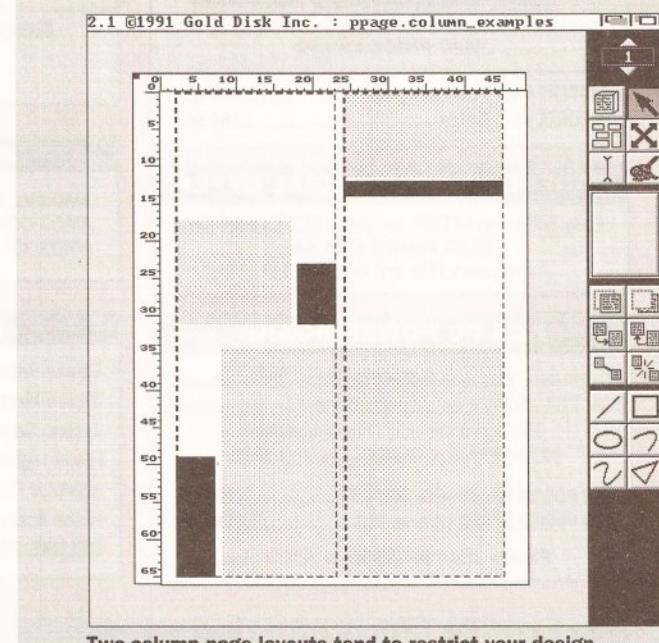
### MAN BITES DOG!

Newspaper style front pages are a completely different kettle of fish and, contrary to what you might think, they are actually much more difficult to design than magazine style covers.

A newspaper front page depends almost entirely on the headline to attract attention to itself. That headline has to interest or intrigue the reader so much that he feels



Like magazine covers, newspaper style front pages have to sell the paper. Don't have more than two stories on the front page, and give the main story the biggest headline



Two-column page layouts tend to restrict your design options. You only have two widths of illustration available, plus all the way across the page of course

forced to pick it up and read the first paragraph of the story. And that first paragraph has to interest or intrigue the reader so much that he feels forced into buying the newspaper there and then.

Headline and first paragraph writing is a great skill. Most newspapers will have an expert whose job it is to write these two elements, even if the rest of the story has been written by someone else. It's a difficult skill to learn, many books have been written on the subject over many years, and even today a newspaper is fortunate if it manages one 'perfect' front page in 10.

Your newsletter, however, won't need to sell itself so heavily because it probably won't have any competition, so you can stick to the general front page design principles and not worry too much about composing perfect headlines and first paragraphs.

The initial obstacle to get over is the danger of the masthead clashing with the headline. It's best to put the masthead in some kind of panel that is obviously separate from the rest of the page, or if the masthead stretches all the way across the page then a simple rule below it will be enough.

If there is more than one story

on the front page, then the point size of the headline will reflect the importance of each story. The most important story gets the biggest point size, the least important the smallest. In general, the most important story should be higher on the page than less important stories.

If you are going to use pictures on your front page then treat them like headlines – if possible, the most important story gets the biggest picture, unless you have a spectacular picture for a lesser story, in which case don't hesitate to put it on the front page but use a smaller headline for it than the lead story. You needn't worry too much about the composition of front page pictures as normally it will be the lead headline that dominates the page.

### MOVING INSIDE

With the basic design of the front cover sorted out we can move on to the editorial pages.

If your newsletter is more than four pages you probably need a table of contents. Many newsstand magazines will devote a page or a spread to the contents, not because there is so much in the magazine but because this will be the first place a reader looks after taking a magazine from a shelf.

Like the front cover, the job of this kind of contents page is to sell the magazine. The main guideline here is to keep it simple and make it easy for readers to see if there are any articles that they are interested in. Remember that the more space you devote to an article on the contents page, the more importance you are giving to it.

In a newsletter that doesn't have to sell itself on a shelf you are wasting space with a fancy contents page. Stick to a panel somewhere on the first or second inside page (page 2 or 3). All you need is the title of the article, the number of the page the article starts on, and maybe a sentence or two that describes what the article is about. If you want you can include the author's name in this description.

To make it easy to read use plenty of white space and use the same font for all the article titles and page numbers; the short descriptions should be in a smaller point size, and you can use a different typeface if you like, but again, use the same font for all the descriptions.

The size and shape of your contents panel will depend upon, and have to fit into, your basic page design, which is something that should be consistent throughout the newsletter.

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and four-column design. Each has its pros and cons.

There is a guideline to do with columns that you'd do well to adhere to. I've seen many newsletters over the years – both amateur and professional – and a lot of them make the mistake of not considering column boundaries when placing pictures on page. Pictures look best if they fit between columns exactly. So, for example, on a two-column page you have two widths of picture available – the width of one column and the width of two columns.

If a picture doesn't stretch all the way across a column you are left with an awkward white space. Many amateur publishers will fill this space with text, usually by running the main body copy around the picture. On the whole this is not a good idea. Often it makes the text difficult to read because the width of the column has been reduced drastically and the reader will unconsciously have to adjust to the new look of the text. And just when they've made that mental adjustment the copy goes back to full column width and they have to adjust again.

If you must stop illustrations part of the way across a column, use the white space that is left for a caption – remember that unless a picture is

need something in that column then pull out a short and pithy quote from the text on that page and set it in the narrow column in a larger point size between quotation marks. This is known as a 'call-out'. There's one below right on this page.

For two-column pages you need to set your main text in a 12pt font with 2pt of leading. A smaller font will make the text difficult to read because there will be too many words on each line, and if you use less than 2pt leading with a 12pt font the lines of text will be so close together that readers may skip lines when transferring the eye from the

end of one line to the beginning of the next.

In general, the wider the column width (known as the 'measure'), the larger the point size and the more leading should be used.

The three-column page is the most common magazine style. This is because you get a greater number of picture widths while retaining a width of column that won't make the text difficult to read. You can stretch pictures across one, two or all three columns, plus you have the option of one-and-a-bit and two-and-a-bit widths, using the leftover white space for captions.

For this width of column you should use 9pt, 10pt or 11pt for your main text. Leading can be anything from 1pt to 2pt – 1pt leading will make the page look 'busier' but will also make it slightly more difficult to read.

If three columns isn't flexible enough, you can go up to three-and-a-half columns. For this design you reduce the width of each column slightly and position two together, then a gap, then the other column. The gap can be used for captions, call-outs, and even small tables and figures.

The benefit of this design is that you can have one column, one-and-a-bit, two column, two-and-a-bit, and full measure pictures, and if you position them correctly the left and right edges of the pictures always line up with column boundaries. But because the text columns are narrower you run the risk of the copy being difficult to read because you can only get, on average, five or six words per line at 10pt. For this reason you should use a 9pt font (or a narrow 10pt one), which is about as small as you can go for main body text, although you can usually get away with 8pt for captions.

If you want to pack a lot on to each page of your newsletter, thus making it fewer pages and cheaper to reproduce, then four columns will serve you well. Using something like 9pt Times you can get about 1,300 to 1,400 words on an A4 page with no pictures. Such pages look daunting to the reader, however, so you will need at least one illustration, figure, table or panel on every page to make it look a bit friendlier. Even then you can count on 1,000 words per A4 page.

## POSITIONS PLEASE

Once you've decided on how many columns your pages are going to have you can set up a blank page in your DTP program, with all the boxes positioned correctly on the page and regular sized boxes ready to import pictures into.

But a word of warning here. Many printers insist on imposing their own top and bottom margins in order to feed in and feed out the paper. If you have one of these printers then you need to bear this in mind when setting up your page dimensions.

For argument's sake let's say that your printer imposes a half-inch top and bottom margin – one inch in total – and you are using A4 paper. In this case you should subtract that measurement from your on-screen page height. So click on the A4 button and then click in the page height gadget and subtract one inch (or 6 picas if, like me, you always work in picas).

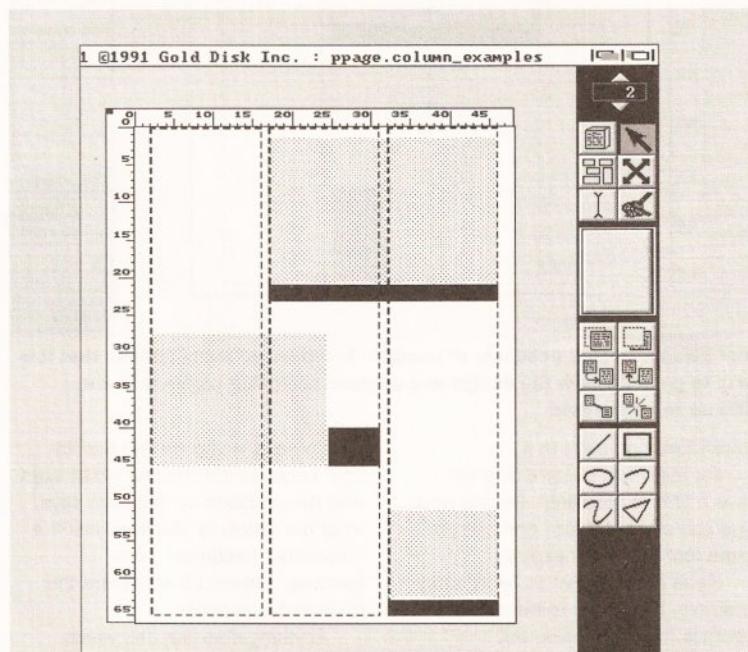
You will have to imagine the

**"If you feel you need something in that column, pull out a short and pithy quote..."**

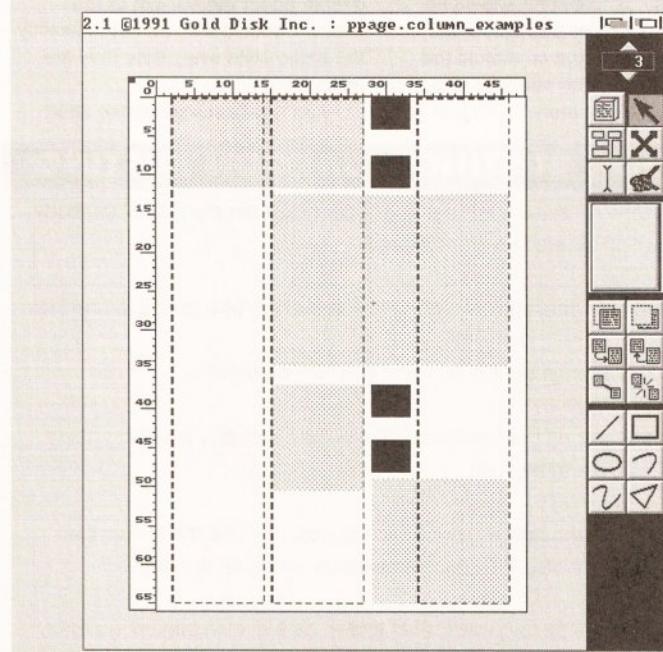
purely illustrative (that is, it is not conveying any information) it should always have a caption, as should all tables and figures.

Because you only have two choices of picture width on two-column pages this design is the easiest to work with – put simply, you have fewer decisions to make. The price you pay is the risk of looking boring, but if your newsletter is a businessy or technical publication two columns will make it look the part better than three or four columns will.

Remember that the two columns don't have to be the same width. One idea is to make one column about twice the width of the other and put the text in the wide column, reserving the narrower column for any associated pictures, tables and captions. If the text on that page doesn't have any pictures or tables, don't worry, just leave that column empty. If you really feel that you



Three-column page layouts are what most magazines use because they are flexible design-wise and provide a decent measure of column for 9pt, 10pt or even 11pt text



Two-column page layouts tend to restrict your design options. You only have two widths of illustration available, plus all the way across the page of course

margins. Work right from the top of the page, all the way to the bottom, remembering that when you print it out there will be half-an-inch above and below what you actually see on the screen.

Likewise, some printers, typically lasers and inkjets, impose a small left and/or right margin. Whatever that measurement is (your manual should tell you; if not, measure it) subtract it from the page width when setting the on-screen dimensions.

When positioning columns you should leave about a sixth of an inch (one pica) or quarter of an inch between them.

Another decision you will have to make is whether you want lines in the gutter between the columns or not. If you are flush justifying your text, gutter lines will never be needed, but you can have them if you like them. If you are setting your text left justified (ragged right edge), then gutter lines are compulsory if your columns are close together, however if the gap between columns is approximately 2 picas or greater you can get away without the gutter lines.

You only need gutter lines in between columns, not to left of the left-most column, nor to the right of the right-most column. The line weight should be a hairline if possible, half-a-point at the most.

## THE OTHER SIDE

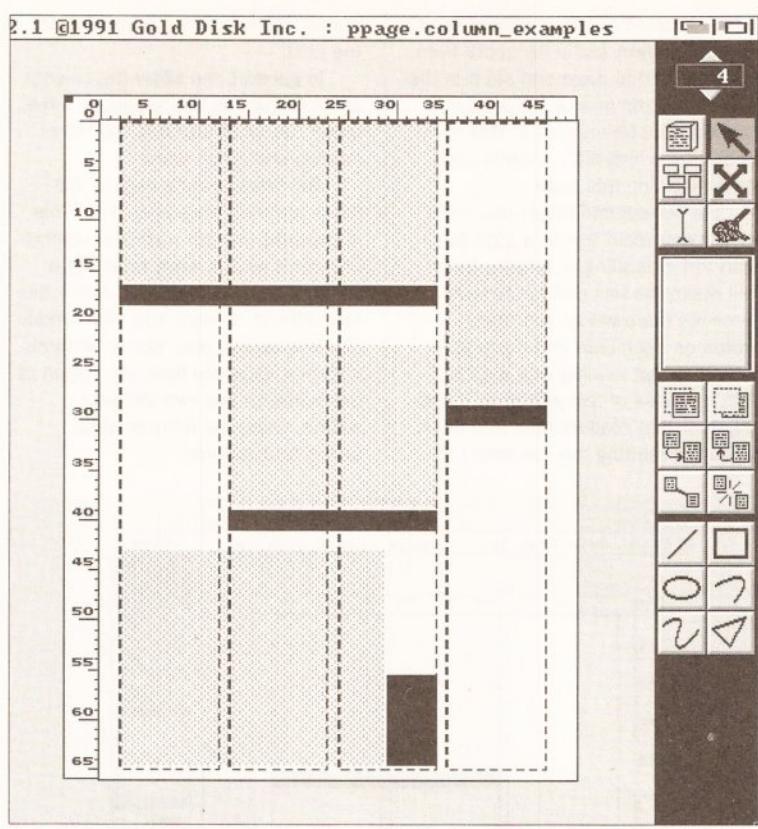
When designing a newsletter which is going to open as a normal magazine would do, so that you have a left-hand page and a right-hand page, you need to remember that the whole spread is what will get seen, not merely the individual pages. So you have to think about the facing page while designing each of them.

For instance, if you had an article, or part of an article, on the left-hand page and it included lots of pictures, then you'll have to 'balance' the spread by having some pictures on the right-hand page as well.

Remember to leave an adequate margin on the right of left-hand pages and the left of right-hand pages so that text doesn't get lost in the fold when the newsletter is bound - 2 picas is plenty for anything that is up to 60 pages saddle-stitched (folded and stapled). If you are using those plastic edge-binding strips that you slip sheets of paper into and they pinch them all together, you'll need to leave much more space in the gutter, at least half-an-inch, maybe three-quarters (3.5 picas), depending on how wide the strip is.

## STICK TO A STYLE

Above all, make sure you decide on a style for all elements of your



Four column layouts need lots of thought. You have so many options that it is easy to go potty with the design and produce confusing pages that are difficult to understand

newsletter, and stick to it.

For instance, every article will have a title or 'heading'. Decide on a typeface and point size and use the same font for each heading.

If you have a main or 'lead' story or article, then stick to the same typeface for the heading but increase the point size by 30 to 50 per cent if you like; this will help to give it more importance than the other articles.

Likewise, all captions should be set in the same font throughout the whole newsletter. And so should the bit on the page which refers to who wrote the article or story; if it's just

the author's name we call it a 'by-line' because it's the line which says who the article is by, if it also says what the article is about we call it a 'standfirst' because ... erm ... because it stands first, before the main text, I suppose.

Anything else like this which tends to happen quite a lot in your newsletter - such as bibliographies, for instance, or panels which tell the reader exactly where to get further details about the subject of the article - should also be set in exactly the same style every time they are used.

And sub-headings, those short

## JARGON BUSTING • JARGON BUSTING

**Drop capital** - An initial letter set in a larger type than the rest of the body text, which covers two or more lines.

**Pica** - A unit of typographical measure. There are twelve points in one Pica.

**Layout** - The arrangement of text and graphics on a page.

**Point** - The basic unit of typographical measure. Roughly speaking, there are 72 points to the inch.

**Gutter** - Usually the space between facing pages where the fold or the binding is, but also the space between columns on a page.

**Spread** - A pair of facing pages. Also known as a double page spread, or, for short, 'dps'.

**Body text** - The main text of the document, excluding headlines.

lines of text that break up different parts of an article. If you are going to use them, decide on a style for sub-headings and use that style for every sub-heading in the newsletter. If you don't like sub-headings you could use a dropped capital instead, or even a blank line, but don't use horizontal rules as these will make the reader think the article stops there.

A good way to invent your own style is to trot down the newsagents and pick up 10 magazines or so - see if they have any out-of-date ones that they'll sell you at a reduced price, you're not interested in the content, you want to study the design of the pages. Get out your ruler and measure things. Make a note of what you like best and copy it. It's not really stealing, honest. Well, if you copy the complete design of just one magazine it would be stealing, but if you mix and match different ideas from different magazines you'll end up with something that looks like nothing else.

## SEARCH FOR PERFECTION

Don't expect to get it right first time. After each issue is published take a look at your newsletter and make a note of where the design can be improved. (In the trade we call this a 'post-mortem' because we are pulling a 'dead' issue apart to find out what is wrong with it.)

After six or seven issues, make all the improvements in one issue. Then make notes again. After that make the improvements after another six or seven issues. Don't fiddle with the design every issue, you might enjoy doing it but your readers won't like it.

Always remember that your ultimate aim is to make the content of your newsletter as readable as possible. If you can make it look pretty as well, then you are doing your job properly, but readability is paramount. A redesign should not decrease the readability of the newsletter; if it does, it was a bad decision and you should go back immediately to your previous design.

Once you've got all these decisions made about columns, headings, pictures, sub-headings and so on, you won't have to make those decisions every time you lay out a page. In the long run, this leaves you more time for having fun and expressing yourself, which is what it's really all about.

And for heaven's sake don't take it too seriously. There will always be more people who think your newsletter is bad than those who think it is good. Take no notice, they're only jealous.

Well, that's my excuse anyway, and I'm sticking to it. **AS**

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All prices are correct at time of going to press but please note that prices may be subject to change.

# A night at the opera

It seems that hardly a week passes without another new, cheaper, and more useful gadget appearing for Amiga video and graphics users. The gizmo in question this time is a new RGB display device from a French company called Archos.

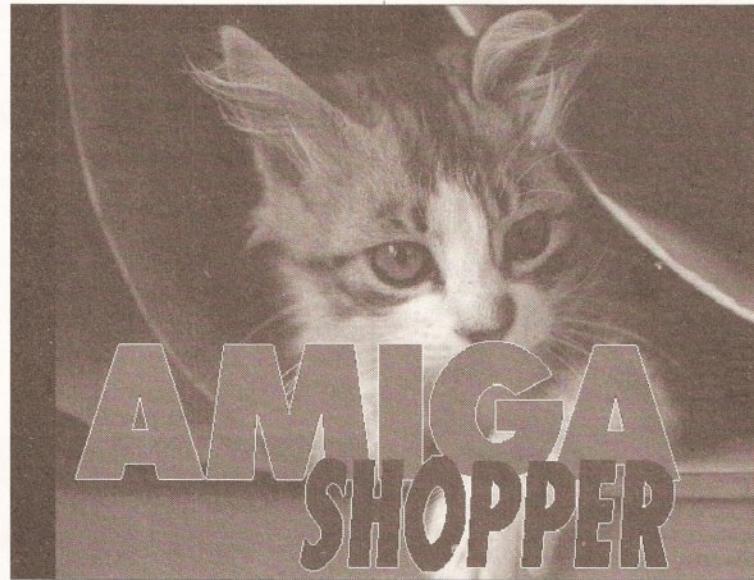
As soon as I'd heard of its existence I had an AVideo card sitting in my grubby little paws. But that's only half the story. There are, in fact, two versions – in 12 and 24-bit forms (that's 4096 and 16 million colours). The cost? £299 for the AVideo 12 and £599 for the AVideo 24 – which is quite reasonable when you find out what's included!

So what's the big deal about these new devices? Well, the great thing is that with an AVideo board installed in any Amiga (except the A1000) it's possible to display 12-bit or 24-bit graphics (depending on the AVideo model) directly on to an RGB monitor (including 1084 or 8833 monitors) in resolutions up to 768 by 580 – ie PAL overscan. The benefit of this is that the quality of output is much higher than the composite video output of devices such as the DCTV, or the Video Toaster, can be. Even so, you'll have to have a high quality RGB to video encoder or genlock to reap the benefits if you want to record the output to video.

Because the image is held in its own framebuffer and memory area, the AVideo does not interrupt the Amiga graphics processes. As a result, standard Amiga graphics can be displayed over AVideo images, rather like a genlocked graphic over a video signal. This happens on your RGB screen, meaning that any standard Amiga graphics (including animations) could be played over any 12 or 24-bit background, or output through any decent genlock!

Both boards come with a variety of software for painting, image display and manipulation and AVideo control and installation. The AVideo 24 is also provided with a complete version of *TV Paint*, while the AVideo 12 has *AVPaint* and a demo of *TV Paint* (which can work in 12-bit).

In both cases the AVideo fits into the Denise socket of the Amiga, which means the computer has to be



Graphics are easily superimposed over 12 or 24-bit images held in AVideo's framebuffer. The results can be recorded on to video tape using a genlock

cannibalised a little, something which may not appeal to those whose machines are still under guarantee or worried about damage to their Amiga. It also means that the device will not work with any future Amigas without a Denise slot.

Installation is straightforward. Simply extract the Denise chip from its socket, plug it into the vacant space on the AVideo card, then plug the AVideo into the Amiga. Mind you, you'll have to dismantle your Amiga to get at the Denise socket! If you're worried about installing it, Checkmate Digital will do it for free if you pay the return carriage of your Amiga.

If you have an Amiga with a video slot I'm not sure how the AVideo card might interfere with whatever you may have plugged in there, though I can tell you for sure that the Video Toaster refused to run while the AVideo card was installed. I can also tell you that the card fits snugly

into an Amiga 1500/2000, with barely enough space between the power supply chassis and the mother board to accommodate it.

## A CLOSER LOOK

With the AVideo now installed let's have a closer look at the software.

## AVIDEO'S TECH SPECS...

- AVideo 12 – 12-bit framebuffer/display device
- AVideo 24 – 24-bit framebuffer/display device (or 2 x 12-bit buffers)
- Software – includes *AVPaint V1.6* (AVideo 24)  
*AVPaint Demo* (AVideo 12)  
*Opera* – an *Arrex*-driven presentation program  
*AVPaint* – 12/24-bit basic paint software  
Utility programs
- Output via RGB connector for optimum display quality
- Plugs into Denise chip socket

## THE FUTURE OF AVIDEO?

An interesting application for the AVideo boards could be 12 or 24-bit animation, as a non-interlaced 768 x 580 resolution 12-bit image can theoretically be loaded into the AVideo in only 3/50th of a second, though at the moment restrictions in the Amiga hardware mean that this cannot be achieved. But in the future, and with the right hardware, who knows what we might see?

This month Gary Whiteley goes into another dimension with *Pixel 3D2.0* and presents the AVideo card

All four of the disks contain relevant programs which can be auto installed on to hard disk, though they could be used from floppy. There are also several read-me files (in English and French) which give an overview of some of the software. These are adequate for installing the AVideo card, though they don't go into great detail about the bundled software.

The first thing to do every time the AVideo card is used is run a program called AVideo, though this could be done automatically from the Startup-Sequence. But the first time the AVideo card is used it must be set up by using the ATune program to ensure that the card is attuned to the Amiga host. This procedure is similar to the HAM-E tuning – click on an arrow until the screen graphics are sharp and clear, with no jittering. Save the resulting .prefs file, adjust your Startup-Sequence to include the AVset command, and every time the system is booted the tuning will be done automatically.

## THE SOFTWARE

I wasn't able to review a complete AVideo 24 package so the rest of this review is based around the AVideo 12 – though in many respects

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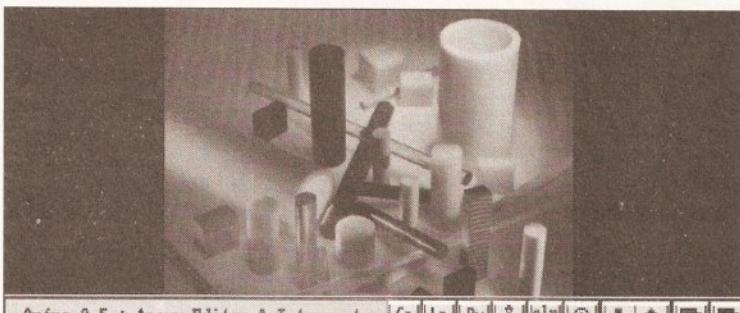
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A/F VIDIGI



```
Opéra 2.5 : ARexx Editor & Interpreter
AVSHOW('AVideo:Pictures/Heads,12b');
LOAD('PIX:AVideo12.opeaPic8');
DISPLAY(9,2,2);
LOADANIM('PIX:toasterHAManim',3,3);
LOADFONT(1,'lopaz',11);
TEXT('Demonstration File');
SDLOAD(1,'AVideo:TestSuite/copter.snd',2);
# "new" Line 1
```

OperaCompo is for devising your own presentations, which can include 12 or 24-bit graphics, Amiga graphics, animations, sound, text and drawing

the two systems are identical.

Once tuned and running it's obviously time to check out the rest of the software. But first make sure that you have ARexx installed in your Amiga, as you'll need it to run most of the AVideo programs.

### THE OPERA FAMILY

With the exception of *TVPaint*, this pair of programs is the most interesting of the supplied software. OperaCompo is an ARexx interpreter used to translate text file scripts of Opera commands into AVideo commands while OperaPlayer runs in the background and plays the Opera scripts which you have created.

By using OperaCompo it's possible to build up an entire script for manipulating Amiga images and animations, loading and displaying framebuffer images, adding and controlling text and sound (8SVX and Soundtracker files), making wipes and transitions between Amiga images and adding simple graphics.

In many ways the results from OperaCompo are similar to those produced by programs such as Director, Scala and other presentation programs, though the user interface and many of the results are completely different. For instance, it is possible to load and play a HAM animation over a 12 or 24-bit background, while replaying a Soundtracker music file. Or make a sophisticated slide show with Amiga images and 12 or 24-bit images. There is a lot of scope for creation with OperaCompo, though it does take a while to understand what all the various functions do.

## WISH LIST

Now, wouldn't it be nice if there was a facility for grabbing from live video, an auxiliary video output - all included in a box which plugs into the outside of a standard Amiga. Oh, and how about real time 12 or 24-bit animation support?

There are numerous functions to select, and many have adjustable parameters for size, speed, display time, transition length etc. While 12 or 24-bit images can only be faded up and down or cut together in sequence it is possible to do some quite sophisticated transitions on other images.

There's a heap of tutorial files that you can use to learn from. They provide a variety of examples. One, called AnimTest, plays a nice animation of a waiter in a French cafe. Others show off the range of wipe patterns and transitions, play sounds and show animbrushes.

A number of operations can be made using text, utilising standard Amiga bitmap fonts. Textfiles can be displayed, or specific captions entered and programmed into sequences. I found that text was the most difficult feature, though

perhaps due more to my partial understanding of the French help files than a problem with the program and I did manage to get some results in the end.

However, Opera is a new program and there is more work to be done. It is quite extensive and works pretty well, but if some of the annoying problems such as not being able to quit the program without rebooting were solved, I think AVideo users would have a very useful tool to complement their display cards.

### THE AV FAMILY

The AV programs are a suite of utilities for software installation, tuning up AVideo, converting 24-bit images to 12-bit versions and controlling the AVideo card. Only the last program, AVCMD, needs a

mention, as the others are all straightforward to use. It can be used to load and show 12 or 24-bit files or issue direct commands to the AVideo card - for instance as a way of flushing out the buffers or reset the card.

### AVPAINT / AVPAINT1.3

This is a basic paint program supplied in two versions - one for WB2 owners, the other for 1.3-ers. I gave each a good test drive and decided that AVPaint is not so special, as paint programs go. It does the job but suffers from a few bugs and inconsistencies which mar its overall performance. The range of tools is OK, though there are a few good features offering picture compositing effects and text handling.

For reasons which I couldn't

# Requirements:

- For TV Paint - 68030 accelerator and at least 4Mb RAM.
- For AVPaint - 68030, 2Mb chip and 2Mb RAM recommended, running under AmigaDOS 2.XX, though works with 1Mb chip RAM and 2Mb RAM and 68000 minimum under 1.3.

In general - some kind of accelerator and at least 4Mb RAM will be extremely helpful, though the accelerator is not obligatory (except for *TV Paint*). As always, a hard disk will be more than useful, considering the average size of 12 and 24-bit images (often 500K plus) and the amount of disk swapping you'd otherwise need to do. You'll also need ARexx (though WB2.XX owners have it included with their Amigas).

### JARGON BUSTERS • JARGON BUSTERS

**12-bit/24-bit graphics** - Graphics are composed of bitplanes of 2 colours each. 12 bitplane graphics can have up to 4096 colours (2 to the power 12) and 24-bit up to 16.8 million colours.

**ARexx** - A scripting language for the Amiga allowing programs which utilise ARexx ports to be linked together for input, output and other information exchange.

**Composite Video** - A video signal including chrominance (colour hue and saturation) and luminance (brightness) information in one combined signal.

**Framebuffer** - A hardware device for storing an image, often up to very high quality, usually for use with video effects hardware.

**Genlock** - A way of slaving one video source (eg Amiga) to another (eg Video Tape) in order to synchronise their signals together to allow stable wipes, mixes and other effects including overlay (key) between the two sources.

**HAM** - Hold And Modify - the Amiga's 4096 colour graphics mode.

**Overscan** - A full size video image with enough spare all round to ensure that the full video screen is safely filled.

**PAL** - Phase Alternation Line - the television standard used in the UK and around 50 other countries.

**RGB** - Red, Green and Blue components of a video signal - provides higher quality than composite video.

**WYSIWYG** - What You See Is What You Get

determine, AVPaint will load some IFF24 files and not others. It will also load raw RGB files and 12-bit IFF files which have previously been converted from IFF24 files using the AVRmap program. It wasn't a question of memory - I had 9Mb on board at the time. Even images which were of similar resolution were

picture directly to disk it's possible to save it from the AVideo's framebuffer. However, I would like the running time to be longer - simply because by the time you managed to load a picture and have started messing with the program it throws you out again. Ten minutes would have been a more realistic

## POST HYPNOTIC SUGGESTION

As a final thought, whilst considering AVideo's use of ARexx I remembered that I'd been told that Digital Vision's Scala program could use ARexx commands, though it hadn't been documented at the time. Whilst I wasn't able to test Scala and AVideo running together under ARexx (as I didn't know any of the Scala commands) I reckon that the potential is there for an impressive combination of Scala graphics running over 12 or 24-bit backgrounds. Actually, the potential is there for any program which runs ARexx to interface with the AVideo cards. Only time will tell.

treated differently. But most images did load, as long as they were in the right format.

AVPaint does not load 'normal' IFF pictures, eg *DPaint* images - they have to be converted to 24-bit files first.

Most of the usual painting tools are present, although there is no filled freehand tool or snap to grid. AVPaint is obviously faster with a faster processor, but it's not too slow on a straight 68000 machine, though loading and saving the large picture files produced could inspire you to make a cup of tea while you wait.

### TVPAINT / TVPAINT DEMO

There's a demo version of TV Paint included with the AVideo 12, and a fully working 1.6 version with the AVideo 24.

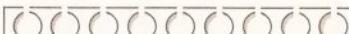
All the features you'd expect in a top quality paint program are included - and a lot more as well.

Remarkably, this is the same program which can cost more on its own for other graphics cards than a whole AVideo 24 package does. But one important difference between this version and the others is that you can't carry out real-time 24-bit painting with it. While you are able to view the fruits of your labours by toggling the screen-mode to 24-bit, you can only paint in 12-bit. This looks pretty cool anyway, but it obviously isn't the real thing as far as WYSIWYG is concerned. But at this price?...

The demo version provided with the AVideo 12 is frustrating not because it draws the word DEMO across the screen, but because it closes down after about three minutes, forcing you to restart it. It also doesn't save. Now, this protectiveness makes sense, because even if you can't save a

time limit.

A full review of TV Paint is beyond the scope of this article (see AS11 for a review of the Harlequin version) but suffice to say that TV Paint looks like a very exciting product! **AS**



### SHOPPING LIST

AVVideo 12 ..... £299  
(including software)  
AVVideo 24 ..... £599  
(including software & TV Paint V1.6)  
by Checkmate Digital Ltd  
80 Mildmay Park,  
London N1 4PR  
071 923 0658

### CHECKOUT AVVIDEO 12

#### Documentation



Only adequate, but could do with improving and/or translating. Mostly provided on disk for printing out yourself.

#### Ease of use



Would be easier with clearer manuals and more explanations of software functions, rather than being left to frequent experimentation.

#### Features



Plenty of features, some better than others, but all with potential.

#### Usefulness



Great for those requiring low cost, high quality Amiga output.

#### Price Value



Nearest competitors are DCTV and HAM-E.

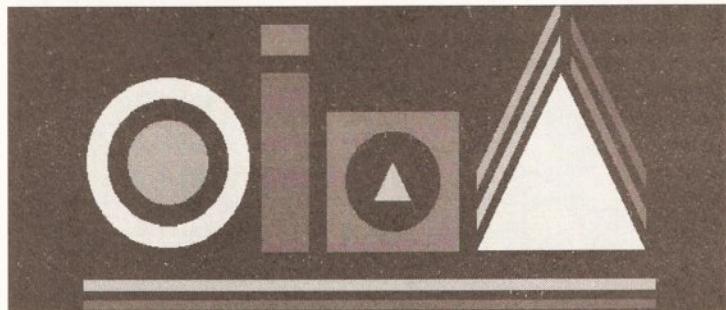
#### Overall rating



I would have liked to award four blobs, but I felt that both the Denise mounting and the lack of serious documentation were letting down these potentially blockbuster display devices.

# PIXEL 3D 2.0

## A NEW PERSPECTIVE ON 2D



Want to turn this bitmap image into a 3D object? If so, then look no further, *Pixel 3D 2.0* could be the package to take your idea from conception to the next dimension

**N**o matter how you look at them, 3D objects are complicated. Not just because they consist of multiple points and faces which are joined in three dimensional space, but because making them can often be a heck of a difficult job. You'll require highly developed skills, such as a good eye for modelling in the 2D wire-frame world of the computer and a clear notion of how you're going to get from idea to 'solid' object. You'll also require patience during lengthy image rendering times and while you iron out creases from your objects and your technique.

One prerequisite for good 3D work is an object modeller which you are comfortable with, as it's here that you'll spend much of your time struggling to turn your concept into virtual reality.

Unfortunately, this plethora of programs has spawned many different object formats - which are often incompatible. For instance, it's not possible to load *Modeller 3D* objects into *Imagine*, or *Lightwave 3D* objects into *Sculpt*. The reasons for this are historical - there is no standard IFF 3D file format. Here programs such as *Pixel 3D 2.0* come

into their own for converting from one object format to another.

There have been usable converters, such as Syndesis' *Interchange*, but until *Pixel 3D* all objects had to be created either in a modeller or, if you were really devoted, by using programming and file generation methods. Only when *Pixel 3D* brought bitmap tracing to us did things get more interesting. It became possible to digitise a logo, for instance, clean it up with a paint program and extrude it into a 3D object. Good as it was, the original *Pixel 3D* could only extrude bitmaps and save the resulting objects.

Times have changed and there are now newer formats and greater needs. The Amiga 3D community has become more demanding. Turbo cards and 24-bit are here and we want to play with the big boys. Enter *Pixel 3D 2.0* - a beefed up program to help us dream in 3D.

### 3D TO 3D

If you are an old hand at Amiga 3D you'll realise how frustrating it can be to know that you have a perfectly good object ("I've got one here that I made earlier, Blue Peter fans")

*continued on page 89*

## PIXEL 3D'S TECH SPECS...

- Turbo, Non-turbo and Demo (!) versions supplied.
- Converts any IFF bitmap image (in up to 32 colours) to 3D objects.
- Supports Lightwave, Sculpt 3D, Imagine, Turbo Silver, VideoScape 3D, 3D Professional and DXF AutoCad (for use with some PC programs).
- Inter-format conversion.
- Beveling, spin, extrusion, colour/height mapping and smoothing.
- Point and face reduction, polygon flipping, doubling and division tools.
- Impressive interactive view window.
- Accelerator and at least 1.5MB memory recommended.

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# Turbo Tales

No. 2 of a series of 94



The Klingon Cruiser had by sheer luck jumped out of Hyperspace just 300 miles from the Enterprise; they hoisted in some metal and scored two Phason hits on the Engine room before Sulu got her out of range.... As usual, the Screens were down. As usual, James T. and the crew were in an ongoing deep frown situation, and Scotty cuid'n hold 'er.... "Spock, we're in deeeeep sh..." said Kirk. "The deepest, Captain." replied Spock, with his usual attention to detail. "Let's get to the other end of the Galaxy with the utmost dispatch." Sulu punched in the numbers, but it was no use - the Trimensional Navigation Computer had been reduced to the mental age of seven by the passage of a Phason beam on its way to the Engine room. Jumping around the Galaxy without Trimensional Axes could stuff you into the heart of a planet.... As the Klingon vessel ranged up on the Enterprise, all eyes turned to Spock. "There's still a chance, Jim," he said. "Around the ship on Ethernet there are some twenty AMIGAS, all toting FUSION-FORTY Accelerators and AMIGANET. I'll configure a Neural Net to calculate the Trimensional Axes - we should do 400 MIPS, no problem." Spock set to, but in moments the Klingon Cruiser was back within striking range, its Commander on the comms screens making the usual demands. However, all was not lost: the ever resourceful Chekov cut a deal with the Klingon, trading the FUSION-FORTY boards and a few copies of REAL 3D for a couple of second-hand Ion-Propulsion Motors. Chekov figured that while the Klingons got down to some Serious Rendering, Enterprise could slip away and make repairs. The rest, as mankind looks forward to StarTrek 17, will be History.... thanks to the FFabulous

## FUSION-FORTY from RCS

(Boldly going where no Accelerator has gone before....)

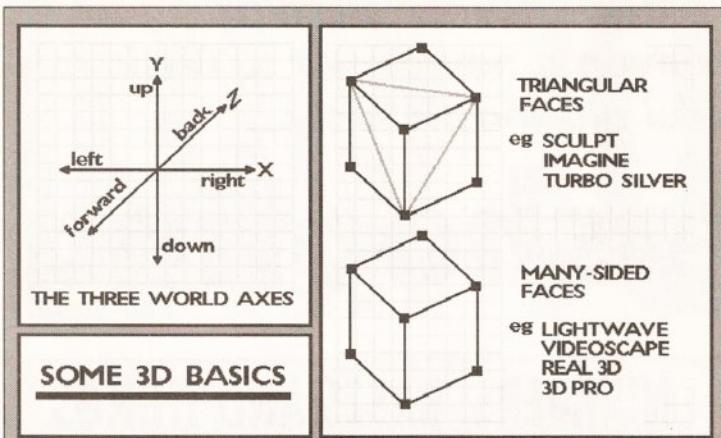
20 MIPS and 4MB of RAM - just £1395.00 at your Dealer.

The F40 is a 68040 Accelerator for A2000 Amigas, currently the fastest available in the Galaxy. Three times faster than the quickest '030 board but it still costs less. How can that be? It's not logical....

## HYDRA SYSTEMS

Red Lane, Kenilworth, UK. CV8 1PB Tel: 0203 471111 Fax: 473333

CUT OUT AND KEEP



Showing the world axes according to the Cartesian system (published by Descartes in 1637) and two methods of covering an object with faces

continued from page 87

which, to all intents and purposes, has become useless because it won't work with your new version of WizzoModelMaker, or whatever 3D program you are now using.

*Pixel 3D 2.0* may solve your conversion problems, as it can load objects from several popular formats, convert and save them in the format of your choice. In doing so, it is possible to make changes to the structure of the object, such as reducing the number of points, turning triangular faces into many-sided faces, making single-sided polygons into double-sided polygons and making sure that all the polygons are correctly aligned. Such changes are useful for reducing the chances that the converted object may have holes in it and for increasing rendering speed – objects with fewer points and faces generally render faster. So while programs such as *Lightwave 3D* (supplied with the Video Toaster) will load *Sculpt 3D* objects (made of many triangular faces), it is desirable to convert the object to a *Lightwave* or *Videoscape 3D* object (made of many-sided faces) so rendering will be faster.

## 2D TO 3D

So, *Pixel 3D* was a breakthrough because it could turn 2D bitmap images into 3D objects. But it was limited to extruding. The new version can do lots more – take a look at the Tech Spec box for more details.

How does it work? First, take a bitmap image in up to 32 colours (from a paint program, for instance), that is on a Colour 0 background. Import it into *Pixel 3D 2.0*. If the normal default settings are in use, a flat model of the image will be produced. This may be all you need – you could extrude this object in your 3D program. But this is just the tip of the iceberg!

It's easy to make more complex shapes by changing a few parameters in the Configuration requester. Perhaps you want to

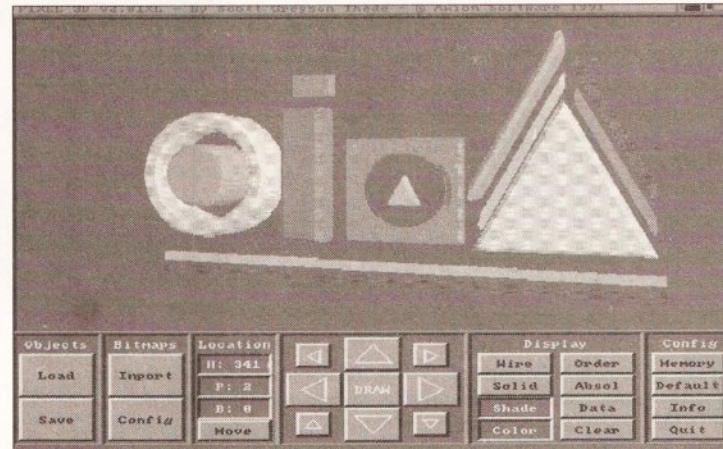
make bevelled lettering (where all the edges of the letters have been sliced back at 45 degrees to the front face). Or maybe you want to spin a flat image into a rotated object. How about a multicoloured object whose colours control the depth of extrusion – eg an easy-to-make 3D bar graph? Or one where the colour intensity in the bitmap affects the extrusion depth? There's even an option to produce a fractal object from a bitmap – with the height of the surfaces linked to the colour intensity of the image! All this is simple to do with *Pixel 3D 2.0*, but fiendishly difficult to describe.

*Pixel 3D 2.0* will retain all the colour of the original image, though for display purposes it will use only 64 colours to represent the object and its shading on screen.

*Pixel 3D 2.0* will also recognise ARexx scripts (this requires ARexx to be running on your Amiga), enabling repetitive conversions or constructions to run under ARexx control.

## 3D IN 2D

Once you have loaded an image or object into *Pixel 3D 2.0* it will appear in the view window. This is another great part of the program – click on the object and it can be rotated in space by using the mouse. Once



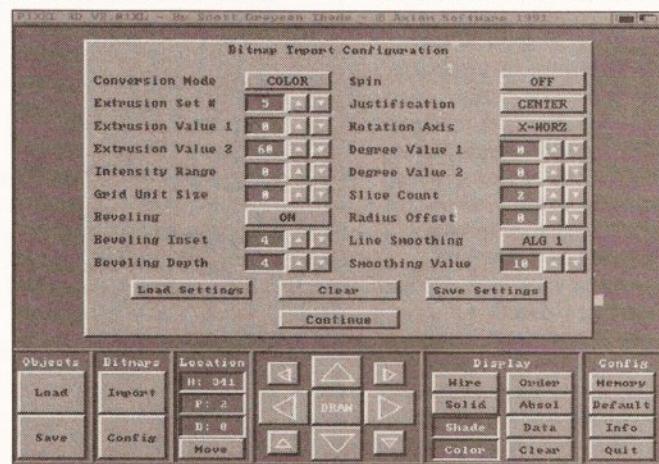
The results of extruding a bitmap image. Each colour of the image is set to extrude to a different length

rotated it will be redrawn as soon as you let go. Great for making sure that everything is as you want it to be. And not too sluggish either, even on an unaccelerated Amiga.

It is possible to zoom in or out or rotate the new object by using the arrow gadgets beneath the view window. By toggling Move the object can be moved relative to the origin (X=0, Y=0, Z=0), shifting the object's axis. A numerical readout shows exactly where you are at any time. The way in which the object is drawn can be set from a choice of combinations, comprising Wireframe, Solid (hidden lines removed), Shaded and Coloured.

## UNDER TEST

I converted objects to and from most of the supported formats and found that I only had a couple of (apparently) major problems. One concerned a particular object which I had made using *Imagine*. I re-made it and had no further trouble, so maybe it was something to do with the orientation of the object's axis (*Imagine* is perverse in that it places the Z axis where the Y axis would normally be). A more serious fault surfaced when it appeared that *Imagine* objects generated by *Pixel 3D 2.0* would not render correctly



The configuration requester is used for setting the parameters which will affect bitmap image manipulation by *Pixel 3D 2.0*

with Phong shading enabled. I called Axiom Software in the States to explain the problem. The solution is to make use of the Merge function in *Imagine* – it's not a problem with *Pixel 3D 2.0*, more the way that *Imagine* handles some objects. Problem solved – thanks guys! The ARexx functions work fine too. It does take practice to understand everything that goes on, but in my opinion it is worth it, as you will be repaid later on. **AS**



## SHOPPING LIST

**Pixel 3D 2.0 (inc VAT)..... £99.95**  
by Axiom Software  
Available from:  
HB Marketing Ltd,  
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## CHECKOUT PIXEL 3D 2.0

**Documentation**   
Informative, with good examples, though some omissions.

**Features**   
Extensive – more than enough for most.

**Ease of use**   
Simple and effective.

**Speed**   
Even faster with the accelerated version.

**Price Value**   
The only slight drawback (sells for \$70-\$80 in USA).

**Overall rating**

No real competition for *Pixel 3D 2.0*'s usefulness, unless you're a *Real 3D* user. Great time saver for 3D users and well worth the investment. By the way, if your friends like it there's a fully working, though non-saving, demo also included on the disk. So they can try before they buy.



are going to be too complicated but they will require a working familiarity with both binary/hexadecimal number conversion and bit-orientated AND/OR operations. To avoid cluttering the main Basic text I've dealt with these issues separately and the following discussions therefore assume that you are already binary and hex literate!

## TRANSMITTING DATA

When using the SER: device from Basic the complexities of the Amiga's serial port are relatively transparent. All the programmer has to remember is that Preferences needs to be used to set suitable serial port characteristics, namely, a baud rate of 31250 with no parity or handshaking, and just one stop bit.

File handling from AmigaBasic, and most other Basics, is straight-

terminal newline character).

There are several ways of transmitting longer messages but the easiest approach is to build up the messages using CHR\$() with Basic's string concatenation operator (+). To transmit a two byte program change message, I'd need to send a program change status byte followed by the patch number. The channel/patch-p message takes this form...

|             |        |           |        |
|-------------|--------|-----------|--------|
| Status byte | .....  | Data byte | .....  |
| 1100 nnnn   | binary | pppp pppp | binary |

Providing that we remember that MIDI channel numbers 1-16 are transmitted as the numbers 0-15 and patch commands 1-128 are represented by the numbers 0-127, it is easy to work out which bytes need to be transmitted. If we wanted to transmit a patch number = 5

## LISTING 1 • LISTING 1 • LISTING 1

```
SUB PlayChord(type$,rootnote,channel) STATIC
  IF type$="major" THEN RESTORE MajorChord
  IF type$="minor" THEN RESTORE MinorChord
  READ count
  FOR I= 1 TO count
  READ interval
  PRINT#1,FNNoteOn$(rootnote+interval,channel)
  NEXT I
END SUB
```

forward. Basic's sequential file handling input/output conventions are that you 'output TO a file' or 'input FROM a file' - so to open the serial device for sending serial data this statement could be used...

OPEN "SER:" FOR OUTPUT AS #1

To make sure MIDI data is sent at once (and not buffered), it is best to explicitly set a buffer size of 1 byte. This modified form does the job...

OPEN "SER:" FOR OUTPUT AS #1 LEN=1

With the serial device open, all that's needed is a way of sending MIDI messages. The easiest way is to place them in a string variable or expression. Let's suppose that I wished to transmit a MIDI real-time stop message (which is a single byte whose value is decimal 252, ie FC hex) - Basic has a number of string conversion functions but the most useful for current purposes is CHR\$(). This converts a numeric argument into a 1 byte character string. If I use it in conjunction with Basic's PRINT# statement like this...

PRINT# 1, CHR\$(252);

MIDI stop message will be transmitted (the final semicolon prevents Basic from transmitting a

command on MIDI channel 2 we'd need to incorporate the numbers 4 and 1 respectively into the general message just described. The binary, hex, and decimal forms of the required numbers are as follows...

|             |             |                  |       |
|-------------|-------------|------------------|-------|
| Status Byte | .....       | Data Byte        | ..... |
| Prog Change | Channel     | Patch Number     | ..... |
| 1100        | 0001 binary | 0000 0100 binary | ..... |
| C           | 1 hex       | 0 4 hex          | ..... |
| ie          | 193 decimal | 4 decimal        | ..... |

and so the message which needs to be transmitted is this...

PRINT# 1, CHR\$(193) + CHR\$(4);

Most programmers however prefer to use hex values for status bytes and, in the above example, this would be done by re-writing the fragment as...

PRINT# 1, CHR\$(&Hc1) + CHR\$(4);

Why use hex? Because working out decimal values for the status bytes makes it *harder* to see what the status byte represents. The 1 value in the above status byte C1 hex tells you that the byte refers to a channel 2 MIDI message, and the C tells you that the status byte refers to a program change message. The same information is there when the status byte is in decimal form...

continued from page 90

| binary | hex | binary | hex |
|--------|-----|--------|-----|
| 0101   | 5   | 1101   | D   |
| 0110   | 6   | 1110   | E   |
| 0111   | 7   | 1111   | F   |

To convert a hexadecimal number into binary form you just replace each hexadecimal digit with its group of four binary digits. To convert a binary number to its hex form you peel off (from right to left) groups of four bits and replace them with the corresponding hex digit!

So, to convert CF hex to the binary equivalent you'd replace each of the two hexadecimal symbols with the binary equivalents like this...

|          |      |      |                   |
|----------|------|------|-------------------|
| CF hex = | C    | F    |                   |
|          | 1100 | 1111 | = 11001111 binary |

To go the other way you take groups of four bits from the binary number and replace them with the corresponding hex digits. The binary number 1111000010101010, for example, could be translated to hexadecimal form as follows...

1111000010101010 = 1111 0000 1010 1010

F 0 A A = FOAA hex

Using (and converting between) binary, hex and decimal number systems is not that difficult but it does take practice. Familiarity with hex and binary number forms is also essential for understanding how the bitwise logical operations provided by most high-level languages work. For this month's MIDI instalment I've used logical AND and OR - these perform operations based on these two truth tables...

| X | Y | X AND Y |
|---|---|---------|
| 0 | 0 | 0       |
| 1 | 0 | 0       |
| 0 | 1 | 0       |
| 1 | 1 | 1       |

Logical AND Operation

| X | Y | X OR Y |
|---|---|--------|
| 0 | 0 | 0      |
| 1 | 0 | 1      |
| 0 | 1 | 1      |
| 1 | 1 | 1      |

Logical OR Operation

Being able to 'picture in your mind' what these tables mean is a big advantage - if you AND two operands together then only the bit positions where both operands have a bit set to 1 will produce a 1 in the result. With the OR operation you'll get a 1 in the result when either (or both) of the bits in that position in the corresponding operands are set to 1.

The bit pattern for FO hex for instance is 11110000 so ANDing any value with FO hex will force the lower four bits of the result to zero - the value FO hex is called a mask because it 'masks out' certain bit positions. You'll find examples of this type of use in this month's instalment. The OR operation is also useful because it can force bit positions to take particular values. You'll find an example in the main text where a MIDI channel number is combined with a general MIDI message code to create a complete status byte.

One last thing... AmigaBasic, like most Basics, requires hex numbers to be identified by using an &H prefix. Hence in AmigaBasic FO hex would be written as &HFO, FAA hex would be &HFAA, and so on.

I don't really like to see programs littered with CHR\$() type statements. A useful idea, as far as constant values are concerned, is to isolate the characters transmitted so that they are no longer embedded in the main code. One approach is to place any required definitions at the start program. The definition...

```
REM define constants...
message$=CHR$(&Hc1) + CHR$(4)
```

might, for instance, be used later as:

```
PRINT# 1, message$;
```

You don't have to use constant values in the PRINT# expressions. To send a two byte message consisting

of the numerical values X and Y we could use something like:

```
PRINT# 1, CHR$(X) + CHR$(Y);
```

If X=&Hc1 and Y=4, the same message as described earlier would be transmitted.

## GOING LOOPY...

The variable approach is useful when used as part of a Basic FOR/NEXT loop. To send all 128 channel program change messages on MIDI channel 2 I could use this loop:

```
X=&Hc1
FOR Y=0 to 127
  PRINT# 1, CHR$(X) + CHR$(Y);
NEXT Y
```

To send the program change patch 5 message on all sixteen MIDI channels I'd use a loop to modify the status byte value:

```
FOR X = &HCO TO &HCF
PRINT# 1, CHR$(X) + CHR$(4);
NEXT X
```

If all program change messages on all channels were to be sent a double loop, this would do the job...

```
FOR X = &HCO TO &HCF
FOR Y=0 to 127
PRINT# 1, CHR$(X) + CHR$(Y);
NEXT Y
NEXT X
```

In general, it is better to use meaningful variable names. In a real program the above fragment might be written as something like...

```
FOR STATUS = &HCO TO &HCF
FOR PATCH = 0 to 127
PRINT# 1, CHR$(STATUS) + CHR$(PATCH);
NEXT PATCH
NEXT STATUS
```

As well as binary <-> hex <-> decimal conversion, budding MIDI programmers need to be happy about extracting part-values from a byte. Given a channel message status byte, for instance, we'll often need to be able to identify the channel and the message type. Channel numbers can be obtained from a status byte by masking out the upper four bits of a byte by ANDing with &HF, like this...

```
channel=ASC(status$) AND &HF
```

Similarly masking out the lower four bits (by ANDing with &HFO) will give the isolated MIDI message class in the top four bits of the number...

```
messagetype=ASC(status$) AND &HFO
```

Sometimes the alternative situation will occur and you'll want to build up a status byte from the component channel and message type values. Here the values are combined by ORing, so to create and send a Note-On status byte we would OR &H90

with the channel number and transmit the value using this...

```
PRINT# 1,CHR$(&H90 OR channel);
```

To transmit a complete Note-On message we'd follow the status byte with a number and a velocity value...

```
PRINT# 1,CHR$(&H90 OR channel)
+CHR$(note)+CHR$(velocity);
```

The string part of these types of fragments are useful and easily turned into user-defined functions (UDFs). Here's one which sends a complete MIDI Note-On message on a specified channel, this time using a fixed velocity value of 64...

```
DEF FNNoteOn$(note, ch)=CHR$(&H90 OR
(ch-1))+CHR$(note)+CHR$(64)
```

Subtracting one from the channel

middle C root) on that channel. When the left mouse button is pressed the major chord is cancelled and changed to C minor, and, when the left mouse button is pressed again that minor chord is also cancelled. Not what you'd call an 'earth shattering' MIDI program but it does illustrate how such ideas can fit together in a real program...

Once you know how to transmit one type of MIDI message, you can apply the same type of principles to any MIDI message. Having to work with binary and hex numbers takes some getting used to at first, but it is particularly important for MIDI programming.

As with most things the solution to any difficulties in this area is to practice – have a look in your synthesizers MIDI implementation chart or manual, see which messages the synthesizer can

## LISTING 2 • LISTING 2 • LISTING 3

```
OPEN "SER:" FOR OUTPUT AS 1 LEN=1
FOR channel = 1 to 16
    CALL PlayChord("major",root,channel)
NEXT channel
GOSUB CheckMouse
FOR channel = 1 to 16
    CALL CancelChord("major",root,channel)
NEXT channel
CLOSE 1
END' Logical end of program
```

## LISTING 2 • LISTING 2 • LISTING 3

```
REM
REM User-defined functions...
DEF FNNoteOn$(note, ch)=CHR$(&H90 OR (ch-
1))+CHR$(note)+CHR$(64)
DEF FNNoteOff$(note, ch)=CHR$(&H80 OR (ch-
1))+CHR$(note)+CHR$(64)
REM Constants...
MajorChord: DATA 3,0,4,7
MinorChord: DATA 3,0,3,7
root=60
REM
REM Main program code...
OPEN "SER:" FOR OUTPUT AS 1 LEN=1
INPUT "Please enter MIDI channel ";channel
CALL PlayChord("major",root,channel): GOSUB CheckMouse
CALL CancelChord("major",root,channel)
CALL PlayChord("minor",root,channel): GOSUB CheckMouse
CALL CancelChord("minor",root,channel)
CLOSE 1
END' Logical end of program
REM
REM Subprograms and subroutines...
SUB PlayChord(types,rootnote,channel) STATIC
    IF type$="major" THEN RESTORE MajorChord
    IF type$="minor" THEN RESTORE MinorChord
    READ count
    FOR I= 1 TO count
        READ interval
        PRINT#1,FNNoteOn$(rootnote+interval,channel)
    NEXT I
END SUB
REM
SUB CancelChord(types,rootnote,channel) STATIC
    IF type$="major" THEN RESTORE MajorChord
    IF type$="minor" THEN RESTORE MinorChord
    READ count
    FOR I=1 TO count
        READ interval
        PRINT#1,FNNoteOff$(rootnote+interval,channel)
    NEXT I
END SUB
REM
CheckMouse: IF MOUSE(0)<>-1 THEN CheckMouse
RETURN
REM
```

number lets me use conventional channel numbers from 1 to 16 rather than having to work in terms of the internal representations (ie the values 0-15). Here is the alternative function to turn a note off...

```
DEF FNNoteOff$(note, ch)=CHR$(&H80 OR
(ch-1))+CHR$(note)+CHR$(64)
```

It's possible to use these functions in all sorts of ways. I could, for example, use DATA statements to define chords by adopting the convention that my data statements consisted of a note count followed by the values of the harmony intervals (from some unspecified root note). Descriptions could be built up so...

- MajorChord: DATA 3,0,4,7 : REM three notes – root, major 3rd, and fifth
- MinorChord: DATA 3,0,3,7 : REM three notes – root, minor 3rd, and 5th

and it would be possible to write a subprogram to play the notes of a chord on a specified MIDI channel. Listing 1 gives an example...

In listing 2 I've put these ideas into an example which asks the user to provide a MIDI channel value, and then plays a major C chord (with a

recognise, and write a few of your own UDF based programs – this experimentation will help you understand what happens to your music at the nuts and bolts level.

Here's a couple of suggestions to get you started:

To write a program which transmits a C chord on all sixteen MIDI channels you could change the code in the main program of listing 2 to that shown in listing 3...

Alternatively you could create a MIDI Patch (program change) transmitter based on this user-defined function...

```
DEF FNSendPatch$(patch, ch)=CHR$(&HCO OR (ch-1))+CHR$(patch)
```

At this stage we come back full-circle to the subject of MIDI fault finding. The bottom line is that by being able to understand and generate your own MIDI test data you will be in an infinitely better position than the user who regards MIDI communications as some sort of 'electrical magic'.

## COMING SOON...

Next month I'm going to continue these Basic discussions by looking at the opposite problem... reading and decoding MIDI data as it arrives at the serial port. **AS**

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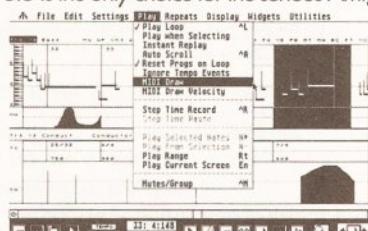
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Command mode is entered by typing AT followed by a number of options, for instance D to dial a number or B to set the mode. The AT part of the string need only be entered once, so to set the mode and dial a command string such as ATB5D0813901244, <RETURN> could be used. The command entered is stored in a 40 character internal buffer and can be reused if required (see below).

Not all commands start with AT though, a few command buffer orientated one do not, and they are also listed below.

## SOME OF THE HAYES COMMANDS AVAILABLE

Hayes commands are a standard way of setting up your modem. Here are some of the more important ones and what they do.

### ● ATA: Answer immediately.

This command will cause the modem to try and answer an incoming call. It is useful for connecting to another modem without the need for a BBS system. The other person simply dials your telephone number, and when you hear it ringing you type ATA, the modem will answer the phone to establish the link.

### ● A/: Repeat the last command.

Repeats the last command string you entered. The command buffer is only cleared by a new AT command or loss of power.

### ● A%: Display what is currently stored in the command buffer.

The command buffer is not cleared so A/ can still be used.

### ● ATBn (eg. ATB5): Set the mode.

This command is used to determine the speed of operation of the modem and whether the modem is originating calls or answering them. The exact numbers available will vary depending on the speed of your modem but the most common ones shown in figure 1 opposite.

● ATCn (eg. ATC0): Carrier on/off. This command controls the status of the carrier signal. Issuing the command ATC0 will turn the carrier off - this will have the result of hanging up during a call. Having done this though, the carrier will not turn on again until a ATC1 (carrier on) or ATZ (reset) command is issued.

The ATC1 command turns automatic carrier control on, it also turns the carrier on immediately. It is best to turn the carrier off using the hang up command (ATH). The default for this option is carrier on.

### ● AT&Cn (eg AT&C1): Carrier detect line mode.

With this option set to 1 (the default)

the carrier detect line indicates the presence or absence of the carrier, otherwise the line is permanently active.

● ATD (eg. ATD0813901255): Dial. Puts the modem into originate mode and begins to dial. There are several options available within the dial string which effect its operation, see DIALLING.

### ● ATEn (eg. ATEn): Command echo on or off.

ATE0 disables command echoing, whereas ATE1 turns it on. With command echoing any commands entered will be "echoed" back to the terminal.

● ATHn (eg. ATHO): Directly controls the relay used by the modem to seize and drop the line.

## FIGURE 1: MODEM SPEEDS AND MODES (ATBn command)

The example settings shown below are for a 2400 baud modem supporting V21, V22, V23 and V22bis.

|      |            |                       |           |
|------|------------|-----------------------|-----------|
| n= 0 | V22 alt B  | 1200 baud Full duplex | Originate |
| 2    | V21        | 300 baud Full duplex  | Originate |
| 3    | V22 alt B  | 600 baud Full duplex  | Originate |
| 4    | V22        | 1200 baud Full duplex | Originate |
| 5    | V22bis     | 2400 baud Full duplex | Originate |
| 6    | V23 mode 2 | 1200 baud Half duplex | Host      |
| 16   | V22 alt B  | 1200 baud Full duplex | Answer    |
| 18   | V21        | 300 baud Full duplex  | Answer    |
| 19   | V22 alt B  | 600 baud Full duplex  | Answer    |
| 20   | V22        | 1200 baud Full duplex | Answer    |
| 21   | V22bis     | 2400 baud Full duplex | Answer    |
| 22   | V23 mode 2 | 1200 baud Half duplex | Terminal  |

### ● AT&Dn (eg. AT&D2): Data terminal ready line mode.

Controls the operation of the DTR line, with the following options:

- n=0 Modem ignores DTR line
- n=1 Modem enters command state when DTR line goes from on to off

ATH0 (or just ATH) is used to hang up the modem at the end of a call.

### ● ATIn (eg. ATI2): Returns selected product or setup information.

For instance ATI2 will return details of the current settings of the modem,

## FIGURE 2: RESULT CODES

### BASIC SET (ATV0)

| Numeric | ASCII      | Meaning                                 |
|---------|------------|---|
| 0       | . OK       | Command completed successfully          |
| 1       | CONNECT    | Carrier detected                        |
| 2       | RING       | Ringing signal detected (incoming call) |
| 3       | NO CARRIER | Carrier has been lost                   |
| 4       | ERROR      | Incorrect command entered               |

### EXTENDED SET (ATV1)

|               |              |                           |
|---------------|--------------|---------------------------|
| As above plus |              |                           |
| 5             | CONNECT 1200 | 1200 baud connection made |
| 9             | CONNECT 600  | 600 baud connection made  |
| 10            | CONNECT 2400 | 2400 baud connection made |

### 255-EXTENDED SET (ATV2)

|               |              |  |
|---------------|--------------|--|
| As above plus |              |  |
| 21            | CONNECT 7512 | 75 baud receive, 1200 baud transmit connection |
| 22            | CONNECT 1275 | 1200 baud receive, 75 baud transmit connection |

### Note:

No matter which set of codes are used, a 300 baud connection will always be reported using CONNECT.

- n=2 Modem hangs up line and enters command state when the DTR line goes off

- n=3 Modem resets completely when the DTR goes off

The default mode is 2.

it's mode, the number of stop bits etc.

### ● ATMn (eg. ATM2): Controls the audio monitor.

The action depends on the value of n. If n is 0, the speaker is always

turned off; if it is one, the speaker is turned on until the carrier is detected, allowing you to listen to the call being made. If a value of three is used the speaker is always on.

### ● ATO: Go on-line.

Used to return to a line having left it with a valid escape sequence (see below)

### ● ATP: Sets the modem into Pulse dialling mode.

● ATQn (eg ATQ0): Determines whether result code should be sent or not, if n is 0 they will be.

### ● ATSr? (eg ATS3?): Returns the value contained in one of the modems registers.

The registers available will depend on your modem but some examples are shown in REGISTERS.

### ● ATSr=n (eg. ATS12=10): Sets the value of the specified register (r) to n.

### ● ATT: Sets the modem into tone dialling mode.

### ● AT&Tn (eg. AT&T1): Performs a self test.

After running this test the number of errors found will be returned. Values less than 10 are OK.

### ● ATVn (eg. ATV1): Sets result codes (see below) to either verbose (n=1) where result codes are returned using words, or terse (n=0) which uses digits.

### ● ATXn (eg. ATX2): Controls the result code set used.

Either basic (n=0), Extended (n=1) or 255-Extended (n=2)

### ● ATZ: Terminates any link with another modem and resets all parameters to their default values.

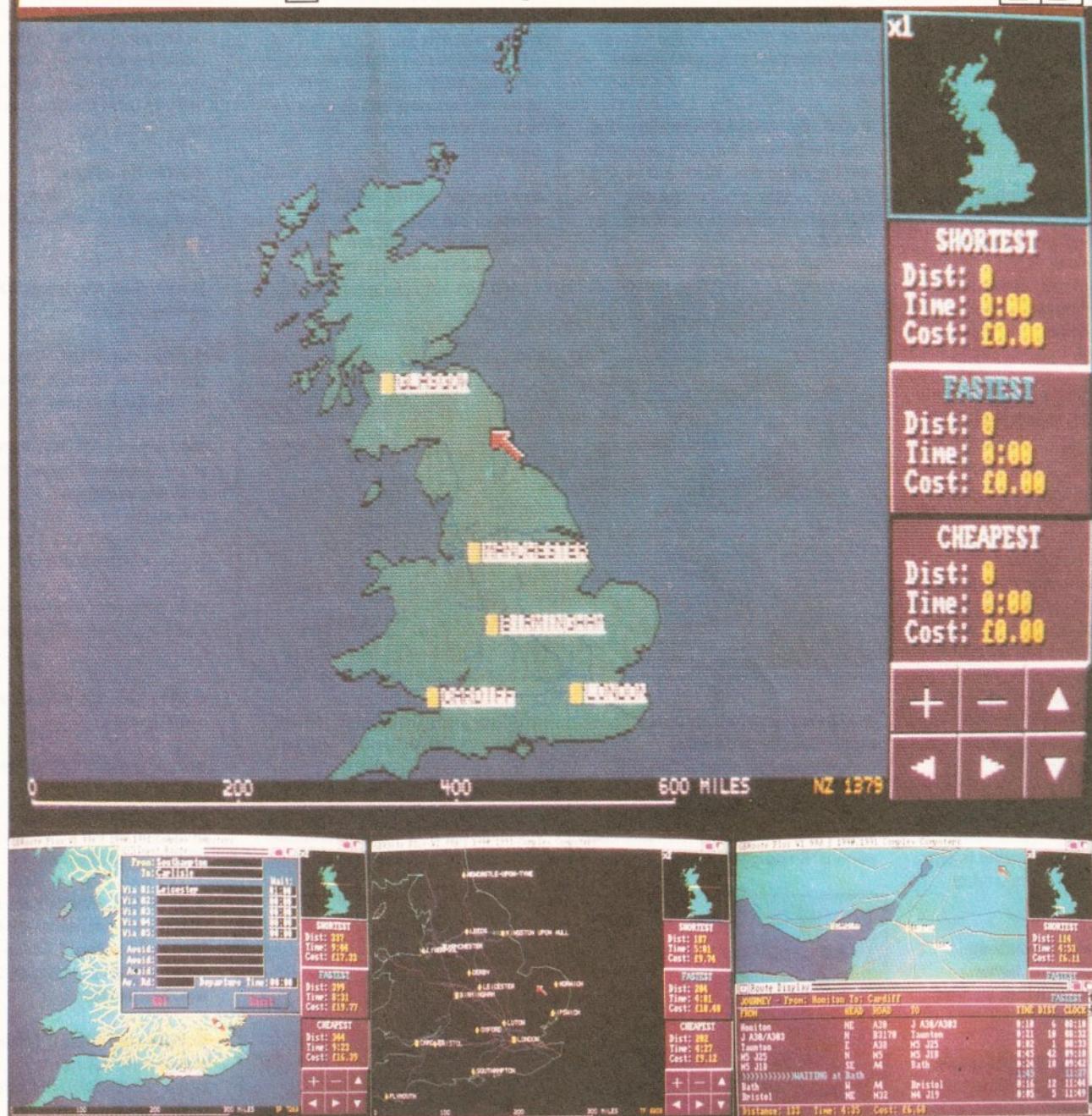
## ESCAPE SEQUENCES

Escape sequences are used to force the modem from on-line mode to command mode. An escape sequence is made up of three escape characters which are usually "+" although this can be changed (see register S2).

When an escape sequence is used, it must be preceded and followed by a guard time during which no characters must be transmitted. The length of the guard time is determined by the value in S12.

After an escape sequence has been used to enter command mode the ATO command can be used to return on-line.

continued on page 97



**£79.95** Inc Vat

1 Meg Required

## GBRoute Plus

### Route Planner for the Amiga

**£79.95** Inc Vat

1 Meg Required

GBRoute Plus for the Amiga computer has been carefully designed to assist the United Kingdom motorist plan easily and efficiently journeys almost anywhere in the UK. GBRoute Plus will not only find routes but will also cost, time and distance a journey in a matter of seconds, allowing the user to then print out a route or graphical map in either black and white or colour. There are many other features within the software designed for ease of use many of which allow the user to customise the program to suit the individual driver.

#### Features include:-

- \* Over 25 Million possible routes
- \* Calculate shortest, fastest and cheapest routes
- \* Includes Motorways, A roads and B roads
- \* Includes Cities, Towns and many Villages
- \* 5 Via options, 3 Avoid places and avoid road
- \* Colour and wireframe map graphics
- \* Interlace display
- \* Supports colour and black and white printers
- \* Map scrolling and zooming facilities

#### Features Include:-

- \* Motorway service stations included
- \* Road Bias facility for six classes of road
- \* 10 levels of magnification to a 1 mile scale
- \* Mileage scale bar
- \* National grid coordinates
- \* Colour palette requester
- \* ARexx support - over 50 commands
- \* Vector mileage calculator
- \* 3D look user interface

#### Dealers Contact:

1. Leisure Soft
2. HB Marketing
3. Laser Distribution
4. Centresoft/IBD
5. SDL

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continued from page 95

## RESULT CODES

Hayes modems return a series of "result codes" which help you and your software determine what is happening. There are three sets, BASIC, EXTENDED and 255-EXTENDED and the result codes for these are shown in figure 2 on the previous page. Which set of result codes to be used is determined using the ATW command.

## DUPLEX MODES

There are three types of "DUPLEX", communications modes which modems can operate in. *Full Duplex* means that transmission of data can take place in both directions simultaneously. In *Asymmetric Duplex* mode, only one device can transmit at full speed at any one time, but the other can transmit at a much lower speed (such as V23, 1200/75 baud). Finally, in *Half Duplex* only one device can transmit at a time.

## PRECISION DIALLING

Dialling is performed using the ATD command followed by the number you wish to dial. There are also several other options which allow you to control the dialling more precisely.

### ● R - Reverse mode

This option is used to allow a modem to autodial an originating modem. Its main use is for connecting to modems which do not have an auto answer mode.

### ● P,T - Pulse & tone dialling mode

Controls the type of dialling to be used, which one should be used depends on the type of telephone exchange you have.

### ● W - Wait for secondary proceed

This is used mainly for private exchange and waits for a proceed tone. For example, if a 9 must be dialled to get an external line, the dial string would be ATD9W0812341234. This would dial the 9, wait for the proceed tone and then continue dialling.

### ● , - Pause

A comma in a dial string inserts a delay of n seconds where n is obtained from register S8 (see REGISTERS). The first comma after a digit will have a minimum delay of 4 seconds and can be used instead of the W option to allow for connection to an outside line, or Mercury exchange.

### ● ; - Return to command state

Placed at the end of a dial string it causes the modem to return to command state after the number has been dialled.

# THE END ZONE

**F**rom time to time, I plan to visit a few BBSs to give you a better idea of what is available. This month it's the turn of the End Zone. I first encountered The End Zone when I was setting up my own BBS and the sysop, Adam, proved to be extremely friendly and knowledgeable. Since then the board has gone from strength to strength and currently boasts a 1.2Gb hard drive and loads of files to go on it. I'm happy to say, that despite this increase in size, he's still as helpful and friendly as ever.

The board is not exclusively devoted to the Amiga, it also covers PC, Archimedes and other machines. But around half the callers are Amiga owners and there is an impressive array of public domain Amiga software available for download. Unfortunately Amiga owners are shirking their duty somewhat and not uploading as much software as Adam would like. I'm sure this will change in the future though.

### Dialing End Zone...

|           |                              |            |
|-----------|------------------------------|------------|
| Number:   | 0524 752245                  |            |
| Speed:    | 2400                         |            |
| Comment:  | (none)                       |            |
| Script:   | ncomm:scripts/endzone.script |            |
| Config:   | (none)                       |            |
| Macros:   | (none)                       |            |
| Retries:  | 0                            |            |
| Next:     | (Select from menu)           |            |
| Esc/Abort | Space/Next                   | Del/Remove |

Going on-line - when you dial End Zone from within NComm 1.921, the above information appears

### HERE FIDO

As with all good boards The End Zone is part of Fidonet and features the usual echomail areas, including some of the more obscure areas such as Police Questions and International Recipes, so whether you're planning on joining up with the forces or even an evening to impress a special person, you know where to look!

### ONE OF THE GANG

The End Zone also operates an entirely voluntary membership scheme. Paid-up members are given unlimited time on-line and unlimited downloads. Members can also obtain any software on the board by sending a disk to Adam, he will copy the software and return the disk free of charge. All this for just £10 a year!

### INTO THE KITTY

The money from the membership goes towards improving the board, for instance buying a new hard drive and in particular towards getting a new line - so, you can be sure that it's all in a good cause. One thing you'll notice about the board is that it's very busy. It can often take a while to get through but there are quiet periods, 5am being the quietest!

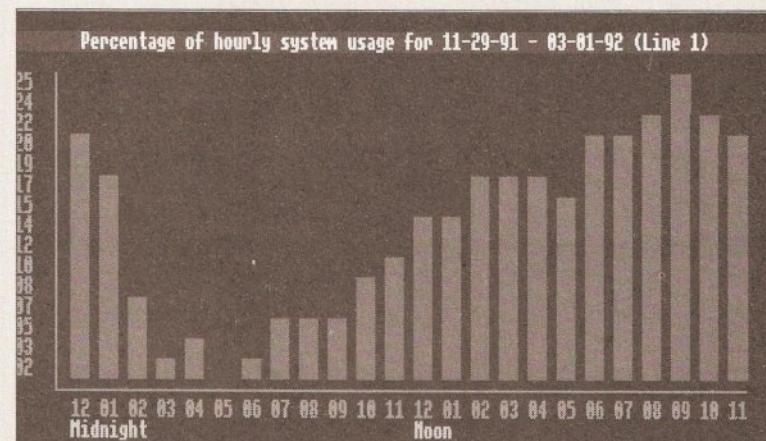
### GIVE IT A GO

So if you haven't already, why not try giving The End Zone a ring and take a look at one of the most exciting boards around at the moment. The End Zone can be found on 0524 752245. Leave me a message if you do, and don't forget to mention *Amiga Shopper* when you register.

### Message Areas:

|     |                                    |     |                                    |
|-----|------------------------------------|-----|------------------------------------|
| 1   | ... Private Mail                   | 2   | ... Local Amiga Chat               |
| 3   | ... Local PC Chat                  | 4   | ... Local Archimedes Chat          |
| 5   | ... Local Atari ST Chat            | 5   | ... Security Watchdog Message Area |
| 100 | ... Netmail Messages               | 102 | ... European Amiga Microcomputer D |
| 103 | ... Communications                 | 104 | ... Modems                         |
| 105 | ... IBM Computers and Compatibles  | 106 | ... Bulletin Board Adverts         |
| 106 | ... 'C' Programming                | 109 | ... DESQView Multitasker           |
| 110 | ... UK Remote Access Support       | 111 | ... Hard Disk Problems             |
| 112 | ... Cinema/TV/Satellite Discussion | 113 | ... Acorn Archimedes Microcomputer |
| 114 | ... Telix Communications Package   | 115 | ... Comms HelpLine                 |
| 116 | ... SDS/SDM Files Info             | 117 | ... Virus News/Discussion          |
| 118 | ... HST Modems                     | 119 | ... Driving/Motoring               |
| 120 | ... For Sale/Wanted                | 122 | ... Recipes and cooking tips       |
| 123 | ... Computer security              | 124 | ... BiModem Users                  |
| 125 | ... Desk top publishing            | 126 | ... European files info            |
| 127 | ... Police Questions               | 128 | ... Hardware Interest              |
| 129 | ... International Recipes          | 130 | ... Law related micro chat         |
| 131 | ... Pascal programmers             | 132 | ... Public Domain Software         |

All manner of files are to be found when you dial End Zone from within NComm



A graph showing the daily usage of the BBS, obviously 5am is the best time to call - "the early bird catches the worm", as they say

**REGISTER MANIA**

Hayes compatible modems contain a range of registers which are used to store various values used to control the modem. Here are a few of the more useful ones:

**• S0 Autoanswer off/on (Number of rings)**

This register contains the number of rings which are allowed before the modem answers the phone. A value of 0 means that the modem will never answer the phone.

**• S1 Incoming ring count**

Used internally to count the number of incoming rings.

**• S2 ASCII value of escape code**

The ASCII value of the character which is to be used as an escape character, usually 43 (+).

**• S6 User defined**

This register can be used for anything the user wants, although not particularly useful for most people there are times when it could be used to temporarily store information.

**• S7 Wait time**

The time (in seconds) that the modem will wait between the end of a dial command or an auto answer before it will give up and return to command mode.

**• S8 Pause time**

The length of time in seconds that a pause in a dial string will wait for.

**• S12 Escape code guard time**

The time that must be left clear before and after an escape sequence before the system goes into command mode.

There are many more registers in the majority of modems, but most will not be used during normal use.

**SAVE MONEY THE MERCURY WAY**

The biggest bane of any comms fan's life is the telephone bill incurred in the pursuit of that elusive file. There are ways of cutting costs. A faster modem is the most obvious choice, the faster the modem the less time spent downloading files and the less it all costs.

The other obvious way of cutting bills is to escape the clutches of BT. Currently the only way to do this is to change to Mercury Communications and this isn't anywhere near as difficult as it might sound at first.

**THE UP SIDE 8-**

First off, let's disperse some myths. Mercury do not have their own lines, they lease BT lines. This means that

once you have a Mercury account you can call almost anywhere that you can with normal BT equipment. I say almost because there are some calls you can't make, in particular local calls in some places.

No special equipment is needed to use a Mercury line. It is possible to purchase a special Mercury phone which includes a magic blue Mercury button although this is by no means essential – we'll be telling you how to get around this later.

All that is required to use Mercury is a Mercury PIN number. One of these will cost you just under £9 a year. A Mercury PIN number is a unique ten digit number which identifies any calls you make. This means that you can use it anywhere with any phone and the calls will be billed to you.

Using your PIN number couldn't be easier, simply press the Mercury button on a phone and then dial your PIN number and then the telephone number you wish to call. That call will be routed via Mercury taking advantage of their cheaper rates (roughly 20% cheaper than BT). Mercury also use one-second billing as opposed to BT's Unit, which makes things even cheaper.

The other major advantage of Mercury is the option of monthly,

fully itemised bills, at no extra cost. This will allow you to keep track of your calls much more easily.

**THE DOWN SIDE 8-(**

Of course there has to be disadvantages. Firstly, not all exchanges can offer the Mercury service although the majority can and the list is getting longer by the day.

**MERCURY DIALLING THE EASY WAY**

When you press the blue button on a Mercury telephone all it does is dial 131. This tells the exchange that you wish to go via Mercury. After a short time a tone will be heard and you then dial your PIN. Then you dial the telephone number as normal.

**LATE NEWS • LATE NEWS • LATE NEWS**

**Guru 10 (0524 752245)** has undergone another upheaval since we last mentioned the board. The faithful Amiga has broken down again and the board has been moved to a PC. The board has certainly livened up though, despite the change of software and a Fidonet address has also been obtained so things are beginning to look up.

Secondly, you still have to pay the BT line rental but for people who make regular long distance calls the savings are still considerable.

The third disadvantage is the use of the Mercury button and PIN number. When using a modem it is a real pain to have to press the blue button, enter your PIN and then set the modem dialling. At first sight it would seem there is no way around this, but *Amiga Shopper* is here to help.

So, to avoid the need for a blue button simply dial 131, wait, then dial your PIN. Obviously this makes using Mercury with a modem much easier, particularly as you can use commas to add delays. Just set up a dial string such as ATD131,1234567890,0812431856 and away you go.

Most comms packages will allow you to set up a dialling prefix which is dialled every time you ring a number. Programming this with your 131 and your Mercury PIN would ensure that all your calls go via Mercury.

All that remains is to mention that I don't work for Mercury and have no financial interest in the company, I just enjoy saving money. Mercury can be contacted on 0800 424 194. And if anyone wishes to try out Mercury for free my PIN number is..... NO CARRIER

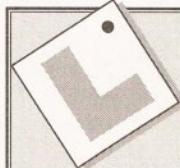
**GOING VISITING**

There are an enormous range of BBSs out there, and occasionally you need a guide. Although I won't be covering a specific board each month, I do intend to occasionally visit a board which really stands out. The End Zone is one of those boards. All the gen on the End Zone can be found on page 97, if you haven't already read it, that is.

**NEXT MONTH**

Next month I'll be taking a look at automating your comms work using the scripting facilities of *NComm*, a light hearted look at the range of modem users you're likely to find haunting the BBSs and for beginners, how to get the most out of your comms package. See you then. **AS**

**Philip Harris** can be contacted as [piharris@compulink.co.uk](mailto:piharris@compulink.co.uk) or as **"PHILIP HARRIS"** on Guru 10 BBS (0738 52063).

**FRONT PANELS  
A BEGINNERS GUIDE**

Modern modems usually have a bewildering array of lights along the front panel which flash on and off at seemingly random intervals. Not wanting to leave you bewildered, we've come up with a guide to all those lights.

**DTR** – Data Terminal Ready. This light is lit when the terminal to which the modem is attached is ready to send or receive data. The DTR is usually taken high at the start of the session and remains so until the end of the call.

**RTS** – Request To Send. When this is high (lit) the computer is signalling to the modem that it can accept another character.

**CTS** – Clear To Send. The modem uses this line to tell the computer that it is ready to receive another character. When the modem is ready, the line goes high and the LED lights. The CTS line is used to facilitate "hardware handshaking" to prevent missed characters, and is especially important on fast (>2400 baud) modems.

**DCD** – Data Carrier Detect. This LED is lit when the modem detects a carrier, which signals that a connection has been made. It stays on until the connection is broken.

**TXD** – Transmitted Data. This LED flashes once for every character transmitted, including characters typed while in command mode.

**RXD** – Received Data. Flashes briefly every time a character is received from the remote computer.

**OL** – On-line. This light shows when the modem is using the telephone line.

**AA** – Auto Answer. Lights when the modem is in auto answer mode. Surprisingly this is only found on modems which have the ability to enter auto answer mode.

**POWER** – Erm, yes well.

**Oh yes, do remember that not all of the above lights will be shown, some older modems get away with a lot less.**

# AMOS AMOS ACTION

Anyone can write games using AMOS. Read on to find out how you too can get in on the action!



**So you want to write a game using AMOS, eh? Our new AMOS columnist Jason Holborn shows you how to achieve this dream**

**G**ames aren't usually the domain of *Amiga Shopper*, but the AMOS column is the exception. Don't worry – we're not going to bore you with endless reviews of AMOS-produced games or anything as dull as that. Instead, we'll show you how you can write games using nothing more than your Amiga, a copy of AMOS and *Amiga Shopper*.

During its two years of existence, AMOS has been applied to many programming tasks from tracking down faults in cars to more conventional programs such as databases and word processors. But about 98% of AMOS owners bought AMOS for one thing only – games programming. There's no doubt that AMOS is a powerful language, but using AMOS for anything other than games is like driving a Ferrari F40 which is stuck in first gear – a total waste of the power at your fingertips!

Over the coming months we'll be showing you just how simple it is to write games with AMOS. We're not promising to turn you into the AMOS equivalent of Jez San or Andrew Braybrook, but I'm sure you'll find

games programming very rewarding.

No introduction to programming games would be complete with just a look at how games work. It's all very well knowing how to scroll the screen and move sprites, but there are other aspects which can make or break a game. So, we'll be covering virtually every aspect of this ancient art from designing good-looking sprites, to using sampled sound effects, designing maps and more besides. Stay tuned – I think you'll find the coming months a real eye-opener!

## HOW GAMES WORK

Games programming has always been seen as something of a mystical art grasped only by the chosen few, but in fact games aren't as complex as you might think. Fact is, all games are based around the same theory. Once you've grasped this and you feel confident enough to put it into practice (by writing AMOS source code!), you'll be churning out games faster than you imagined.

All games are based around a loop which performs all the functions that must be performed for the game to run. In the case of an arcade

## SPRITES MASTERCLASS

Professional games development has come a long way since the days of the back-room programmers. Back in those days the programmer was responsible for virtually every aspect of a game's design and implementation. These days though, programmers stick to programming while the job of designing the game, drawing sprites and backgrounds and writing the game's soundtrack are all delegated to specialist game designers, graphic artists and musicians respectively.

Problem is though, unless you can find a friend who is either nifty with the pixels or a talented songster, all this work is left down to you. In this, the first in a series of tutorials, we'll be showing you the techniques which the professionals use to make their games look and sound great. This month we start with the much underrated art of sprite design.

**1** Before you sit down in front of your Amiga and boot up AMOS, the first thing to do is to have some idea of exactly what you're trying to achieve. Tinkering around in the AMOS sprite designer can produce some nice sprites, but it's a very time consuming process. A much better bet is to get your hands on a pen and a piece of paper and draft out a few rough ideas first, developing these ideas until you get a sprite that you're happy with. It's not important whether you can draw or not – even the worst scrawls are fine as long as you can make out the basic shape of the sprite you are designing.

If you're designing a sprite based around a real life object (a car or a tank, for example), it's worth popping down to your local library for a couple of books which contain illustrations that you can work from. The car sprite was actually drawn from a photograph of a Sierra Cosworth that I took myself. I know the shape of a Cosworth pretty well, but I wouldn't have been able to faithfully produce a decent sprite without some source material to work from.

Designing imaginary objects such as space ships and aliens is slightly more tricky. After all, unless you want to use Space Shuttles and Saturn 5 rockets in your shoot'em up, there's little in the way of source material. It's not a good idea to copy sprites from sci-fi films simply because of copyright hassles. It's also very uncool if someone recognises your alien attack fighters from some tacky 1950s B-movie. If you do use somebody else's spaceship design, at least modify it so that its origin can't be spotted!

How do you go about designing spaceships? This is where the pen and paper really comes into its own. You don't have to mess around selecting different icons, you can let your imagination run riot. Start off with a basic shape and then try changing different aspects of the sprite – the shape of the nose cone, the size of any wings etc.

**2** The next step is to transfer it on to your computer. AMOS does come with its own sprite designer, but I must admit that I rarely use this to actually draw sprites from scratch. It's fine for building up sprite banks, but a much better tool to use for the process of drawing sprites is good old DPaint.

Before you start drawing away, you must ask yourself a couple of questions. First, how many colours will your game use? 8? 16? 32? Second, how many of these colours will be available for sprites? This is one mistake



Designing sprites based around real life objects is considerably easier if you've got some decent source material to work from

continued on page 100

game, each time this loop is completed, the screen is redrawn once so the faster you can get AMOS to execute this loop, the faster your game will run. There is a point where the Amiga's screen redraw rate won't be able to keep up with your program (on a PAL machine, there's no point redrawing the screen more than 50 times per second!), but, although AMOS is pretty rapid, you're unlikely to find this a problem unless you code large sections of your game in assembler. Even then, you should always tie screen redraws in with the vertical blanking period of the screen using the AMOS 'WaitVBL' command. If you don't use WaitVBL, any objects that you have moving onscreen will appear to flicker terribly.

### LOOP THE LOOP

So what does the main game loop actually do? The best way to understand this bit of trickery is to imagine a game slowed down to just a single loop per second (most well-programmed commercial games run at about 25 frames per second). At the start of the loop, the first thing to happen is the joystick being checked. If it is being pushed in a particular direction, the X and Y values of the player's sprite ('sprite' can refer to 'true' hardware sprites and software sprites like Bobs) will be updated to reflect the sprite's new position. It isn't redrawn – this comes later.

Once the player's sprite has been updated, the next step is to update the positions of any other sprites on the screen – aliens for example. If you're writing something like a Galaxians game, all your aliens will follow a set path which must be defined within your program – 20 steps left, 20 steps down, 20 right, 20 up etc. This fixed attack pattern is soon learned by the player though (eg an arcade game where an entire attack wave can be wiped out simply by sitting in one position, merrily blasting away?), so if you want to add more of a challenge to your game, it doesn't take a lot of effort to add a bit of intelligence to your sprites. More on this in a future AMOS column though!

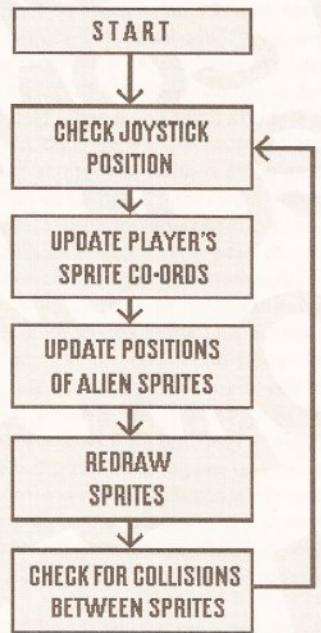
The positions of all the sprites in your game have now been updated, so all that remains is to redraw them. This can be handled automatically by AMOS, but I prefer to turn off Bob redrawing and handle this manually. Once all the Bobs have been redrawn, the loop checks to see if any of the sprites have collided. Obviously you're not that worried about all sprite collisions – aliens bumping into other aliens, for example – so if a collision has taken place, the loop jumps to a routine which sorts out the collisions you don't want to know about from those

that you do, then acts upon them accordingly (eg if one of the player's missiles collides with an alien, an explosion will be drawn).

Now all that remains is to update the score. If no collisions are detected, the game will carry on as normal, but if a player's missile strikes an alien, points will be added.

So there you have it, the main game loop in all its glory. Obviously there are many other steps which need to be considered – what happens if the player's ship has been hit, for example? – but the bare bones are there. All that now remains is to add the meat to those bones by writing the AMOS code which will handle all the above tasks.

## THE MAIN GAME LOOP



The main game loop contains all the routines that must be executed for a game to run

As it stands, this is a pretty daunting task, but you can make things somewhat easier by breaking each step down into subroutines.

### AMAL ACTION

Writing games in assembler is hard work, but AMOS users are spoilt rotten. Many operations that assembler programmers write from scratch are handled automatically by AMOS – interrupt driven music, sprite animation, double buffering etc.

One of the most powerful aspects of AMOS is AMAL, its under-rated animation language. AMAL programs run much faster than their AMOS equivalents so it's worth using AMAL as much as possible when writing a game. What's more, AMAL routines run under interrupt, so you can set them up and running and then virtually forget about them. If you're writing a game which requires the screen to be scrolled, a very

continued from page 99

that many budding games programmers make. It's all very well to design a sprite which uses all the colours available on your game's screen, but you'll soon find this extremely limiting. After all, what happens if you want to change the colour of the background? Answer – Your sprite changes colour too.

It's worth allocating colour registers to different aspects of your game's screen – if you used a 32-colour screen, for example, you might allocate the first sixteen colours to all your sprites and bobs and the second sixteen colours to the background. Once this is done, stick to it.

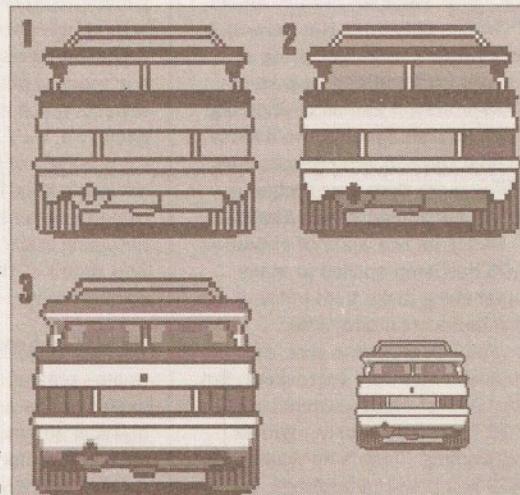
③ Now we can start to draw our sprites. I always start off by drawing a black outline of the sprite like that shown in step 1 of my car sprite illustration. Because you're using one colour to trace out the shape of your sprite, it's considerably easier to correct any mistakes that you might make. If you jump straight in with lots of colour, you'll find that making corrections takes a lot longer at this stage.

When drawing the outline, try to include as much detail as you can so that you can dump your rough sketches once the outline is complete. Don't get too detailed though – as long as you can make out the basic shape and a few of the more outstanding features then this'll be more than enough. Details like individual nuts and bolts on an aircraft wing aren't really needed – concentrate instead on the more important details like the shape of the windows in your car, the air-inlets on your spaceship etc.

④ Once the basic outline of your sprite is there, you can start to add in some colour. At this stage we're not that worried about shading – that comes later – but what is important is to add the basic colours that make up your sprite. In the case of our car sprite, there's really only four basic colours – one for the bodywork, one for the glass in the car's windows, one for the car's underside and tyres, and another for the rear indicator cluster. These four basic colours will do for the meantime, as they serve only to add more depth to the sprite, making the process of adding shading that bit simpler.

⑤ The final stage of actually drawing our sprite is to add detail to the rather flat sprite we have so far. Shading can be added simply by creating a range of colours (try not to use more than four colours per range though!) using DPaint's 'SPREAD' and 'RANGE' tools. Then, simply by layering the shades in series, a greater feeling of depth can be added. This method of shading works particularly well when you're trying to design a sprite that has rounded edges or is cylindrical in shape – the fuselage or an aircraft, for example.

⑥ Once your sprite is finished, all that remains is to port it into AMOS. If you



Always start your sprites with an outline and then add in the basic colours followed by any shading and details required

Those of you who aren't lucky enough to own SpriteX can still do the same job using the separate AMOS Sprite Grabber utility included on the AMOS Extras disk. You'll probably have to load the sprite bank that the Sprite Grabber produces into the AMOS Sprite editor for a bit of cleaning up, but once this is done your sprites are ready for use.

# HELP!

If you've got a problem with AMOS, why not put your mind at rest by writing in to *Amiga Shopper*? Send your letters to: **AMOS ANSWERS, Amiga Shopper, 30 Monmouth Street, Bath, Avon BA1 2BW**

simple AMAL program is all that is needed to get the screen scrolling in the direction that you want automatically. Without the help of AMAL, you'd have to add an extra routine to your main game loop that handled screen scrolling, increasing the time that it takes for the main game loop to be executed still further. Using AMAL can speed up your game considerably, so always try to use AMAL before you decide to write a routine using AMOS' native commands.

Take for example a game like *Defender*. You don't want the player's ship to move – this just sits

the process of keeping track of the screen scrolling and the player's ship automatic. The code printed below was from a game called 'Moon Patrol' which I wrote within the first few weeks of receiving AMOS.

```
' AMAL control programs for ↴
main ship and background scroll
' Works on standard 320 by ↴
256 (PAL) resolution screen
hs$=" Let RD=4;Let X=0"
hs$=hs$+" A:Pause;If J1&8=8 ↴
Jump B;If J1&4=4 Jump C;Jump F"
hs$=hs$+" B:Let RX=RX+4;Let ↴
RD=4;If RX=320 Jump D;Jump G"
hs$=hs$+" C:Let RX=RX-4;Let ↴
RD=-4;If RX=0 Jump E;Jump G"
hs$=hs$+" D:Let RX=0;Jump G"
hs$=hs$+" E:Let RX=320;Jump G"
hs$=hs$+" F:If RD=4 Jump B;If ↴
RD=-4 Jump C;Jump A"
hs$=hs$+" G:Let X=RX;Jump A"

sh$=" Let RY=160
sh$=sh$+" A:Pause;If J1&8=8 ↴
Jump B;If J1&4=4 Jump C"
sh$=sh$+" If J1&2=2 Jump D;If ↴
J1&1=1 Jump E;Jump H"
sh$=sh$+" B:Let A=32769;Jump H"
sh$=sh$+" C:Let A=1;Jump H"
sh$=sh$+" D:Let RY=RY+2;If ↴
RY>216 Jump F;Jump H"

sh$=sh$+" E:Let ↴
RY=RY-2;If RY<26 ↴
Jump G;Jump H"
sh$=sh$+" F:Let ↴
RY=216;Jump H"
sh$=sh$+" G:Let ↴
RY=26;Jump H"
sh$=sh$+" H:Let ↴
X=RX+176;Let ↴
Y=RY;Jump A"

Channel 0 to ↴
Screen Offset 1 ↴
; Pointer to ↴
screen to be ↴
scrolled
Channel 1 to Bob ↴
1; Pointer to ↴
player's ship bob
Amal 0,hs$ ↴
Amal 1,sh$ ↴
Amal On
```

The game is looking a bit long in the tooth

these days, but I still use much of the code extensively. It's far from perfect, but as foundations for more powerful routines, it serves its purpose. If you're feeling adventurous, try adding inertia to the scroll so that it slows down before changing in either direction.

Don't worry too much about the technicalities of scrolling screens and moving Bobs at this point in time. Those of you that already know AMOS will be able to put it to work straight away, but I'll be explaining in detail how to scroll screens and start using sprites and bobs in the next issue of *Amiga Shopper*. **AS**

When writing a game, try to use AMAL as much as possible. AMAL is ideally suited to handling the scrolling of screens and the player's sprite control

in the centre of the screen while the attacking ships and the background move around it. Because the screen is being scrolled, if you're using Bobs, the player's ship must be moved to cancel out the screen's movement. So, if the screen moves two pixels to the right, the player's ship must be moved two pixels to the left to keep it centralised. If the direction of scrolling changes, so does the direction of the player's ship – if the screen moves two pixels to the left, so the player's ship must move two pixels to the right.

Something like this can be handled perfectly by AMAL, making

# AMOS ANSWERS

If you're having problems with your bobs and your copper lists don't compute, then write in and tell us. Jason Holborn is the man with the answers.

## THE FINAL FRONTIER...

After many months of reading the AMOS column in *Amiga Shopper*, I've finally bought myself a copy of AMOS, the AMOS Compiler and 3D extension. I'm trying to write a 3D game based around the *Star Wars* arcade machine. I've managed to design some nice looking space ships but coding the game is proving to be a problem. I've worked out how to display and move

objects on the screen, but

I need to be able to move

the player's viewpoint to

give the impression that

the player is actually flying

in 3D space. How do I do

it?

**L Humphries**  
Melksham, Wiltshire

Moving yourself around within 3D space is just like moving any other object. AMOS 3D refers to your viewpoint as Object 0, so just use the same movement commands as you would for all your objects but tell them to act upon object 0 and you won't go far wrong.

## TOME SYNDROME

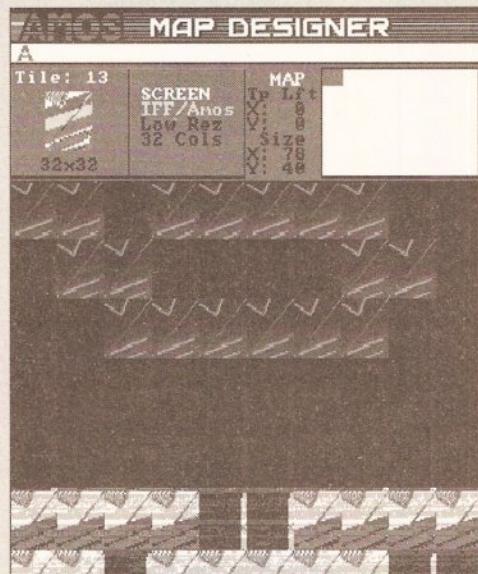
Please can you help. I'm trying to write a sideways scrolling shoot 'em up but I've stumbled across a

problem which looks set to stop my mega-game earning me the millions of pounds that I so deserve. When I started writing the game, the background consisted of nothing more than just a 320 by 200 pixel low resolution screen that was scrolled using the AMOS 'Screen Offset' command. Unfortunately, this looks rather dull. What I'd rather have is a background that changes as the player progresses through the levels. I think the AMOS Map Editor is the answer, but I can't find any mention in the AMOS manual of any commands that will allow me to use these maps within my own programs. Please help before I tear all my hair out!

**C Hemphenstall**  
London

You're right, the AMOS Map Editor is the most efficient answer to this problem. Unfortunately, the

commands to actually handle AMOS maps aren't actually built into the interpreter, so they can't be used directly. Your best bet is to get your hands on a copy of Aaron Fothergill's TOME extension which is available for just £24.99 from Shadow Software. Failing that, all the code you need can be obtained by ripping out the TOME routines from the AMOS demo game *Magic Forest*.



The current release of AMOS doesn't directly support the AMOS Map Editor, but all the code you need to handle maps can be found by ripping the TOME routines out of the AMOS demo game *Magic Forest* pieces.

## PRINTER PROBLEMS

I hope you can help me. I have written a database in AMOS to catalogue my disk collection. It does all the usual things a database should do such as search and print etc. The problem I have is that I cannot find any info in the AMOS manual to detect whether a printer is connected to the machine the program is running on. If you try to print when the printer is either not ready or just not connected, my program just hangs. Please help!

**P Compton**  
Fareham, Hants

Simple! Providing that you're accessing the printer using the OPEN PORT n, "PRT:" command ('n' being the port number), just read the value of the =PORT function. If a value of -1 is returned, then you can print. If 0 is returned, then the printer is either not ready or not connected.

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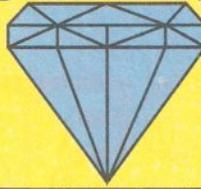
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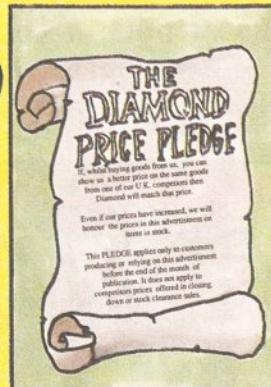
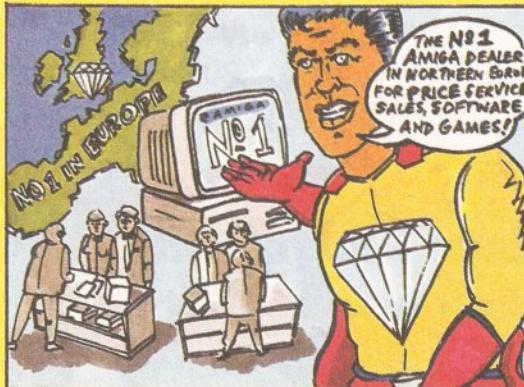
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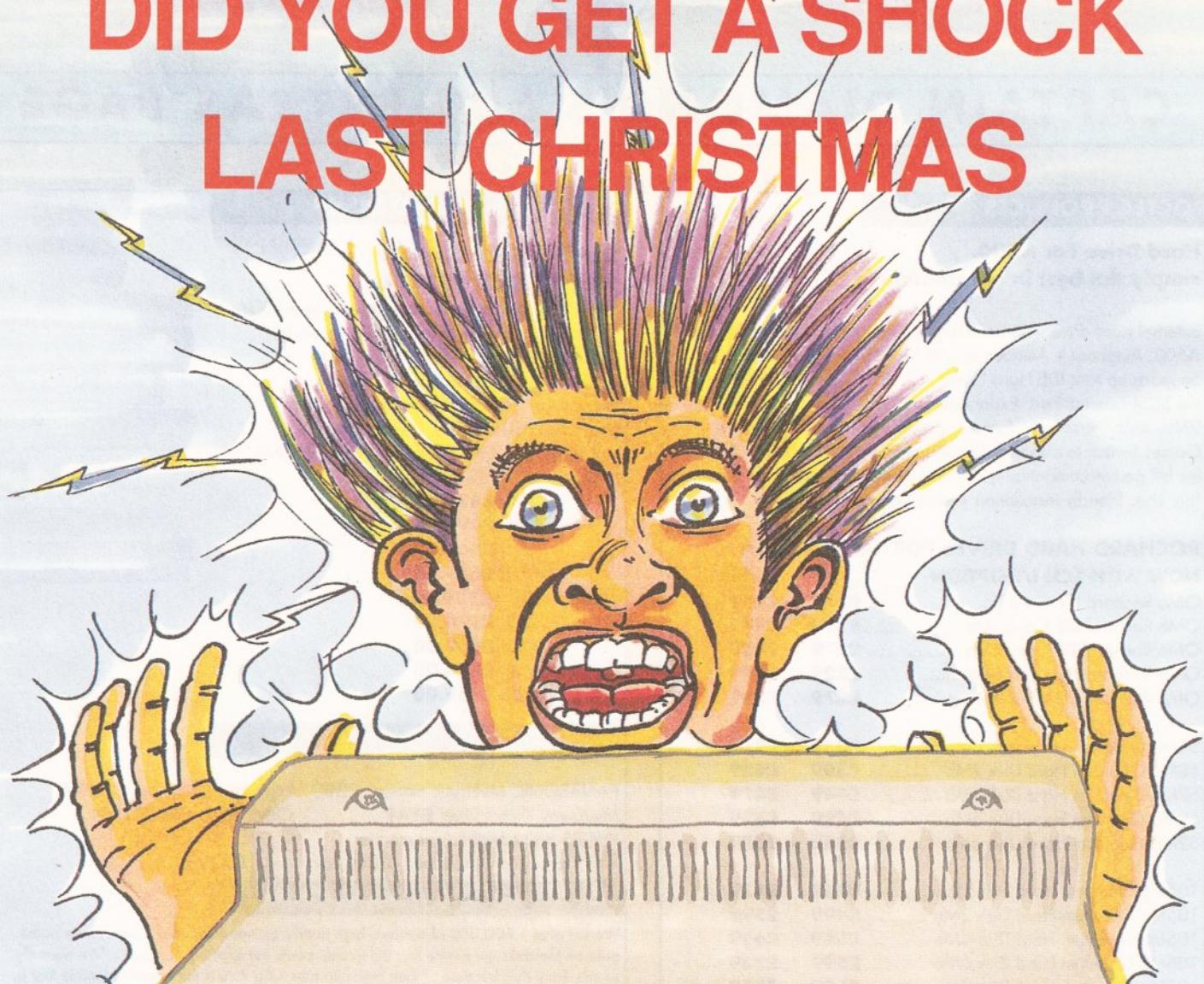
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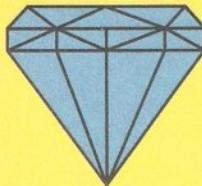
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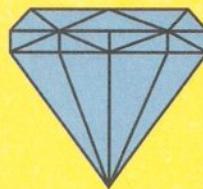
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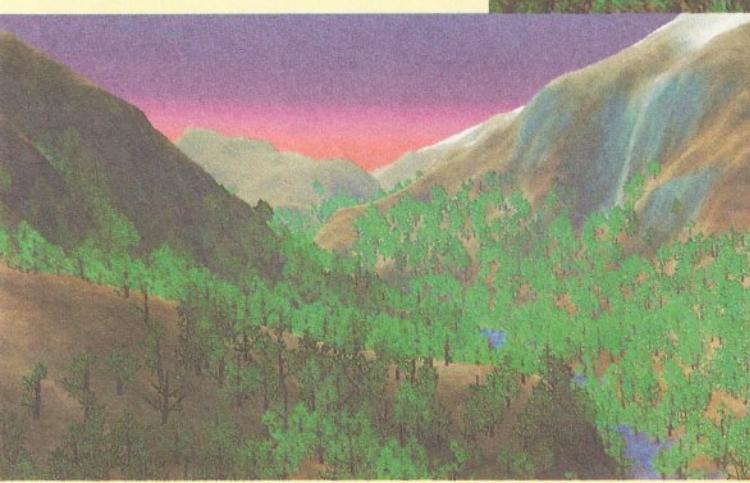
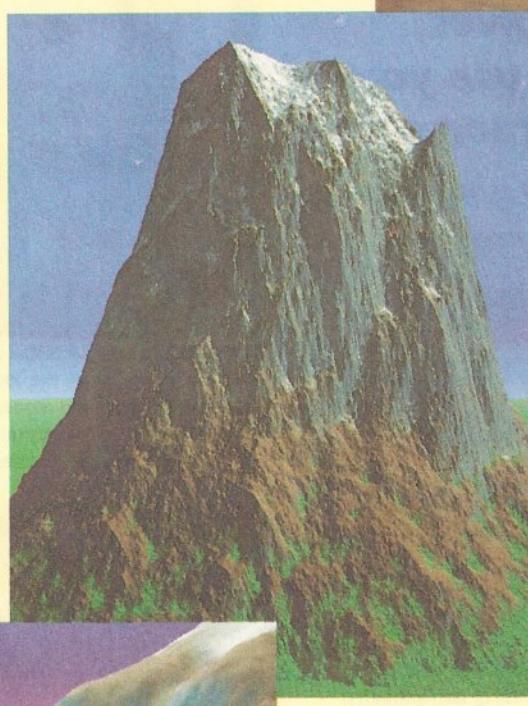
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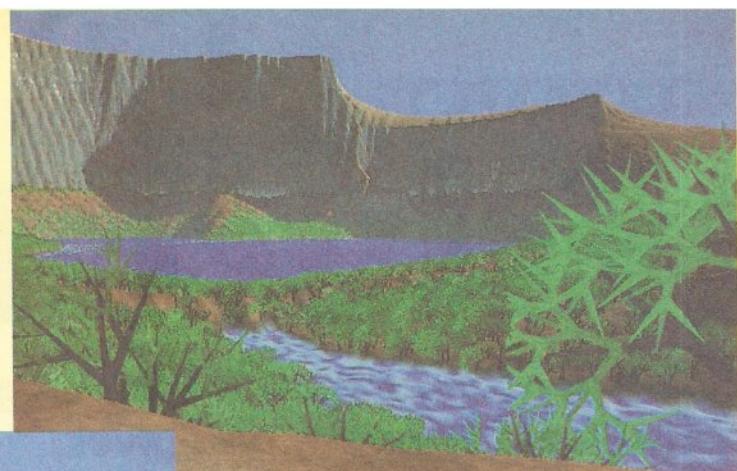
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# Education

**Wilf Rees reports on Tekno Amiga and TouchWindow, and gives handy advice on how to use your Amiga to produce silk screen prints**

Ever wondered how to produce quality prints from digitised images when you don't have a decent printer? This month's tutorial describes how. What's more, this month we've got a review of TouchWindow which could be a revolution for the less nimble fingered among you and Tekno Amiga, the kit to get you on the road to becoming an electronic genius.

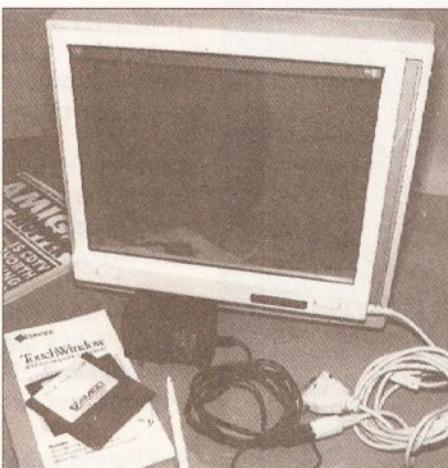
## TOUCHWINDOW

TouchWindow gives you the ability to perform functions normally carried out by mouse or keyboard with a finger on the monitor's screen.

The supplied software enables easy installation and calibration. A stylus is supplied with the package which may be used to achieve accurate positioning of a selected point. However it is not essential, as touch works equally well.

I tried the screen out with several pieces of software, all of which ran, some more successfully than others. *Deluxe Paint* was not too brilliant in that the defaulting grid had a similar effect to using the package with its own grid turned on, meaning that drawing with fine detail was just not possible. It was clever in the way in which it implemented the menu bar, enabling automatic pull-down of menus without the need to press another button as per the mouse.

The principal criticism I would level at it is that the screen sits



TouchWindow is attached to your monitor simply by using self-adhesive velcro tape

approximately 5 to 15mm away from the actual screen of your monitor, dependant on the degree of curvature of its screen. This can be confusing at times, as the parallax from the changing position of your viewpoint alters the position of exactly where you think you should be touching.

There is no doubt that this hardware will have a huge impact with special needs applications. I tried it with *Maths Adventure*, reviewed last month, and it was ideal. Any special schools, or schools with special units, will find this device invaluable in making their Amigas perform even better. It will also appeal to younger children where manipulative skills are less developed.

## JARGON BUSTING • JARGON BUSTING

**Light-Box** – An enclosed box which contains an ultra-violet lamp, used to chemically 'fix' light-sensitive emulsion.

**Light-Sensitive emulsion** – a two part emulsion, sensitive to ultra-violet light. Areas not fixed within the life of the emulsion can be washed out.

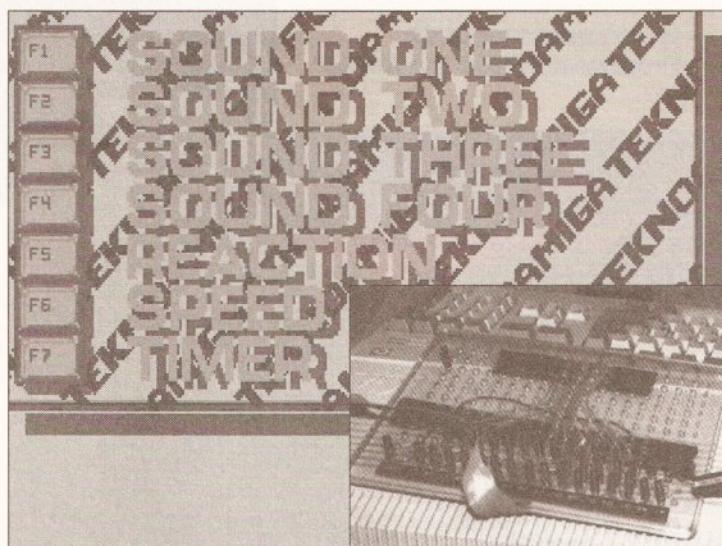
**Process Colours** – The colours known as process yellow, cyan and magenta, plus black. Used to create coloured images by mixing.

**Registration Marks** – Reference marks put on to an image with multiple facets. When aligned, all of the facets will be correctly superimposed.

**Screen Printing** – A process of creating images by forcing ink, using a rubber squeegee, through tightly stretched fabric, fastened to a wooden frame.



One of the neater facilities available with Tekno Amiga is this super program to help with the identification of resistor values. The colour bands are entered using the mouse and the palette. Then you can use the program either as an information service, or as a tester to check your knowledge of resistor values



Tekno Amiga – each of the sound menus contains four sampled sounds which can be triggered using the experiment board. (Inset – the perspex experiment board which can be used to mount electronic components)

## TEKNO AMIGA

It is so nice to come across hardware and software which attempts to present complicated procedures in a more understandable way, and Tekno Amiga does just that. It addresses the issue of introducing electronics and electronic applications.

Tekno Amiga's three manuals comprise of a handbook explaining how to assemble the interface, a basic book of electronics, and a software guide. These are best read in this order, as assembly of the interface requires concentration. It is not particularly difficult, but it does demand careful reading. The parallel interface end has a glass fibre PCB with two ICs, a couple of resistors, a capacitor, and a surface mounted parallel connector. These come ready

built. The tricky bit involves the clean cut end of the ribbon cable which leads away from the PCB.

The ribbon has to be opened up at the cut end and attached to the perspex experiment board by trapping the cable in the springs which have been screwed into the experiment board in a prescribed manner. The manufacturer recommends placing a strip of sticky tape along the opened wires to avoid pulling out of the ribbon. It sounds fiddly, but it is quite easy, and once the interface has been assembled we can connect it to our Amiga. One end goes to the parallel port, one to the joystick port; and the business bit, the experiment board, sits at a convenient place ready for action.

The best thing now is to sit down with a coffee, put up your feet and

read through the manuals. They are actually quite entertaining, and are not written by any means for someone with a PhD in electronics.

The handbook then describes how to test the assembled interface and continues by helping you develop an understanding of electronics. Some initial experiments are described to get the system working.

The three disks contain a selection of menu driven experiments gradually increasing in complexity. Disk one contains experiments with sound, time and speed. Disk two extends work on time and includes temperature and light, as well as a rather good disk copying program. Disk three is slightly different in that it includes some excellent utilities. There is an

## PROJECTS PLEASE!

If you want to see your work in print put it on a disk, and send it to me at: Education, Amiga Shopper, 30 Monmouth Street, Bath BA1 2BW. Do include some documentary material to help me understand the nature of your work, and how you used the Amiga to resolve it.

Amiga Basic extender which introduces extra commands. A program called Resistance enables quick calculation of resistor values by inputting colour codes; Closed Circuit is another program which plots the flow of current in a closed circuit with a moving picture.

The package has a place in any school. It is probably most appropriate for ages around 10 to 15, but if any of you parents are struggling to decide what to buy your son or daughter for a gift which has real educational value, look no further than Tekno Amiga. And do you know what is the most amazing feature of all? The whole kit including manuals costs £72, which I think is excellent value. **AS**



## SHOPPING LIST

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# PROJECT POWER

**I**t has always been a problem to obtain hard copy of any quality from a good Amiga screen image. Many schools have assorted colour printers, usually the Integrex 132, or if you are luckier, the HP Paintjet.

Schools often have to compromise on price, and a 9- or 24-pin dot-matrix with a colour kit is often the only option. Despite the hype from the dot-matrix manufacturers, the colour kits are just a novel add-on – once the ribbon has been used a few times the yellow becomes contaminated by the other colours. Being cost-conscious, and wanting to achieve quality, we need to find an alternative method.

In your Art & Design department you will no doubt have some screen printing facilities. You may have photo-emulsion based imaging, which allows you to transfer images onto a silk-screen using a light sensitive emulsion and an ultra-violet light-box. The following section will explain how, with a bit of care and experimentation, you can obtain excellent results without the need to utilise a colour printer at all.

Let's start by selecting an image. It ought to be in colour. On two opposing corners of your picture, draw a right-angle to help later on with registration.

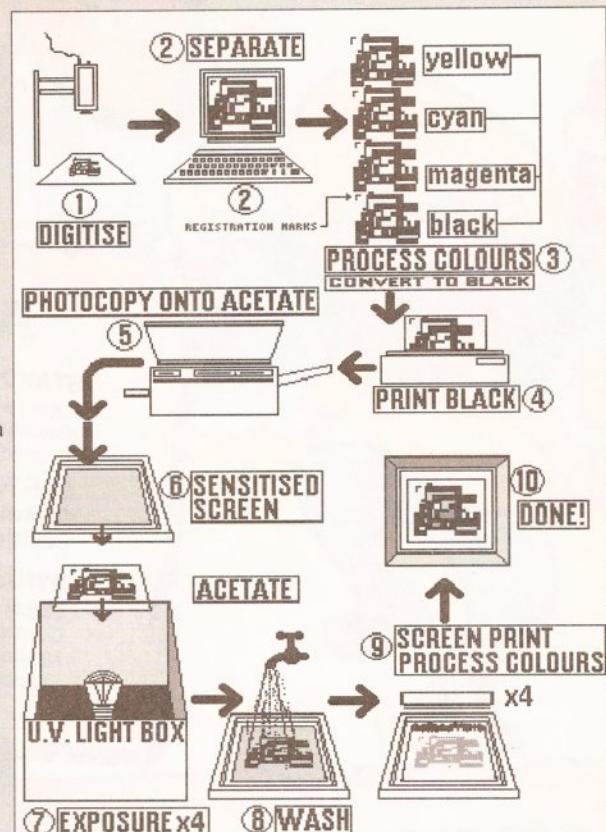
Using your digitising gear, produce a high quality digitised copy of the image. Set the software to employ the highest level available. The outcome varies widely according to the quality and level of light on the surface of the image. Too much light and you get a bleached, pale outcome; too little and the colours are not clearly defined. The nature of the light is also important. Ordinary light bulbs are poor substitutes for daylight. Move your gear near a window, or splash out on some daylight bulbs – the investment will warrant the difference in the quality. I use *DigiView 4*, and have achieved superb results, simply by following this practice. Watch the angle of the beam of your lights: it's too easy to get a flare from the bulb, especially if the surface of your image is slightly glossy.

Digitise the pic, and save the file as IFF. Then take the image and load it into *Art Department*. *Art Department* will enable you to separate the three process colours, plus black, from any image.

### COLOUR PROCESSING

What do we mean by process colours? Take a look at a copy of a daily newspaper which uses colour pictures. At the side of the page you will find several coloured rectangles, printed in a vertical line. These are the colours which, when combined, produce colour images. There are usually three plus black. *Art Department* separates these from your digitised picture and saves them as separate files, labelled according to their colour.

You now have four files, each representing the constituent element of a photographic colour image. Print each of the colours as a black print. Ensure you record which process colour each print represents. You can do this by writing it on each printout. Here is where the clever trick comes. Take the prints to a photocopier, and instead of white paper, fill the paper carrier in the photocopier with clear acetate. Set the density to maximum, and copy each of the process tones on to the acetate. Silk screens should have been pre-coated with light-sensitive emulsion.



The process to make a screen print from a photograph:

- 1 Digitise as normal in colour. Add registration marks.
- 2 Take the file to software which allows colour separation.
- 3 Convert all of the process colours, including black, to black images, not forgetting to label them by colour.
- 4 Print out all of the images as black prints.
- 5 Take the prints to a photocopier, and insert some acetate sheets in the paper-holder, instead of white paper. Transfer each of the four images on to the acetate.
- 6 Prepare 4 screens by coating with light-sensitive emulsion.
- 7 Expose screens in Ultra-violet light-box.
- 8 Wash out all of the emulsion which has not been fixed.
- 9 Using process colour inks, screen each of your colours in turn. Experiment with the transparency of the inks, and also with the order in which you print them. You can even use different colours to really create exotic effects.
- 10 The completed print can now go into your portfolio.

Place them, with the acetate, into the light-box, and transfer the image on to the screen. After washing out the fixed image, we have four silk-screens, each with an image representing one of the four process colours required to produce a printed image by silk-screen.

This is where you realise the importance of the registration marks, as, in order to ensure the four prints lie accurately on top of each other, you use the registration marks to align each subsequent print.

Experimenting with the transparency of the process inks enables you to alter the quality, as will the order in which you print the colours. The choice can be made between oil-based, or water-based inks.

You can also not use the appropriate process colours, which will give you some really wild images, or, try mixing them! You don't have to have a dedicated light-box (mine's made out of an old cupboard turned on its end, with an ultra violet bulb stuck in it!), and in fact it is possible to use ordinary daylight. What we end up with, however, are images transferred to a different medium, but essentially computer generated – so the outcome is greater than the sum of the individual parts, thanks to that wonderful, and versatile machine, the photocopier.

So, if you are into innovation, or have found a unique way of making the Amiga perform new tricks, let me know.

# DYNAMITE



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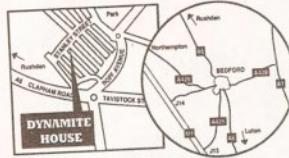


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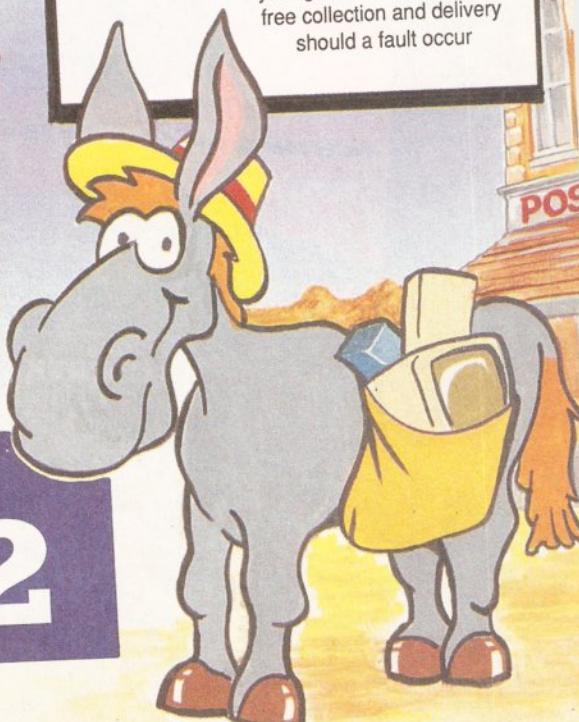
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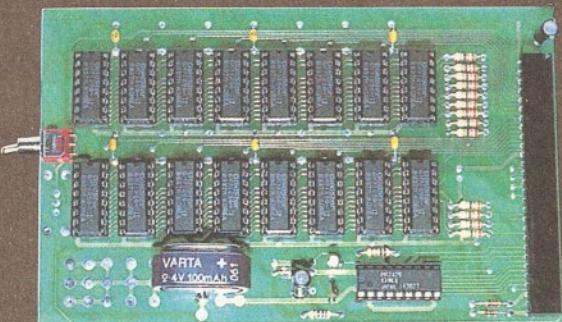


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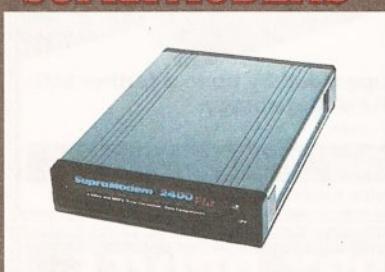
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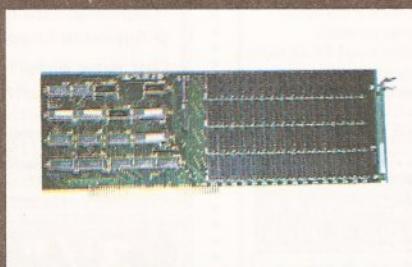


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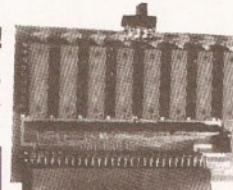
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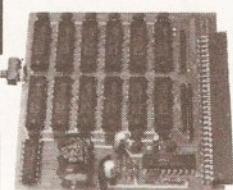


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Fully populated board increases total RAM in A500 to 2Mb! ★ Plugs into trapdoor area, & connects to 'GARY' chip ★ Includes Battery-Backed Real-Time Clock ★ Socketed RAM ICs on 512K / 1Mb Versions

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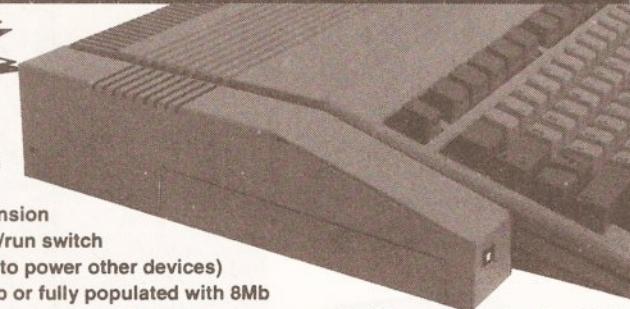
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**NEW**

★ Very low power consumption  
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★ Available fitted with 2Mb, 4Mb or fully populated with 8Mb



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N.B. Any memory fitted to this unit is in addition to that on your machine already, to a maximum of 8Mb.

With 2MB fitted... £119.99 With 4MB... £179.99 With 8MB... £289.99

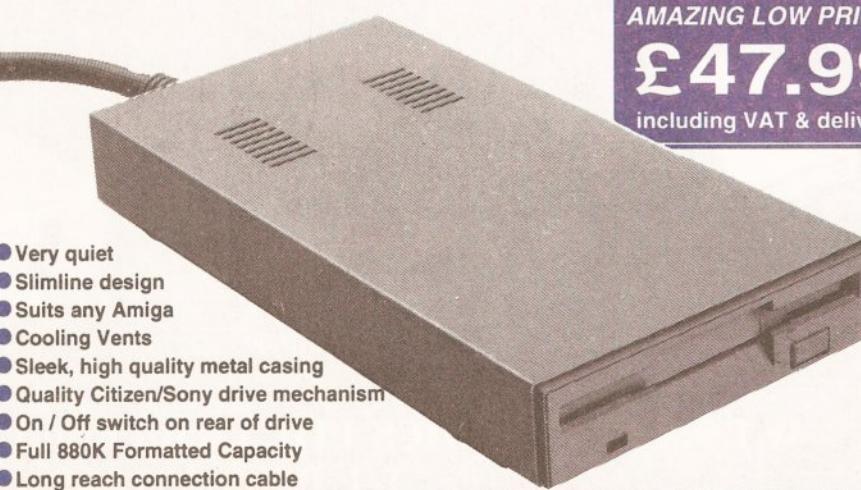
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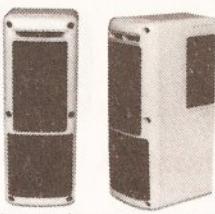


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Speaker Dimensions 246x93x125mm (HxWxD)

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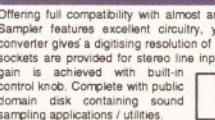
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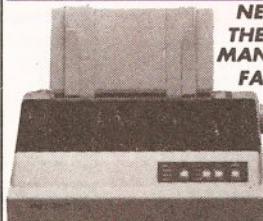
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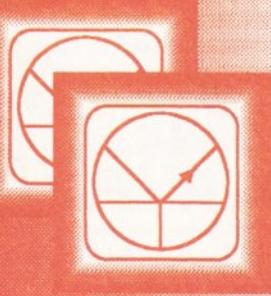
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# see the new Amiga

Rumours have been circulating for months about a possible new affordable Amiga – and now you can be among the first people to see it for yourself. Commodore has announced that the official launch of the new machine, called the A600, will be at the Amiga Shopper Show on May 15-17.

The announcement confirms that the Amiga Shopper Show is the premier event of the spring. Also being launched at the show is the A570 (formerly the A690) CD-ROM drive for the A500.

Dozens of hardware and software companies, book publishers and dealers will be at the show. This is just part of the list: Commodore, Ashcom, AdventureSoft, Bitcon, Bruce Smith Books, Citizen, Computer Books, Connect, Cortex, Digita, Evesham Micros, FMG, Fujitsu, Future World, GVP, Gasteiner, Golden Image, George Thompson Services, Harde Cache, HiSoft, JAM, Kador, Media Ware, New Dimensions, Pacific Digital, Power Computing, Precision, Progressive Peripherals, Rombo, Silica, Supra, Videk, WTS, Zone Distribution... and many, many more.

As well as the exhibitors, Amiga Shopper will be hosting a series of seminars on topics ranging from programming to DeluxePaint. And there will be question and answer sessions with the Amiga Shopper experts, and a chance to talk about the magazine to the team which produces it.



If you've ever fancied experiencing virtual reality, the Amiga Shopper Show will be your chance, with the opportunity to lose yourself inside an incredible computer generated world. And gamers will have the chance to win prizes for getting the high score on the latest games from Ocean, US Gold,

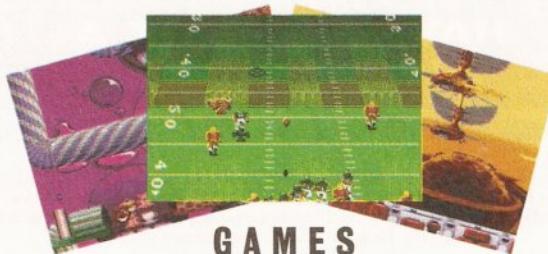
Psygnosis, Electronic Arts and many others in the Amiga Power Games Arcade.

New launches, lots to see, great bargains, informed seminars, stunning entertainment: the Amiga Shopper Show is the best day out for Amiga owners this year. So order your tickets now using the form on the left or dial the credit card hotline number. Either way, you save money, and you'll get a full show guide sent to you before the event!



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Powerful hardware which will transform your Amiga will be on display and on sale, including devices from Supra, GVP, Gasteiner and more...

**OPENING HOURS** The Amiga Shopper Show is being held at the Wembley Exhibition Centre, London, on these dates: **Friday May 15th, 9am - 5.30pm** • **Saturday May 16th, 9am - 5.30pm** • **Sunday May 17th, 9am - 4pm**

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2. **CITIZEN COLOUR PRINTING KIT**. This kit enables you to upgrade either the Swift 9, Swift 24E or 224 to a full colour printer. The kit comes with a colour ribbon. Normally retailing at around £40.00, we are offering, while stocks last, the chance to buy this colour kit for only £19.99.

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We are now stocking the Phoenix Rom Switcher which means, once installed, you can switch between Kickstart 1.3 and 2.04 giving you all the benefits of both Amigas and solving those incompatibility problems. It can be easily installed to the A500 Plus and comes supplied with Kickstart V1.3 Roms. Included in the kit is a microswitch which can be mounted virtually anywhere to enable toggling between the two Rom versions.

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## SOFTWARE

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**Digital diaries too expensive?  
Mark Smiddy creates a diary  
system using AmigaDOS**

# Cracking the shell

Over the past few months I've concentrated on AmigaDOS's more sublime features but it's time to take a break from all that and explore what is possible with this amazing and often underrated system. In the last few years digital diaries have sold in ever-increasing numbers, so why don't we have a go at coding one ourselves for free?

Since you already have a computer you may as well use it, but "real" database programs are rarely cheap and usually too powerful for simple applications – such as a telephone book. The flat-file database described here is crude by commercial standards but boasts the following features:

- Completely menu driven
- Sort records on any record column
- Search and display a record on any sub-string
- Database can be edited directly with any text editor (or ED)
- Delete any record group
- View any group of records

## JARGON BUSTING • JARGON BUSTING

**Database** – A collection of one or more records.

**Flat-file** – A simple type of database where every item of information must be stored in each record.

**Record** – A collection of one or more fields.

**Empty field** – A field which does not contain any data. It is quite common to use empty fields in databases where optional data notes perhaps can be entered.

- View entire database
- Outputs to printer
- Compatible with AmigaDOS 2
- Imports and Exports to and from *Superbase*

Quite impressive for a program written entirely in the machine's DOS batch language, I think you will agree. But even if you have a database, this application will show you how to control many parts of AmigaDOS in previously unexplored avenues.

The entire program (actually it's a series of modules) is much too large to explain and list entirely in one issue; instead, the feature will expand over the next few months as each module is added.

Each module will be described in detail showing how it has developed. However, I know how annoying part works can be, so the basic feature presented here has basic editing and reporting facilities built in.

All the scripts for the program are compatible with AmigaDOS 2, but they do not take advantage of any extra facilities in the new system.

### THE MENU SYSTEM

The main part of AmigaDOS Database is its front-end menu system. This allows anyone with little or no knowledge of AmigaDOS to operate the system without fuss. All commands can be operated by selecting the first (highlighted) letter and pressing return P for print; S for sort and so on. However, many commands also take parameters. View for instance takes one or two

The task of deciding which parameters are required is handled partly by the main menu module and partly by the view module; more of which in a future instalment.

### HOW IT WORKS: DATABASE

1. This is the key to the main menu, although under normal circumstances you won't even see it. Database is normally started without parameters so it displays its menu.

Experienced users also have the option of giving a command directly as is shown below:

1>DATABASE P ; print ↓ database now

or

1>DATABASE S 20 ; Sort ↓ database from column 20

The key breaks down into three sections.

## LISTING: DATABASE

```

1. .key Command,d1,d2,d3,d4,↓
  d5,d6,d7,d8,d9,option/k.↓
2. .bra {↓
3. .ket }↓
4. .def option "{d1} {d2}↓
  {d3} {d4} {d5} {d6}↓
  {d7}{d8} {d9}"↓
5. if "{command}" EQ ""↓
6. SKIP menu↓
7. Endif↓
8. if "{command}" EQ "A"↓
9. delete >NIL: T:Temp↓
10. execute S:AddData.↓
  {option}↓
11. endif↓
12. if "{command}" EQ "D"↓
13. execute S:DelBlock {d1} {d2}↓
14. endif↓
15. if "{command}" EQ "V"↓
16. execute S:ViewBlock.↓
  {d1}{d2}↓
17. endif↓
18. if "{command}" EQ "F"↓
19. execute S:FindData.↓
  {option}↓
20. endif↓
21. if "{command}" EQ "E"↓
22. ED s:Data↓
23. endif↓
24. if "{command}" EQ "S"↓
25. execute S:SortData {d1}↓
26. endif↓
27. if "{command}" EQ "L"↓
28. TYPE >RAM:Data{$$}↓
  S:DATA OPT N↓
29. MORE RAM:Data{$$}↓
30. endif↓
31. if "{command}" EQ "P"↓
32. execute S:PrintData↓
33. endif↓
34. if "{command}" EQ "Q"↓
35. ASK "Are you sure Y/N?"↓
36. if warn↓
37. echo "Thanks for using."↓
  AmigaDOS DataBase*nPlease.↓
  come again..."↓
38. QUIT↓
39. endif↓
40. endif↓
41. LAB Menu↓
42. echo "*e[33mAmigaDOS.↓
  Database*n*e[I(c) 1992.↓
  Mark Smiddy*e[31m*n"↓
43. echo "*e[7m*e[I(A)*e[0mdd.↓
  a record"↓
44. echo "*e[7m*e[I(D)*e.↓
  [0mdelete records [Start @.↓
  #] [End @ #]"↓
45. echo "*e[7m*e[I(V)*e.↓
  [0mview records [Start @.↓
  #] [End @ #]"↓
46. echo "*e[7m*e[I(F)*e.↓
  [0mind a record [Search.↓
  string]"↓
47. echo "*e[7m*e[I(E)*e.↓
  [0mdir database directly"↓
48. echo "*e[7m*e[I(S)*e.↓
  [0mort database [Column.↓
  #]"↓
49. echo "*e[7m*e[I(L)*e.↓
  [0mist entries by number"↓
50. echo "*e[7m*e[I(P)*e.↓
  [0mprint database"↓
51. echo "*e[7m*e[I(Q)*e.↓
  [0mUIT"↓
52. echo "Command: " noline↓
53. execute >NIL: s:database ?↓

```

parameters as the starting and finishing numbers. These can be supplied as part of the command line, for instance:

Command: V 2 5

displays records 2 to 5 inclusive. However if a parameter is not supplied the module will prompt for it automatically. For instance:

Command: V  
View record #:

- Command: The single letter command.
- d1...d9: Nine data elements (or arguments)
- Option: A reserved variable

**2-3.** Set the BRA and KET characters to { and } respectively (because I happen to like them like that).

**4.** Sets the Option variable to the contents of d1...d9. This is reserved for the FindData and AddData

**14.** Control only reaches here if the test at Step 12 was unsuccessful and continues directly at Step 15.

**15-17.** Open the ViewData block. This works just like DelData described above.

**18-20.** Open the FindData block. These work like AddData, passing any automatic data in the Option variable.

**21-23.** Open the ED block. The ED

**30.** Terminates the List block. Control will continue from here when MORE exits.

**31-33.** Operate the PrintData block. Control does not resume at Step 33 unless the test at Step 31 is unsuccessful.

**34-40.** Looks after the Quit section, thus terminating the program rather nicely.

The block 35-39 just stops users from accidentally exiting.

If they enter N at the prompt, execution falls off the end of the program and the script runs itself again.

**41-51.** Display the menu. Several escape sequences are used here, viz:

\*e[1 Tabulate  
\*e[7m Inverse video  
\*e[0m Normal video  
\*e[33m Foreground orange (blue in AmigaOS 2)  
\*e[31m Foreground white

**52.** Displays the command prompt. Note the use of the NOLINE switch to suppress the automatic line feed character.

**53.** More trickery. EXECUTE is used to call the Database module and display its command line in interactive mode; which is also suppressed by the re-direction to NIL:

The result is you can enter commands at an invisible prompt!

## LISTING: SORTDATA

```

1. .key Col
2. .bra {
3. .ket }
4. .def col 1

5. ECHO "Sorting*nPlease."
6. FAILAT 11
7. STACK >NIL: 16000
8. if error
9. echo "Out of memory...*."
10. else
11. SORT S:data RAM:data{$$}..
12. COPY RAM:data{$$} S:data
13. endif
14. FAILAT 10
15. STACK 4000
16. execute s:database

```

modules described later.

**5-7.** This is provided as a time saver. Under normal circumstances when Database is launched, the Command variable will be empty, that is equal to "" and this causes the program to skip immediately to the menu starting at Step 41.

**8.** If the command variable equals A (add) control continues at Step 9, otherwise it continues at Step 11.

**9.** Control only reaches here if the Add selection has been made. This line deletes a temporary file created by the AddData module.

Redirection to NIL: is used to suppress the error message when the file does not exist. (This could be tested with IF EXISTS... but that's just overkill.)

**10.** Calls the AddData module directly passing any automatic data entered by the user. (Automatic data is collected in the Option variable at Step 4).

**11.** Marks the end of the AddData control block. Control only reaches here if the test at Step 8 was not successful.

**12.** Opens the DelData block and tests for the delete option. If the key has been pressed, control resumes at Step 13; otherwise it branches to Step 14.

**13.** Calls the DelData module passing up to two parameters collected in D1 and D2.

screen editor is opened; which is the only way to Add, Delete and Edit data with the modules listed this month. Note that ED is called directly within the script unlike most commands which execute a new script.

**24-26.** Open the SortData module. One optional automatic parameter is passed in D1

**27.** Open the List by number module

user a chance to alter the printer setting. (Usually you would use this feature to set NLQ mode or the margins.) If Y is pressed the WARN flag is set; otherwise it is cleared and this is tested for...

**3...** ... here. If the user entered Y (run preferences) control continues at Step 3; otherwise it jumps to Step 5.

**4.** Launch the Preferences tool and go straight to the Printer screen. AmigaOS 2 users should replace

## GOTTA PROBLEM?

If you get stuck with AmigaOS or there is anything specific you would like to see, drop a line to: **Mark Smiddy, Amiga Shopper, 30 Monmouth St, BATH, BA1 2BW. Sorry, no personal correspondence. You can EMail me on CIX @ SMIDOID.**

this with SYS:Prefs/Printer as noted in the comment.

**5.** Marks the end of the control block started at Step 3.

**6.** Creates a new file in RAM which will form part of the printout.

**7.** Appends the current day, date and time to the print header.

**8.** Merges the printfile header with the entire database and creates a new file in RAM.

**9.** Raises the failure level from 10 to 11.

**10.** Prints the entire database. If something goes wrong (say your printer is not switched on) COPY will fail with an ERROR condition. This is prevented by raising the fail condition to 11 in Step 9; and ambiguous error messages are absorbed by directing output to NIL:.

**11.** This line checks for the ERROR condition. If COPY failed as described above, control continues at Step 12. Normally it just jumps straight to Step 13.

**12.** Displays a helpful error message and suggests what might be going on. Much nicer than Error during copying or some such thing.

**13.** Marks the end of the control block opened at Step 11.

**14.** Resets the failure level to 10 (default).

## LISTING: PRINTDATA

```

1. ASK "Position paper,.."
2. ASK "Do you want to.."
3. if warn
4. SYS:Prefs/preferences..
5. endif
6. ECHO >RAM:title{$$}..
7. DATE >>RAM:title{$$}
8. JOIN RAM:title{$$}..
9. FAILAT 11
10. COPY >NIL: RAM:PrintFile..
11. if error
12. echo "Your printer .."
13. endif
14. FAILAT 10
15. Execute S:DataBase

```

if L was passed as a command parameter.

**28.** Copies the entire database to a file in the RAM disk, but adds line numbers to each record – a good way to view and edit blank records.

**29.** Displays the temporary data file a screen at a time.

## HOW IT WORKS: PRINTDATA

**1.** This is a cheeky trick to force AmigaOS to pause until you press a key and display a message at the same time. ASK is conventionally used to collect a yes or no answer as in Step 2.

**2.** Stops the script and gives the

15. Calls the main Database program without parameters so it re-displays the menu.

#### HOW IT WORKS: SORTDATA

1. Defines a key with a single parameter. This is passed by the Database module as the column start.

2-3. Re-define BRA and KET to { and }.

4. Force the COL variable to contain 1 if no value was supplied.

5. Displays a simple message.

Sorting can be quite time consuming on large databases. This just lets the user know what's happening

6. Raises the failure level to 11 in case STACK fails...

7. ...here. SORT is a very stack hungry command (it needs a lot of memory) so STACK attempts to allocate 16000 bytes four times normal. If the attempt fails an error is produced (but sunk to NIL:) and the ERROR flag is set...

8. ...which is tested here. If STACK failed to allocate the required amount of stack space control continues at Step 9; if all went to plan control jumps to Step 10.

9. Reports the error and allows control to resume at Step 10.

10. If control gets here from Step 9 (failed), it jumps to Step 13. If it gets here from Step 8 (all OK), it continues at Step 11.

11. Sorts database to a temporary file in RAM. An optional column start parameter is supplied (default 1).

12. Copies the database disk.

13. Marks the end of the control block opened at Step 8.

14. Resets failure level to default.

15. Resets the stack to its default setting of 4000 bytes – not strictly necessary but it frees up some RAM.

16. Calls the main Database program without parameters so it re-displays the menu.

#### CONCLUSION

So there you have it the first part of your very own database program and your own appointment scheduler. A digital diary written entirely in AmigaDOS! See you next month (make a note of the publication date in your scheduler so you don't miss the next part). **AS**

# AmigaDOS 2 Master class

## The Pest

When was the last time you forgot an important appointment? Moreover, if you keep a diary do you remember to check it every day? Isn't it just too easy to get engrossed in a computing session and forget you had to nip to the dentist for a filling... This little AmigaDOS 2 specific program will check your appointments every time you start or reset your machine. In a few seconds it will calculate the current date and check your schedule for any due appointments. Although it would be possible to construct a similar script for AmigaDOS 1.3, it would slow down the Startup-sequence too much due to the extra complexity required. Also, your machine must be fitted with a real-time clock.

All you have to do is construct a file of appointments in the S: directory under the name: Reminders. The format is as follows. Each reminder must fit on one line and must contain the date in AmigaDOS format, for example DD-MMM-YY.

The following are acceptable:

01-Mar-92 – Go to Mr Andrews for inspection at 10:00  
Buy flowers for P's birthday: 02-apr-92

whereas these are not:

Monday: Dentist  
3-2-1992 Take car to Bob for oil change  
Go to Amiga Shopper show: 15/5/92

#### HOW IT WORKS: THE PEST

1. Create an auto-executing macro for EDIT using DTA and DFA. This will be used to extract just the date portion from the DATE's output. More of that later.

2. Get the current day, time and date and send it to the file: T:Today

3. Use the macro created at Step 1 to create a new file ENV:Now which contains the date string in the correct format. Here's how it works:

DATE's output file contains a string which might look like this:

Monday 2-Mar-92 12:30:04

The EDIT macro removes just the days name and the time like this:

DTA/ / or Delete Start After the next space. Removes the day's name including the trailing space. Our example date now looks like this:

2-Mar-92 12:30:04

DFA/ / or Delete From After the next space. Removes the time starting with the space after the date to the end of the line. This produces the final output to file, viz:

2-Mar-92

4. Now for another little bit of AmigaDOS 2 trickery. This line creates a file in T: containing the reminder title and the date. For instance:

== Reminders for: 2-Mar-92 ==

But hang on – where does the date come from? Look at the line more closely. Notice how the date appears at the position \$now. In other words \$now is replaced by the contents of the global environmental variable, now. This variable was created right under AmigaDOS's nose in Step 3. EDIT's output file is called ENV:now.

5. The same kind of trickery is used here. The reminder file (S:Reminders) is searched for any lines containing the current date. Any lines containing that date are appended to the print file T:pf created at Step 4. The actual date is retrieved at run-time from \$Now. (This is possible in AmigaDOS 1.3 but is much more complex to achieve.)

6. This line opens a conditional test. The WARN flag will be set if the date doesn't match any dates in the schedule file. If this is the case, control continues at Step 7; if not (a date was found) control passes to Step 8.

7. Displays a short confirmation to let you know your day is free from appointments.

8. If control reaches here directly from Step 7, it passes to Step 10, does not pass go and does not collect £200. If control came from Step 7 (a date was found) it continues at Step 9.

9. Opens MORE and displays all the appointments/ reminders for that day. RUN is used to start more so the Startup-sequence can continue and launch Workbench while you study your calendar.

10. Closes the script.

## The Pest – append to S:User-startup

**The Pest – AmigaDOS scheduling program by Mark Smiddy**

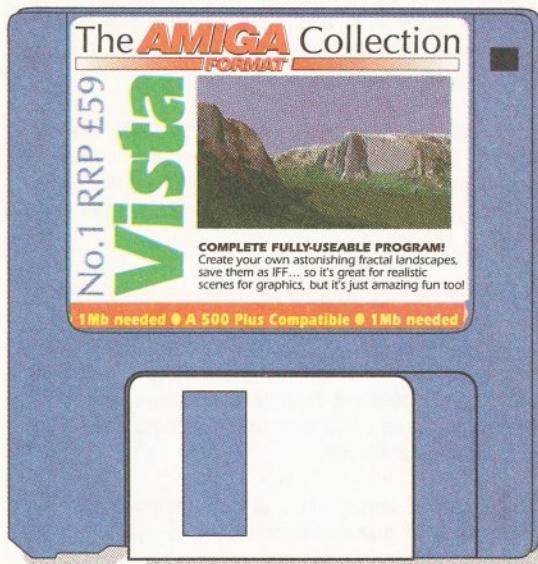
```
; add these lines to the end of
S:User-Startup
1. echo >T:Autol "DTA/ /*nDFA/ /"
2. date to T:today
3. edit T:today to ENV:now with T:Autol
4. echo >T:pf "== Reminders for: $now
==*n"
5. search >>T:pf s:Reminders "$now" nonum
6. if warn
7. echo "Nothing in reminder diary
today...""
8. else
9. run more T:pf
10. endif
```

# The **AMIGA** Collection

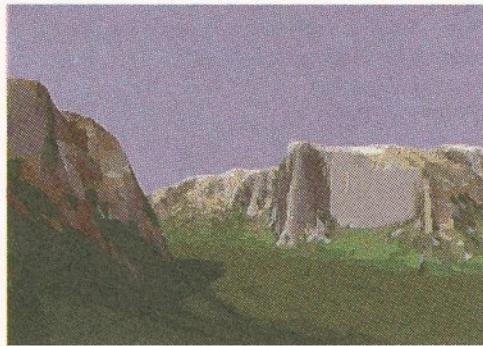
**FORMAT**

## Spring a few surprises!

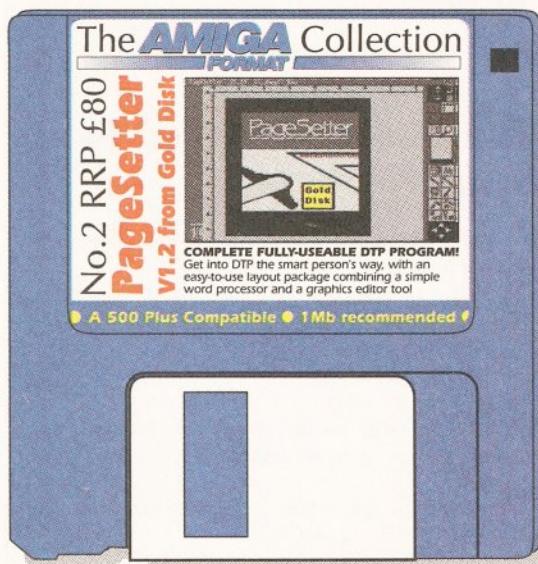
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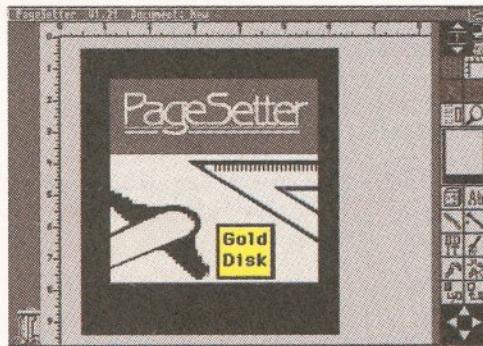
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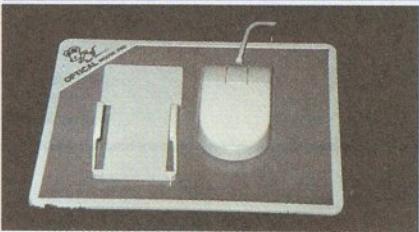
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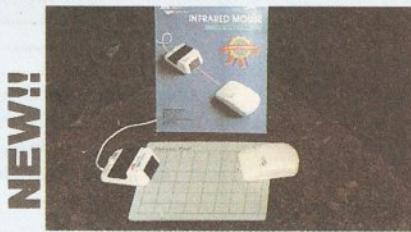
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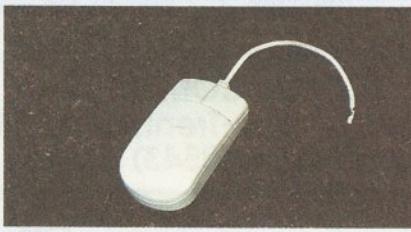
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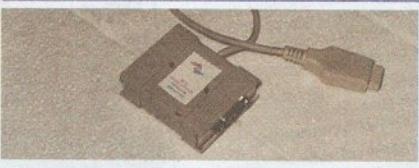


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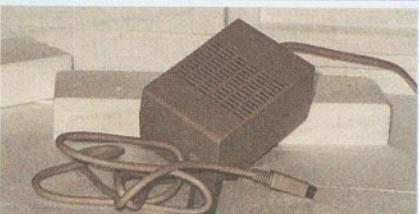
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int MaxDwell=63; float art_box; int
double dwell=0.012; float art; int
double radius=2.0; float length; int
double Rorigin=0.0; float cycle=0;
Mandels* p_fof; float g[3];
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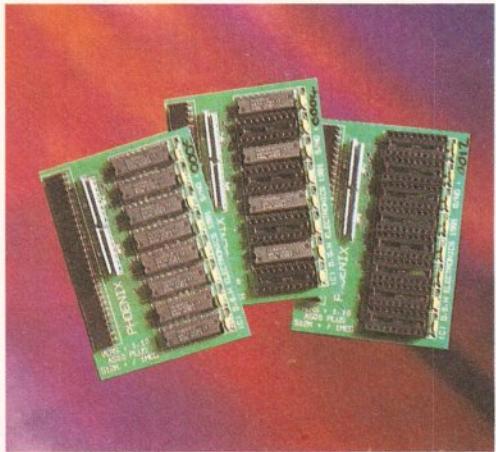


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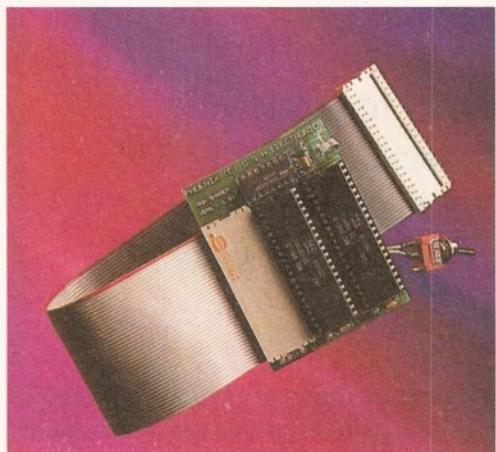
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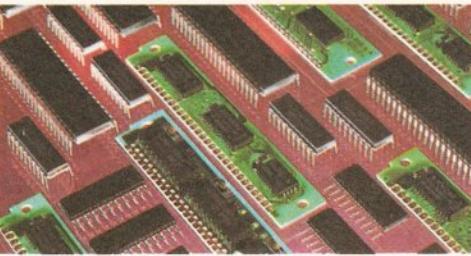
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**Mark Smiddy describes how Superbase can be effectively used to keep track of what's on your video cassettes**

# What's on the box?

**W**hat a great invention the video was; no more arguing over who watches what on TV. Fine, if you get round to watching the video the next day but many people keep films for weeks or longer. Very soon recordings start to get lost among the video detritus, or worse still, overwritten by *Neighbours*. This month I'll be showing you how to create a database to keep track of what's on which video and make sure those recordings never get lost.

This example will demonstrate how Superbase can be used to access three files at once; including a set of graveyard data. Although the application may seem a little mundane the techniques are anything but.

## DATABASE 1: The Subject data

As a nice easy start, this database only contains two fields: an index and a subject classification. It may seem pointless, but consider in the main database only two characters will be used to access a 30 character descriptive field.

Open a new file (VSubjects) and define the two fields as follows:

| Name    | Attributes | Format      |
|---------|------------|-------------|
| CODE    | TXT        | REQ IXU 2 U |
| Subject | TXT        | REQ 30      |

Remember, by convention, the names of any indexed field (of fields) are written in upper case letters. This makes them easier to pick out when you come to use them. Note the code field has a UNIQUE index.

Now enter a few records in the following format:

| CODE | Subject   |
|------|-----------|
| AC   | Action    |
| AD   | Adventure |
| CM   | Comedy    |
| HR   | Horror    |
| SP   | Soap      |

and so on; you can enter as many classifications as you wish.

## DATABASE 2: The Video data

The second database in this example is also graveyard data. This proves you can have as many graveyards as

you like, all accessed by a single main database. The format, of VData is similar to the first one:

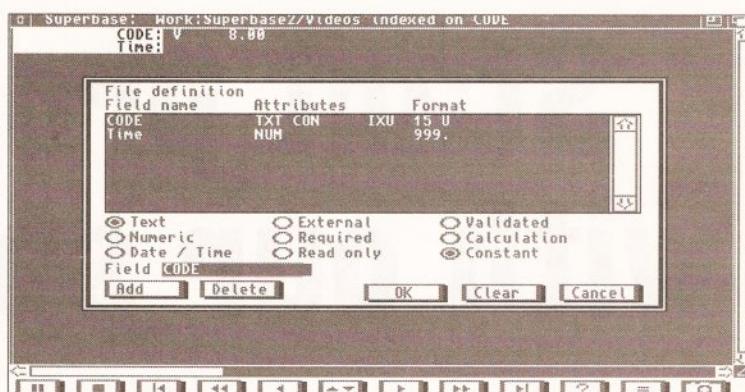
| Name | Attributes | Format      |
|------|------------|-------------|
| CODE | TXT        | REQ IXU 6 U |
| Time | NUM        | REQ 999     |

Notice here again, the CODE field must be unique. It is possible to get Superbase to assign a value to it automatically by applying a constant formula such as this:

"V" + LTRIM\$ ( STR\$ ( SER ("vdata") ) )

- SER("VData") – Returns a unique number for each record in the file.
- STR\$() – Converts a number into a string suitable for a text field.
- LTRIM\$() – Removes the leading spaces left behind by the STR\$() function.

This formula suffers from an important problem: the number returned by SER() follows the current global numbering format usually 2 decimal places. Therefore when you



Entering the video with Superbase Personal – the database contains graveyard data which can all be accessed by a single main database

enter the data you will get records numbered like this: V12.00, V13.00, V14.00. Unfortunately there isn't a way around this in the calculation; just set the global number format to suppress decimal places.

## DATABASE 3: The Programme data

The important part of this application is the main database: the one that ties the whole thing together, and,

not surprisingly, perhaps, it's also the most complex. Here's the file definition of the Progs database:

| Name    | Attributes | Format          |
|---------|------------|-----------------|
| Title   | TXT        | REQ 30          |
| Cert    | TXT        | VAL 2           |
| Recd    | DAT        | dd mm YYYY      |
| Length  | NUM        | 999             |
| SUBJECT | TXT        | VAL REQ IXD 2 U |
| VIDEO   | TXT        | VAL REQ IXD 6 U |

At first glance it looks a lot worse than it really is. In fact, the only complex parts are the input validations. I'll come to those shortly, but notice both the indexed fields are non-unique even though they will reference to unique index. The reason for this will become clear as you start to enter the data.

## CERTIFICATE VALIDATION

Most films have a viewing certificate which is intended for viewers' guidance, so it seems appropriate to include them in the database. Eg: PG, U, 12, 15, 18. Validation formula should only accept those values. However, if you enter the validation using the standard requester, Superbase complains: "Can't do this... data types don't match." Why? Look at the result:

```
Cert.Progs = "U" OR Cert.Progs = "PG" OR Cert.Progs = 12 OR Cert.Progs = 15 OR Cert.Progs = 18
```

Superbase knows U and PG are text strings and 12, 15 and 18 are numbers but it does not check which type of data is required until you click OK. The work around is simple, just enclose each of the numbers in

continued on page 134

## BEGINNERS START HERE

**Q: Why does Superbase need to know the size of some fields?**

**A:** Superbase uses a common system of fixed length records which allows it to skip through records very quickly by simply adding the length. Because of this, it must know the exact size of each field in the definition. Many fields, dates and numbers for instance, take up a fixed amount of space no matter what format you use. Text fields on the other hand can be any size and the program must know what this will be in advance so it can allocate just enough space.

**Q: What is the file definition?**

**A:** It's just a housekeeping file. It's where Superbase keeps a variety of information about the file such as the number and type of fields, also any validations and calculations that are associated with them. The file definition is automatically loaded when you load a Superbase file.

## BEGINNERS

**Q: Why does Process... reorganise need a separate file?**

**A:** Superbase reorganises a file by copying all the active fields from the original file to the new file. If it attempted to re-shuffle data in the original, a crash would destroy all information.

**Q: What is graveyard data?**

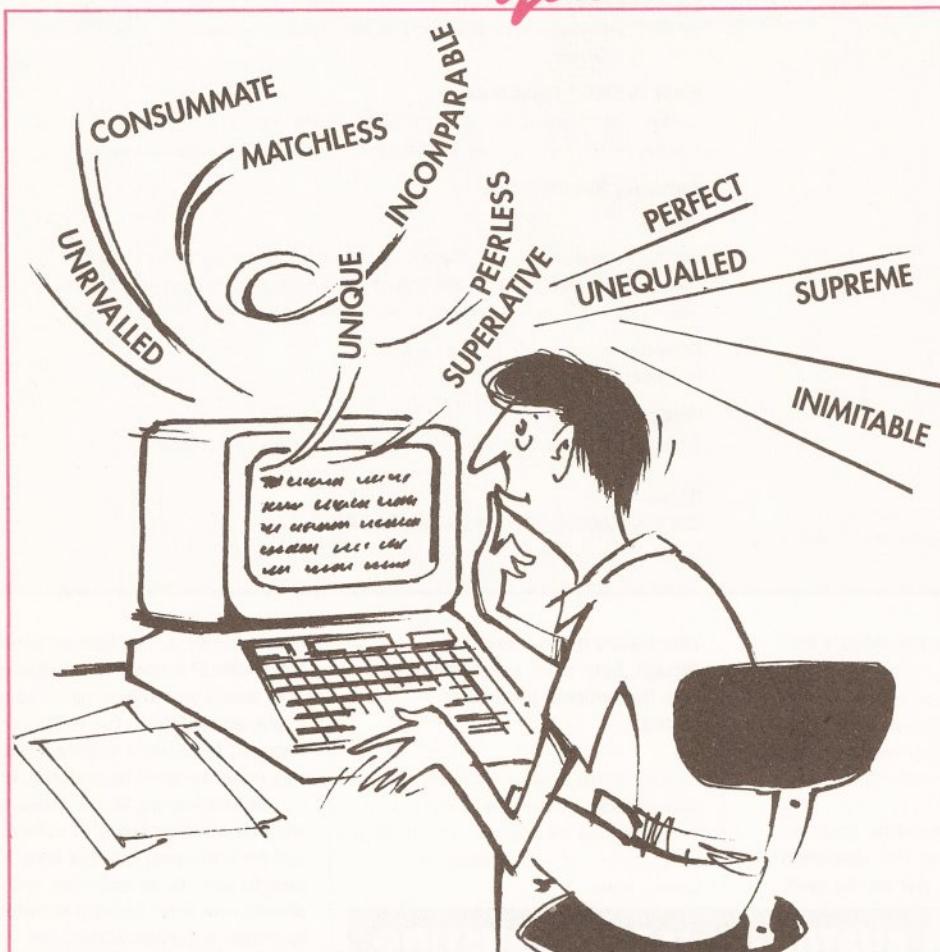
**A:** A database that contains unchanging (static) data. Graveyard files are accessed by active files in during relational reports and lookups. Typical examples are product codes in a stock database or the film classifications in the videos database described here.

**Q: Why has each file an index?**

**A:** Superbase and most other systems just work that way. Indexes provide a very fast method to locate data and avoid the hassle of having to sort the entire database every time you add a new record.

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# SUMMARY OF VIDEO DATABASE DEFINITIONS

## VSubjects

| Name    | Attributes |     |     | Format |
|---------|------------|-----|-----|--------|
| CODE    | TXT        | REQ | IXU | 2 U    |
| Subject | TXT        | REQ |     | 30     |

## VData

| Name | Attributes |     |     | Format |
|------|------------|-----|-----|--------|
| CODE | TXT        | REQ | IXU | 6 U    |
| Time | NUM        | REQ |     | 999.   |

## Optional "CODE" calculation

"V" + LTRIM\$ ( STR\$ ( SER ("vdata") ) )

## Progs

| Name     | Attributes |     |     | Format      |
|----------|------------|-----|-----|-------------|
| Title    | TXT        | REQ |     | 30          |
| Cert     | TXT        | VAL |     | 2           |
| Recorded | DAT        |     |     | dd mmm yyyy |
| Length   | NUM        |     |     | 999.        |
| SUBJECT  | TXT        | VAL | REQ | IXD 2 U     |
| VIDEO    | TXT        | VAL | REQ | IXD 6 U     |

## Field "Cert" Validation

```
Cert.Progs = "" OR Cert.Progs = "U" OR Cert.Progs = "PG" OR Cert.Progs = "12" OR Cert.Progs = "15" OR Cert.Progs = "18" ELSE "Should be: U, PG, 12, 15 or 18."
```

continued from page 132

quotes and the final validation begins to take shape:

```
Cert.Progs = "U" OR Cert.Progs = "PG" OR Cert.Progs = "12" OR Cert.Progs = "15" OR Cert.Progs = "18"
```

What's missing? As you will have noticed, the file definition does not provide this field should it be required. Indeed, many television programmes are difficult to judge. However, if this validation were left as it stands, the validation formula would fail because there is no provision for the null string. Also, to kill two birds with one stone, let's add a helpful aide-memoire to guide the operator. The completed validation looks like this:

```
Cert.Progs = "" OR Cert.Progs = "U" OR Cert.Progs = "PG" OR Cert.Progs = "12" OR Cert.Progs = "15" OR Cert.Progs = "18" ELSE "Should be: U, PG, 12, 15 or 18."
```

## KEY VALIDATION

The subject and video list can get quite extensive, so we'll use the LOOKUP requesters discussed last month. For the SUBJECT code the following will be used:

```
LOOKUP (SUBJECT.Progs, CODE.VSubjects) ELSE REQUEST "Can't find that subject", "Please enter another", 20,a%, SUBJECT.Progs, 60, CODE.VSubjects, Subject. VSubjects
```

When you enter an incorrect or blank code, a requester will pop up to show a list of valid codes and a short description of each. Much the same

## Field "SUBJECT" Validation

```
LOOKUP (SUBJECT.Progs, CODE.VSubjects) ELSE REQUEST "Can't find that subject", "Please enter another", 20,a%, SUBJECT.Progs, 60, CODE.VSubjects, Subject. VSubjects
```

## Field "VIDEO" Validation

```
LOOKUP (VIDEO.Progs, CODE.Vdata) ELSE REQUEST "Video code not in file", "Please choose one...", 20,a%, VIDEO.Progs, 30, CODE.Vdata, Length.Vdata
```

## Summary Report Query

### Fields:

```
FIELD ON "VSubjects" REPLICATE ("=",79) NEWLINE UL TRIM$ (Subject..VSubjects) UL OFF NEWLINE NEWLINE ON "Progs" Title.Progs, ("Cert.Progs"), Length.Progs" mins", Recorded.Progs, Code.Videos
```

### Report:

Not used, leave this blank.

### Filter:

```
(CODE.Vdata = VIDEO.Progs AND CODE.VSubjects=SUBJECT.Progs)
```

### Order:

```
CODE.VSubjects, Cert.Progs ASCENDING
```

can be applied to the video's file:

```
LOOKUP (VIDEO.Progs, CODE.Vdata) ELSE REQUEST "Video code not in file", "Please choose one...", 20,a%, VIDEO.Progs, 10, CODE.Vdata
```

If you spotted the subtle structure difference between this validation and the last one, pat on the back.

Don't worry if you missed it though, here's the same validation with the optional parameter added:

```
LOOKUP (VIDEO.Progs, CODE.Vdata) ELSE REQUEST "Video code not in file", "Please choose one...", 20,a%, VIDEO.Progs, 30, CODE.Vdata, Length.Vdata
```

Now you see it. The last parameter in the LOOKUP requester is optional and allows you to add some specific explanatory data to the validation request; but it isn't required and, in this case, is down to preference.

Before looking at the queries, it's worth examining how this database can be improved. But this time it's over to you. As an exercise, you should now have enough knowledge to create a graveyard data file containing these and create a more friendly input validation for the BBFC codes. Hint: you will need to create another index on the current file.

## VIDEO REPORTAGE

A basic report can be constructed quite quickly using the Query function to produce the following (the report line is not used here):

### Fields:

```
Title.Progs, Subject.VSubjects, CODE.Vdata
```

### Filter:

```
CODE.Vdata = VIDEO.Progs OR CODE.VSubjects=SUBJECT.Progs
```

### Order:

```
CODE.VSubjects, Title.Progs ASCENDING
```

Perhaps the most important part of this query is the relational join between the three files; and once again, the convention of using capitalised field names for indexed fields proves its worth. It is important to note that the join here is achieved with AND not OR as recommended in the manual; this filter maintains the relational join between the files.

You can narrow the search down

## JARGON BUSTING • JARGON BUSTING

**Database** – A collection of one or more records.

**Empty Field** – A field which does not contain any data. It is quite common to use empty fields in databases where optional data notes perhaps can be entered.

**External Field** – In Superbase, an external field is a field which refers to an object on disk: a picture, text file or even a sound. The field itself must contain the name (and path if there is one) to the external file.

**Field** – A blank area in a database record used to hold data. Fields are usually categorised by the type of data stored in them: text, dates etc.

**Flat-file** – A simple type of database where every item of information must be stored in each record.

**Index** – A list of pointers. A normal index holds one pointer for every non-unique indexed record in the database. A unique index contains one value (key) for every record in the database.

**Key** – An index pointer. Put simply, a value calculated from a field's contents. A collection of keys is called an index.

**Query** – Superbase's name for a report.

**Record** – A collection of one or more fields.

**Relational database** – A more powerful form of database where information can be retrieved and collated from two or more database files.

**Relational operator** – A comparison operator usually used to test for true or false. Typical examples are: = (is equal to) and > (is greater than).

**Required Field** – Some data must be entered here. Typical uses for these are peoples' surnames, postal towns that sort of thing. Indexed fields should usually be made required. Unique indexed fields must be required or calculated.

by adding other parameters to the filter, but these must come *after* the relational join. For instance, say you were a science-fiction fan and wanted to locate all the tapes with sci-fi films or programs on them.

Assuming the code for sci-fi was SF, the following would do the job:

```
(CODE.Vdata = VIDEO.Progs AND J
CODE.VSubjects=SUBJECT.Progs) AND J
CODE.VSubjects = "SF"
```

The relational join is picked out with brackets in this example for two reasons. First, it aids clarity; second, it reminds you which part can be edited and which must remain as is.

What remains is to get the report into some sort of sensible order where relevant data is retrieved from

all three files and presented on screen or to the printer. The previous attempt will do, but the following is more powerful. Using the same Filter as before, define the field list so:

```
FIELD ON "VSubjects" REPLICATE J
(=,79) NEWLINE UL TRIMS J
(Subject.VSubjects) UL OFF NEWLINE J
NEWLINE ON "Progs" Title.Progs, J
"("Cert.Progs")", Length.Progs" J
"mins", Recorded.Progs, Code.Videos
```

Now define the Order line as:

```
CODE.VSubjects, Cert.Progs ASCENDING
```

which ensures a reasonable sorting order for the files.

The Fields line breaks down like this:

## Last Month's Query

Last time I left you with an unusual file query and, as promised, here is a description of how it works. You may remember the idea was to use query to produce a cleanly laid out report without the advantage of a forms designer or reporting language found in Superbase Pro 4. Here it is again:

```
FIELDS FIELD ON "Albums" NEWLINE REPLICATE ("*",79) NEWLINE "Album:" J
Title.Albums, @40"Media: "Type.Albums @55"By: "Artist.Albums NEWLINE J
NEWLINE ON "Tracks" Title.Tracks,@40"(" Time.Tracks ")"
```

```
FILTERCODE. Albums = ALBUM.Tracks
```

```
Order Title.Albums, Title.Tracks ASCENDING
```

and here's how it works:

**FIELD** – Suppresses the automatic field titles which would otherwise mess up the display.

**ON "Albums"** – Inform Superbase to only perform the following operations when the albums name changes.

**NEWLINE** – Print a blank line.

**REPLICATE ("\*",79)** – Print a line of 79 asterisks.

**NEWLINE** – Print another blank line.

**"Album:"** – Print the message Album: and follow it with...

**Title.Albums** – ...the contents of the Title field in the Albums database.

**@40** – Move the cursor to column 40 and...

**"Media:** " – ... print the message Media: followed by...

**Type.Albums** – ... contents of the type field in the Albums database then...

**@55** – ... move the cursor to column 55 and...

**"By:** " – ... print the message By: followed with...

**Artist.Albums** – ... the Artists name from the Albums database.

**NEWLINE NEWLINE** – Print two blank lines and stop.

**ON "Tracks"** – Now perform the following operations when field data in the Tracks database changes. (The previous ON operator is still active but has no effect because the album name only changes once in a while):

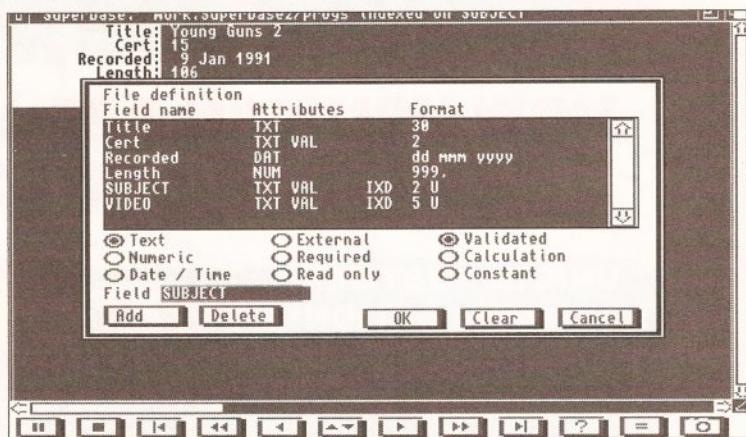
**Title.Tracks** – Print the contents of the title field in the Tracks database (the current track on the current album) then...

**@40** – ...move the cursor to column 40 and...

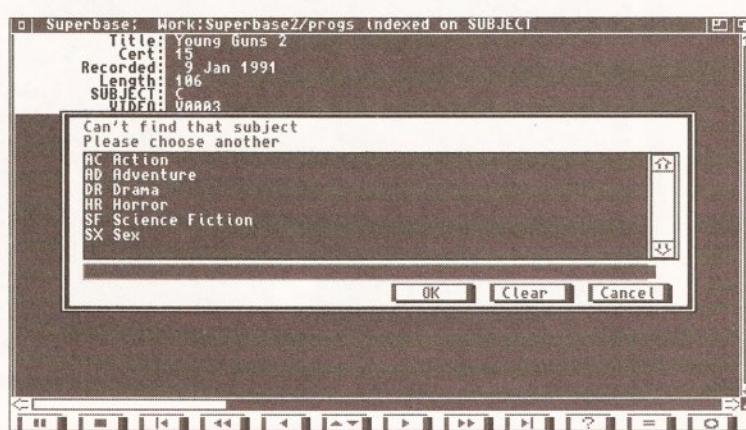
**"("** – ...print an open bracket followed with...

**Time.Tracks** – the length of the current track the time field from the Tracks database. Finally...

**")"** – print a closing bracket to keep it nice and neat.



When you enter the data, it is useful to include categories such as length of the film, certification, date recorded – all help for easy retrieval



With this database those long forgotten recordings can be searched by subject... if you're looking for action or adventure, they're never far away

**FIELD** – Suppress Superbase's automatic display of the field names this report is self-contained as it is.

**ON "VSubjects"** – Ensure the following operations are only carried out when data in the VSubjects file changes.

**REPLICATE ("=",79)** – Print a line of equals signs. 79 is just enough to cross the screen or a printer without causing a line feed.

**NEWLINE** – Print a blank line.

**UL** – Switch underlining ON.

**TRIM\$ (Subject.VSubjects)** – Remove the trailing spaces from the contents of the current Subject name and display it. If TRIM\$() is not used, the underlining carries across the entire field width and that looks messy.

**UL OFF** – Switch underlining off and...

**NEWLINE NEWLINE** – ... print two more blank lines. This provides some space between the subject heading and the film titles about to appear.

**ON "Progs"** – Now use the following instructions when data in the Progs file changes...

**Title.Progs** – Print title of recording...

"(" – ...followed by an opening bracket...

**Cert.Progs** – ...include the film or program's optional BBFC rating and...

")" – ...close the brackets.

**Length.Progs** – Now print the length of the recording and...

**"mins"** – ... follow that with the phrase "mins" (notice the leading space is relevant here).

**Recorded.Progs** – Now pop add the date the recording was made and...

**Code.Videos** – ...the video it currently resides on.

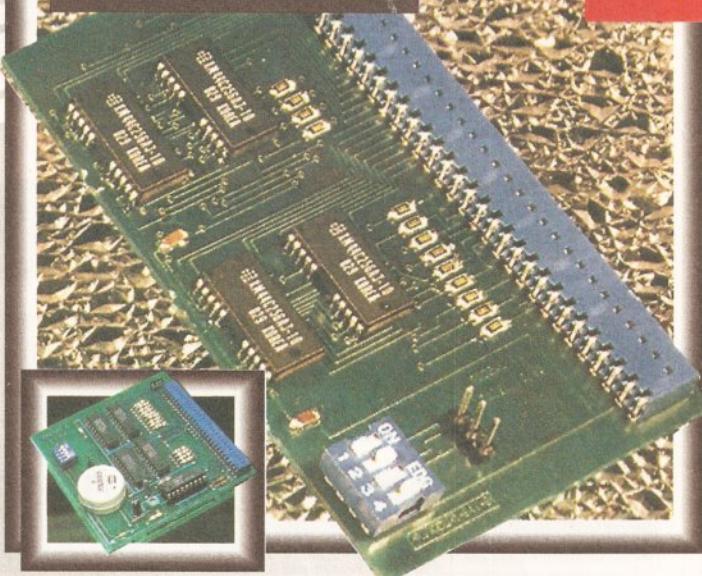
### FOR MY NEXT TRICK...

Next time I'll be taking a parting look at *Superbase Personal* and giving some more examples of how this amazing system is still one of the best available. In the meantime, experiment with the options available under Process...Query and see what sort of information you can retrieve from this database. Or experiment with Lookup requesters to make the system more appealing to amateur users. Until then, may your all your files be secure and your gurus be few... **AS**

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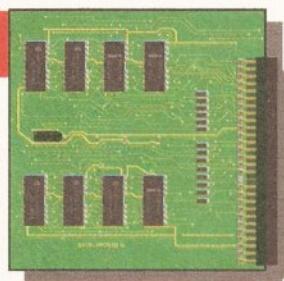
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## 10

## Top tips for the Shell

**Yes, you can be sure of Shell with Amiga Shopper. Come with us and take a look under your Amiga's bonnet at the power that drives the operating system of your high performance machine**

**S**ome operations on the Amiga are made so much easier by using the Shell. Some operations just can't be done any other way. Using the Workbench is all very well, but it's only once you click on that Shell icon that you can really get your hands dirty and find out exactly what is going on.

Here we provide a brief introduction; if you need more information don't forget our regular *Cracking The Shell* column, which covers just about every conceivable use of AmigaDOS.

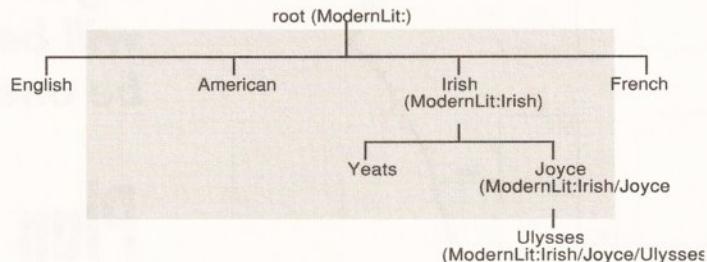
**1 Files** – a file is a collection of information stored on a disk. It could be a program, or simply a group of data for use by other programs. Each file has associated status information stored with it, which records such things as when the file was last altered and whether or not it is a program file. All of the Shell commands are held on disk as program files.

**2 Directories** – these are the Shell equivalent of Workbench drawers. They are arranged in a hierarchical, tree-like fashion, and may contain further directories and files.

At the top of the hierarchy is a directory termed the 'root'. It is denoted by the ':' symbol. The root directory of another disk is specified by the disk name followed by a colon. A directory further down the hierarchy is specified by supplying its name after the colon. If the directory is not immediately 'below' the root, then any intervening directories must also be named, each of them being separated by a '/' character.

**3 Dir** – an AmigaDOS command that produces a listing of all the files held in a directory. Normally, the listing is given for the current directory – the one named in the Shell's prompt. Any directories held within the current one are marked '(dir)'.

It is possible to get a listing of files in a different directory by using that directory's name (and those of any others between it and the current one, all separated by the '/')



**Top tip 2 – Directories are organised in a hierarchical structure often called a 'tree'. In fact, the shape is more like an upside down tree, with the root at the top. The AmigaDOS path to the directories is shown in brackets**

character) as part of the command. If the directory is above the current one in the hierarchy, then the '/' character must be used before the directory name to instruct AmigaDOS to look one level up. Alternatively, the ':' character tells AmigaDOS to look from the root directory on the disk. Precede this with the name of another disk, and AmigaDOS will look there instead for the required directory.

Getting a list of the files held in the *Joyce* directory, held in the *Irish* directory, all on the disk *ModernLit*, would be done as follows:

Dir ModernLit:Irish/Joyce

It is possible to specify which files you want to list by the means of a wildcard. Represented by the '#?' characters, a wildcard means 'any characters'. The **Dir #?.iff** command will behave exactly as normal, but the **Dir #?.iff** will only list those files whose names end with '.iff'.

**4 CD** – this command changes the current directory (the one which will be listed with a simple **Dir** command, and which is named as part of the AmigaDOS prompt). Followed simply by a '/' character, it will move one

level up in the directory hierarchy. Followed by a ':', it will move to the root directory of the current disk.

A directory name can also be specified with **CD**, but if it is anything other than directly below the current directory in the hierarchy, then a path to it must be specified.

**5 Makedir** – creates a new directory inside the current one. The name of the new directory is specified as part of the **Makedir** command, but must be separated from it by a space. The newly created directory will initially be empty.

**6 Copy** – this command, funny enough, copies files. Following the command comes the source file, then, after a space, the destination where the copy should be placed. Both source and destination can be specified with full AmigaDOS paths. If the name of the destination file is omitted, then the source file name is used. In this case, wildcards can be used to copy several files with only a single command:

copy grabs:#?.iff article:

**7 RAM** – this is the RAM disk, behaving like an ordinary disk but

much more quickly and with the information held in memory. If you are using a single drive machine, it is useful to copy often used commands into RAM: so that you won't have to insert the Workbench disk whenever you use one of these commands.

RAM: can also be used as an intermediary store when copying groups of files from one disk to another on a single drive system.

**8 List** – this is an advanced form of the **Dir** command. As well as listing the files in a directory, it will display the status information and size of each file.

The command has many other possibilities. Its output can be sent to another file by use of the command **To** following it, followed itself by the name of a destination file. The options are too complex to go into here – refer to *Cracking The Shell* for more details.

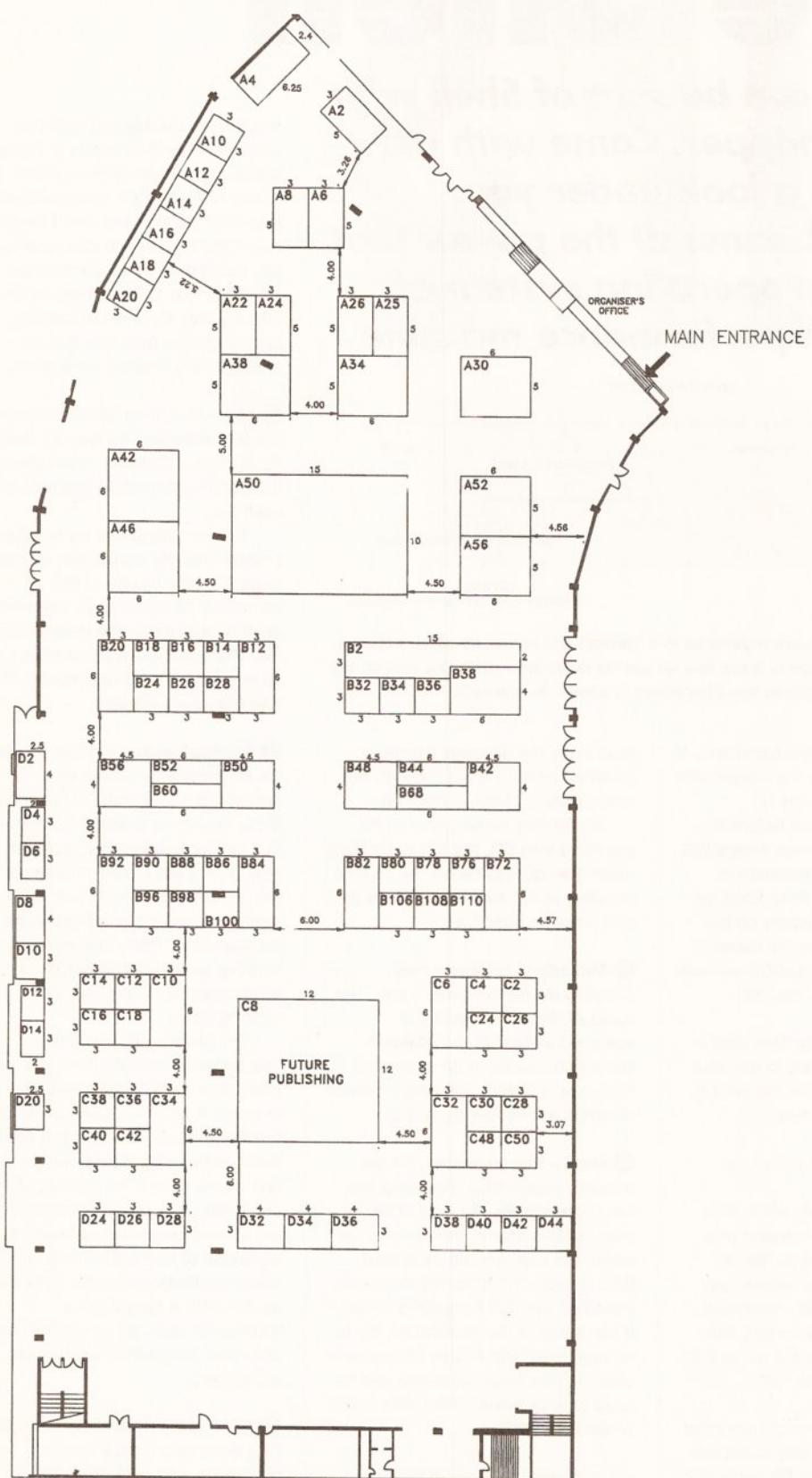
**9 Startup-sequence** – this is a text file containing a number of AmigaDOS commands. This type of file is known as a script. It behaves in a similar manner to a program when run. Each of the commands in the file are executed in turn, as if a user were typing them one by one at the keyboard. Think of it as a way of creating your own AmigaDOS commands by joining together existing ones.

The startup-sequence is a specialised script which is executed every time the Amiga is switched on or reset. It performs various set-up functions, such as telling the Amiga which nationality of keyboard to use, and where to look for certain, often used files. It is possible to modify the startup-sequence, although it's advisable to make a back-up first, using the **Copy** command (only ever do this with a copy of your Workbench disk, as tampering may stop your Amiga from booting up altogether).

**10 Ed** – is the AmigaDOS text editor. It is like a very simple word-processor, and is mainly used for creating and altering script files such as the startup-sequence. Just type **Ed** at the prompt to use it.

AS

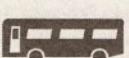
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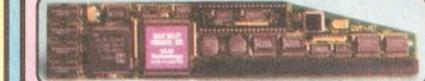


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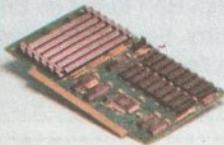
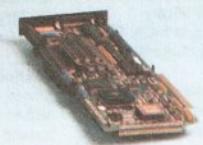
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**Amiga Witham Users' Group** 85 Highfields Rd, Witham, Essex CM8 1LW. Tips and Basic programs. K Anderson **0376 518271**.

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**Chester-le-Street 16-Bit Computer Club** Ground floor function suite, The Civic Centre, Newcastle Road, Chester-le-Street. Club meets Mondays from 7.30-9.30pm to look at software, exchange advice and swap tips. Contact Peter Mears **091-385 2939**.

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**Chic Computer Club** Full details with an SAE to STAMP, Chic Computer Club, PO Box 121, Gerrards Cross, Bucks. Contact Steve Winter **0753 884473**.

**Club Amiga** Membership £10 a year for PD software and a 24-hr helpline service (091-385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shirey Row, Houghton Le Spring, Tyne and Wear.

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**Independent Commodore Products Users' Group** Biggin Hill Library, Church Rd, Biggin Hill, Kent. Meets most Thursdays from 7.45-9.45pm. Lectures and open nights. **0173 830000** John Bickerstaff after 8.30pm 081-651 5436. Also national network of user groups. Contact individual groups for details on activities, cost, meetings etc:

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**Norwich Masked Heros** SAE for info. Free membership. Contact Zorro, 278 Aylsham Rd, Norwich, Norfolk NR32RG **0603 409899**

**Pennine Amiga Club** 26 Spencer Street, Keighley, West Yorkshire BD21 2BU. Free membership, free advice and a newsletter. Contact Neville Armstrong **0535 609263**

**Public Domain User Group** Swaps PD, provides advice. SAE to 12 Oxford Road, Guildford, Surrey GU1 3RP.

**Rye Computer Club** Swap/meet at the Rye Community Centre. For info contact Oliver Camplion, 71 The Mint, Rye, E Sussex TN31 7DP **0797 222876**

**Serious Amiga Users** Membership £5, £1 admission. Contact J Kucak for more: **0706 290387**. Fortnightly meetings 7.30-11 at the High Crompton Conservative Club.

**Sherlock PD** Quarterly disk mag, help and advice for beginners. 50p/disk. A Doyle, 44 Milton Street, Warrenpoint, Co Down N Ireland

**Slim Agnus** 115 Brocks Drive, North Cheam, Sutton, Surrey SM3 9UW. Meet last Thursday of month. PD library, BBS, advice from Amiga experts. Contact Philip Worrel.

**Software Exchange Service** 13 Bourneville Lane, Stirlingshire, Birmingham, West Midlands B30 2JY. Michael Pun **021-459 7576**

**Southampton Amiga Nutters club** SAE for more info to D Collins, 6 Bentley Green, Harefield, Southampton SO2 5GB

**Warpdrive (friends of Amiga)** Amiga help-line, PD library, bi-monthly disk mag, free drinks, competitions and infosheet. £15 a year. Contact B Scales 110 Burton Ave, Balby, Doncaster DN4 8BB **0302 859715**

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**Wrexham District Computer Club** PD, library, equipment loan. 10p to join, 50p to get in. Memorial Hall, Wrexham every Thursday, 7-10pm. Contact Paul Evans, 3 Ffordd Elfed, Rhosnesi, Wrexham, Clwyd LL12 7LU.

**Your Amiga Club** Helplines, PD, social evenings, classes, club mag. Fee: £12, family £15. Contact P Higgins **0424 892269**. The Old Chapel, Church Rd, Catsfield Battle, Sussex TN33 9DP

## GET YOURSELF LISTED

If you run a user group which isn't listed on this page, fill in the form below for your free entry. Send it to **Amiga Shopper User Groups List, 30 Monmouth Street, Bath BA1 2BW**. We reserve the right to refuse entries.

AS13

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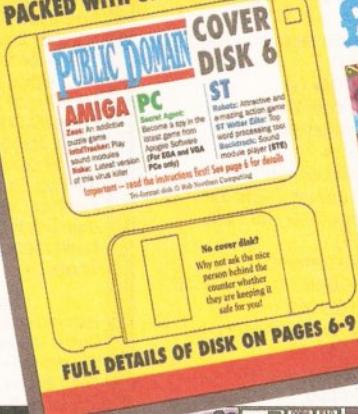
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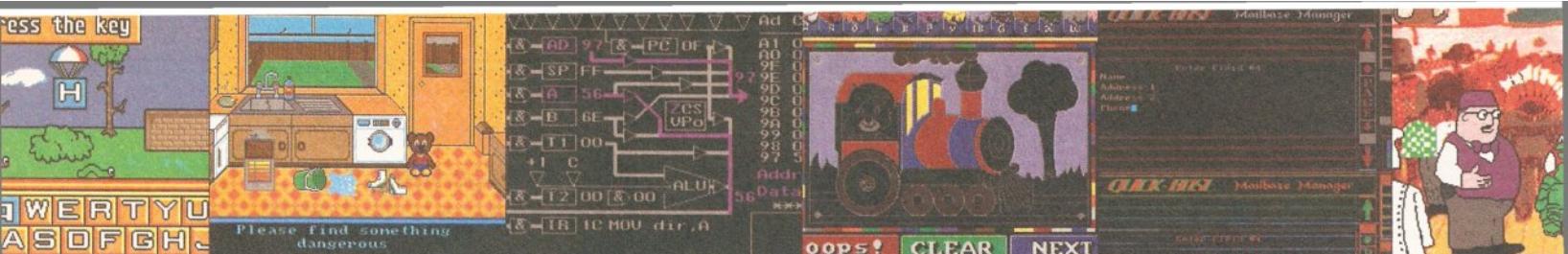
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**Amiga 1500**, Phillips (M8833) Mk2, 3Mb Ram. All under warranty boxed, as new. Much software, some books. £700 the lot. **» 0242 235758** (evenings).

**Commodore A590** hard drive 20Mb with 2Mb of ram installed. Including Ram test software and setup disk plus all manuals £220 ono. Please leave message on answeringphone, if necessary. **» Tony Glover** 071 9269129 (work) or 0705 596018 (home)

**Star LC-200** colour printer, only 2 months old, good as new, leads, instructions included. Still under guarantee. £150 ono. Ilford, London **» Julian** on 081 518 5678.

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**AT Bridge** Board with 5.25" disk drive, £200. Also UGA card, £50 and 32meg hard card, £100. All suitable for B2000 or A1500. **» 071 272 9297**.

**Nexus hard card**. Bare supports SCS1 and AT drives. up to 8Mb memory in Simms. Offers? W.H.Y? **» Steve** on 081 317 1645.

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**A500 Accelerator** card 68020/68881 combination with 4 megs 32-bit RAM on board list, price £554 asking £30, Sculpt Animate 4D - full blown ray tracing package £160. **» 0302 859851** - Dean.

**Amiga A1500** PHC 2 x 3.5" drives 1Mb Chip RAM, Fatter Angus, 3 games, paint 3 works! Platinum, joystick, mouse, mat, bracket, dust cover, disk box, 25 disks £575 ono. **» 051 426 0138**.

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**Do you really need to spend over £100 on a word processor, or will a PD or shareware offering do the job? That's just one of the questions Ian Wrigley answers in this month's PD World**

# Word processing on the cheap

**T**his month, as well as the usual round-up of what's best in the way of PD and shareware, I've been looking at freely-distributable word processors. It seems to me that you'd be mad to pay vast sums of money on a commercial program if there's a shareware or PD version about that will do the same job for you – so that's what I've been looking for. And those (like me) who need to watch the pennies could well be pleased with the result...

The PD and shareware arena still seems a little quiet at the moment; even demos seem to be a little thin on the ground. But there's still a reasonable amount of stuff around, if you look hard enough. Apart from my investigation of budget word processors, I've looked at several programs which come guaranteed to brighten up the grey days until summer comes.

## FIRST THOUGHTS

Before looking at the word processors available, let's consider some general points. First of all, you ought to consider what you want the program to do. If you're only going to be using it for writing programs or dashing off short notes, do you need to bother with a word processor at all? An editor like MicroEMACS (or even ED), both of which come free with your Amiga, will probably do just as good a job.

Printer support is a major factor when choosing a word processor. If you're using the Kooky 750, which has its own printer control codes, then you may find that commands such as 'bold' and 'underline' produce unexpected results unless the word processor allows you to edit the printer control codes which are sent. On the other hand, it would be rather nice if the program came set up for something like Epson emulation, since virtually every printer can be persuaded to emulate

an Epson machine.

None of the PD word processors can cope with importing graphics – but then, neither can many commercial programs. If it's pseudo-DTP that you're after, you'll have to look elsewhere. However, I found that when it comes to word processing power, some of the PD and shareware applications available can give many of the commercial programs a good run for their money.

## THE TEXT ON TEST

To check the word processors, we devised a simple test. We used a 4,000-word ASCII file (which had, as a matter of fact, been created on a Mac and then transferred to the Amiga).

The file had some strange ASCII characters, due to the translation process – an en-dash on the Mac, for instance, is translated to a strange-looking graphic.

We loaded and then altered the file in each of the programs, as well as creating other documents from scratch, to see how the programs coped.

We also felt it was necessary to take into account the number of new Amigas being sold, and the fact that many owners of standard A500s will be upgrading to Workbench 2.0 and the Enhanced Chip Set. It was therefore felt that programs which wouldn't work with Workbench 2.0 should not be included in the test.

*continued on page 148*

## BEGINNERS

### What Is PD?

PD is a general term which many people use (incorrectly) to refer to all freely-distributable software. In fact, PD (which stands for public domain) software is only one branch of this area; the other main one is shareware. Essentially, PD software may be copied and used by anyone, although some authors place restrictions such as the PD library not being allowed to charge more than a certain fee for the disk. Shareware, on the other hand, should be considered as commercial software, which you can obtain on a 'try before you buy' basis. If you like the software, you are morally obliged to send the author the requested fee. This is normally only a few pounds or dollars; it won't break your bank, it will encourage the author to write more software



## BEGINNERS START HERE

## BEGINNERS

and it often entitles you to free upgrades, a printed manual or similar inducements.

### Can I give other people copies of PD and shareware?

Yes – if you have a program which you like, be sure to give it to as many other people as possible; that way, as many folk as possible get to hear about it. However, if you've registered a piece of shareware, make sure that you don't give anyone the registered copy: that is yours alone, and should be treated like any other piece of commercial software. For example, *Text Plus*, reviewed this issue, has a frequently-appearing requester asking you to register. That is the version you should pass on – not the registered version, with the requester removed.

## Where to get it

There are two main ways to get hold of Amiga PD and shareware: from a bulletin board or from a PD library.

The advantage of using a bulletin board is that often the latest software is uploaded as soon as it's available. On the down side, you need a modem to connect (check out the *Amiga Shopper* modem offer for a couple of low-priced units); you'll also have to pay phone charges (and sometimes a BBS connect charge, too).

There is a growing number of bulletin boards with a reasonable range of Amiga software available for download. For instance, check out 01-for Amiga (071 377 1358) and the Cheam Amiga BBS (081 644 8714). On the other hand, you could join up to CIX (short for Compulink Information eXchange), which has not only Amiga software but also conference and file areas for loads of other machines, as well as hundreds of conferences on subjects not remotely connected to computers. Many of the *Amiga Shopper* writers have CIX accounts, so you can get first-hand advice on your problems, too. For more details, give CIX a ring on 081 390 8446 (voice) or 081 390 1244 (modem).

If you don't want to use a bulletin board, you'll be getting your software from a PD house. Many advertise in *Amiga Shopper*, and there's a comprehensive list at the end of this article. Expect to pay between 99p and £2.50 or so per disk.

## SIMPLY THE BEST!

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FF-524 **SNAP V1.62:** Cut and paste graphics or text from other applications. Uses the Amiga clipboard device.

FF-533 **BOOT GEN V3.4:** Easily create a boot menu by simply entering the names of up to ten programmes and Boot Gen will do the rest.

FF-535 **KEY MACRO V1.12:** A keyboard macro programme configurable via a text file, that also supports hot key programme execution. You can map up to 8 functions to each key including keys such as cursor keys and the return key etc.

FF-543 **PIC SAVER:** A screen grabber that will save pictures in IFF format.

FF-561 **TOOLS DEAMON V1.0:** A useful utility that makes it easy to add programs to the tools menu on workbench 2.0.

FF-562 **DEGRADER V1.0:** Degrades your machine to try and get badly written programmes to work. Locks out fast memory turns of cache and burst modes traps privilege errors forces pal or NTSC screens etc. Survives reset.

FF-563 **DISKEY V2.1:** A sector orientated disk monitor with lots of useful features like disassemble, user friendly ASCII or HEX editing facility and extensive search options. Useful for salvaging data from damaged disks or learning about the Amiga's inner workings.

FF-572 **MULTIPILOT XLNC:** An intuitive data plotting programme featuring flexible input options, arbitrary text addition, automatic scaling, zoom, and slide with clipping at boundaries, a range of output file formats and publication. Quality printed output. Workbench printers are supported via transparent use of the PLT device. Postscript and HP LaserJet are directly supported.

FF-573 **MULTIPLAYER:** Music player that will play over 15 types of module including SoundTracker, NoiseTracker and MED.

FF-579 **BINTOHUNK:** A utility to convert a raw data file (text, bitmapped graphic etc) into an Amiga hunk format object file that can be linked using Blink.

FF-580 **WORLDDATABANK V2.2:** Using a database of coordinates compiled by the CIA and made available under the freedom of information act, this program plots world maps in cylindrical or spherical projections with various degrees of magnification. Includes the largest available data file for detailed mapping of even small sections of the globe. Disk includes source code.

FF-589 **TERM V1.9c:** A telecommunications program with some nice features, including an ARexx port, external process communications, XPR support, Programmable function keys, postscript downloading to laser printer, phone book, Programmable panel buttons, public screen support etc documentation in English and French. Requires dos 2.0 an update to Term 1.8A

FF-593 & **FF594 ANALYRIM:** An integration of the AnalytCalc spreadsheet and the RIM-5 database management system 2 meg of ram needed of which 750K must be contiguous.

FF-597 **ICON TOOLS:** Four programmes to manage some aspects of icons using the intuition interface and allowing operation on many icons at one time by shift clicking etc.

FF-598 **DX100:** Editor/Librarian for the Yamaha DX100, DX21 AND DX27 synthesizers.

FF-598 **FB-01:** Editor/Librarian for the Yamaha FB-01 with lots of features.

FF-598 **TX81Z:** Editor/Librarian for the Yamaha TX81Z and DX11 Synthesizers. Provides voice and librarian features similar to the FB-01.

FF-601 **PP:** Patches Amiga Dos and makes decrunching of PowerPacked files completely transparent. Which means that any programme may work directly with PowerPacked files without having to decrunch them first.

FF-602 **MATHSADV:** An adventure programme that will educate as well as being fun to play.

FF-603 **NOTIFY:** A suite of Rexx programmes that can be used to issue messages or run commands automatically on certain days and or certain times.

FF-604 **RINGWAR:** A classic arcade game of reflexes with vector graphics.

FF-604 **MIDISTUFF:** A package of 8 tools that use the midi library.

FF-605 **HDCCLICK:** A programme selector/hard disk-menu. Programmes can be started easily by clicking on gadgets which can be defined by the user.

FF-606 **SPELL CHECK:** A programme which aids you in learning foreign words. You enter the words and translation and the computer will quiz you on them.

FF-607 **DOS CONTROL:** A new directory tool that combines the functionality of many separate tools allowing you to control the operation of your Amiga with a single programme.

FF-608 **VERTEX:** A 3D object editor that differs from other 3D editors in many ways. You can choose any view, including perspective, to select points and examine objects. The view can be rotated, positioned and scaled at will by either typed in values or using the mouse which makes the editor fast and responsive.

FF-609 **CRYPTO KING:** A game for all those that like to solve cryptograms.

FF-610 **ATCOPY:** A programme to copy files from the Amiga side of a system equipped with a PC/AT bridgeboard to the PC side using wild cards. Copies directly through the shared memory. Supports CLI and Workbench usage. This is an upgrade to version 2.2 on disk 458 which now includes an ARexx port.

FF-610 **PCEEXECUTE:** A little programme that allows you to execute programmes on a bridgeboard without opening a PC window.

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## UTILITIES &amp; GAMES

UT-014 **AMIGA SYSTEMS TEST:** Tests keyboard, mouse, disk drive, memory - both chip and fast - screen resolutions, clock, sprites and more.

UT-017 **WORD WRITE:** A nice word processor along with 2 other utilities Label Print & S-Calc

UT-044 **M-CADD:** Computer aided design program with lots of drawing tools and load/save feature.

UT-064 **COMPLETE C MANUAL V2.0:** 4 disks each one about 98% full. A must for anyone wanting to learn C. Executable examples along with the source code to take you through screens, gadgets, windows etc. On disk documentation shows how to use a compiler, how to link code etc a very useful tutorial.

UT-072 **BANK'N V1.5:** An excellent utility for keeping track of your bank account, produces reports on income and expenditure so you can see where the money is going. Handles multiple accounts.

UT-097 **NORTH C V1.3:** (2 disks) a complete C compiler along with libraries and all.

UT-108 **PRINT STUDIO:** Will print text with different options. Will also print/save screens and windows or parts of, alter colour palette etc.

UT-139 **DRAWMAP V2.30:** An upgrade of the excellent map drawing utility.

UT-151 **BOOT X V4.1:** An excellent (probably the best) easy to use Amiga virus killer UT-152 is the same programme but set up for the Amiga Plus.

UT-157 **TEXTPLUS V3.0:** A full featured word processor.

UT-165 **UEDIT V2.3:** Another useful word processor that's easy to use.

UT-172 **TEXT ENGINE V2.1 & AZSPELL:** A very nice wordprocessor along with a very good stand alone spell checker.

UT-185 **LABEL MAKER V1.3:** Brilliant, allows you to create and print full 3.5" disk labels with graphics and in colour too. Nothing is static you can move text and graphics around at will. Full load and save features.

UT-188 **MESSY-SID II:** Converts Data files between Amiga Dos and MSDos.

UT-189 **AMIBASE PROFESSIONAL:** An easy to use database program and upgrade to the very popular Amibase.

UT-192 **HARD DRIVE UTILS:** Various utilities for backing up and repairing data on your hard drive those fortunate enough to have a hard drive.

UT-197 & **198 THE A64 PACKAGE II:** Probably the best Commodore 64 emulator available. Updated to be Amiga Plus compatible.

UT-201 **GRAFIX UTILS 1:** QuickFlix, Slate, RTap, VideoDataBase, Combine Anim, Split Anim, Anim Build & anim Info.

UT-202 **GRAFIX UTILS 2:** Tesselatr, Plasma, Plans & Plotxy.

UT-203 **GRAFIX UTILS 3:** PicBase, Agraph & Freepaint.

UT-204 **GRAFIX UTILS 4:** TitleGen, Image LAb, ShowFont, Vtov and Jpeg.

UT-206 **BBASE II:** A database with a professional look, full features and easy to use.

GA-109 **PETERS QUEST:** Can you rescue your girl friend by completing the twenty levels.

GA-112 **DITRIS:** A two player Tetris clone and very good too.

GA-126 **CARD SHARP:** A collection of Solitaire type card games professionally presented.

GA-128 **NAPOLEONIC WARFARE SIMULATOR:** For all those who would be Generals.

GA-129 **MIND GAMES:** A collection of 21 games, a couple of which do not work on the plus but the disk is still well worth having.

GA-130 **DIPLOMACY II:** A good strategy game for 2 to 7 players.

GA-132 **SURVIVOR:** A graphics adventure. Good graphics, very well presented.

GA-134 **WASTELANDS:** An impressive 3D graphic adventure.

GA-135 **PARACHUTE JOUST:** Fight over a parachute whilst free falling from a plane. Worth getting just for the animation sequence at the end.

GA-136 & **GA-137 STAR TREK TRIVIA:** An excellent quiz game based on the new generation.

GA-139 **NU GAME:** A vertical smooth scrolling shoot em up and very good too.

GA-140 **ADVENTURES:** A collection of 6 text adventures Atlantis, Safari, Star Trek, Grungy Towers & Ring World.

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LPD-001 **COLOURING BOOK:** A nice colouring in program with several nursery rhyme pictures. An excellent program for young children.

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LPD-004 **THINGAMAJIG:** Kiddies jigsaw type program with 24 pictures to choose from and a difficulty level. 1 meg.

LPD-005 **JUNGLE BUNGLE:** A very good graphic adventure written with children in mind.

LPD-008 **WORK AND PLAY:** 3 educational programs for kids. Click Clock, Fun Times Tables and Lets Go Shopping. 1 meg.

LPD-010 **THE WORD FACTORY:** A neat spelling game for the kids. 1 meg

LPD-015 **ARC ANGELS SHAPES:** Fun for the kids. Build colourful pictures from predefined shapes. 1 meg.

LPD-016 **REVERSI II:** A new improved version of the old classic board game Othello.

LPD-025 **THE MISSION:** An excellent text adventure by Jim McBride.

LPD-029 **BIG TOP FUN:** A top quality educational program, three games based on circus acts. 1 meg.

LPD-030 **SHYMER:** A very nice adventure game for children. Based on the island of nursery the must sort out the rhymes that have become mixed up.

LPD-037 **ROCKET MATHS:** A game designed to aid children with their maths. Various levels of difficulty may be set.

LPD-039 **MAGIC FOREST II:** Version 1 was given away free with Amos. This program is far superior and continues the story set by version 1. 1 meg.

LPD-041 **RESCUE:** A 3D adventure in which you must solve a murder. You can click on objects and examine them for clues etc. Excellent game.

LPD-042 **X-STITCH:** Prints out your pictures in the form of a cross stitch pattern for embroidery.

LPD-044 **FORMULA 1 CHALLENGE:** A very comprehensive racing car game for one to four players.

LPD-045 **MUSIC BOX:** A music programme created with children in mind simply place the notes on the staves. There are a choice of instruments to use and also a selection of tunes already created.

LPD-047 **DIRTY CASH:** An excellent fruit machine game with all the normal features like hold, gamble nudge etc.

LPD-052 **LC24/200 FONTS:** Fonts to download to your 24 pin printer along with an editor so you can create your own.

LPD-057 **KIDDIES CLIP ART:** Lots of good quality clip art designed with children in mind. Can be used in your favourite graphics package.

LPD-061 **THE FINAL CHAPTER:** A 3D interactive graphic adventure. I did not get very far but the bit I did was quite impressive.

LPD-065 **POWER PLANNER & DIARY CHECKER:** A database in which you can store telephone numbers and addresses etc also a diary to help keep track of appointments.

LPD-067 **CYADONIA (CYAD II):** The follow up to Cyad with improved graphics and even more devious puzzles. Very addictive.

LPD-069 **MAGICAL MIXUP:** This one is addictive. A type of jigsaw puzzle where a picture is broken up into pieces and you have to put it back together again. Lots of pictures and various levels to suit young and old.

LPD-070 **PAINTBOX:** A nice painting programme for children with 16 pictures to paint and the facility to draw your own.

LPD-071 **BATTLECARS:** An excellent car racing programme for 1 or 2 players use your money to buy specialist tyres, weapons etc before you start. Features split screen so players can keep tabs on each other.

LPD-072 **MONSTER ISLAND:** At last a simple role playing game for children.

LPD-073 **AMOS DATABASE:** An easy to use database ideal for keeping track of your CD/Record/Video collection etc. Full documentation is included on disk along with a sample file. An impressive database.

LPD-074 **SOUR GRAPES:** A 3D isometric game controlled by joystick. Collect grapes and make bottles of wine but watch out for the Kikkynacks who will do anything to stop you.

LPD-075 **VIDEO LAB:** The first Amos video titling programme that saves the expense of a genlock and associated software but still manages to do a pretty good job.

LPD-077 **POWERBASE V2.1:** A powerful database with lots of features and easy to use. A very professional looking programme that impressed me at first sight.

LPD-079 **MUSIC ENGINE:** This one is for Amos programmers it gives the ability to play MED, Octamed, NoiseTracker, GMC and sonix music from Amos without having to first convert it to ABK.

LPD-081 **POOLS PRO:** A very easy to use programme that will try to help you win those magic millions. You feed in the data and try and increase your chances of winning.

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FF-P2 FLETCHER COLOUR FONTS PACK (2)  
FF-P3 FLETCHER COLOUR FONTS PACK (3)  
FF-P4 FLETCHER COLOUR FONTS PACK (4)  
FF-PA FLETCHER MONO FONTS PACK (1)

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This, and ignoring the really basic attempts, actually left us with three word processing programs: *Textengine*, *Text Plus* and *Wordwright*.

All offer different levels of user control and sophistication; one of them could well be exactly what you need – without you having to spend a fortune on a commercial package. Read on and see...

## TEXTENGINE V3.0

### Digitz disk Util 277

First up is a fairly basic program from Nicholas Harvey. *Textengine* carries a £5 shareware fee, and there's no excuse not to register, since Nicholas lives in Surrey, not some far-flung corner of Guatemala.

Launching the program (from either Workbench or Shell) produces an attractive screen; a dark blue main area, with lighter blue menu bar

and a set of icons down the left hand side. *Textengine*'s icons are a neat touch – they represent a number of common operations, such as loading and saving files, so that you are saved the bother of remembering which menu to

select in order to perform these functions.

On the menu bar is a copyright message, the version number of the

program and a display telling you which printer driver you are using. Unfortunately, this didn't seem to work on my machine – the program insisted on believing that I was using the generic driver whichever one was actually selected from

the program: for example, the 'Tab' key simply produces a space character rather than a tab or a number of spaces (although importing a document seemed to translate tab characters into a string of spaces with no trouble).

The fact that the keys continued to auto-repeat for a short time after I had stopped pressing them was extremely annoying, especially since all navigation around the document has to be done with the cursor keys; clicking on a character with the mouse doesn't move the cursor to that point in the document.

The 'Centre line' option doesn't appear to work properly; every time it's issued it just seems to add a few more spaces to the beginning of the line. Also, it is sometimes impossible to add characters to the beginning of a line if it's already full of text – the words at the end don't wrap around to the next line. But the most serious complaint is that the program will let you load one file on top of another without warning you

that you should save first; an omission which could well mean that you lose work by accident.

On the plus side, the program has a decent range of type effects: bold, underline, italics, superscript and the like.

*Textengine* can cope with 50K of text, which works out at about 8,500 words – which should be plenty for most users. Text scrolls rapidly, and there's no noticeable delay when adding words or lines to the beginning of a large document. When text is entered, it appears as black on white – this provides a nice contrast to the normal blue background (and if you don't like the colour scheme, a 'palette' Prefs requester is provided which allows you to change the appearance of all four colours used).

Printer control is at the mercy of your Prefs printer driver; and since *Textengine* wouldn't believe that I was using anything other than the generic driver, this meant that not all the text effects were available.

Printing out the test document produced some interesting effects: the en-dash translated to a character which made the printer go into subscript mode. And since there is no 'search and replace' facility available, I wasn't easily able to translate the characters into a standard dash. Still, it's a job which can be done by hand if necessary – and it will only be a problem for people who want to use *Textengine*

to edit files produced on another machine.

All in all, *Textengine* is probably not the best program to write your next novel on, but it's a perfectly reasonable application for the odd letter or memo, and should suit those who don't want to get too involved in the complexities of printer control codes and the like.

**Program rating.....** 6/10

## TEXT PLUS V3.0

### PDSOFT disk V261

*Text Plus* comes to us from German author Martin Steppeler, who requests a £15 shareware fee. And if you like the program, you're sure to send the fee, since until you obtain your registered copy, a requester appears with incredibly annoying regularity, reminding you that the program isn't registered. I'm sure that many people pay up because of this, but it doesn't help when you're trying to decide whether or not you like the program – you find yourself starting to really hate it, regardless of how good it really is.

And *Text Plus* certainly is good: it's incredibly fully-featured, with just about every option that a word processor should have. It knocks spots off some of the commercial packages which cost well over twice its

## "Don't be put off by Text Plus' annoying This is a shareware requester!"

registration fee, and in some areas *Text Plus* can even give commercial programs such as *Protext* a run for their money.

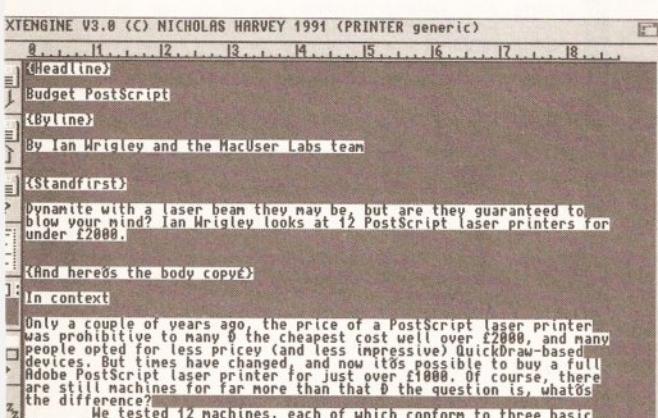
Launching *Text Plus* (from the CLI or by Showing All Icons and double-clicking if you're in Workbench 2.0 – there's no pretty icon) reveals a starkly black-and-white screen; no pretty colours here! (Although selecting a block of text – about which more later – highlights it in blue.)

The menus are large, to say the least: the Project menu, for instance, has 16 items, and most of the menus have at least a couple of sub-menus available.

The first thing that you should do is print out the documentation – which consists of a well-written 21 or so pages – and study it. This is really the only way to get a full appreciation of what the program can do – just playing with it doesn't give anything like a full flavour.

All of the standard features are present in the program – things like block copy, paste, delete and so on. But virtually everywhere there are extra little additions: under the Block menu, for instance, you can load,

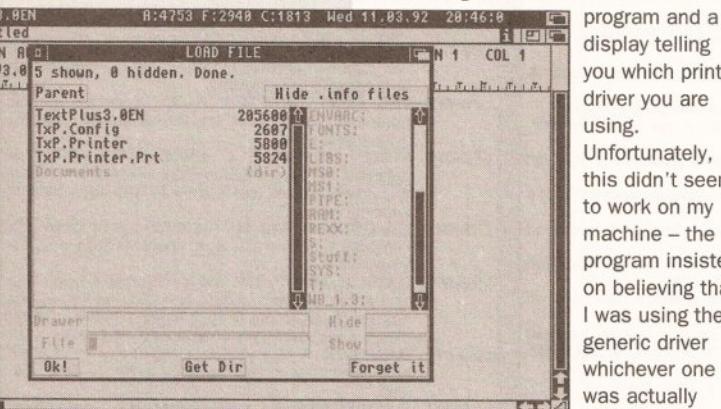
continued on page 150



*Textengine* is the simplest of the three programs, but it does have some nice touches – such as icons on the left of the screen

select in order to perform these functions.

On the menu bar is a copyright message, the version number of the



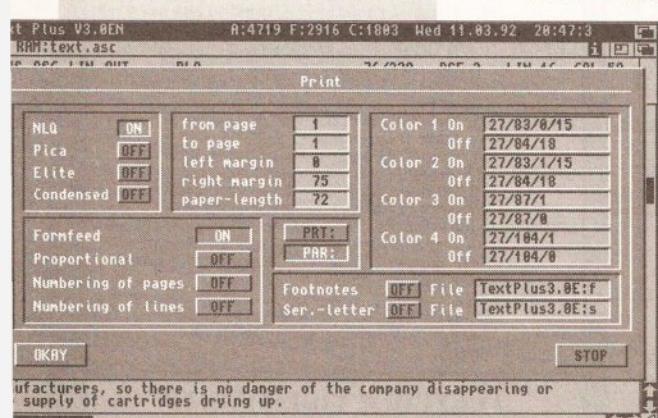
*Text Plus* has one of the best 'Load file' requesters that I've seen in a long time. Other programmers, please note!

Workbench Preferences. Perhaps that's because I was running WB2.0?

The actual features available in the program are fairly limited – restricted to type style, wordwrap or not, word count, cut and paste, centre line and a few 'prefs' options. Notice that I said "cut and paste" – there's no copy option available, for some

unexplained reason. (Many things go unexplained, as a matter of fact, since the documentation only runs to four pages.)

There are a few other anomalies



When 'Print' is selected from *Text Plus'* menu, this requester appears. There are more options on this requester than some programs have in total!

# Crazy Joe's

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 DEMO (P)  
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 1550 FLEXY-BASE V2.0 (NP)  
 1569 LANGUAGE TUTOR (NP)  
 1606 DATABASE MASTER 2.0 (NP)  
 1629 SPECTRUM EMULATOR (NP)

1663 DYNAMITE BRUSH  
 FONTS (P)  
 1858 202 UTILITIES (NP)  
 1878 TEXTPLUS WORD PROC. (P)  
 1880 DCOPY & UTILITIES (NP)  
 1884 EQUINOX INTRO WRITER\* (NP)  
 1886 MED V3.10 (NP)  
 1893 DICE V2.06A (NP)  
 1896 DESK BENCH (3) (NP)  
 1906 PAGESETTER CLIP ART  
 (8) (P)  
 1914 SLIDESHOW CONSTRUC. (NP)  
 1951 KING JAMES BIBLE (3) (P)  
 1954 CELTICS DEMO MAKER (NP)  
 1987 QUICKBENCH\* (NP)  
 1990 NIGHTFLYERS UTILS. IV (NP)  
 2004 TURBO IMPLODER V4.0 (P)  
 2012 DRAW MAP V2.3D (P)  
 2058 VECTOR BALL EDITOR\* (NP)  
 2168 MESSYSID  
 2174 ANTI-VIRUS V3.14 (P)  
 2176 KIDS PAINT (P)  
 2180 TEXT ENGINE (P)  
 2181 AMIGA FOX DTP (P)  
 2182 WINDOWS BENCH (NP)  
 2186 PERM CHECK (P)  
 2189 PRINT STUDIO V1.25 (P)  
 2190 PICTURE CONVERTORS  
 PACK  
 2195 BBASE 2 (P)  
 2197 UNICOPY V1.0 (P)  
 2200 LITTLE BENCH (PLUS ONLY)  
 2201 PC EMULATOR DEMO (P)  
 2202 TARTO 2 (2) (NP)

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 1279 FORGOTTEN REALMS '90 (P)  
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 1719 YABBA DABBA CARTOONS (P)  
 1781 REFLECTIONS (NP)  
 1835 NIGHTBREED  
 SLIDESHOW (P)  
 1876 REFLECTIONS 6 (P)  
 1901 LEEDS UNITED S/SHOW (P)  
 1919 DEBBIE HARRY (2) (2D)\* (NP)  
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continued from page 148

save and even print just the selected block.

Navigation around the text is either by cursor keys or by scroll bars – both vertical and horizontal. Clicking anywhere on the screen moves the text to that point – something which should be standard but which, in *Textengine*, is not implemented. However, this is where I found a major annoyance with the

different style when output to the printer. So, for example, you can edit the printer config file so that any text in colour 3 will be output as superscript, any text in colour 4 as double-width and so on. (Of course, if you have a colour printer then you can define text in the different colours to actually be coloured.)

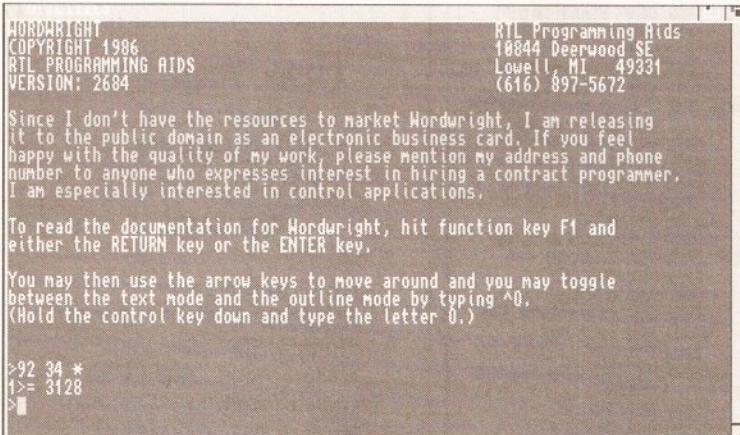
Because the printer control codes sent when you define text to be bold, italic or whatever can be altered, you aren't restricted to just

Selecting 'Print' produces a requester which once again reminded me of the Macintosh (it's fairly clear that Martin has been heavily influenced by the Apple Mac when designing his program). Things such as the text width, style (NLQ, Pica, Elite or Condensed), the page length, which pages to print, the name of the mail-merge file to use (if you want to use one) and so on are all selectable before printing is started – yet again, a feature which

say, is a little selective about just which commands it will undo), the fact that up to ten windows can be open on-screen at once, and so on and so on.

If you want a professional, fully-featured word processor but don't want to spend a fortune, take a look at *Text Plus*; don't be put off by the annoying "This program is shareware" requester – registering will get rid of it.

**Program rating.....9/10**



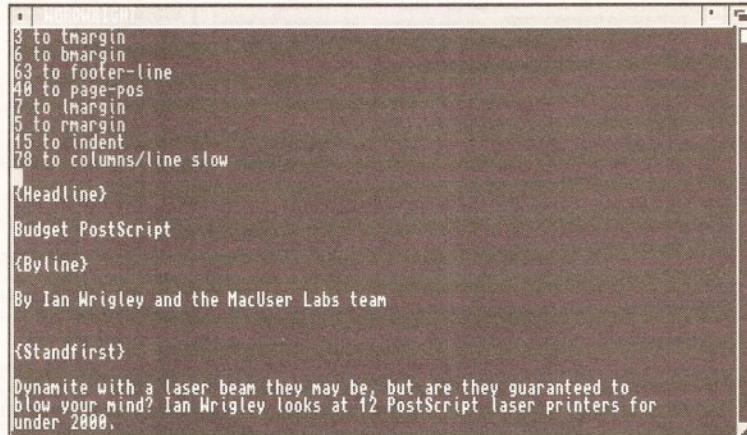
Wordwright's utilities screen gives access to things like the built-in calculator; notice the Reverse Polish Notation method of entering calculations

program: if you click on a character and move the mouse, *Text Plus* assumes that you're trying to define a block. Now, clicking and dragging is a great way to mark blocks – and is, indeed, the standard method on computers such as the Mac. But I found that the amount of movement required to start the block marking procedure was so minuscule that I kept doing it by mistake – which meant that I was forever having to select 'Delete mark' from the Block menu. This is a real pain; as someone used to navigating documents with the mouse, I found myself getting more and more frustrated. Please, Martin – fix this!

The program is configured using two separate, ASCII files – which *Text Plus* itself can, of course, edit. (In fact, the program can save files as ASCII, ANSI or in its own format.) You are supplied with default config files, including a printer file for Epson-compatible devices, and both are well commented so you can easily customise them to your own requirements. The general configuration file is the only one which might cause some problems – the comments are in German! However, most options are easily worked out, and you can resolve any queries with a little trial-and-error experimentation.

Only three different type styles are available from the 'Styles' menu: Bold, Underlined and Italic. However, type can also be displayed in four different colours; and each of these colours can be set to produce a

the three styles in the Style menu: if, for instance, you never use underline but often want text to be double-width, just edit the 'Underline' codes in the config file to produce double-width instead. The printer config file also includes an editable translation table, so odd foreign characters can be printed out by converting a keyboard-generatable character to the foreign character required during printout.



Instructions to *Wordwright* such as the amount of space to leave in the left-hand margin and the number of lines per page are entered into the document; the instructions appears in yellow (but you can't see that...)

more programmers should incorporate.

It is, in fact, the relatively minor features which really made me think that this program is truly professional: the ability to automatically insert the date into a document, an auto-save feature, a menu-bar clock which also tells you how much free memory is available, an 'Undo' feature (which, I should

## WORDWRIGHT

### PS Soft disk V28

Software Expressions disk V084 *Wordwright*, by an American who goes under the name 'RTL Programming Aids', is unique in a number of ways – not least the fact that it's public domain, rather than shareware. According to the programmer, "since I don't have the resources to market *Wordwright*, I am releasing it to the public domain as an electronic business card." All he (or she) asks is that you consider RTL if you are considering hiring a contract programmer (although presumably this only applies in the States...)

Because the program is American in origin, it only takes up the NTSC-sized portion of the screen; the text window is resizable, but only down to a little over two-thirds of the screen depth. Shame.

*Wordwright* is unique in other ways, too. It is, according to the documentation, "a collection of four integrated packages, a word processor, an outliner, mail merge, and a set of general purpose utilities." The "general purpose utilities" come in the form of a separate command window, accessed by hitting the [Esc] key.

The command window allows you to do things like produce a memory dump, access any DOS commands, set up the printer control codes and use the built-in calculator. This

| At a glance guide to cheap word processing |            |           |            |
|--|------------|-----------|------------|
|  | Textengine | Text Plus | Wordwright |
| <b>TEXT EDITING</b>                        |            |           |            |
| Multiple documents                         | No         | Yes (10)  | No         |
| Timed autosave                             | No         | Yes       | No         |
| <b>DOCUMENT FORMATTING</b>                 |            |           |            |
| Ruler                                      | Yes        | Yes       | No         |
| Headers/footers                            | No         | No        | Yes        |
| Footnotes                                  | No         | Yes       | No         |
| Page numbering                             | No         | Yes       | Yes        |
| Line numbering                             | No         | Yes       | No         |
| <b>PRINTING</b>                            |            |           |            |
| Customise control codes                    | No         | Yes       | Yes        |
| Character translation                      | No         | Yes       | No         |
| <b>EXTRAS</b>                              |            |           |            |
| Outliner                                   | No         | No        | Yes        |
| Table of contents generator                | No         | No        | Yes        |
| Access to DOS commands                     | No         | No        | Yes        |
| On-line help                               | No         | Yes       | Yes        |
| Macros                                     | Yes        | Yes       | Yes        |
| <b>PRICE</b>                               |            |           |            |
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continued on page 153

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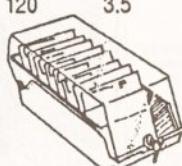
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the spelling checker will query the word 'bed' – ie, the word 'bed' followed by a quote mark. You can, of course, tell the program to ignore it – or even to add it to the dictionary – but I would have preferred some option to ignore quote marks. Perhaps Danny will make this alteration in a future version.

Once you have checked a file, you can run the extra program AZmerge to add your new words to the main dictionary. And that's it: an easy-to-use, efficient program which can be thoroughly recommended to anyone whose current word processor doesn't include a spelling checker.

**Program rating.....8/10**

## MESSY SID II

**PD Soft disk V490**

*SID* has, as any fool knows, been around now for some time, and version 2 is imminent. For those who aren't acquainted with the program, it's a tool which gives you a kind of graphical version of the Shell, with which you can navigate around a disk, read, execute, delete, copy and rename files, compress and decompress them and so on and so on.

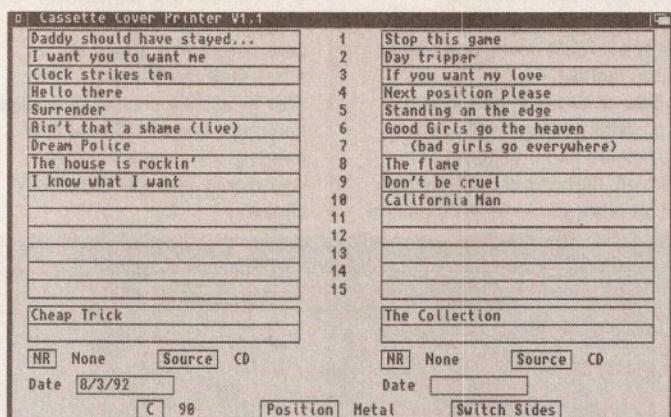
*MessyDOS* has also been doing the rounds for a while; it's a utility which allows you to read PC-formatted disks on your Amiga. Note that it's not a PC emulator – you can't run PC programs – but you can use it to transfer data files from one computer to the other. (*Amiga Shopper* uses it to transfer Amiga files to the Mac since, with *MessyDOS*, text files such as this article can be put on a PC disk which the Mac would otherwise be unable to read.)

Unfortunately, *MessyDOS* isn't the easiest program in the world to install; the instructions are somewhat cryptic, and it can take you hours to work out just what to do.

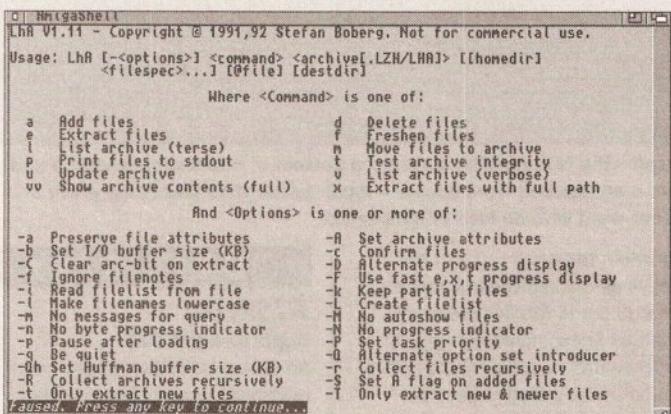
The idea of combining the two programs is a good one, and congratulations must go to Jeff Tullin for making the whole thing come together. According to his documentation files, someone tried it before, but this version contains far more utilities than the previous attempt.

*Messy SID II* is supplied as a self-booting disk, which has all the relevant commands and utilities in its *c:* directory. All you need to do is boot from the disk and wait; first *VirusX* checks to make sure that the disk is not infected, then *SID* starts up.

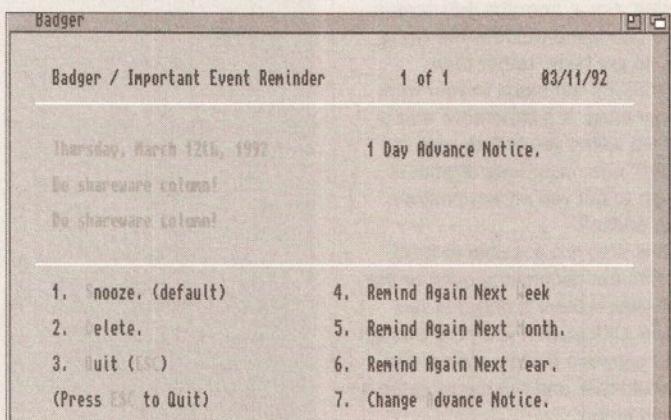
Checking through the various directories on the disk, it's clear that loads of utilities have been included. These include *PowerPacker* (which is required to read much of the



**Cass – a simple, effective program for tidying up your cassette collection. No more trauma when you can't find that Kylie track...**



**LhA – this may be one of the fastest compression utilities available, but its on-line help isn't the clearest in the world!**



**Badger – for those of us who are on the forgetful side, Badger is perfect. Remember to pay the shareware fee, though – the program will only work for 30 days if you don't!**

documentation), *lharc* (a file compressor), *Last Hope* (a file recovery utility) and many more. Indeed, the disk is 99% full, with only 1K of free space left over.

If you need to be able to access data stored on PC disks, and you can't afford the time to mess about installing *MessyDOS* from scratch; or if you just want a good collection of utilities (including *MessyDOS* and *SID*), then this is the disk for you.

Let's hope that it will be updated when *SID v2.0* makes its appearance...

**Value for money.....8/10**

and general table row and column data.

The program is compatible with Workbench 1.3 or 2.0, automatically sensing which it's running under, and works in both interlaced and non-interlaced modes. However, when running in non-interlaced mode some of the data is not available (due, presumably, to the fact that the text wouldn't fit on the screen). There is even a 'quiz mode', where you are asked questions about selected elements. The disk contains Swedish and German data files, as well as the default English version.

If you're studying Chemistry, get your hands on this; it's worth it for the sheer amount of information it contains!

**Program rating.....9/10**

## CASS V1.1

**Fish disk 579**

**Supplied by Unique Computing**

This program, written by Jorn Clausen, has one simple task in life – to create labels for cassette boxes. It doesn't claim to be incredibly sophisticated, or to create amazing text effects. But hey – who cares?

Using *Cass* is a simple matter of typing in the track and artist names, clicking on buttons like 'Source' to cycle through the available possibilities (in this case CD, Phono, Tuner, DAT, Computer et al), and then printing the thing out. Output can either go straight to your printer, or to a disk file as *TeX* data (for those who have an Amiga *TeX* program).

The author says that he's sure the labels will be the right size, although he's only checked this out on his Star printer. Well, I can certainly confirm that they look fine on my Canon BJ10ex, so it's likely that they'll be fine on most machines (the program addresses the PRT: port, so your Preferences printer driver is used).

True, this is not the most exciting program on the market. But at least, now, my cassette collection looks a damn sight better!

**Program rating.....7/10**

## QUICKIES

### ELEMENTS

**Fish disk 593**

**Supplied by Unique Computing**

*Elements* is a shareware program written by Paul Miller for those studying (or working in the field of) chemistry. When run, it produces a display of the Periodic Table of Elements; clicking on any element displays information about that element, and shift-clicking on a further element displays information about chemical bonds between the two. There's also info available on things such as sub-atomic particles,

continued on page 156



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### DEMOS

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REBELS MEGA II .....neat gfx

DIGITAL INNOVATIONS .....nice one anarchy

DECAYING PARADISE (1meg) .....great vectors

RED EMPATHY (1meg) .....2 disks great gfx

continued from page 154

archive, you can just write it down and refer to it in future. But working out just what to use is the tricky bit...

Still, *LhA* is likely to become one of the more widely used utilities in the future, due to its speed, so it's certainly worth getting hold of a copy.

Incidentally, next month I'll be comparing all of the popular data compression programs, complete with speed tests. Stay tuned...

**Program rating.....8/10**

### BADGER

#### Fish Disk 543

#### Supplied by Unique Computing

*Badger* is a \$15 shareware program for those of use who need to be constantly reminded to do things. It is really only for people with hard disks; although you could use it on floppy-only machines, it isn't

particularly recommended, because it will slow your startup down too much.

To activate the program, just put it somewhere on your hard disk, and add the command 'badger -s' to your startup-sequence somewhere after your clock has been set. Then, every time you start your Amiga up, you will be presented with a list of things which you asked to be reminded about. You can set the program so that the list is only presented when you start your Amiga for the first time on any day, or so that every time you reboot the list appears. Items can be added or removed at any time by double-clicking on *Badger*'s icon, and the amount of warning that you get for an event is selectable between 0 days (the item only shows up on the day itself) and 45 days (even I don't need to be hassled that much!).

The program is protected in a

neat way – if you don't register within 30 days of first running the program, it will refuse to continue to work, and an annoying requester will appear, tying up your machine for 20 seconds or so every time you try to run it. Of course, you could just reset your clock so that less than 30 days appear to have passed; but

since this program relies on knowing the current date, that's just a tiny bit pointless!

All in all, *Badger* is a neat little program, worthy of a place on the hard disk of any forgetful Amiga owner. (If you can remember to order the disk, that is...)

**Program value.....7/10** **AS**

## NEXT MONTH • NEXT MONTH

Next month I'll be taking a look at all of the data compression packages available, and we'll be printing speed tests so you can see just which is the best for your needs.

I'll also be leafing through the growing number of disk magazines available for the Amiga; so if you know of any good ones, or if you run one yourself, make sure that you send me the latest issue! You can reach me c/o Amiga Shopper, Future Publishing, 30 Monmouth Street, Bath BA1 2BW, or on CIX as 'iwigley' and CompuServe as '100016,320'. Don't forget, if you know of any good PD or shareware that you think I should be looking at, let me know!

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PO BOX 15, Peterlee  
Co Durham SR8 1NZ  
091-587 1195

**Virus Free PD**  
23 Elborough Road  
Moredon, Swindon  
Wiltshire SN2 2LS  
0793 512321

**Workbench PD**  
1 Buccleuch Street  
Barrow-In-Furness  
Cumbria LA14 1SR  
0229 870000

# CITIZEN

## ALWAYS A GOOD IDEA

### FREE DELIVERY

Next Day - Anywhere in the UK mainland

### FREE STARTER KIT

Worth £29.38 - With every Citizen printer (excluding inkjet) from Silica

### 2 YEAR WARRANTY

Silica offer a 2 year warranty (including the printer head) with every Citizen printer from Silica.

### WINDOWS 3.0

Free Windows 3.0 driver.

Included with the Silica Starter Kit.

### FREE COLOUR KIT

With every Prodot 9 and Swift 24e printer.

### FREE HELPLINE

Technical support helpline open during office hours.

### MADE IN THE UK

Citizen printers are manufactured to high standards.

# DOT MATRIX PRINTERS

## LOW PRICE 9 PIN PRINTER



144 CPS

80 COLUMN

- Citizen 120D+ - 9 pin - 80 column
- 144cps Draft, 30cps NLQ
- 4K Printer Buffer + 2 Fonts
- Parallel or Serial Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- Pull tractor & bottom feed
- FREE Silica Printer Starter Kit

**£115**

+VAT = £135.13 ref: PRI 2120

RRP ..... £199

SILICA STARTER KIT £25

TOTAL VALUE: £224

SAVING: £109

SILICA PRICE: £115

The Citizen 120D printer comes supplied with a parallel interface as standard. If you require a serial interface instead, please state ref: PRI 2125 when placing your order with Silica.

## 9 PIN PRINTERS



### FREE COLOUR KIT

**300 CPS** 80 COLUMN

- Citizen Prodot 9 - 9 pin - 80 column
- 300cps Draft, 60cps NLQ
- 8K Printer Buffer + 3 Fonts
- Parallel Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- FREE Colour Kit
- FREE Silica Printer Starter Kit

RRP ..... £189

COLOUR KIT ..... £41

SILICA STARTER KIT ..... £25

TOTAL VALUE: £255

SAVING: £66

SILICA PRICE: £189

**£189**  
+VAT = £222.08 ref: PRI 2319



**192 CPS** 80 COLUMN

- Citizen Swift 9 - 9 pin - 80 column
- 192cps Draft, 48cps NLQ
- 8K Printer Buffer + 3 Fonts
- Parallel Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- Colour Option available
- FREE Silica Printer Starter Kit

RRP ..... £239

SILICA STARTER KIT ..... £25

TOTAL VALUE: £264

SAVING: £75

SILICA PRICE: £189

**£189**  
+VAT = £222.08 ref: PRI 2209



**192 CPS** 136 COLUMN

- Citizen Swift 9x - 9 pin - 136 column
- 192cps Draft, 48cps NLQ
- 8K Printer Buffer + 3 Fonts
- Parallel Interface
- Graphics Resolution: 240 x 240dpi
- Epson and IBM Emulation
- Colour Option Available
- FREE Silica Printer Starter Kit

RRP ..... £329

SILICA STARTER KIT ..... £25

TOTAL VALUE: £354

SAVING: £105

SILICA PRICE: £249

**£249**  
+VAT = £292.58 ref: PRI 2309

## 24 PIN PRINTER



**NEW!**  
LIMITED OFFER

### FREE COLOUR KIT

**PRINTER + SOFTWARE + COLOUR**

- Citizen Swift 24e - 24 pin - 80 column
- 192cps Draft, 72cps LQ
- 8K Printer Buffer + 6 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson, IBM, NEC P6 & Citizen Emulation
- FREE Colour Kit
- FREE Silica Printer Starter Kit
- FREE Lotus AMI 1.2 Word Processor and DTP package
- FREE Adobe Type Manager V1.15

RRP ..... £369

COLOUR KIT ..... £38

SILICA STARTER KIT ..... £25

LOTUS AMI 1.2 WP/DTP PACKAGE ..... £95

ADOLE TYPE MANAGER V1.15 (Fonts) ..... £79

TOTAL VALUE: £606

SAVING: £337

SILICA PRICE: £269

**£269**  
+VAT = £316.08 ref: PRI 2544

## 24 PIN PRINTERS



**NEW!**

**192 CPS** 80 COLUMN

- Citizen 224 - 24 pin - 80 column
- 192cps Draft, 64cps LQ
- 8K Printer Buffer + 4 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson and IBM Emulation
- Colour Option Available
- FREE Silica Printer Starter Kit

RRP ..... £269

SILICA STARTER KIT ..... £25

TOTAL VALUE: £294

SAVING: £95

SILICA PRICE: £199

**£199**  
+VAT = £233.83 ref: PRI 2484



**192 CPS** 136 COLUMN

- Citizen Swift 24x - 24 pin - 136 column
- 192cps Draft, 64cps NLQ
- 8K Printer Buffer + 4 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson, IBM, NEC P6 & Citizen Emulation
- Colour Option Available
- FREE Silica Printer Starter Kit

RRP ..... £499

SILICA STARTER KIT ..... £25

TOTAL VALUE: £514

SAVING: £165

SILICA PRICE: £349

**£349**  
+VAT = £410.08 ref: PRI 2574



**360 CPS** 80 COLUMN

- Citizen Projet - inkjet - 80 column
- 360cps Draft, 120cps NLQ
- 50 Noodle Head - Whisper Quiet 47dB(A)
- 8K Printer Buffer + 3 Fonts
- Optional HP Compatible Font cards
- Parallel Interface
- Graphics Resolution: 300x300dpi
- HP Deskjet plus emulation

RRP ..... £499

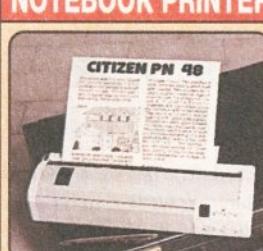
SILICA STARTER KIT ..... £25

TOTAL VALUE: £510

SAVING: £137

SILICA PRICE: £359

**£359**  
+VAT = £421.83 ref: PRI 2090



**64 CPS** 80 COLUMN

- Citizen PN48 Notebook Printer
- Non-impact Printing on Plain Paper
- 53cps LO - 4K Buffer + 2 Fonts
- Rear and Bottom Paper Loading
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson, IBM, NEC P6 & Citizen Emulation
- Powered From Mains, Battery or Car Adaptor
- FREE Silica Printer Starter Kit

RRP ..... £325

SILICA STARTER KIT ..... £25

TOTAL VALUE: £350

SAVING: £101

SILICA PRICE: £249

**£249**  
+VAT = £292.58 ref: PRI 2100

## FREE STARTER KIT WORTH £25 +VAT



**FREE!**

This starter kit will help you to get you up and running with your new dot matrix or notebook printer when you buy it from Silica Systems.

- 3½" Disk - Amiga & ST Drivers
- 3½" Disk - Driver for Windows 3
- 2 Metre Parallel Printer Cable
- 200 Sheets of Continuous Paper
- 100 Continuous Address Labels
- 5 Continuous Envelopes

## ACCESSORIES

### SHEET FEEDERS

ORIGINAL RIBBONS

PRA 1200 1200/Sil 9 Black ..... £2.91

PRA 1215 1240/224/Sil 9 Black ..... £3.70

PRA 1228 1240/224/Sil 9 Black ..... £4.00

PRA 3336 224/Sil 924 Colour ..... £15.63

PRA 3348 PN48 Multi Strike ..... £3.61

COLOUR KITS

PRA 1236 224/Sil 924/244 ..... £55.25

PRA 1242 1240/224/Sil 24 ..... £13.10

### 32K MEMORY EXPN

ORIGINAL ACCESSORIES

PRA 1753 1240/224/Sil 24 ..... £13.10

### PRINTER STAND

PRA 1242 1240/224/Sil 9/24 ..... £24.03

PRA 1274 Swift 9X/24X ..... £30.86

PRA 1162 PN48 Car Adaptor ..... £1.95

All accessories prices include VAT and free delivery

## SILICA SYSTEMS OFFER YOU

- **FREE OVERNIGHT DELIVERY:** On all hardware orders shipped in the UK mainland.
- **TECHNICAL SUPPORT HELPLINE:** Team of technical experts at your service.
- **PRICE MATCH:** We normally match competitors on a "Same product - Same price" basis.
- **ESTABLISHED 12 YEARS:** Proven track record in professional computer sales.
- **BUSINESS + EDUCATION + GOVERNMENT:** Volume discounts available for large orders.
- **SHOWROOMS:** Demonstration and training facilities at our London & Sidcup branches.
- **THE FULL STOCK RANGE:** All of your requirements from one supplier.
- **FREE CATALOGUES:** Will be mailed to you with offers and software/peripheral details.
- **PAYMENT:** By cash, cheque and all major credit cards.

Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or help and advice. And, will the company you buy from contact you with details of new developments and products? At Silica Systems, we ensure that you will have nothing to worry about. We have been established for over 12 years and, with our unrivalled experience and expertise, we can now claim to meet our customers' requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now for our latest Free literature and begin to experience the "Silica Systems Service".

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-309 1111  
Order Lines Open: Mon-Sat 9.00am-6.00pm No late Night Opening Fax No: 081-309 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA Tel: 081-580 4000  
Opening Hours: Mon-Sat 9.30am-6.00pm No late Night Opening Fax No: 071-323 4737

LONDON SHOP: Selfridges (1st Floor), Oxford Street, London, W1A 1AB Tel: 071-629 1234  
Opening Hours: Mon-Sat 9.30am-6.00pm Late Night: Thursday until 8pm Extension: 3914

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-302 8811  
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday until 7pm Fax No: 081-309 0017

To: Silica Systems, Dept AMSHP-0592-55, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

## PLEASE SEND A CITIZEN COLOUR CATALOGUE

Mr/Mrs/Miss/Ms: ..... Initials: ..... Surname: .....

Address: .....

Postcode: .....

Tel (Home): ..... Tel (Work): .....

Company Name (if applicable): .....

Which computer(s), if any, do you own? .....



# BUYING ADVICE FOR SHOPPERS

**Whether buying over the phone or at a local store, here's our advice on how to get what you want**

## BUYING IN PERSON

- Where possible, always test any software and hardware in the shop before taking it home, to make sure that it works properly.
- Make sure you have all the necessary leads, manuals or other accessories you need.
- Don't forget to keep your receipt.

## BUYING BY PHONE

- Be as clear as possible when stating what you want to buy. Make sure you confirm all the technical details of what you are buying. Some things to bear in mind are version numbers, memory requirements, other required hardware or software and compatibility with your particular model of Amiga (that is, make sure you know which version of Kickstart you have).
- Check the price you are asked to pay, and make sure that it's the same as the price advertised.

- Check that what you are ordering is actually in stock.
- Check when and how the article will be delivered, and that any extra charges are as stated on the advert.
- Make a note of the date and time when you order the product.

## BUYING BY POST

As with buying by phone, you should clearly state exactly what it is you are buying, at what price (refer to the magazine, page and issue number where it's advertised) and give any relevant information about your system set-up where necessary. You should also make sure you keep copies of all correspondence both to and from the company concerned.

## MAKING RETURNS

Whichever method you buy by, you are entitled to return a product if it fails to meet any one of the following three criteria:

- The goods must be of 'merchantable quality'.
- The goods must be 'as described'.
- The goods must be fit for the purpose for which they were sold. If they fail to satisfy any or all of the criteria, then you are then entitled to:
  - Return them for a refund.
  - Receive compensation for part of the value.
  - Get a replacement or free repair.

## HOW TO PAY

Paying by credit card is the most sensible way, whether buying in person, by post or on the phone, because you may be able to claim the money from the credit card company even if the firm you ordered from has gone bust or refuses to help sort out your problem.

Otherwise, you should pay by crossed cheque or postal order – never send coins or notes through the mail.

## GETTING REPAIRS

Always check the conditions of the guarantee, and servicing and replacement policy, so that you know what level of support to expect. Always fill in and return warranty cards as soon as possible, and make sure that you are aware of all the conditions contained in the guarantee.

## BUYING PD

Even though PD software is relatively inexpensive, you should still apply the guidelines set out above, making sure that you confirm all orders as clearly as possible.

Shopping around is still important when buying PD because different houses charge different prices for the same disks. There is no set pricing structure for disks, but bear in mind that PD houses are, in theory, supposed to be non-profit making operations. **AS**

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## A CHECK LIST FOR MAIL ORDER BUYING

- 1 Make sure you know exactly what you want. Draw up a checklist of the specifications you are looking for and what you want it to be able to do. Check with the suppliers that their product matches your list
- 2 Will the product you have in mind work with your existing set-up, and anything else you are planning to buy?
- 3 Can you see a demonstration? Many products are on display at computer shows around the country.
- 4 Are there any hidden extras? Does it need 1Mb to run, or a hard disk?
- 5 What technical support is provided by the supplier? Does the manufacturer offer after-sales advice? Check before you buy.
- 6 Check the guarantee terms. How long is the free warranty? What does it offer?
- 7 Draw up a list of these details and make them a condition of your order.
- 8 Check the price and delivery details when you order, and make a note of them.
- 9 Note down when you placed the order and who you spoke to.
- 10 When it arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier. If it doesn't work, make the obvious checks such as the fuse. If it still doesn't work don't try to fix it – contact the supplier.



# PRODUCT LOCATOR

# PRODUCT LOCATOR

## HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE • HARDWARE

Welcome to the *Amiga Shopper* Buyer's Guide, your regular guide to what's hot and what's not in the Amiga market place. It's designed as a simple-to-use yet comprehensive guide which will help you to make the right buying decisions. It may not include each and every product ever produced for the Amiga (that would take up virtually the whole of *Amiga Shopper!*), but rest

assured that all major brands and models are here.

The Buyer's Guide will run each and every month and as new products are released and others discontinued, we'll be updating it accordingly. This month we bring you what is possibly the most comprehensive guide to hardware for the Amiga owner. Next month we'll be listing Amiga software...

### AMIGAS

| Model   | Price  | Memory | Total Chip | Total Fast | Processor | Speed (MHz) | Hard Disk (Mb) | Floppies | Comment   |
|---------|--------|--------|------------|------------|-----------|-------------|----------------|----------|---|
| A500    | £399   | 1 Mb   | 2 Mb       | 10 Mb      | 68000     | 7           | No             | 1x880k   | Base machine. Recently upgraded to OS 2.0               |
| A1500   | £999   | 1 Mb   | 1 Mb       | 9 Mb       | 68000     | 7           | No             | 2x880k   | More expandable than A500                               |
| A2000HD | £1299  | 1 Mb   | 1 Mb       | 9 Mb       | 68000     | 7           | 40             | 1x880k   | Exactly the same as A1500, but now includes hard disk   |
| A2500   | £????? | 1 Mb   | 1 Mb       | 9 Mb       | 68020     | 16          | 40             | 1x880k   | Same as A2000HD, but comes with processor card          |
| A3000   | £3180  | 2 Mb   | 2 Mb       | 16 Mb      | 68030     | 16/25       | 50/100         | 1x880k   | Available in several hard disk/processor configurations |

Note: A500 and A1500 now denote 2.0-based machines. A2500 only available in the US.

### HARD DRIVES

| Model         | Supplier        | Price | Machine | Capacity (Mb) | RAM Expansion | Rating | Issue    |
|---------------|-----------------|-------|---------|---------------|---------------|--------|----------|
| Impact II+    | Silica          | £399  | A500    | 50/110        | 8 Mb          | ****   | 1,2,13   |
| A590          | Commodore       | £399  | A500    | 20            | 2 Mb          | ***    | 1,2,8,13 |
| DataFlyer500  | Trilogic        | £350  | A500    | 48            | -             | **     | 1,2,8,13 |
| 500XP         | Surface UK      | £489  | A500    | 40            | 2/8 Mb        | ****   | 1,2,8,13 |
| FastTrak      | Third Coast     | £599  | A500    | 40            | -             | ***    | 8        |
| Novia 30i     | Power Computing | £399  | A500    | 20/30         | -             | ***    | 8        |
| Prima         | Power Computing | £499  | A500    | 50/100        | -             | ****   | 8        |
| Trumpcard     | Third Coast     | £399  | A500    | 40            | -             | ***    | 8        |
| Proter HD     | Proter          | £299  | A500    | 20            | 8 Mb          | ****   | -        |
| Impact IIHC+8 | Silica          | £299  | A1500→  | 40/300        | 8 Mb          | ****   | 1,2,13   |
| DataFlyer2000 | Trilogic        | £360  | A1500→  | 48            | -             | ***    | 1,2      |
| WordSync2000  | Surface UK      | £450  | A1500→  | 52            | -             | ****   | 1,13     |
| A2091-40      | Commodore       | £200  | A1500→  | 40            | -             | **     | 8,13     |
| Nexus HC      | Power Computing | £350  | A1500→  | 40            | 8 Mb          | ****   | 8,13     |
| SysQuest      | Omega Projects  | £690  | SCSI    | 88            | -             | ****   | 8        |
| OpticalDrive  | Power Computing | £1199 | SCSI    | 128           | -             | ****   | -        |
| TapeStreamer  | Omega Projects  | £600  | SCSI    | 150           | -             | *****  | -        |

NOTE: Trumpcard can be used on both A500 and A1500+

### EXTERNAL DRIVES

| Model          | Supplier            | Price | Machine | Size   | Capacity | Disable Switch | Rating | Issue   |
|----------------|---------------------|-------|---------|--------|----------|----------------|--------|---------|
| PC880B         | Power Computing     | £55   | Any     | 3 1/2" | 880K     | Yes            | *****  | 8       |
| RF332C         | Silica Systems      | £60   | Any     | 3 1/2" | 880K     | Yes            | ****   | 0,1,2,8 |
| RF542C         | Silica Systems      | £80   | Any     | 5 1/4" | 880K     | Yes            | ****   | 0,1,2,8 |
| A1011          | Commodore           | £100  | Any     | 3 1/2" | 880K     | No             | ***    | 0,1,2,8 |
| Zydec          | Evesham Micros      | £55   | Any     | 3 1/2" | 880K     | Yes            | ***    | 8       |
| CAX354         | Cumana              | £75   | Any     | 3 1/2" | 880K     | Yes            | ****   | 0,1,2,8 |
| 3A-1D          | Golden Image        | £65   | Any     | 3 1/2" | 880K     | Yes            | ****   | 0,8     |
| AEHD           | Applied Engineering | £140  | Any     | 3 1/2" | 1.52 Mb  | No             | *****  | 8       |
| Internal2000   | Power Computing     | £50   | A1500→  | 3 1/2" | 880K     | No             | ****   | 8       |
| DualDrive      | Power Computing     | £120  | Any     | 3 1/2" | 2x880K   | Yes            | ****   | 0,1,2,8 |
| Floptical Disk | Digital Micronics   | £650  | Any     | 3 1/2" | 20 Mb    | Yes            | *****  | 8       |

NOTE: PC880B comes with built-in disk copier. Floptical Disk not yet available in UK.

### RAM EXPANSIONS

| Model        | Supplier        | Price | Machine | Size   | Max Size | Power Supply? | Fitting       | Rating | Issue |
|--------------|-----------------|-------|---------|--------|----------|---------------|---------------|--------|-------|
| 500RX        | Surface UK      | £198  | A500    | 2 Mb   | 8 Mb     | Optional      | Expansion Bus | *****  | 5     |
| ProRAM Plus  | Datel           | £25   | A500    | 512k   | -        | -             | TrapDoor      | ***    | 8     |
| RAM-Master 2 | Datel           | £100  | A500    | 1.5 Mb | -        | -             | TrapDoor      | ***    | -     |
| V2000        | Virgo           | £104  | A500    | 2 Mb   | -        | -             | TrapDoor      | ****   | -     |
| Zydec1.5     | Zydec           | £79   | A500    | 1.5 Mb | -        | -             | TrapDoor      | ****   | -     |
| BaseBoard    | EPD             | £300  | A500    | 4 Mb   | -        | -             | TrapDoor      | ****   | -     |
| Ashcom512k   | Ashcom          | £35   | A500    | 512k   | -        | -             | TrapDoor      | ****   | 8     |
| Ashcom1.8Mb  | Ashcom          | £155  | A500    | 1.8 Mb | -        | -             | TrapDoor      | ****   | -     |
| Cortex2      | Cortex          | £199  | A500    | 2 Mb   | 8 Mb     | Yes           | Expansion Bus | ****   | 8     |
| GVP Series2  | Silica          | £159  | A1500→  | 2 Mb   | 8 Mb     | -             | Card          | ****   | -     |
| A2058        | Commodore       | £159  | A1500→  | 2 Mb   | 8 Mb     | -             | Card          | ****   | 8     |
| AdRAM2000    | Power Computing | £179  | A1500→  | 2 Mb   | 8 Mb     | -             | Card          | ****   | 8     |
| Cortex2000   | Cortex          | £175  | A1500→  | 2 Mb   | 8 Mb     | -             | Card          | ****   | 8     |

### PROCESSOR ACCELERATORS

| Model          | Supplier        | Price | Machine | Processor | Speed  | Max 32-bit RAM | Maths Co-pro | Rating | Issue |
|----------------|-----------------|-------|---------|-----------|--------|----------------|--------------|--------|-------|
| Turbo68000     | Bytes&Pieces    | £45   | A500    | 68000-16  | 16 MHz | -              | No           | **     | -     |
| AdSpeed        | Silica          | £173  | A500    | 68000-16  | 16 MHz | -              | No           | ****   | 3,5   |
| VXL-30         | ZCL Ltd         | £409  | A500    | 68030     | 25 MHz | 8 Mb           | Yes          | ****   | -     |
| 2000/40        | Marcam          | £1937 | A1500→  | 68040     | 50 MHz | 32 Mb          | Yes          | ****   | -     |
| A3001          | Silica          | £1799 | A1500→  | 68030     | 50 MHz | 32 Mb          | Yes          | ****   | 3,5   |
| G-Force        | Silica          | £1999 | A3000   | 68040     | 28 MHz | -              | -            | ****   | -     |
| FusionForty    | Power Computing | £1999 | A1500→  | 68040     | 50 MHz | 32 Mb          | Yes          | ****   | -     |
| CSA MegaMidget | Bytes&Pieces    | £389  | A500    | 68030     | 33 MHz | 8 Mb           | Yes          | ****   | 3,5   |
| A5000-16       | Solid State     | £295  | A500    | 68020     | 16 MHz | 4 Mb           | Yes          | ****   | -     |
| B5000-25       | Solid State     | £595  | A500    | 68020     | 25 MHz | 16 Mb          | Yes          | ****   | 3,5   |
| B5000-40       | Solid State     | £1162 | A1500→  | 68030     | 40 MHz | 32 Mb          | Yes          | ****   | -     |
| Harms Pro30    | Bytes&Pieces    | £1099 | A1500→  | 68030     | 28 MHz | 4 Mb           | Yes          | ***    | 3,5   |
| A2630          | Commodore       | £1200 | A1500→  | 68030     | 25 MHz | 4 Mb           | Yes          | ****   | -     |

NOTE: Although some 68030 cards appear to run faster than their '040 equivalents, this may not necessarily be the case. All '040 cards will run faster internally.

### SCANNERS

| Model           | Supplier        | Price | Machine | Type      | Colour | Resolution | Rating | Issue |
|-----------------|-----------------|-------|---------|-----------|--------|------------|--------|-------|
| Sharp JX-100    | Silica          | £695  | Any     | Hand Held | Yes    | 200dpi     | *****  | -     |
| GeniScan        | Datel           | £130  | Any     | Hand Held | No     | 400dpi     | ***    | -     |
| GoldenImage     | GoldenImage     | £150  | Any     | Hand Held | No     | 400dpi     | ****   | 5     |
| Sharp JX-300    | Silica          | £3600 | Any     | FlatBed   | Yes    | 300dpi     | ****   | -     |
| Pandaal Scanner | Pandaal         | £180  | Any     | Hand Held | No     | 400dpi     | ****   | 3     |
| PowerScanner    | Power Computing | £99   | Any     | Hand Held | No     | 400dpi     | ***    | 11    |

# PRODUCT LOCATOR

PRODUCTS

## DIGITISERS

| Model          | Supplier        | Price | Realtime | Colour | Realtime Colour | Animation | Rating | Issue |
|----------------|-----------------|-------|----------|--------|-----------------|-----------|--------|-------|
| DigView 4      | Silica          | £150  | No       | Yes    | No              | No        | ****   | -     |
| ColourPic      | JCL             | £399  | Yes      | Yes    | Yes             | No        | ****   | 2     |
| VIDIAmiga      | Rombo           | £130  | Yes      | Yes    | No              | Yes       | ****   | 5     |
| Videon         | Power Computing | £200  | No       | Yes    | No              | No        | ***    | -     |
| FrameGrabber   | Marcam          | £599  | Yes      | Yes    | Yes             | Yes       | ****   | -     |
| VideoDigitiser | Datel           | £80   | Yes      | Yes    | No              | No        | ****   | -     |

## SOUND SAMPLERS

| Model           | Supplier       | Price | Stereo | Volume Adjust | Resolution | Rating | Issue |
|-----------------|----------------|-------|--------|---------------|------------|--------|-------|
| StereoMaster    | MicroDeal      | £40   | Yes    | Yes           | 8-bit      | ****   | 11    |
| TechnoSound     | New Dimensions | £35   | Yes    | No            | 8-bit      | ****   | 5     |
| Audio Engineer  | HB Marketing   | £199  | Yes    | Yes           | 8-bit      | *****  | 5     |
| Perfect Sound 3 | HB Marketing   | £60   | Yes    | Yes           | 8-bit      | ***    | 10    |
| SampleStudio 2  | Datel          | £70   | Yes    | No            | 8-bit      | **     | -     |
| Sound Master    | HB Marketing   | £130  | Yes    | Yes           | 8-bit      | *****  | -     |
| MicroSampler    | Datel          | £25   | Yes    | No            | 8-bit      | *      | -     |
| SoundTrap 3     | Omega Projects | £30   | No     | No            | 8-bit      | ****   | 3     |
| AMAS 2          | MicroDeal      | £100  | Yes    | Yes           | 8-bit      | ****   | -     |
| StereoSampler2  | Trilogic       | £40   | Yes    | Yes           | 8-bit      | ****   | -     |
| GVP DSS         | Silica         | £60   | Yes    | Yes           | 8-bit      | ****   | 3     |
| AD1012          | HB Marketing   | £TBA  | Yes    | Yes           | 12-bit     | *****  | -     |
| AD1016          | HB Marketing   | £TBA  | Yes    | Yes           | 16-bit     | *****  | -     |
| Audition 4      | HB Marketing   | £49   | Yes    | Yes           | 8-bit      | ****   | 10    |
| Audio Sculpture | SMG            | £49   | Yes    | Yes           | 8-bit      | **     | 12    |

NOTE: AD1012 and AD1016 are for A1500→ only

## GENLOCKS

| Model            | Supplier        | Price | Fade | Dissolve | S-VHS | RGB Pass thru | Rating | Issue |
|------------------|-----------------|-------|------|----------|-------|---------------|--------|-------|
| MicroGen         | Power Computing | £199  | Yes  | Yes      | No    | Yes           | ****   | -     |
| MiniGen          | ASAP            | £99   | No   | No       | No    | No            | **     | -     |
| RocGen           | Silica          | £117  | Yes  | Yes      | No    | No            | ****   | 8     |
| RocGen+          | Silica          | £199  | Yes  | Yes      | No    | Yes           | ****   | 10    |
| A8802            | Marcam          | £200  | No   | No       | No    | Yes           | ***    | -     |
| A8802S-VHS       | Marcam          | £600  | Yes  | Yes      | Yes   | Yes           | ****   | 10    |
| A8806            | Marcam          | £900  | Yes  | Yes      | Yes   | Yes           | *****  | -     |
| GST Gold         | Third Coast     | £550  | Yes  | Yes      | Yes   | Yes           | ****   | -     |
| VideoCentre2     | G2              | £1170 | Yes  | Yes      | Yes   | Yes           | ****   | -     |
| VideoCentre3     | G2              | £1999 | Yes  | Yes      | Yes   | Yes           | ****   | 7     |
| VideoMaster VM-2 | Power Computing | £799  | Yes  | Yes      | Yes   | Yes           | ***    | 1     |
| Videocomp G-100  | Silica          | £1800 | Yes  | Yes      | Yes   | Yes           | *****  | 3     |
| ImageMaster      | Neriki          | £1150 | Yes  | Yes      | Yes   | Yes           | ***    | -     |
| ProGen           | Gordon Harwood  | £130  | No   | No       | No    | Yes           | ***    | -     |

## MICE

| Model           | Supplier       | Price | Ergonomics | Resolution | Rating | Issue |
|-----------------|----------------|-------|------------|------------|--------|-------|
| CBM Mouse       | Commodore      | £35   | ***        | ***        | ***    | -     |
| Naksha          | Naksha UK      | £28   | *****      | *****      | *****  | -     |
| Optical         | Golden Image   | £52   | ****       | *****      | ****   | -     |
| Opto-Mechanical | Golden Image   | £26   | *****      | ***        | ****   | -     |
| Beetle          | Gasteiner      | £30   | ****       | ****       | ****   | -     |
| TrueMouse       | Evesham Micros | £18   | ****       | ***        | ***    | 2     |
| Daatamouse      | Pandaal        | £40   | *****      | ****       | ****   | 1     |
| LogiMouse       | Logitech       | £27   | ***        | ****       | ****   | -     |

## COLOUR CARDS

| Model     | Supplier  | Machine | Price | Type   | Colour Palette | Max Resolution | Rating | Issue |
|-----------|-----------|---------|-------|--------|----------------|----------------|--------|-------|
| HAM-E     | Checkmate | A500    | £299  | Pseudo | 24-bit         | 368x580        | ****   | 8     |
| DCTV      | Silica    | A500    | £499  | Pseudo | 24-bit         | 368x580        | ****   | 12    |
| GVP IV-24 | Silica    | A1500→  | £1799 | 24-bit | 24-bit         | 910x576        | ****   | 12    |
| Harlequin | ACS       | A1500→  | £1400 | 24-bit | 24-bit         | 910x576        | ****   | 11    |

NOTE: A500 devices can be used on all Amigas

## TOUCH TABLETS

| Model           | Supplier     | Price | Size  | Resolution | Rating | Issue |
|-----------------|--------------|-------|-------|------------|--------|-------|
| Podstat PT-3030 | HB Marketing | £179  | 9x12" | *****      | *****  | -     |
| Genitzer        | Datel        | £130  | 9x6"  | ****       | ***    | -     |
| Cherry Mk4      | Cherry       | £450  | 9x12" | *****      | ***    | -     |

## DOT-MATRIX PRINTERS

| Model    | Supplier | Price | Pins | Speed(CPS) | Fonts | Buffer | Rating | Issue |
|----------|----------|-------|------|------------|-------|--------|--------|-------|
| P20      | NEC      | £351  | 24   | 115        | 8     | 8K     | ****   | 4     |
| L24d     | Citizen  | £292  | 24   | 109        | 3     | 8K     | ****   | 4     |
| Swift 9  | Citizen  | £280  | 9    | 121        | 3     | 8K     | *****  | 4     |
| Swift 24 | Citizen  | £428  | 24   | 121        | 5     | 8K     | ****   | 4     |
| LX850    | Epson    | £269  | 9/24 | 106        | 3     | 4K     | ***    | 4     |
| LQ400    | Epson    | £269  | 24   | 121        | 3     | 8K     | ****   | 4     |
| LQ550    | Epson    | £375  | 9    | 109        | 4     | 8K     | ***    | 4     |
| LC200    | Star     | £304  | 24   | 91         | 4     | 16K    | ****   | 4     |
| LC24     | Star     | £304  | 24   | 130        | 5     | 16K    | ****   | 4     |
| ML380    | Oki      | £386  | 24   | 127        | 3     | 8K     | ****   | 4     |

## SUPPLIER LIST • SUPPLIER LIST

|                       |                   |                   |                   |                      |              |                     |              |                          |              |
|-----------------------|-------------------|-------------------|-------------------|----------------------|--------------|---------------------|--------------|--------------------------|--------------|
| ACS                   | 031 557 4242      | Cumana            | 0483 503121       | Gordon Harwood       | 0773 836781  | Oki                 | 0753 31292   | Star                     | 0494 471111  |
| App.Engineering       | 0101 214 241 6060 | Datel Electronics | 0782 744707       | HB Marketing         | 0753 686000  | Omega Projects      | 0925 763946  | Surface UK               | 081 566 6677 |
| ASAP                  | 0724280222        | Digital Micronics | 0101 619 431 8301 | JCL Business Systems | 0892 518181  | Pandaal Marketing   | 0234 855666  | Third Coast Technologies | 0257424444   |
| Ashcom                | 0530 411485       | EPD               | 0602 841640       | Marcam Ltd           | 081 941 6117 | Power Computing     | 0234 273000  | Trilogic                 | 0274 678062  |
| Bytes & Pieces        | 0253 734218       | Epson             | 0442 61144        | MicroDeal            | 0726 68020   | Protar              | 0923 54133   | Virgo                    | 0276 676308  |
| Checkmate Digital Ltd | 071 923 0658      | Evesham Micros    | 0386 765500       | Naksha UK            | 0925 56398   | Rombo               | 0506 414631  | WTS Electronics          | 0582 491949  |
| Citizen               | 0895 72621        | G2 Video Systems  | 0252 737151       | NEC                  | 081 993 9831 | Silica Systems      | 081 309 1111 | ZCL Ltd                  | 0543 251275  |
| Commodore             | 0628 770088       | Gasteiner         | 081 365 1151      | Neriki               | 081 900 1866 | SMG                 | 0274 562999  |                          |              |
| Cortex                | 051 236 0480      | Golden Image      | 081 518 7373      | New Dimensions       | 0291 690933  | Solid State Leisure | 0933 650677  |                          |              |

WIN • WIN

# FREE - £600 worth of genlock must be won!

**Yep, it's true, those generous folk at Marcam have donated a Rendale Super 8802 - all you have to do is answer three easy peasy questions**

**T**his month's competition gives you the chance to win a professional quality genlock and really get volatile with video.

A genlock enables you to combine ordinary video images with graphics from your Amiga. Its use has been made popular by the TV music series *The Chart Show*. The genlock up for grabs here, kindly donated by Marcam, is worth £600 - a tidy piece of kit that would look at home in any video pro's studio.

Reviewed back in issue 10 by Gary Whiteley, the Rendale Super 8802 will accept either PAL composite or S-VHS video input, and provides a good range of effects including fades and 16 straight-edged style wipes. Because the unit works with S-VHS, it is possible to get results of a much higher quality than some cheaper genlocks.

As you can see from our question panel to the right, we've gone a little topical with our challenge this month. We don't want facts from you this time, we want predictions. Who's going to win the General Election? Opinion at the *Amiga Shopper* office is divided, to say the least, but perhaps you have it sussed. If you think you've got your finger on the pulse of the nation (or think you can make a lucky guess), get your answers to the questions

down on a postcard or the back of a sealed envelope and pop in the post.

Because of the nature of the competition, we can only accept entries postmarked with a date before the April 9 - so get your skates on! Send your entries to: Genlock Election Jape *Amiga Shopper* 29 Monmouth Street Bath BA1 2DL **AS**

## THE CHALLENGE

### QUESTION 1

Who is going to win the 1992 General Election?

- a) Labour
- b) Conservative
- c) Liberal Democrats

### QUESTION 2

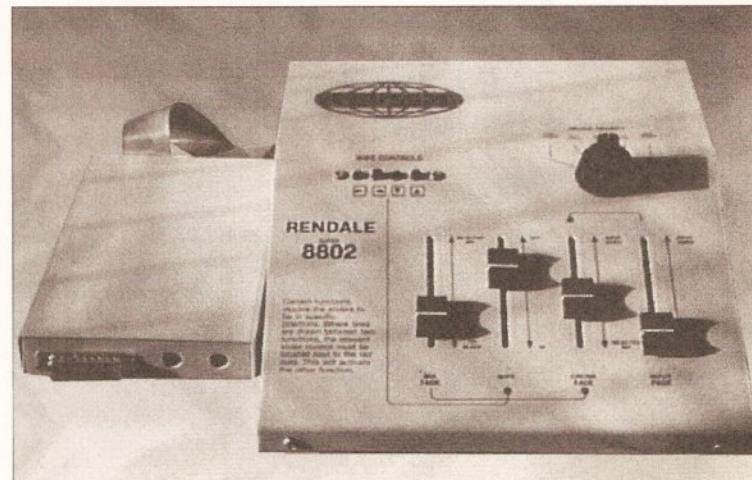
What will be the winning margin?

- a) 1-20 seats
- b) 21-100 seats
- c) Over 100

### QUESTION 3

Which party's spokesman, speaking live on Radio 4, said, "A 'p' on education is a 'p' well spent"?

- a) Conservative
- b) Labour
- c) Liberal Democrats



Get into video titling with the Rendale Super 8802 genlock from Marcam - your holiday videos will never be the same again!

### ANOTHER WINNER

Barry Evans of Tunbridge Wells is the lucky winner of our CDTV competition. For all you unlucky others the answers go like this:

- 1) Camelot castle was in Tintagel.
- 2) Merlin was the magician.
- 3) Guinevere was Arthur's wife.

### CALLING ALL GFA BASIC WINNERS

(or, it's the *Amiga Shopper* You're fired - Ed admin cock-up corner) If you were one of our GFA Basic winners, could you please get in touch with your full names and addresses as soon as possible.

## IN NEXT MONTH'S ISSUE

We'll be back on May 7 with another bumper serving of *Amiga Answers* and course after course of succulent morsels for your delectation. Here's what's on the menu:

- Hand scanners - DTP maestro Jeff Walker sorts out the best from the rest in this definitive five page round-up.
- Mark Smiddy concludes his in-depth intro to Amiga memory with a comparative assessment of all the expansions on the market.
- Food for thought with the first article in our DIY artificial intelligence series. PLUS: How to build a neural network in AMOS!
- Spaghetti junctions!! - we unravel a new networking system.
- PLUS: Part Two of our animation series - how to add sound and music to your creations. So, until then, Pasta La Vista! (and pass us the brandy)

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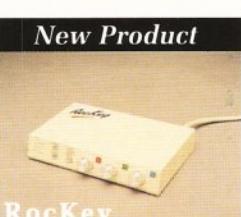
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**LC 24/200 COLOUR** £269.99  
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## STAR PRINTER ACCESSORIES

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|------------|-------------|----------|---------|--------------|------|
| Sht Feeder | £69.99      | £69.99   | £69.99  | £99.99       | £149 |
| Buffer U/G | N/A         | £32.99   | £64.99  | £32.99       |      |
| Font Cards | N/A         | £27.99   | £54.99  | £27.99       |      |

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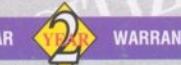
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|   |                  |         |
|---|------------------|---------|
| 120D+ MONO                                  | 9 Pin Dot Matrix | £139.99 |
| SWIFT 9 MONO                                | 9 Pin Dot Matrix | £189.99 |
| SWIFT 9 COLOUR                              | 9 Pin Dot Matrix | £219.99 |
| NEW CITIZEN 224 MONO                        |                  | £219.99 |
| 24 Pin Dot Matrix, 360 x 360 dpi, 160/53cps |                  |         |
| NEW CITIZEN 224 COLOUR                      |                  | £249.99 |
| Colour Version of the New 224 Mono above    |                  |         |
| NEW CITIZEN SWIFT 24E COLOUR                |                  | £279.99 |
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| PN 48 'NOTEBOOK' PORTABLE [♦]               |                  | £269.99 |

CITIZEN PRINTER ACCESSORIES...

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|---|--|----------|
| 120D+ Cut Sheet Feeder                  |  | £74.99   |
| 124D, Swift 9/24 Semi-Auto Sh. Feeder   |  | £44.99   |
| 124D, Swift 9/24 Auto-Sheet Feeder      |  | £94.99   |
| 124D, Swift 9/24 Printer Stand          |  | £24.99   |
| 124D, Swift 24 - 32K RAM Expansion      |  | £13.99   |
| Font Cards Swift 24 (6 Different Sorts) |  | £39.99ea |

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## PRINTER RIBBONS

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|------------------|--------|--------|--------|--------|
| Star LC10/20     | Mono   | Mono   | Colour | Colour |
| Star LC200       | £4.75  | £19.95 | £5.95  | £27.95 |
| Star LC 24/200   | £6.49  | £29.95 | £12.49 | £59.95 |
| Star XB Printers | £6.99  | £32.99 | £12.99 | £59.95 |

| CITIZEN            | 5 Pack | 5 Pack | 5 Pack | 5 Pack |
|--------------------|--------|--------|--------|--------|
| Genuine Ribbons    | Mono   | Mono   | Colour | Colour |
| 120D+/Swift19      | £4.99  | £22.95 | -      | -      |
| 124D/Swift24       | £4.99  | £22.95 | -      | -      |
| Swift19-24/224/24E | -      | -      | £16.45 | £76.95 |

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Monitor Dust Cover £5.95 PHILIPS Tilt/Swivel Stands...

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