

EXPERT ADVICE AND TIPS FOR EVERY AMIGA ENTHUSIAST

WIN!  
AN EPSON FLATBED SCANNER

# AMIGA SHOPPER

From the makers of **AMIGA**  
FORMAT

ISSUE 32 • DECEMBER 1993 • £2.95  
YOUR DEFINITIVE AMIGA GUIDE

## COLOUR YOUR WORLD

Colour scanners and their software  
reviewed and rated

**Brilliance: is it really  
better than DPaint?**

**Programming masterclass:  
resource handling with  
abstract-data-type stacks**

## AMIGA SHOPPER

SHAREWARE COLLECTION - VOLUME SIX

**ACC Hardware**

**Programming Guide**  
Fully-functioning assembly language  
tutorial package, including assembler,  
worked example files, step-by-step  
guide, plus advanced hints and tips

**MapStation**

Comprehensive game map creator/  
editor for all game designers

**Listings**

Give your fingers a rest! Full source  
code for this issue's reader listings

**Alarm**

Full source code for our advanced  
programming feature inside

**PLUS**

Full listing of the latest version of  
our AMOS paint package tutorial -

PLUS runnable compiled version

**QuickTools**

Handy utilities for locating a file  
from within any directory or changing  
between directories (Needs Wb 2.04+)

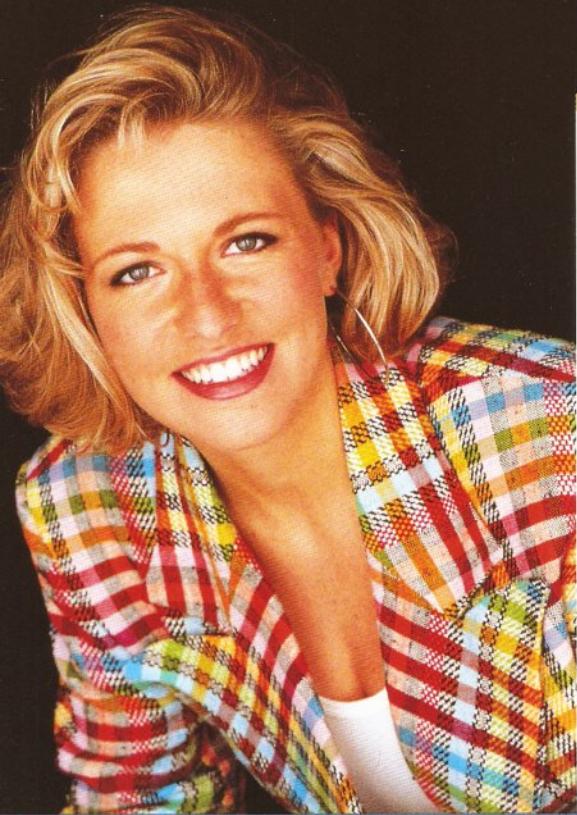
## PLUS

Answers to all your  
problems, comms, programming  
tutorials, video, music, AmigaDOS,  
public domain, legal advice, buying  
advice and much, much more...

**Future**  
PUBLISHING  
Your guarantee  
of value



9 770961 730049



## THE JAKKI BRAMBLES COLUMN

Well OK then you Mums and Dads, it's that time of the year again when letters to Santa are coming your way. We get a lot of phone calls at this time of year from you guys because it really isn't that easy to decide which of the mega bundles to buy. So this month we have an easy guide to help you make that really important choice.

**Amiga 600 Single Drive** - The ONLY home computer for **less than £200**. Suitable for the child fed up with paying out £40 for software for their Megadrive (software available from £9.99) or for the first time buyer. There are hundreds of software titles available including games, education, word processing, home accounts etc. Games available include strategy / role playing, titles where imagination is more important than aggression, learn to create animations not zap aliens aimlessly. **Age Group 8 - 13**

**A600 Hard Drive** - A more serious version of the above. The hard drive saves repeatedly loading and swapping floppy disks. Suitable for serious games players and applications such as database management for a student or home office environment. The Epic Pack is particularly useful for a foreign language orientated student. **Age Group 12 +**

**Amiga 1200 Chartbusters** - Only the really lucky child will receive this as their first computer. Its state of the art latest Amiga technology made it the computer that most kids aspire to. Its fast 32 - bit technology makes it the choice of Amiga enthusiasts who want not only the ultimate in games playing but also serious applications. You can expand this computer through the addition of hard drives, extra memory, accelerator boards whatever the option most suitable for producing any number of serious applications. Want to be a graphic artist, video producer, film director, cartoon animator, musician, mathematician, designer..... the only limitation to the machine is your imagination. **Age Group 10 - 100**

**Amiga 1200 Desktop Dynamite** - As above but with some serious applications included in the package. The perfect solution for the student. You want him or her to have a computer to produce school work using quality Desktop Publishing software, he / she wants a dynamic games playing machine. This gives both of you what you are looking for. The software alone is worth over £300. **Age Group 14+**

**Amiga CD32** - The choice for existing Amiga owners looking for the latest product in the range or for the dedicated console owner. Knocks the Sega for six with its State - of - the - Art graphics. (Colours on screen Sega = 64/ CD32 = 256 or 262,000) and processing speed (Sega = 16-bit / CD32 = 32-bit) To you or me this means that people who write the games can now display more colours on screen and the action can be even faster. Also be aware this is also a Compact disc player with full four voice stereo sound so you can play your favourite CD's when the kids are at school. Connects to standard TVs and most hi - fi's. **Age Group 10+** I hope this info assists. With Commodores help I'm certain that there will be thousands of happy smiling faces on Christmas Day, but if you're still not sure give Indi a call they will be delighted to help.

Seasons Greetings.

# BUY NOW PAY 1994!!!!

## AMIGA CD32

FREE SOFTWARE  
Lemmings, Oscar, Diggers



The exterior may be sleek but lurking inside the Amiga CD32 is a technological wonder. At its heart is the mighty powerful 68EC020 processor from Motorola. This contains the 32 - bit technology which has made the Amiga 1200 a runaway success throughout Europe.

Alongside it is Commodore's unique custom AGA (Advanced Graphics Architecture) chipset - comprising three chips nicknamed Paula, Lisa and Alice.

Together they make Amiga CD32 and awesome powerhouse of high speed graphics and stunning sound capabilities.

In fact, the machine can display 256,000 colours on screen (compared to Sega's Mega CD which can only display 64) and has a total colour palette of 16.8 million colours.

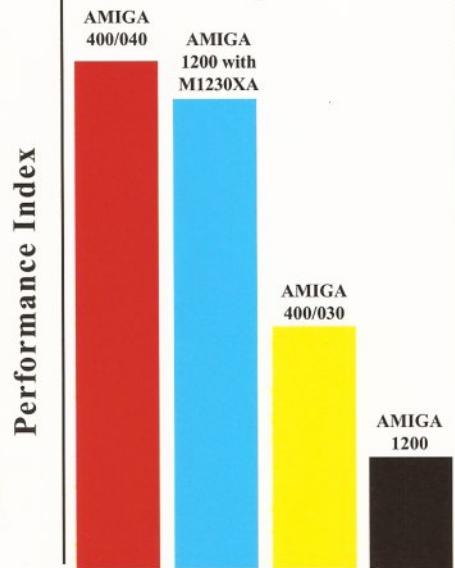
Amiga CD32 also comes with a chunky 2 Meg of RAM (that's 15 times more than Mega CD) and a double speed drive.

### SPECIFICATIONS:

- 14 MHZ 68EC020 processor
- 2 Megs 32 - bit chip RAM
- 2 Joystick ports/controller ports
- S- video jack
- Composite video jack
- RF output Jack
- Stereo audio jacks
- Keyboard connector/ auxiliary connector
- Full expansion bus
- Headphone jack
- Headphone volume control
- External brick power supply
- Internal MPEG FMV expansion capability
- Multiple session disc capability

We've said it before and no apologies for repeating it. Adding an Indi Microbotics M1230XA card to your Amiga 1200 turns it into a **MEAN MACHINE!**

### Performance Comparison



### IT'S AN OFFER YOU CAN'T REFUSE 6 MONTHS INTEREST FREE CREDIT

Buy the superb new Amiga 1200 Desktop Dynamite Pack from Indi and we will send it to you for only 10% deposit with the balance over 6 months Interest Free\*  
\*Subject to status

### INDI PRICE PROMISE

If you find an identical product advertised in this magazine at a lower price than the advertised Indi Price and available for immediate delivery then we will match that price\*. Our way of ensuring that Indi customers have the guarantee of the very best service and the lowest price in town.

\* Applies to current products and subject to availability

Christmas is a very expensive time of year so here's an offer that really helps you buy in time for Christmas and spreads the cost over next year. Choose any Indi product (or mix of products) valued at over £200, pay 10% deposit and start paying again in 3 months time. **Here's how it works**, choose your products and telephone **Indi on 0543 419999** and ask for Credit Sales. We will ask you a few questions, explain to you what you will pay and when and then complete our credit check. Within 24 hours we will be able to clear your order and subject to status deliver your products to you.

To save time it is important that when you call us you have your Bank details handy and that you satisfy the three main questions:

- 1) Are you over 18 years,
- 2) Have you lived in the UK for the past 3 years
- 3) Are you in full time employment.

If you cannot answer yes to all of these questions perhaps the credit agreement would be in someone else's name if so then they should telephone us. Once you are accepted we will ask for a 10% deposit. If you pay by credit card we will be able to release the products straight away. If you send us a cheque, it will take a few extra days. The only other decision that you will have to make is do you wish to spread the payments over 6, 12, 18, 24, or 36 months? **The choice is yours!**

### DON'T SEND ANYMORE

Until you are 100% certain that any advert has the product that you want **in stock** and will deliver it to you **immediately**.

Far too often Jakki Brambles receives letters from customers who are finding it difficult to obtain a refund from an advertiser that has promised to supply but hasn't.

To give you the confidence to purchase **INDI** has joined the **DMA** a very important Independent Authority that demands the highest possible standards from its members. DMA members agree to abide by the British Code of Advertising Practice and to subscribe to the Advertising Standards Board of finance (ASBOF). Look out for the DMA Symbol it is your guarantee signifying to the customer the truly professional edge of the industry.



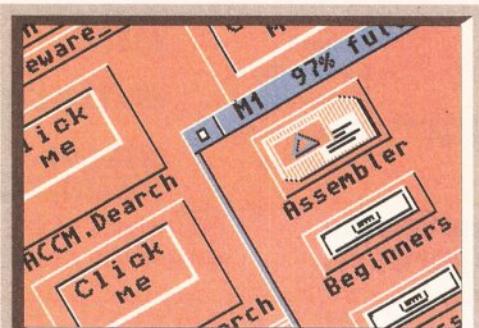
The DMA Symbol.

# IN THIS ISSUE

**News**

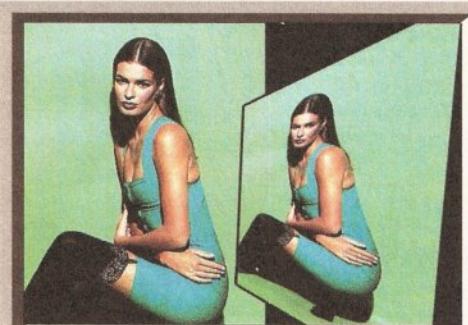
9

Two hot new software packages from the States – *Final Writer* and *PageStream 3 PLUS Future Entertainment Show* details and compo winners


**Cover disk**

12

A complete index of contents, and important advice on how to retrieve and make the best use of all the lovely public domain and shareware programs packed on to your cover disk


**Brilliance Review**

28

Can this long-awaited package displace the revered *Deluxe Paint* as king of the paint packages? Jeff Walker dons his virtual beret and smock and really puts it through its paces

**AMIGA? ANSWERS**

37

Eleven pages absolutely jam-packed with answers to your genuine Amiga problems and conundrums, courtesy of our ever-helpful panel of experts

**Listings**

61

Two AMOS programs: one to distort a user-specified IFF image, another to enlarge sprites

**Amiga Advocate**

62

This month we tell you your rights and what to watch out for when getting your equipment repaired

**Reader Ads**

64

The place to look for hardware and software bargains. Want to place an ad? A fiver to you, John

**C Programming**

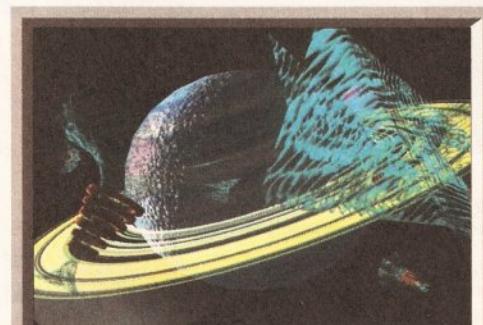
69

It's time to combine our address book code with some interface code to produce a working program

**AmigaOS**

74

Our beginners' exposé of the operating system explains the subtle power of the LIST command


**Video**

78

Reviewed: *Essence II* textures for *Imagine* users, *Textures II*, Interleaved Frame Recording software for the VLab YV digitiser, and Lola's L1000 MiniGEN genlock and L520 modulator

**Music**

81

Tim Tucker gives hints and tips on how you can use your sequencer to ease the creative process

**Advanced Programming**

85

How to use abstract-data-type techniques to keep track of your programs' system resources

**User Groups**

88

Get in contact with like-minded Amiga users

**Back Issues**

90

Details of all the previous *Amiga Shoppers'* contents – turn here if you're missing the full set

**Communications**

92

A beginners' guide, containing all the information you need to get hooked up and logged on

**File Transfers**

94

How to get your Amiga speaking to other types of machines and exchange important data with them

**Subscriptions**

98

Save yourself some money, as well as effort, by taking out a subscription. Full details inside

# COLOUR YOUR WORLD... 14

Find out which is the best colour hand scanner package for you in our review round-up PLUS we take a look at the more up-market Epson GT 6500 colour flatbed scanner and compare the abilities of all the Amiga-compatible software packages available for it

**AMOS**

101

Expand your AMOS drawing program with code to give it Freehand and Fill tools, and an Undo function. The source code is on the cover disk

**Letters**

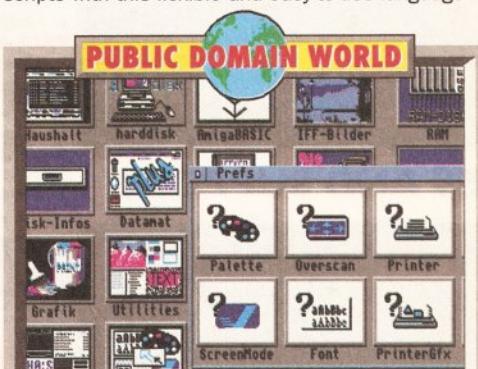
104

Correction – how to install last month's *Virus Checker* PLUS an alternative view on piracy

**ARexx**

106

Learn how to control *Virus Checker* from your own scripts with this flexible and easy-to-use language


**Public Domain World**

111

The latest batch of low-cost and no-cost software includes a program to infest your Workbench screen with cockroaches (*I – Ed*), a selection of colour icons, and an astronomy program

**Product Locator**

125

Your guide to the best in software, complete with supplier information and review references

**Safe shopping**

128

Damned fine advice for ensuring you get a fair deal when buying products by mail order

**Next Month**

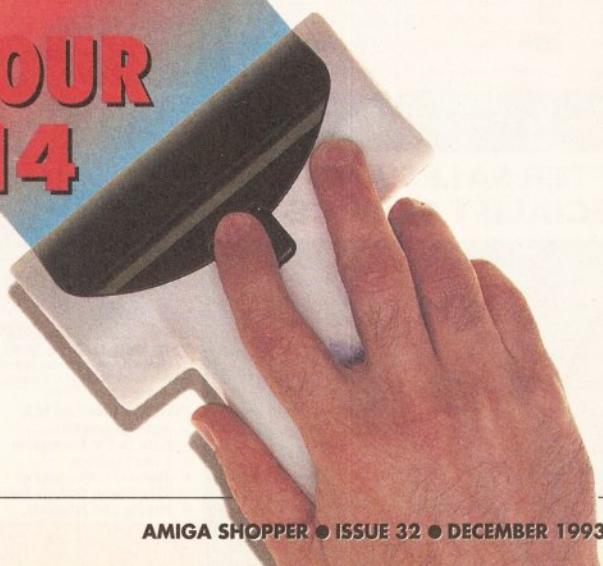
129

Find out what we've got in store for you next, and see if you won issue 30's competition

**Competition**

130

This month's prize is £800-worth of full colour flatbed scanner from Epson. All you have to do is answer the three ridiculously easy questions



**\*PAY 10% NOW AND NOTHING MORE FOR 3 MONTHS**

**\*ORDERS OVER £200 SUBJECT TO STATUS**

## AMIGA A1200

### NEW DESKTOP DYNAMITE PACK

#### A1200 STANDARD FEATURES.

- \* 68020 Processor \*
- PCMCIA Slot \*
- 2MB Chip RAM \*
- 3.5" Internal
- AA Chipset \*
- Built in TV modulator \*
- Alpha numeric keypad.
- 12 Months at home maintenance.

#### FREE

- \* Wordworth AGA \*
- Print Manager \*
- Deluxe Paint IV AGA \*
- Oscar
- Dennis The Menace AGA

INDI 300003

### 6 MONTHS INTEREST FREE CREDIT

**£349.99**

(+ normal delivery charge)

\* Subject to Status

Deposit ..... £35.49

6 Monthly

payments of ..... £53.25 = £315.49

Total Interest

Free Price ..... £354.99

Price includes standard £5 delivery charge

AI200 80 MEG HD

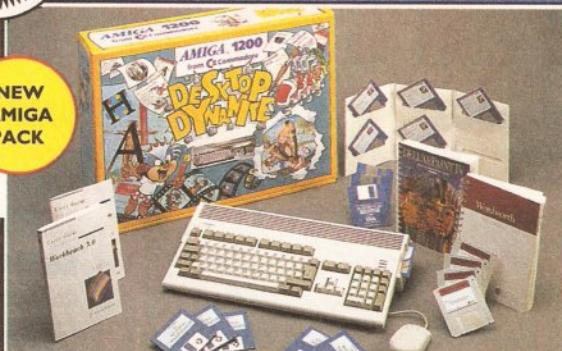
INDI PRICE ADD £

AI200 120 MEG HD

INDI PRICE ADD £

### OFFICIAL AI200 HD SYSTEMS

The Amiga 1200 supplied by Indi Direct Mail now includes the official Commodore installation disk and hard drive utility manual. Indi are pleased to be an official supplier of Amiga 1200 Hard Drive systems, that include official software, documentation and on-site warranty.



### AMIGA 1200 CHARTBUSTER PACK

#### AMIGA 1200 SD

- \* Nigel Mansells World Championship Racing
- \* Trolls
- \* Amiga Challenge Pack

**PACK INCLUDES:** \* International Sports Challenge  
\* Paradroid 90 \* Cool Croc Twins \* Indianapolis 500

NEW AMIGA PACK

INDI 300000

**£289.99 or from £11.04\*** per month

(\*Credit price based on 36 monthly payments APR 29.8%  
Total repayment £397.92 and 90 day deferred payments.

80 Mb and 120 Mb Hard Disk upgrades available on any A1200. Upgrade does not invalidate your Wang or ICL warranty on A1200 and Hard Disks. Phone



### It's here - The new Amiga 4000/030

The NEW Amiga 4000/030 features a EC68030 processor running at an incredible 25Mhz, and upgradable at a later date to a faster processor. The 4000/030 has a powerful 2 Mb of 32-bit RAM expandable to 18 Mb using industry standard 32-bit SIMMs module. In line with the Amiga Flagship 4000/040 the 4000/030 features the new AGA graphics chipset, giving you a massive palette of 16.8 million colours. A range of hard drive options are available from 80 - 240 Mb and includes a SCSI option.

**4000/030 80 Mb HD INDIA PRICE £899.99**

Other Drive Options

**4000/030 120 Mb HD INDIA PRICE £959.99**

**4000/030 240 Mb HD (P.O.A)**

Phone for price.

INDI 301002

A full range of approved upgrades are available for the 4000/030, including additional memory modules, hard drives, PC bridge boards, FPU's (68881 & 68882) and the 24-bit Opal Vision graphics and video system.

**INDIA GRAPHICS PACK (FREE WITH ALL A4000'S)**

PD C-light, Graphic Utilities, Ray Tracing and Rendering package pre-loaded on to your Hard Drive.

## AMIGA A4000

### NEW MONITOR RANGE

THE NEW DUAL SYNC1942 Monitors have been specially designed for the New Amiga 1200 and 4000 computers. Both monitors feature built-in stereo speakers.

INDI 301010

**1940 Monitor £269.99**

14 inch screen size - 0.39 mm dot matrix

INDI 301011

**1942 Monitor £369.99**

14 inch screen size - 0.28 mm dot matrix



### Parnet Adaptor for CD

Connect a CDTV player to any Amiga, and add a CD-ROM software. The Parnet interface will allow the Amiga CDTV to be used as a drive with any Amiga and will give any Amiga access to the vast range of CDTV software currently available. The CDTV player offers excellent value for money compared with a standard CD-ROM drive. Most CD-ROM drives will see you back on CDTV will cost you less than £300 and will play in addition to CD-ROM / CDTV disks your favorite game and PD disk with driver software for the player. (The Parnet adapter can be linked to any Amigas together)

INDI 309003 £3

**CDTV MULTI MEDIA + PARNET INDIA PRICE £289.99**

INDI 300009



**ZAPSAC AND T-SHIRT INDIA PRICE £17.99**

## AMIGA A600 PRICE CRASH



**THE WILD THE WEIRD AND THE WICKED A600** is an ideal starter pack containing a considered mix of software, making the most of the Amiga's capabilities.

**PACK CONTAINS:**

- \* A600 Single Drive
- \* Built in TV Modulator
- \* 1 Mb Memory
- \* Pushover: Grandprix
- \* Silly Putty: Deluxe Paint III
- \* Mouse and Manuals

**LOW LOW PRICES**

INDI 300006

~~£199.99~~

**£199.99**

**A600 - SD** A single drive Amiga for those of you requiring a basic A600 at a very competitive price.

**PACK INCLUDES:** A600 single drive, built in TV modulator, 1 Mb memory, 12 months at home service.

INDI 300007 £189.99

**A600 EPIC PACK (40 Mb HD) PACK INCLUDES:**

A600 Hard Disks (40Mb) \* 1 Mb Memory \* Epic \* Rome \* Myth Pursuit \* Amiga Text \* Deluxe Paint III \* 12 Months at home service.

INDI 300008 £379.99

**INDI A600 ACCESSORY PACK**

\* Microswitched Joystick \* Lockable Disk Box \* Disk Wallet \* 10 Blank Kick Off 2 \* Pipemania \* Space Ace \* Populous \* Zapsac A600 Carry Case \* Zappo T-Shirt.

INDI 309000 £279.99

**WORTH £79.99**

**£26.99**

**TEL: 0543 419 999 FAX: 0543 418 01**

## CUSTOMER CHARTER

INDI Direct Mail is original and very exciting. Before you buy mail order you must first be confident that you will receive the product you've ordered and that the supplier still be there in the future, should you need them.

A mail order purchase from INDI is a safe and secure decision, and here's why.

INDI is a wholly owned subsidiary of a public company now in its tenth year of trading and specialising in the supply of computer products.

With a turnover approaching £30 million per annum, we have the resources and the purchasing power to offer you the best deals, deliver them next day nationwide and always be around when you need us.

The INDI sales team have been trained to

## SALES AND SUPPORT

take your order with the utmost care and efficiency. All stock offered for sale is held in stock, centrally at our group warehouse complex and is available for next day delivery, direct to your home or business. If at any time we are out of stock your money will not be banked until the product is available (a point worth checking should you be tempted to purchase elsewhere).

General information regarding product is available from our sales team, however technical support is always on hand should you need assistance.

All prices quoted are inclusive of VAT.

### INDI TELESALES

TEL 0543 419999 FAX 0543 418079

9am-7pm Monday to Friday  
9.30am-4.30pm Saturday.

## CREDIT FACILITIES

INDI are now able to offer competitive credit facilities on all orders over £200. All credit facilities are subject to status and applicants must be over the age of 18.

If you would like a quote simply call our sales line where acceptance can normally be notified within the hour. We are also able to offer Credit Insurance to cover repayments in the event of sickness or unemployment.

AMOUNT	12 MONTHS	24 MONTHS	36 MONTHS
OF CREDIT	MONTHLY PAYMENTS	TOTAL PAYABLE	MONTHLY PAYMENTS
200	£22.00	£264.00	£12.00
500	£54.99	£659.88	£31.06
1000	£109.98	£1319.76	£62.13
			£1491.12
			£46.54
			£1675.44

APR 29.9% WRITTEN QUOTATIONS

AVAILABLE ON REQUEST

\* After deposit paid

## AFTER SALES AND SPECIALIST SERVICE

All products are guaranteed for 12 months. Some products carry a 12 months at home service and repair guarantee (where indicated). In the unlikely event that any product purchased from INDI arrives at your home faulty, we will collect from your home and replace the product completely free of charge.

As part of our policy of continual product development and refinement, we reserve the right to change specifications of products advertised. Please confirm current specifications at the time of ordering.

Prices are valid for month of publication only.

**CREDIT AVAILABLE ON 6,12, 18, 24, 36 MONTHS.**

**WHY NOT RING NOW FOR A QUOTE SAME DAY RESPONSE**



## AMIGA PERIPHERALS & ACCESSORIES

### NEW FROM MICROBOTICS!!! MI230XA ACCELERATOR LAUNCH!!

Microbotics beats the competition in price/ performance/ features and configurations. INDI is very pleased to announce the availability of the new 68030 Accelerator product for the A1200: the microbotics MI230 XA (call it the for short). 50 Mhz as standard! Huge 128 MB memory design is standard (the biggest memory space in any A1200 peripheral) just look at these specifications and prices!

30 XA W/40 MHZ EC 030 0MB INDI PRICE £239.99  
30 XA W/40 MHZ EC 030 4MB INDI PRICE £369.99  
30 XA W/40 MHZ EC 030 8MB INDI PRICE £599.99  
30 XA W/50 MHZ MMU 030 0MB INDI PRICE £349.99  
30 XA W/50 MHZ MMU 030 4MB INDI PRICE £479.99  
30 XA W/50 MHZ MMU 030 8MB INDI PRICE £711.99

### AUDIO VISUAL

**MEGAMIX.** Low cost, hi spec digital effects cartridge plugs into the printer port of the Amiga. Allows stereo sampling from almost any musical source.

**INDI PRICE £29.99** INDI 350000

**TAKE 2.** Animation package is a must for computer artists and enthusiasts of all ages. As used in Rolf Harris Cartoon Club.

**INDI PRICE £37.99** INDI 350001

**VIDI AMIGA 12.** The ultimate low cost colour digitiser for the Amiga. "The best value full colour digitiser on the market" AMIGA FORMAT.

**INDI PRICE £74.99** INDI 350002

**VIDO VIDI AMIGA 24(RT).** For the more serious user, this 24-bit version will again capture from any video source with true to realistic images! A staggering 16.7 million colours can be utilised with incredible results. Full AGA chipset support.

**INDI PRICE £219.99** INDI 350004

### AMIGA PERIPHERALS

**2MB SMARTCARD.** The original and still the only fully PCMCIA compatible memory card for A600/ A1200. Comes with lifetime guarantee. Beware of cheap imitations.

**INDI PRICE £129.99**

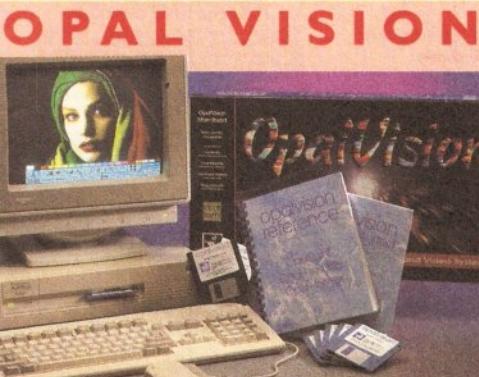
**4MB SMARTCARD.** Same as above but maximum 4MB.

**INDI PRICE £199.99**



**APPO 601**  
Updator upgrade for the A600, 1Mb with 32K INDI PRICE £49.99

**APPO 601 INC** As above only 512K, clock INDI PRICE £29.99



### NEW FOR OCTOBER RELEASE!

The already acclaimed Opalvision Board takes three further leaps into the future with the official launch of the Opalvision modules. With truly awesome capabilities the Amiga can now become the most professional 24-bit video graphics power station ever!

### MBX1200.

The original and best floating point unit and memory upgrade for the Amiga A1200. Available with 0.4 or 8 MB of 32 bit Fast RAM and a choice of floating point units. Now complete with real time clock (RTC)

MBX1200Z 68881 14 MHZ 0MB INDI PRICE £109.99  
MBX1200Z 68881 14 MHZ 4MB INDI PRICE £249.99  
MBX1200Z 68881 14 MHZ 8MB INDI PRICE £449.99  
MBX1200Z 68882 25 MHZ 0MB INDI PRICE £169.99  
MBX1200Z 68882 25 MHZ 4MB INDI PRICE £309.99  
MBX1200Z 68882 25 MHZ 8MB INDI PRICE £519.99  
MBX1200Z 68882 50 MHZ 0MB INDI PRICE £249.99  
MBX1200Z 68882 50 MHZ 4MB INDI PRICE £379.99  
MBX1200Z 68882 50 MHZ 8MB INDI PRICE £579.99  
68882 FPU UPGRADE 50 MHZ INDI PRICE £169.99

### ROCTEC ROCGEN PLUS.

As above but with extra features such as tinting and signal inversion. Allows for real time editing of graphics. Compatible with all Amigas.

INDI 350050

**INDI PRICE £129.99**

### ROCTEC ROCKY.

The ultimate accessory for Amiga / Video fans. Separate RGB controls to chroma key on any colour.

**INDI PRICE £249.99**

INDI 350051

**ROMBO VIDI AMIGA 12(RT).** Based on the best selling Vidi Amiga 12. This all new version offers real time colour capture from any video source. Full AGA chipset support as standard for all A1200 / 4000 users.

**INDI PRICE £129.99**

INDI 350003

### DISK DRIVES



Quality: 9 out of 10. Exceptional value for money.

AMIGA COMPUTING JAN 93

### ZAPPO EXTERNAL FLOPPY

You've seen all the reviews on this popular and affordable second Amiga drive. Compatible with all Amigas.

INDI 350152

**INDI PRICE £59.99**



### 1045 MONITOR.

Commodore's original and best selling colour stereo monitor.

DOES NOT INCLUDE STAND.

INDI 350014

**£189.99**

(£179.99 if purchased with A600 / A1200 / A1500)

### The NEW OPAL VISION system(Rev.2)

The amazing Opalvision 24-bit graphics board and software suite has been updated and is now even better value for money.

The software suite now includes:

Opal Paint V2.0 - Now includes full magic wand implementation and Alpha Channel that allows photo compositing with selectable levels on a pixel by pixel basis. The new Chrominance effect allows absolute, real time control of image contrast, brilliance and re-mapping of colours.

Opal AnimMATE V2.0 - offering real time play back of animations created by ray tracers, landscape generators, morphers and all other 24-Bit software.

Opal Hotkey V2.0 - Display OpalVision graphics anytime with key combinations.

Opal Presents - Comprehensive, icon-driven presentation package Imagine V2.0. Imagine 3D is the most popular 3D rendering software, now supports OpalVision. This is a full version that would cost £300 if purchased separately.

"Quite simply, it's a spectacular product - Amiga Computing

"Undoubtedly the finest, most professional paint program to arrive on the Amiga" - Amiga Format

"Professional quality at this Price can't be turned away" - Amiga User International

"The verdict was unanimous - brilliant" - Amiga Shopper

INDI 350250

**£499.99**

PACK INCLUDES IMAGINE V2.0

### MORPH PLUS

You've seen Michael Jackson's video, you've seen the television adverts using the latest techniques in morphing, now you can create the same results but at a fraction of the cost. Morph Plus is the latest and the ultimate in this technology. Whether you are a professional artist or just want to experiment at home Morph Plus is a must.

**INDI PRICE £129.99**

INDI 350200



### DELUXE PAINT IV AGA

Combines powerful tools with an intuitive interface so both professionals and beginners alike can get superb results quickly. New enhancements to the software include the ability to paint and animate in 4696 colours in the Amiga's HAM (Hold and Modify) mode. New animation features also include metamorphosis allowing you to change one image into another. You determine the number of frames and DPaint IV does the rest.

**INDI PRICE £63.99**

INDI 350201

### ART DEPARTMENT PROFESSIONAL

The ultimate in image processing providing many key benefits to Amiga users working with pictures. With ADPro you can read, write and convert between most common image file formats with unmatched flexibility. Full support for JPEG image makes it possible to maintain an image library in full 24-bit colour without needing massive hard drive storage. Typically a 600 Kb image can be compressed down to 40 Kb!

**INDI PRICE £139.99**

INDI 350202

### REAL 3D V2

Is a full featured 3D animation, modelling and rendering program. With Real 3D V2 you can produce high quality images and animations of three dimensional models with an astounding level of realism. Imagine creating an animation that shows a handful of balls bounce down a flight of stairs to the bottom. Gravity, collision, deflection and the elasticity of the balls are all automatically calculated by the program!



**INDI PRICE £299.99**

INDI 350203

### SCALA Multimedia 200 (MM200)

Is the ultimate on professional video titling. The eminent design of typefaces, the unlimited choice of typographical details, the high resolution and the more than 80 exciting wipes result in video captioning of exquisite quality. No wonder that Scala is used by leading television stations around the world.

INDI 350204

**INDI PRICE £139.99** also available  
**SCALA HOME TITLER**

INDI 350205

### VIDEO DIRECTOR

With Video Director, anyone with an Amiga, a camcorder and a VCR can quickly and easily catalogue and edit the best moments from their video tapes. Video Director is extremely easy to use, you can actually control your camcorder and VCR from your Amiga screen. Video Director comes with everything you need to get started. The hardware to control your camcorder and VCR is included.

**INDI PRICE £119.99**

INDI 350206

\*Camcorder must have a LANC or Control L compatible port  
Professional software is imported and sometimes subject to delay. Confirm delivery at time of order.

**TEL: 0543 419 999**

**FAX: 0543 418 079**

**TERMS AVAILABLE OVER 6, 12, 24, & 36 MONTHS SUBJECT TO STATUS.**  
**WHY NOT RING FOR A QUOTE. SAME DAY RESPONSE. (SEE EXAMPLE)**

# Panasonic Quiet Colour Printing



We researched the colour printer market at great depth to find a colour printer good enough to cope with Amiga's powerful output, yet at an affordable price. We found the perfect printer in the KX - P2180 and KX - P2123 quiet printers.

We then considered that if you were going to buy a Panasonic printer you would probably need a quality word processing package to use with it. We found that too, with 'Wordworth' yet at a retail price of £129.99 we thought that might be a little too expensive on top of your printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every Panasonic printer. How's that for added value?

## Panasonic

## KX - P2180



The new Panasonic KX - P2180 9 -pin quiet printer. Produces crisp clear text in mono or in 7 glorious colours with new quiet technology. The new KX - P2180 is typically 15dBa quieter in operation, than the competition.

- \* Fast Printing Speeds 192 CPS NLQ
- \* Colour Printing 7 colour palette (blue, red, green, yellow, violet, magenta, black)
- \* Quiet printing Super quiet 45 - 48 dBa sound level (most matrix printers are typically in excess of 60 dBa)
- \* 6 Resident Fonts Over 6,100 type styles using Courier Prestige, Bold PS, Roman, Script and Sans Serif Fonts.
- \* 3 Paper Paths Paper handling from bottom, top and rear for total flexibility
- \* 1 Year Warranty for total peace of mind

### \*WORDWORTH AGA COMPLETELY FREE!

**WITH PANASONIC QUIET PRINTERS.** The writers choice. The ultimate word processor for AMIGA computers. Wordworth is undoubtedly the ultimate word / document processor for the full range of AMIGA computers. The graphical nature of WORDWORTH makes producing documents faster and easier, with the enhanced printing fonts (including full Panasonic KX - P2180 and KX - P2123 colour printing support), Collins spell checker and thesaurus, no other word processor comes close. "Without doubt this is one of the best document processors for the AMIGA, Today" (Amiga Format)

**NORMAL RRP £129.99 inc. VAT**

**INDI 320000**

**£169.99**

**INDI 320001**

**£219.99**



The new high performance Panasonic KX - P2123 24 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price

- \* Fast Printing Speeds 192 CPS draft, 64 CPS LQ and 32 SLQ.
- \* Colour Printing 7 colour palette (blue, red, green, yellow, violet, magenta, black)
- \* Quiet Printing Super quiet 43.5 - 46 dBa sound level (most matrix printers are typically in excess of 60 dBa)
- \* 7 Resident Fonts Over 152,000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script, and Sans Serif Fonts.
- \* 24PIN Diamond Printhead High performance and high quality output
- \* 1 Year Warranty for total peace of mind.

## Panasonic LASER PRINTER

### KX - P4410 LASER PRINTER



**WORDWORTH AGA COMPLETELY FREE WITH PANASONIC LASER PRINTERS.**  
 The writers choice. The ultimate word processor for AMIGA computers  
 NORMAL RRP £129.99 inc VAT

### KX - P4430 LASER PRINTER



Once again INDI have joined together with Panasonic to offer all Amiga owners the most outstanding Laser Printer offer ever. We are now able to offer high quality, professional laser printing at affordable prices. We are also giving away a copy of Wordworth with every Panasonic Laser Printer purchased (RRP £129.99). Whether you are looking for a laser printer to handle word processing, DTP, presentation or complex graphic applications - the Panasonic range offers you the power to meet your requirements.

#### KXP - 4410

- \* 5 pages per minute
- \* 28 resident fonts
- \* Optional 2nd input bin (total printer capacity 2 x 200 sheets)
- \* Low running costs
- \* Parallel interface
- \* Optional memory expansion to 4.5 Mb (0.5 as standard)
- \* HP laserjet II Emulation

**INDI 320002**

**£549.99**

inc. VAT  
 Imminent price increase.  
 This price while stocks last.

**WORDWORTH AGA COMPLETELY FREE WITH LASER PRINTERS**

#### KXP - 4430

- \* Satinprint (optimum resolution technology)\*
- \* 5 Pages per minute
- \* HP Laserjet III Emulation, PCL 5
- \* 8 Scalable fonts & 28 bitmap functions
- \* Optional 2nd input bin (total printer capacity 2 x 200 sheets)
- \* Optional memory expansion to 5.0 Mb (1 Mb as standard)

**INDI 320003**

**£699.99**

inc. VAT  
 Imminent price increase.

This price while stocks last.  
 \*(Satinprint use optimum resolution technology to produce truly outstanding print quality. This software technique smooths away traditional jagged edges on curved characters and lines by varying the printed dot size.)

**WORDWORTH AGA COMPLETELY FREE WITH LASER PRINTERS**

## Panasonic PRINTER ACCESSORIES



**1) PANASONIC AUTOMATIC SHEET FEEDER**  
 Automatic sheet feeder for KXP 2180/ KXP 2123 holds 80 A4 sheets. INDI PRICE £89.99

**2) PRINT DUST COVER**  
 Specially tailored quality dust cover for Panasonic KXP 2180/ KXP 2123 printer. INDI PRICE £8.99

**3) PRINTER STAND**  
 2 piece printer stand. INDI PRICE £9.99

**4) PAPER PACK**  
 500 sheets quality A4 paper. INDI PRICE £9.99

**5) CONTINUOUS PAPER**  
 2000 sheets 1 part listing paper. INDI PRICE £19.99

**6) PARALLEL PRINTER CABLE**  
 To be used when connecting Amiga to Panasonic printers. INDI PRICE £8.99 (£5.99 if purchased with a printer)

**7) PANASONIC COLOUR RIBBON**  
 Colour ribbon for KXP 2180/ KXP 2123. INDI PRICE £18.99

**8) PANASONIC BLACK RIBBON**  
 Black ribbon for KXP 2180/ KXP 2123. INDI PRICE £9.99

**SAVE £££££ ON THE FOLLOWING ACCESSORY PACKS**

**PACK 1**  
**PANASONIC COLOUR RIBBON PACK**  
 Contains 6 colour ribbons for the KXP 2123 RRP £119.99.  
 INDI PRICE £89.99 SAVE £30!!!

**PACK 2**  
**PANASONIC RIBBON PACK**  
 Contains 2 black and 4 colour ribbons for KXP 2180/ KXP 2123. RRP £99.99.  
 INDI PRICE £69.99 SAVE £30!!!

**PACK 3**  
**PANASONIC DELUXE ACCESSORY PACK**  
 Contains automatic sheet feeder, 2 black ribbons, 2 colour ribbons, 1 dust cover, 2 piece printer stand. RRP £169.99 INDI PRICE £139.99 SAVE £30

Add £2.50 carriage to all printer accessories or combinations thereof

**TEL: 0543 419 999**

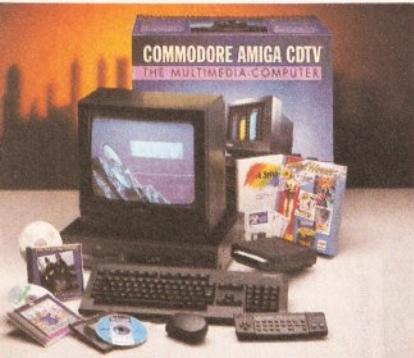
**FAX: 0543 418 079**

**LOW INTEREST CREDIT ON ALL ORDERS OVER £200  
(PLEASE CALL FOR A QUOTATION, SUBJECT TO STATUS)**

**AMIGA CDTV**

**THE MULTIMEDIA COMPUTER TOTAL HOME ENTERTAINMENT SYSTEM**

**PRICE CRASH!!!**



**BLACK 1084S MONITOR**

At the CDTV Monitor you have been waiting for. The final and best selling colour/ stereo monitor from Commodore is now available in black to complement your V.

**INDI 30010**

**INDI PRICE £189.99**

79.99 when purchased with CDTV Multi Media pack

**PACK CONTENTS AS STANDARD**

- \* Amiga CDTV Player
- \* CDTV Keyboard
- \* CDTV 1411 3.5" Disk Drive
- \* CDTV Infra Red Remote Controller
- \* CDTV Wired mouse
- \* CDTV Welcome Disk
- \* Manuals
- \* Fred Fish CDTV Disk

**INDI 30011**

**PACK AS SHOWN £229.99**

**AMIGA CDTV EXTERNAL HARD DISK DRIVE**

You've got the CDTV, you've got the keyboard and the floppy disk drive - for a total computer solution all that's needed is an ultra fast hard disk drive. The CDTV - HD unit boasts a massive 60 Mb of hard disk storage with lightning fast access times through its SCSI interface. The unit comes complete with Workbench 1.3 and all necessary cables.

**INDI 350300**

**£219.99**

If you are thinking of buying CDTV or already own one you'll be pleased to know that INDI stock all CDTV accessories and software that are available from manufacturers. We believe in CDTV and we therefore continue to support this exciting product. You will always have a source of product for your CDTV from INDI.

**L to R**

CDTV Encore SCSI Controller + Internal Mount	£59.99
CDTV Internal Genlock	£99.99
Black 1084S Colour Stereo Monitor	£189.99
(When purchased with CDTV Multi - Media Pack)	£179.99
CDTV Remote Mouse	£39.99
Scart TV / Monitor Lead	£14.99
(inc Stereo Phono Lead)	
Megachip - 1Mb Upgrade Chip RAM Upgrade for CDTV	£152.99
CDTV Trackball	£69.99

**AMIGA CDTV SOFTWARE**

**S AND LEISURE**

ed Military Systems  
en in Motion  
ss Disc of Records  
s in Motion  
isseur Fine Arts  
& Vegetables  
& Shrubs  
Plants

**CATION**

chool - Under 5's  
Hard Day at the Ranch  
for Barney  
ella  
chool for 5 to 7  
chool for Over 7's  
er Hits her First Home Run

LTV - English as a 2nd Language	£34.99	Classic Board Games	£34.99
Mind Run	£29.99	Dinosaurs for Hire	£14.99
Mud Puddle	£29.99	Hounds of the Baskervilles	£29.99
My Paint	£29.99	Psycho Killer	£29.99
Paper Bag Princess	£34.99	Sin City	£29.99
Scary Poems for Rotten Kids	£29.99	Trivial Pursuit (PAL)	£49.99
Tale of Benjamin Bunny	£34.99	Wrath of the Demon	£29.99
Tale of Peter Rabbit	£34.99	Raffles	£34.99
Thomas's Snowsuit	£34.99	Prehistoric	£34.99
Moving Gives me Stomach Ache	£34.99	Snoopy	£34.99
Barney Bear Goes Camping	£29.99	Town with No Name	£34.99
Asterix French for English I	£34.99	European Space Simulator	£34.99
Japan World (PAL)	£49.99	Global Chaos	£29.99
Fractal Universe	£34.99	Turrican II	£29.99
Read with Asterix	£19.99	Guy Spy	£29.99
<b>ENTERTAINMENT</b>		Curse of Ra	£24.99
Battlechess	£39.99	Space Wars	£29.99
All Dogs Go To Heaven: Electric Crayon	£34.99	Defender of the Crown	£29.99
		Case of the Cautious Condor	£34.99
		Tiebreak Tennis	£19.99

**MUSIC**

Karaoke Hits I	£14.99
Music Maker	£34.99
Remix	£29.99
Vocemaster + Microphone	£39.99
Blues Brothers (Audio CD only)	£10.99
Music Colour	£39.99

**REFERENCE**

American Heritage Dictionary	£49.99
Complete Works of Shakespeare	£29.99
Illustrated Holy Bible	£29.99
New Basic Electronic Cookbook	£39.99
Timetable of Business	£39.99
Dr Wellman	£54.99



**DESPATCH**

All orders received by 6pm Monday to Friday are despatched same day for delivery using our national courier - Securicor. (UK Mainland only). Saturday deliveries are available at a small surcharge. If you are out when we deliver, a card will be left at your home giving you a contact telephone number to arrange a convenient re-delivery.

Delivery queries can be resolved immediately using our on-line computer.

Cheque orders are despatched immediately on cheque clearance, usually 10 working days from receipt. A delivery charge of £5.00 is made per item unless otherwise stated.

**WE ALSO ACCEPT B.F.P.O. ORDERS (DUTY FREE) CARRIAGE CHARGE AT UK POSTAL RATES.**

**HOW TO ORDER**

**BY POST** - Simply fill in the coupon below.

**BY PHONE** - phone lines open 9.00am - 7.00pm

Mon - Fri. 9.00am - 4.30pm Sat. - where your call

will be answered by one of our INDI sales team.

After 7.00pm each day your call will be answered by answerphone. If you would like to place an order have all the details at hand including credit card. All offers subject to availability. Prices correct at time of going to press. May we suggest you call before ordering.

**SEND YOUR ORDER TO:**

**INDI DIRECT MAIL**  
1 RINGWAY INDUSTRIAL  
ESTATE,  
EASTERN AVENUE,  
LICHFIELD  
STAFFS. WS13 7SF

**AS1193**

**Please send**

1) \_\_\_\_\_  
2) \_\_\_\_\_  
3) \_\_\_\_\_  
4) \_\_\_\_\_

**Price** ..... + **Delivery** .....

I enclose cheque/ PO for £ .....  
or charge my Access/ Visa No. ....

**Expiry** ..... / .....

**Signature** .....

**Name** .....

**Address** .....

**Deliver to if different** .....

**Daytime Tel** .....

**Postcode** .....

**AMIGA ACCESSORIES**

**PRICE CRASH!!!**



**AMIGA 1500**

**FEATURES INCLUDE:**

- \* 1Mb expandable using A2058 RAM board.
- \* Includes 2 X 3.5" disk as standard with 5.25" Disk Bay.
- \* Integral memory card and card expansion capabilities (most cost effective expansion route)
- \* Workbench 2.00 and kickstart 2.04

**CONTENTS:**

- \* Keyboard, mouse, reference manual, Puzznic, Toki, Elf (Games), D Paint III, Home Accounts, The Works (Platinum edition: Wordpro, Spreadsheet, Database) Joystick.

**MONITOR AND PRINTER NOT INCLUDED**

**RRP £599.99**

**INDI 300012**

**NOW £249.99**



**Commodore MPS 1230 Printer**

A high quality 9 - pin printer with paper and tractor feed and is fully compatible with Epson FX80 and IBM Industry standards. High speed 120 CPS draft mode and an NLQ mode of 24 CPS.

**Indi Added Value Free**

**D - Print** - Design greetings cards, letters and posters.

**Amiga Logo** - Educational and programming language.

**NOW £99.99**

**INDI 300015**

**A2630-2Mb ACCELERATOR BOARD**

The 1630 is a 68030 accelerator board running at 25MHz complete with a 68882 FPU and 2Mb of 32 - Bit fast RAM suitable for the A2000. The 2630 board brings the performance of the Amiga 2000 upto nearly that of the A3000, ideal when running professional applications. An additional 2Mb of 32 - Bit fast RAM can be added to the 2630 board, giving a total of 4 Mb of fast RAM.

**INDI PRICE £369.99**

**A2286 AT EMULATOR**

The A2286 AT emulator kit offers IBM AT compatibility on the Amiga 2000 and 3000 systems, running at 10MHz with 1Mb RAM and CGA graphics. The A2286 emulator also includes a 5.25" 1.2Mb floppy drive and MS DOS operating software.

**INDI PRICE £159.99**

**A2088 XT EMULATOR KIT**

The A2088 XT emulator kit offers IBM compatibility on the Amiga 2000 and 3000 systems, running at 4.77MHz with 512Kb RAM and CGA graphics. The A2088 emulator also includes a 5.25" 360K floppy drive and MS DOS operating software.

**INDI PRICE £79.99**

**A2058 RAM BOARD**

An 8 Mb 16 - Bit RAM board, supplied with 2Mb RAM and upgradable in two steps. The 2058 is a zorro II compatible and they are compatible with the A2000.

**INDI PRICE £99.99**

**A2300 GENLOCK**

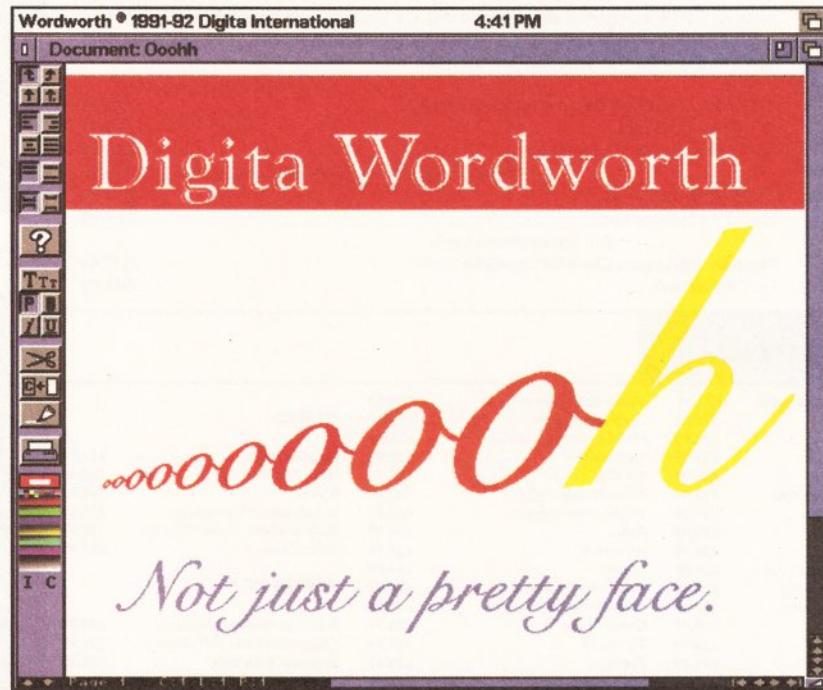
A cost effective home quality entry level internal genlock, suitable for the Amiga 2000/3000. The 2300 genlock is an ideal solution for anyone wishing to put titles or graphics onto home video.

**INDI PRICE £39.99**

**TEL: 0543 419 999 FAX: 0543 418 079**

NEW  
AGA  
VERSION

# Nine reviewed One winner\*



\* Word processor roundup, Amiga Shopper, May 1993

(Just thought you'd like to know)

If you want to know more  
about award-winning Wordworth...



Voted Best Word Processor  
"A good length clear of the field"

"The ultimate in word  
processing power"

Voted Best Word Processor  
"Inspirational, that's the word"

or Agfa Compugraphic  
font and clip art collections...

Genuine Agfa Compugraphic Font Collections			
Pride And Presentation	20 fonts	29.99	
Classic Collection	25 fonts	39.99	
The Reference Library	50 fonts	69.99	

Each collection includes the Digitaw font disk creator for WB2.04+

call 0395 270273 or write to Digitaw FREEPOST Exmouth EX8 2YZ England



Digitaw International Limited

Black Horse House

Exmouth EX8 1JL

England

Telephone 0395 270273

Facsimile 0395 268893

—A member of the Digitaw group—

## COMMENT



The editor, Cliff Ramshaw, offers his penny's worth...

We're beginning to see the benefits of Commodore's recent policy. Their decision to release Amigas with at least a 68020 processor has enabled software manufacturers to produce packages with far more power than we've been used to.

It makes financial sense for developers to aim for the lowest common denominator. The introduction of the A1200 and the A4000 has raised this base level, and therefore the quality of the software. It's not that these new programs won't work on older and slower machines, just that they won't work as well – but that's progress.

Packages such as those in the story to the right, and the paint package *Brilliance* (which we examine *in detail* on page 28), really do represent a new wave of serious Amiga software. We'll need a lot more like them before we can say that the Amiga is as well served in the business market as the Mac or PC, but what a hell of a start.

## Cheaper Caligari

The Caligari Corporation have made dramatic price cuts to their 3D modelling packages in a bid to penetrate the market dominated by RealSoft's *Real 3D*.

Their entry-level package, *Caligari24*, is to sell for £99.95, while the package aimed at professionals, *Caligari Broadcast*, is priced at £399. Both are distributed by Meridian ☎ 081 543 3500.

## XCAD PRICE DROP

As part of a Christmas promotion, *Xcad 2000* has been reduced in price to £79, while *Xcad 3000* drops to £249. For more details call DML ☎ 081 977 1105.

# Professional software – the new power generation

The imminent release of two professional-level software packages looks set to spark off a much-needed renaissance of serious Amiga software. Both packages come from American developers, and both are designed to provide the kind of power more usually enjoyed by Macintosh and PC users.

For years now Amiga users have bemoaned their machines' inability to make any sort of impact in business computing. The Amiga has proved immensely popular with video workers, particularly in America, when used in conjunction with NewTek's Video Toaster, but also in Europe and the UK. Yet in other commercial markets it has been noticeable by its absence. The situation has been especially galling because of the precedence of the IBM PC, an inferior machine in just about every respect. But the undeniable fact has always been that software for the PC is of a much higher quality.

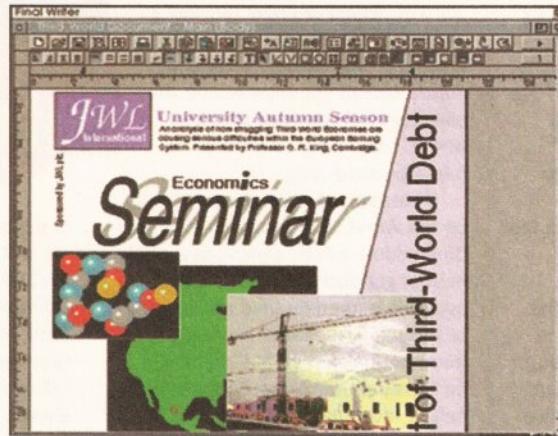
This situation may well be about to change.

The first of the two would-be "killer applications" comes from SoftWood. It's a word processor called *Final Writer*. SoftWood are the company behind *Final Copy II*, a word processor generally considered, along with Digita's *Wordworth*, to be one of the best available for the Amiga. *Final Writer* isn't intended as a replacement for *Final Copy II*, but rather as an addition to the range, with *Final Copy II* being moved down a peg and *Pen Pal* remaining the company's entry-level program.

One of *Final Writer*'s biggest features is its ease of use. Most of its functions can be accessed by

mouse clicks on the sort of tool bar familiar to paint package users. These tool bars are customisable, and it's possible to switch easily between several. Complex formatting macros can also be created and used to speed up the layout of text.

The package comes with a number of drawing facilities, and the ability to import graphics in IFF and EPS formats. Both are displayable on-screen, and can be cropped or scaled without loss of resolution.



Will SoftWood's *Final Writer* change the way that the Amiga is viewed in the commercial computing sector?

Graphics and text can also be rotated.

*Final Writer*'s printing options are also extensive, with the ability to send PostScript fonts to any printer. When used in conjunction with a PostScript-compatible printer it can also scale documents and print them with crop marks.

The package comes with 100 clip art images, all in EPS format, which means they are scalable, and more than 110 fonts. It will cost £129.95 – a fraction of the price of similar packages on the Mac or PC – and should be available any day now.

The second package comes from SoftLogik, who have been fighting with Gold Disk for supremacy in the

Amiga desktop publishing market for years. This time SoftLogik are not only claiming that their latest product, *PageStream 3*, is better than Gold Disk's *Professional Page*, but also that it's better than Quark XPress and Aldus *PageMaker*, the two industry-standard DTP programs in use on the Mac.

*PageStream 3* is being touted not as an upgrade but as a completely new program, containing many new features that users of

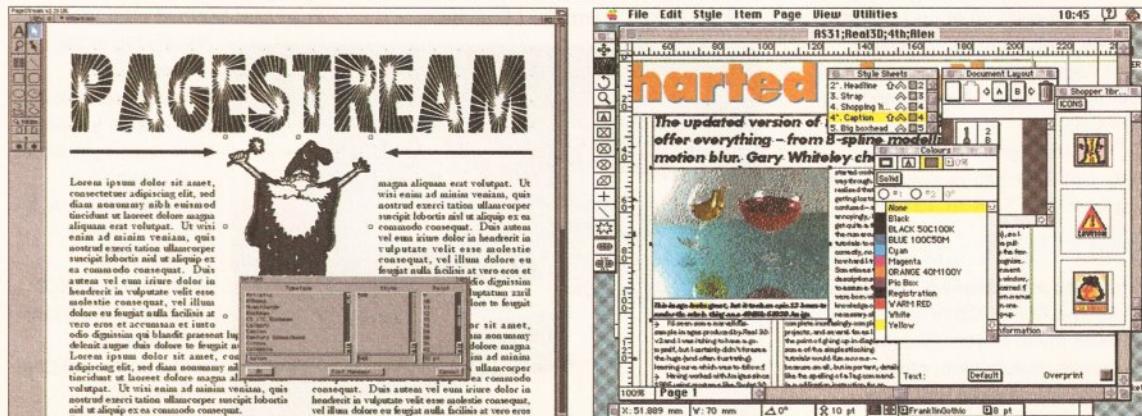
earlier versions have requested. It is aimed not only at hobbyists – many of whom may well be better off with a cheaper document processor such as *Final Writer* – but also at desktop publishing professionals. To this end it gives the user great flexibility in the creation of colour plates, will operate with CMYK, HSV and RGB colour models, and includes support for Pantone colours – Pantone being a system that guarantees publishers much more accurate colour reproduction than can be achieved with

the cheaper CMYK standard.

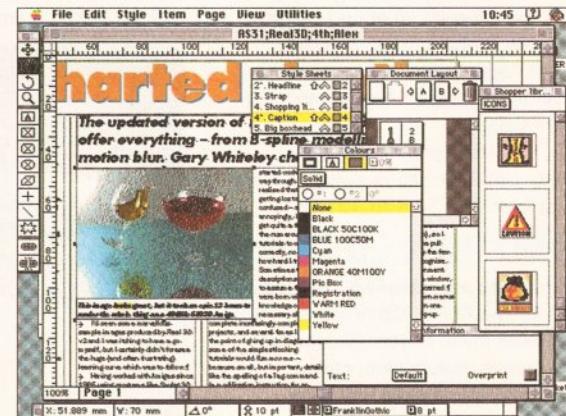
The user interface of *PageStream 3* has been much improved, giving the user a choice of several different toolbox layouts, and providing dragable toolboxes for fonts, colours, pages, macros and styles.

SoftLogik are making no promises about a release date, but the latest estimate is some time in December, with a US price tag of \$395. It will be distributed by Silica ☎ 081 309 1111 and Meridian ☎ 081 543 3500.

*Final Writer* will be distributed by SoftWood Products Europe ☎ 0773 836781. Watch for full reviews of both packages in *Amiga Shopper* as soon as they are available.



SoftLogik's *PageStream 2*. Will its successor really have the power to become the new DTP standard?



And here is its main competitor on the Mac – Quark XPress, the program used to create this magazine.

## GET INTO CD-ROM

Users of Workbench 2.04 or higher can now plug into CD-ROM technology thanks to ASIMWARE's new file system.

Called *Asim CDFSV2.0*, the software will enable you to access a CD-ROM drive as an ordinary AmigaDOS device – over 20 SCSI-connected drives are supported. In addition, it provides support for the Kodak PhotoCD standard and enables the drive to be used as an ordinary CD player. A CD-ROM containing disks 101 to 900 of the Fred Fish collection is provided as part of the package, all of which sells for £49.99.

*Asim CDFSV2.0* is distributed by Micro-PACE UK **0753 551 888**.

## SOFTWARE PC EMULATOR

**PC Task**, the Australian software-based PC emulator, is to be distributed in the UK by Meridian for only £49.95.

The program will run on all Amigas, its performance depending on the power of your machine. It is fully multitasking, and enables you to transfer files between MS-DOS and AmigaDOS. Using it, you will be able to run most PC applications.

Its features include: emulation of up to two floppy and two hard disks; support for high density drives; MDA, CGA, EGA and VGA screen modes with up to 256 colours; support for CD-ROM; and serial and parallel port emulations.

Meridian **081 543 3500**.

## MORE SPEED FOR A4000/030S

The Afterburner accelerator from Dutch-based Eureka is claimed to more than double the speed of an A4000/030.

The card comes with a Motorola 68030, including a memory management unit, clocked at 50MHz, and has space for a maths co-processor. It includes a local memory bus for the addition of up to 525Mb of 60ns 32-bit SIMMs, providing much higher memory access rates than are possible on an unmodified A4000/030.

The Afterburner A4050/030 costs DM 846, and is available from Eureka **010 31 436 13742**.

## ANOTHER CD DEMO

Almathera are releasing *The Demo II CD* for the CD<sup>32</sup>, CDTV and A570 CD-ROM drive. It contains games, PD demos, music files, sound samples, IFF images and three versions of Workbench. It costs £19.95. Call Almathera on **081 683 6418**.

# Huge computer show imminent

Drenched in neon-bright computer graphics, sonically soaring sound effects, electro-music, TV cameras, radio mikes, full motion video and all the latest techno-wizardry, the Second Future Entertainment Show is likely to be the closest you'll get to cyberspace.

Organised by the publishers of good ol' *Amiga Shopper* (as well as about 30 other magazines, including *Amiga Format*, *Amiga Power* and *Future Music*) the show will be the place to be if you want to know what's happening now and in the future of computing.

Naturally, of special interest will be the World Of Amiga section, where Commodore will be exhibiting a whole host of goodies destined to delight even the most hardened and cynical of technophiles. Other big names from the Amiga marketplace who'll be there, showing new products and selling favourites at unbeatable prices, include 16/32 PD Library, Database Direct, Datel Electronics, Digita International, Domark, Electronic Arts, Future Zone Stores, Gasteiner Technologies, Kador, MD Office Supplies, Mail Order Express, PD Selections, PD Soft, Power Computing, Silica Shop, Siren

Software, Snap Computer Supplies, Software Demon, Supra, WTS Electronics and Wembley Electronics.

The *Amiga Shopper* team will be there, along with the people who put together Future's other computing magazines, ready to offer advice and

**The second Future Entertainment Show**

submit to interrogation – or something....

But that, as we're fond of saying, isn't all. The TV programme *GamesMaster* will be broadcast live from the show on the Thursday evening, while the BBC's Radio One will be going out live throughout the show's proceedings.

The show runs from Thursday 11 to Sunday 14 November at London's Olympia. Entry is by ticket only, so you'd better get your skates on and ring the hotline number **051 356 5085**. A single ticket costs £6.95, or you can get a family ticket (which admits four) for £24.95.

And here are the winners of the competition we ran last month. Each will be receiving a free ticket to the show, so if you're not listed here, better dial that number now:

A C Murdoch of Leigh-on-Sea in Essex (who came up with our favourite reason we're so good to you: "When you're shell-shocked good and proper, the remedy's *Amiga Shopper*"); Richard Rogers of Royston in Herts.; M B Peden of Potters Green in Coventry; Nicholas West of London SE1; Daniel Calstor of Sidcup in Kent; S J Trow of Stafford in, er, Staffordshire, isn't it; R Frost of Westbury-on-Trym, near Bristol; Chris Jackson from Chesterfield in Derbyshire; John Oakes of Shotton in Clwyd; Richard Easton of Newcastle upon Tyne; David Turner from Sutton in Ashfield, Notts.; Alan Wightman from Dunbar in East Lothian; M Crossley from Chesterfield, which is still in Derbyshire; David Parker of Cambridge; P Hope from Bedminster in Bristol; Vincent Stewart of Perth in Scotland; Jason Worswick from Bolton in Lancs.; Silvia Risby of Oxford; J Donnelly of Glasgow; and H Watkins from Cardigan in Dyfed. Congratulations. See you there.

## Star dotty over new printers

You might think that the age of the dot matrix printer is gone, what with the proliferation of inkjets and the ever-falling prices of lasers. Star, however, expect 500,000 dot matrix printers to be sold in the next year, and are strengthening their LC range to make sure they get a good share of the sales.

Two colour models – the LC24-30 and LC24-300 – firm the LC series



Star Micronics highlight lower operating costs as a big benefit of their LC colour dot matrix printer range.

into what Star believe is a range with something for everyone.

The LC24-30 is a £351 colour dot matrix that comes with a 30 page sheet feeder. It will automatically change its print emulation to that required by the controlling computer, and features a special zoom mode that will reduce A4 documents to A5 or A6 size.

The LC24-300 will print more quickly (up to 264 characters per second) and quietly, and is able to switch between single sheet and continuous stationery modes. It supports Epson LQ860, IBM ProPrinter and NEC Graphics emulations, automatically switching as needed. It costs £422.

Contact Star on **0494 471 111** for more information.

## COMMODORE UNWRAP XMAS BUNDLE

This year's Christmas bundle from Commodore demonstrates their faith in the A1200's capabilities as a productivity machine.

As well as a batch of games – *Oscar* and *Dennis* – it will be sold with *Deluxe Paint IV AGA*, *Wordworth* and *Print Manager*, all for £349.99. Commented the company's joint managing director David Pleasance: "It's the broadest possible introduction to the vast possibilities of the Amiga world."



The A1200 Desktop Dynamite bundle – more bangs for your bucks.

## SPEAK SPANISH



Whether you're a student, tourist or business type, teach yourself Spanish - written and spoken - with LCL's Micro Spanish. It will take a beginner through to GCSE level, includes sampled speech, music, animations and stills, and costs £24.99 from LCL 0491 579 345.

## Serious muscle for CD<sup>32</sup>

The first expansion card for the CD<sup>32</sup> has been announced, and it looks likely to turn the console into a machine to be reckoned with.

The CD<sup>32</sup> Expansion Board from Microbotics will, when fitted, add the following capabilities: a serial port, a parallel port, a floppy drive port, an IDE hard drive interface, space for up to 8Mb of memory expansion, an MPEG socket (enabling a full motion video unit to be added) and a Parnet cable, meaning that the machine will be controllable via another Amiga with a keyboard.

Microbotics' board will be sold by Indi Direct for £139.99

Also new from Microbotics are two expansion cards designed for the A1500/2000/3000/4000 Amiga

machines. The first, the NX2000, enables Amigas to be connected in a network run under the Envoy peer-to-peer protocol. It will cost £79.99.

The Delta 2000 Expansion Board will provide your Amiga with a further two serial ports, one parallel port, space for up to 8Mb of RAM, a SCSI-2 hard disk interface, an IDE hard disk interface and a two channel MIDI interface. The price will be £129.99.

The final Microbotics board, for A3000s and A4000s only, is called the Delta Z3. It provides all the same facilities as the Delta 2000, but with a network interface and space for 4096Mb of memory. It is set to sell for £399.99.

All cards will be available from Indi Direct Mail 0543 419 999.

## QUANTUM DRIVES FOR AMIGA 1200

Siren Software are selling the first 2.5-inch Quantum hard drives that are compatible with the A600 and A1200.

Quantum drives are acknowledged to be some of the fastest around. They boast a 4Mb per second transfer rate with a seek time of 4ms. They are available from Siren in sizes from 85 to 256Mb, costing £193.49 and £383.49 respectively. They are supplied with fitting instructions, an IDE cable, screws and Workbench. Siren Software 061 724 7572.

## Top titling

Montage24 is a new 24-bit titling package from Innovision Technology, makers of Broadcast Titter II.

Among its features are the ability to anti-alias text to the background on which they are placed, create transitions, and use 24-bit images as backgrounds. It comes with eight scalable fonts, and can import PostScript and Compugraphic fonts with the addition of a PostScript module. Text effects that can be applied include variable transparency, gradient colour fills, embossing, soft shadowing, outline and ordinary shadowing.

Versions are available that are compatible with AGA screens, Opalvision, GVP's IV-24 and the Video Toaster. It is distributed in the UK by Meridian 081 543 3500 for £329.95, and Micro-PACE UK 0753 551 1888, who have yet to fix a price.

## FIGHTING THE GOOD FIGHT

Protection from viruses is at hand from the Safe Hex International organisation, who have recently set up a UK virus centre.

The centre distributes a disk called *The New Superkillers*, which contains programs to deal with all of the latest viruses. Furthermore, it collates new viruses from users and liaises with the main Safe Hex International centre in Denmark.

The organisation charges £2 per disk. The money helps reward the creators of the virus killers, and is also to be used to set up a free telephone, fax and bulletin board line that will offer virus advice to UK Amiga owners.

You can get a copy of the disk by sending a check for £2, made payable to Paul Browne, to: SHI Regional Virus Centre UK, 304 Leeds Road, Eccleshill, Bradford, West Yorks. BD2 3LQ.

## New Citizens boost printer population

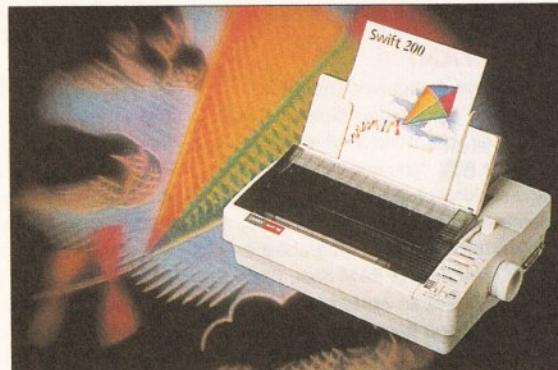
Whether you're after a low-cost dot matrix or a high-end laser printer, Citizen's two new launches should satisfy your requirements.

The Swift 200C is the latest addition to the company's Swift 2 range of 24-pin dot matrix printers. It's a colour printer that can handle multi-part stationery, cut sheet, continuous paper and overhead transparencies.

The Swift 200C's speed in draft mode is 180 characters per second (at a pitch of 10 characters per inch) or a really quite zippy 216 characters per second (at a pitch of 12 characters per inch). Six fonts are available in letter quality mode.

The Swift 200C supports three emulations: Epson LQ500/850, IBM ProPrinter X24e and NEC P20. It has a recommended retail price of £328.

Citizen's ProLaser 6000 marks a first for the company - not only is it their first laser printer, but it's also the first to be available directly from Citizen (0800 525686). It comes with 1Mb of memory and built-in HP LaserJet III, Epson FX-850 and IBM ProPrinter XL-24e emulations. Eight



The latest addition to Citizen's Swift 2 range, the Swift 200C is a low-cost 24-pin colour dot matrix printer.

scalable fonts are also provided. The ProLaser 6000 has a recommended retail price of £1,173, but is available direct from Citizen for £657.

## A SERIAL KILLER

Amiga owners searching for a means of connecting to the real world can rest easy now that Applied Systems Group have announced their high performance serial card.

Called Seriox, the card will supply your Amiga with two or four additional serial ports at speeds between 300 and 38,400 baud. Prices start at £94. ASG 0652 688330.

## Harlequin deal

There's a special offer on at the moment for people interested in buying Xi Electronics' Harlequin Plus 32-bit frame buffer.

Already cheaper than the earlier Harlequin card (and better), the Harlequin Plus is being bundled with MacroSystem's VLAB Y/C framegrabber (itself worth £380).

The whole package, with 2Mb of RAM, is available from Xi Electronics for £1,498. A 4Mb version costs £1,598. XI 031 229 8428.

## TypeSmith upgraded

Desktop publishing aficionados will be pleased to learn of the latest version of TypeSmith from Soft-Logik Publishing.

TypeSmith 2 enables the user to create PostScript, Compugraphic and Soft-Logik outline fonts for use in DTP and other applications.

Among the latest version's enhancements are the ability to create bitmap fonts from outline equivalents, to trace bitmaps to create outline versions (meaning you can create fonts from scanned pages), and to take kerning information from one font and place it in another.

TypeSmith 2 also supports hints - a system that improves the clarity of fonts when they're printed at low resolutions or small sizes.

It will be distributed in the UK by Meridian 081 543 3500 and SDL 081 309 1111 for £169.95.

## SHOW BUSINESS

A list of computer shows happening in the near future:

• Thursday 18th to Sunday 20th November - Second Future Entertainment Show. 051 356 5085.

• Friday 19th to Sunday 20th November - the 8th Christmas International Computer Show. Wembley Exhibition Centre. 0222 512 128.

• Sunday 5th December - the 9th annual Christmas Computer Show of the Nottingham Microcomputer Club. 0602 621 153.

• All Formats Computer Fair. November 6th Oxford, 7th Brighton, 13th West Midlands, 20th London, 21st Portsmouth, 27th North West, 28th Bristol, December 4th Leicester, 5th Washington. 0608 662212.



# The Amiga Shopper Shareware Collection volume VI

Here's the full low-down on what you'll find on this issue's packed cover disk.

## ACC HARDWARE PROGRAMMING GUIDE

### All Workbenches

Want to know how to take total control of your Amiga? Then this package from Amiganuts is the one for you. It's designed to teach absolute beginners the mysteries of assembly language and show you how to use it to access the Amiga's hardware and achieve stunning graphical and audio effects.

This is actually part one in a four disk series from Amiganuts. It deals with the fundamentals of assembly language programming, and then introduces the various instructions you'll be needing. It explains how you can move data around and perform arithmetic, and then goes on to the more involved subjects of loops and subroutines. Finally it deals with the various binary operations assembly language enables you to perform.

The beauty of this package is that you can load in its many examples while you are reading the tutorial text. This means you can see exactly how things are done even as

you read about them. In addition, a complete assembler is supplied, so you can assemble into runnable versions not only the example programs but your own programs too. All of this can be done from the environment of the tutorial reading program, giving you a chance to practise your skills as you learn.

### IMPORTANT

Once you've darchived the *ACC Hardware Programming Guide* on to a floppy disk, you need to give this disk the name **M1:**. You can do this by single-clicking on it and selecting **rename** from the Workbench menu.

Alternatively, if you darchive it to your hard disk or RAM disk, then you must make an **assign** that points to wherever you have placed it. Do this from the Shell. For example, if you have darchived to a directory called **tutorials** on a hard disk partition called **dh1:**, then you would open a Shell window by double-clicking on the Shell icon and type:

```
assign M1: dh1:tutorials
```

You'll probably want to put this line somewhere in your startup sequence (type **ed s:startup-sequence** to enable you to do so) so that you can run the tutorial whenever you switch on your machine.

Once you've done this, you can get into the tutorial by opening up the **Beginners** drawer and double-clicking on the **Tutorial** icon.

### SPECIAL OFFER

The version of the *ACC Hardware Programming Guide* on the cover disk is just one part of a larger package. *Amiga Shopper* has tied up a deal with Amiganuts so that you can get the whole lot at a discount price of £12.60 (including postage and packing) – that's a saving of £3. The other disks move on to more sophisticated uses for assembly language, dealing with such things as opening custom screens, creating sound effects, drawing graphics and animating sprites. To get them, simply send a cheque or postal order for £12.60 payable to Amiganuts at this address: **Amiganuts United**,

## 1 Daffern Avenue, New Arley, Coventry CV7 8GR.

Note that to qualify for this special reduced price you must include your original *Amiga Shopper* cover disk as proof of purchase – but that won't be a problem, will it, because you'll already have made a back-up copy of your cover disk, won't you?

## SOURCE\_CODE

### All Workbenches

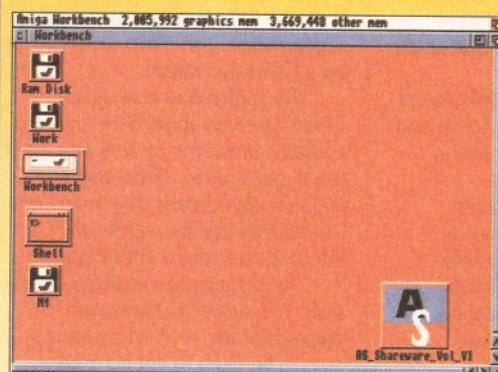
Here you'll find the two programs printed in the Listings section of the magazine (page 61). They're both written in AMOS, and the versions on the disk are in source code format, so you can load them into the AMOS interpreter, examine them to pick up tips, and run them to try them out. Please note that no icons are included for these two programs. Neither of them need darchiving before use – they're both ready to be loaded directly into AMOS.

## MAPSTATION

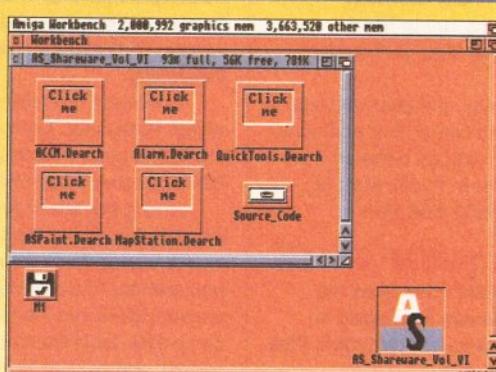
### All Workbenches

*MapStation* is a handy utility that will

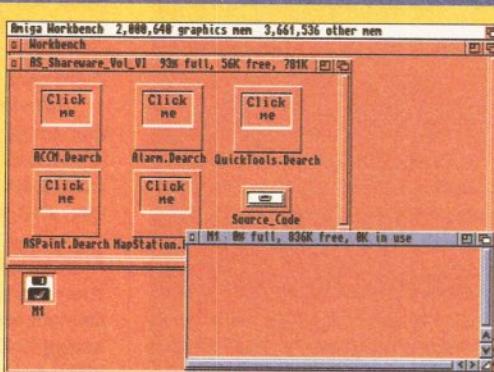
## SO JUST HOW DO YOU GET AT ALL THIS



1 First you should switch on and boot up your machine with Workbench. Then insert the copy that you've made of this month's cover disk. You'll see the **Amiga Shopper** icon appear on the screen. Before you go any further you'll also want to have several blank formatted disks available (unless you intend to darchive to hard disk or RAM:) – you'll need something to save the uncompressed software onto.



2 The next step is to double-click with the left hand mouse button on the **Amiga Shopper** icon. A window for the disk will then open, in which will be displayed the six icons for the software on the disk this month. Apart from the drawer called **Source\_Code**, which contains the readers listings from page 61, all of the cover disk files have been compressed with the archiving utility *LhA*.



3 Let's say that you want to unpack the *ACC Hardware Programming* package. You'll need to have a blank formatted disk ready before you start to decompress *ACC*. Because *ACC* is programmed to look for files on a disk called **M1**, you need to name this disk **M1** (only in the case of *ACC*, though). Now double-click on the blank disk icon and another window will open on your screen.

# VITAL: READ THIS FIRST

The first thing that you *must* do with your cover disk is to protect it from accidents by making sure that it is write-protected. To do this, make sure that the movable plastic tab on the disk is in the open position – that is, you can see through the hole. This means nothing can now be written to the disk, especially viruses. If you don't write-protect your disk and end up with a virus – well, that's your problem.

The next important step is to make a back-up copy of the cover disk – in case any nasty accidents happen while you're busy working with it. The easiest way to go about this is via the Shell. So, open a Shell window and then type the following at the prompt:

```
diskcopy df0: to df1:  
Your Amiga will now ask you to insert the SOURCE disk (that's the cover disk) in df0: and then press the [Return] key to continue.
```

Your computer will now read some of the information from the disk before another System

Requester window appears asking you to insert the DESTINATION disk (that's the empty disk you want to make a copy of the cover disk on). You'll find that you need to swap disks several times – a System Requester window will appear each time, prompting you to insert the appropriate disk.

If you have more than one floppy drive, you can of course copy from one drive to the other by using the following instruction:

```
diskcopy df0: to df1:
```

Right, now that you've made a copy of the cover disk, hide the original in a very safe place and work *only* with the duplicate.

## CAN'T READ THE DISK?

We duplicate tens of thousands of disks, so inevitably a very small number will be corrupted – our copiers do carry out stringent quality-control tests, but the occasional duff disk will always sneak through. You'll know if this has happened to your cover disk

because either you'll get a System Requester window appearing to tell you that you've not got a DOS disk sitting in your drive, or a System Requester will pop up to tell you just as unhelpfully that a READ ERROR has occurred while one of the programs was de-archiving.

The solution is straightforward. Just send the faulty disk to the address below, enclosing an envelope addressed to yourself for the return of your replacement disk – the padded variety are best – and we'll pay the return postage. The address is:

### Amiga Shopper 32

Discopy Labs

PO Box 21

Daventry NN11 5BU

With the disk please include a brief note saying what the problem is. Also mention what Amiga you're using and the version of Workbench that you are running. A replacement disk should then come rattling through your letterbox within a couple of weeks.

prove a boon to games programmers everywhere. It enables you to construct huge game areas out of smaller "tiles". These tiles are designed separately, usually in 16 x 16 or 32 x 32 pixel blocks, in such a way that they can be joined together, jigsaw-puzzle-wise, to create larger images. The trick is to design tiles that can be re-used in many different areas of your game. The result is a huge game area that takes up comparatively little memory or disk

space. If you take a look at just about any games, particularly those that involve scrolling screens, you'll find they make use of the technique – the repeating background patterns are the giveaway sign.

MapStation takes all the pain out of creating such backgrounds. It enables you to design your tiles and fit them together to create the kind of backgrounds you need. Its fully icon-driven interface makes it a doddle to use.

## ALARM

### All Workbenches

Alarm is a demonstration program that illustrates the Programming Masterclass tutorial on page 85. It also doubles as a useful Alarm signaller for your Amiga.

In the Masterclass you'll find a step-by-step guide to the techniques used. It shows you how you can keep track of any system resources that your program sees fit to allocate for itself. That's the easy bit, but

deallocating them after use has always been a bit of a nightmare – until now. With this useful stack-based approach you can allocate and deallocate with impunity. If you feel reasonably competent in C and want to take things further, then try out this program and turn to page 85 to learn some powerful techniques.

## ASPAINT

### All Workbenches

Dearchive this to reveal the latest version of Jason Holborn's AMOS paint program. You'll find that there's some source code that you can load into your AMOS interpreter and examine, and also a compiled version that you can run immediately.

The program is really beginning to take off now, with some paint functions having been added. Turn to page 101 for full details.

## QUICKTOOLS

### Workbench 2+

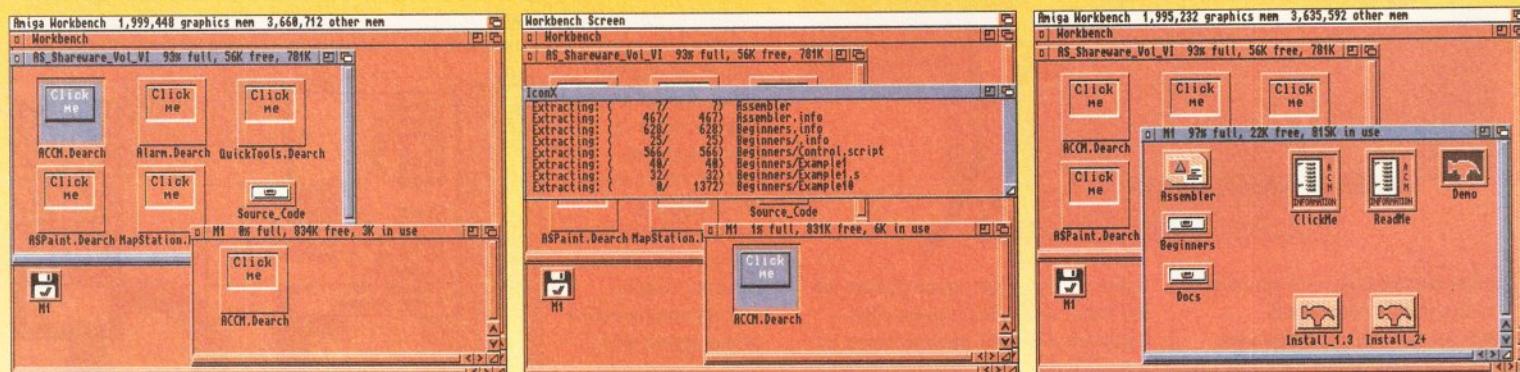
This archive contains three of those handy tools that make using your Amiga that bit easier. The first enables you to switch to different directories from the Shell without having to type the full path name. You only need to type as much of the name as necessary to distinguish the directory you want from any other possibilities – quite a time-saver.

The next enables you to search for a specific file. Give the program the name of the file you're after (or part of the name – wildcards are supported), and it will do the rest.

The final program is a commodity version of the above that you can call up at any time using a hot-key combination. Full documentation for all three QuickTools is in the unarchived directory.



# LOVELY SOFTWARE ON YOUR DISK?



4 Now it's time to dearchive the software. Start by dragging the **ACCM.Dearch** icon from the cover disk window into the **M1** window. To decompress the software all you then have to do is double-click with the left mouse button on the **ACCM.Dearch** icon in the **M1** window. The de-archiving procedure will automatically begin, and another window called **IconX** appears on-screen to tell you how it's going.

5 In the **IconX** window will be listed all the files as they are extracted from the archive. If you are using an Amiga with only one disk drive then unfortunately you'll have to get involved with a fair bit of disk swapping. A System Requester window will appear each time you need to change the disks around – simply put whichever disk is requested in the Amiga's drive.

6 Once the **IconX** window has vanished the **M1** window will still appear to contain only the **ACCM.Dearch** icon – that's because the window isn't automatically updated. Click first on the window's close gadget and then double-click on the **M1** icon. The **M1** window will reopen with the packages' icons displayed in their full glory. You can then run the programs or load the files as normal.

# Colour your world

**Capture the rainbow onto your Amiga! Jeff Walker tests all three Amiga-compatible colour hand scanners, plus a top-flight flatbed.**

**T**here are essentially four types of graphic that you might want to transfer from paper to the computer: photographs, illustrations, line drawings, and text. There are many applications in which digitised graphics can be used – desktop publishing, optical character recognition, illustrating, animation and video presentations.

For greatest flexibility and quality you need a colour scanner. Monochrome scanners are fine for scanning small line drawings and columns of text, but the limited number of shades of grey they produce is not honestly good enough

to get quality results from photographs and illustrations. Yet colour on its own is not the answer – as we'll see, even at this level results can vary widely.

Each of the products featured here has its strong and weak points, but all scanning software operates in essentially the same way. You select the size and resolution of the scan, set the brightness level, and do the scan. That's all there is to it, and all the packages featured here do the basics perfectly well, so we can concentrate on more important stuff like the quality of the results and extra features that make scanning or saving images simpler and faster.

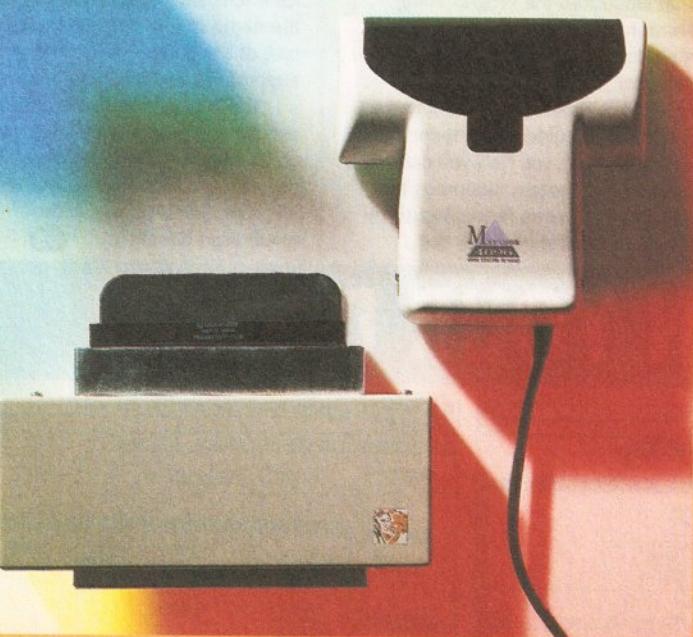
## ALL JOKING ASIDE...

To give you a point of comparison for the scans on these pages, we scanned the same original photo using a professional-standard flatbed scanner, an Agfa Focus Colour Plus. This is capable of up to 800 dots per inch resolution at 8 bits per channel – that is, 256 shades each of red, green and blue. The new model, the Arcus, offers up to 1,200 dpi and 10 bits per channel, comes with Agfa's *PhotoTune* colour management software (for Mac or PC only), and costs a cool £3,745.

How this scan comes out depends on many factors – like the printer's ink and the paper – but theoretically it should be much better than the others...



## POWERCOLOUR



**P**ower Computing were the first to launch a colour hand scanner for the Amiga, some nine months ago now. Since then the package has remained essentially untouched, despite the inadequacies that were discussed in the review in *Amiga Shopper* 23. (If you want the details and missed that issue, you can order a copy on page 58.)

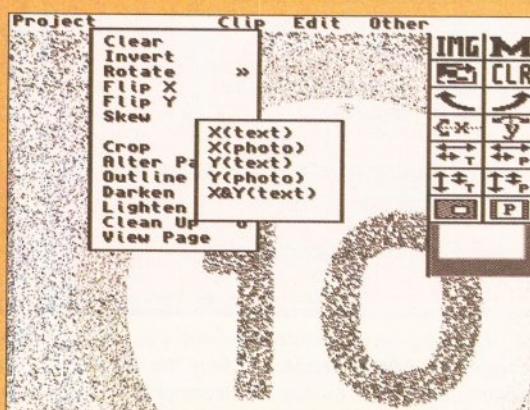
The big problem with Power-

Colour is that there is no version for the A600 or A1200, the only two hardware interface options being for the A500/Plus side expansion port (with throughport) and an internal Zorro II card for the A1500, 2000, 3000 and 4000. Reacting to the launch of two rival colour hand scanners, Power are now rewriting the software and redesigning the interface so that it attaches to the parallel port, thus making it available

to A600 and A1200 owners. But of course all this takes time, and the other packages are available now. Which is a shame, because PowerColour has a lot going for it.

First, it's the cheapest option. The rival hand scanners both have higher specifications – in a nutshell, they "see" more colours – but this doesn't necessarily make them better; compare the example scans of the clown ragdoll on pages 16 and 20 with the PowerColour's on the opposite page. But why should a 4,096-colour scan appear to be as good as one in 262,144 colours?

It's all to do with how the colours you see on your monitor are created. As you know from playing with countless palette requesters, every colour is composed of an amount of red, an amount of green and an amount of blue. When a colour scanner "looks" at a colour photograph or illustration, it doesn't see a lot of different colours; it sees various combinations of red, green and blue. Its scanning head picks up the light it shines onto the original and splits that light into its red, green and blue components. The colour yellow, for example, it would



The PowerColour hand scanner software has some rudimentary image-processing features, including scaling, but they are not powerful or accurate enough to replace a dedicated image-processing package.

see as containing a lot of red and a lot of green, but practically no blue. It follows that the more shades of red, green and blue a scanner can detect, the better it will "see" colours.

Now, in a "12-bit" scanner such as the PowerColour, each pixel is allocated 12 bits of memory, which means four bits for the red, four for the green and four for the blue.

Okay. Because of the way the binary numbering system works, in four bits of memory you can specify any number from 0 to 15, so that's 16 numbers in total. This means that the PowerColour scanning head sees 16 shades of red, 16 shades of blue, and 16 shades of green. Multiplying those numbers together – 16x16x16 – gives you the theoretical maximum number of colours you can

# COLOURBURST



They say speed kills. It certainly kills hand-scanned colour

Images. So much data has to be read by the scanner head that if you

give it too much data too quickly, it will simply ignore it. Because ColorBurst is an 18-bit scanner it has half as much data again to deal with as the PowerColour, so you would think it would be quite a bit slower. Not so. In fact it even feels a little faster. Not fast. But faster. Colour hand scanners are never fast; you always have to pull the head slowly over an image, even when attached to an A4000/040.

Migraph, makers of ColorBurst, are also the makers of Touch-Up, the scanning software used by a number of monochrome hand scanners, most notably the AlfaScan Plus. Touch-Up does things that no other Amiga software can do, so I was initially disappointed upon running the

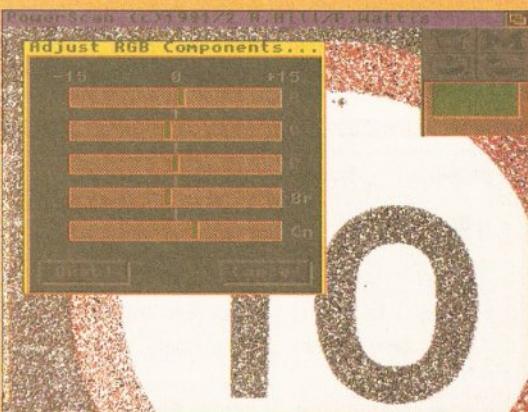
## Scan Settings

Mode:	<input type="checkbox"/> NT <input type="checkbox"/> MG <input type="checkbox"/> DC <input type="checkbox"/> CG <input checked="" type="checkbox"/> SCG	200
1 DPI:	100	14.00in.
Length:	Imperial Metric	Width: 816 Length: 2800
RAM Available: FAST: 10423056 CHIP: 1452088		RAM Needed: Main Buffer: 6854400 Temp Buffer: 2329600
<input type="button" value="SCAN"/>		<input type="button" value="OK"/> <input type="button" value="Cancel"/>

Before starting a scan with ColorBurst you have to make sure that the settings in this panel match the settings of the switches on the scanner head.

ColorKit scanning software to find that all it did was scan, render, crop, and save. But then what else do you want it to do? If you want fancy image-processing features then you need ImageMaster, ADPro or ImageFX. If you want pretty painting features then you need Deluxe Paint-AGA or Brilliance – princes all. ColorKit is scanning software, plain

continued on page 16



Thank heavens the PowerColour hand scanner software is in the process of being re-written. Working a lot in Low-Res HAM mode in weird palettes, as you have to do at present, really gives you a headache.

have with 12 bits of memory in which to describe each pixel's colour. That number is 4,096.

The rival colour hand scanner packages are 18-bit devices, so they have six bits each for red, green and blue. In six bits you can specify any number from 0 to 63, so these scanners see 64 shades each of red, green and blue, making the theoretical maximum number of colours in 18 bits  $64 \times 64 \times 64 = 262,144$ . On the face of it, this is 258,048 more colours than 12-bits. However, this massive difference in the total number of colours is misleading. The difference is really just between seeing 16 and 64 shades of each primary colour.

To look at on the screen there is hardly any difference between 12-bit

and 18-bit colour. The extra six bits of colour information only really come into their own if you intend to process the images in some way – adjust the brightness, the contrast, the colour balance, and so on.

Still, 12-bit colour is nowhere near good enough to produce photo-realistic results – images on the screen that look almost identical to the photograph that

was scanned. But the same is true of 18-bit colour; only 24-bits will give you photo-realism or "true-colour". Anything less is the scanner's best approximation to the hundreds of thousands of colours in the original.

There are nevertheless many non-photographic uses for the PowerColour – scanning coloured illustrations, to start with, and that includes airbrushed work, which usually contains far fewer colours than you realise, because airbrushing is essentially a random dithering technique. Graphics artists may find the PowerColour useful for scanning work prepared on paper in order to import it into a painting or image processing package where it can be more easily manipulated and re-coloured. And, of course, there's

always the good old black-and-white mode for scanning line drawings.

If this sounds like the kinds of uses to which you would put a colour hand scanner, then the question you have to ask yourself is: do I need 18-bit, or is the 12-bit PowerColour adequate? To find the answer to that question you'll have to read the sections on ColorBurst (above) and AlfaColor (starting on page 17).



Colour photographs scanned with the PowerColour 12-bit hand scanner will always contain a lot of random-looking "noise" because it can see only 16 shades each of red, green and blue. Close examination of this scan reveals thousands of red-, green- and blue-tinted pixels scattered all over the picture.

**SHOPPING LIST**

PowerColour	£239
By Power Computing Ltd, Unit 8, Ralton Road, Woburn Road Industrial Estate, Kempston MK42 7PN.	
0234 843388	

## CHECKOUT POWERCOLOUR

### Scan Quality

● ● ● ● ● ○ ○ ○ ○ ○  
Good enough for scanning illustrations, but photo-realistic it ain't.

### Ease of Use

● ● ● ● ● ○ ○ ○ ○ ○  
The ugly and antiquated user interface is in desperate need of an overhaul.

### Features

● ● ● ○ ○ ○ ○ ○ ○ ○  
It doesn't work with the A600 or A1200 and its basic image-processing and editing features aren't really up to par.

### Documentation

● ● ● ● ● ○ ○ ○ ○ ○  
Good enough to get you started quickly.

### Value for Money

● ● ● ● ● ○ ○ ○ ○ ○  
Good value provided you don't want photo-realistic results.

### Overall rating

● ● ● ● ○ ○ ○ ○ ○  
The whole package, software and hardware, needs bringing up to date.

continued from page 15

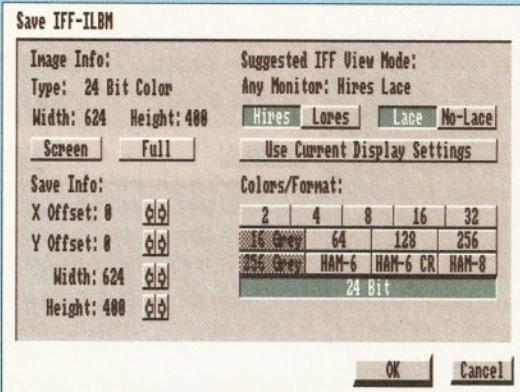
and simple. Yet in its own realm, it too is a prince.

Not so the interface. Pauper more like. It's the usual 3-inch by 2-inch plastic box that plugs into the parallel port. It works okay, but the ribbon cable between parallel connector and interface is a mere 3in long. When plugged into any Amiga, including the 500/600/1200, there's not enough cable to sit the interface up on top of the Amiga's case, so it has to live round the back and can be flipping awkward to get to.

Because the interface plugs into the parallel port, you have to remove your printer lead from that port – and even though ColorBurst costs £400 its interface has no throughport, so you cannot have both plugged in at once.

The package's saving grace is the rendering section of the software and the quality of the scans it produces. While photo-realism is too

much to ask from 18 bits (see the PowerColour review), the colours it produces are bright and vibrant and easily the best of the three Amiga colour hand scanners. Once an image has been scanned, the 18-bit data can be rendered in any screen mode supported by your Amiga, including 256 colours and HAM-8.



**ColorBurst** enables you to save scans in every IFF-ILBM format, and you can save a cropped image via the Screen button and the X and Y Offset gadgets.

including 256 colours and HAM-8. The original image data is never thrown away, so if you render the image in one mode and don't like the outcome, you don't have to scan the image again before rendering in another mode.

You don't have to render the

image at all, in fact. After finishing a scan ColorKit doesn't automatically begin to render the 18-bit data on to the screen, it just sits there waiting to be told what to do. You can save the 18-bit data (in IFF24 format), or render it to fewer colours and then save that. The advantage of this approach is that after completing a scan you don't have to wait while the software renders a HAM image which you can't stop it doing and don't particularly want, which is the case with the rival hand scanners here.

One very important point to bear in mind is that 18-bit colour data takes up a lot of memory. A scan of 4in by 3in at 200 dots per inch, which produces an 800 x 600 pixel bitmap, will require more than a megabyte of memory for the 18-bit data alone. Rendering that on to the screen in HAM-8 or 256 colours will require about another half megabyte of graphics memory. So that's 1.5Mb on top of any memory the ColorKit program itself uses. To give an extreme example, if you were to scan a 4in by 10in area at 200 dpi you would require more than 3.5Mb of memory for the 18-bit data.

There's no doubt that you could scrape by with just 2Mb of memory, but to be able to multitask or use ColorBurst productively you really



While the scans obtained from ColorBurst contain the truest colours of the three hand scanners, there is still a lot of noise evident.

need 2Mb of graphics memory and at least 4Mb of expansion memory. Same goes for the AlfaColor hand scanner, but with the PowerColour you'll get away with 3Mb of expansion memory because its 12-bit images consume less.

Comparing the results obtained from the three Amiga colour hand scanners, the ColorBurst's scans are

## THE TYPEFACE IS FAMILIAR...

Optical Character Recognition (OCR) is not something everyone needs. Unless you need to regularly transfer swathes of printed text from paper into ASCII format, even £49 is quite a lot to pay for software that may

label instead of "Migraph".

Migraph OCR Junior comes bundled with the ColorBurst colour hand scanner and the AlfaScan Plus mono hand scanner. The only difference between the full and Junior versions is that in Junior you can't import a previously-scanned image. In other words, with Junior you have to scan the text and OCR it straight away – you can't scan and save a few pages, then import them one at a time and OCR them, as you can with the full version.

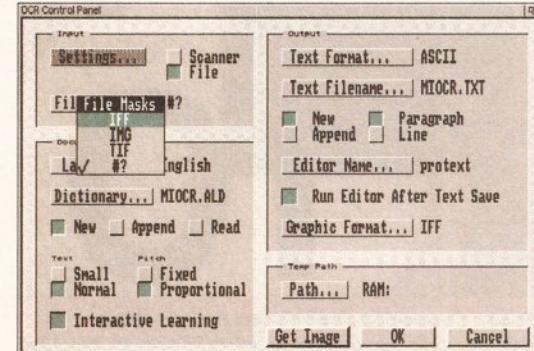
OCR is a memory-hungry process. Both the full and the Junior versions require at least 2.5Mb to even think about running.

If you want to OCR long columns of text, more memory will be required. Power OCR Junior doesn't come free with the Power scanners; it is an optional extra that costs another £49. The upgrade to the full version will cost a further £49.

The software is essentially unchanged from the version we reviewed in-depth in *Amiga Shopper* 19. It's fast and it works very well indeed, although having to hand-scan

and OCR a full A4 page in three horizontal strips is not the most enjoyable of experiences. The software handles the job well enough, it's just that while you are fluffing about trying to do three fairly straight scans and then OCR'ing them one after the other, you could probably have typed the page into a word processor.

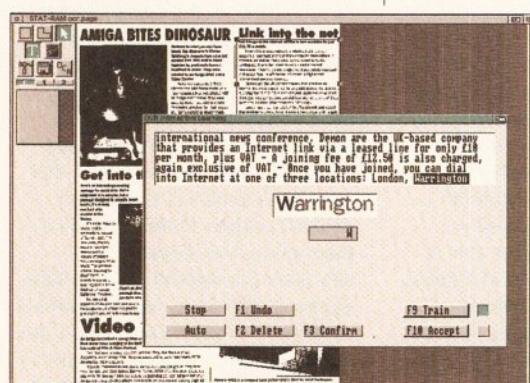
Working from floppies will slow the OCR process down even further,



The full OCR package can import pre-scanned pages in IFF, IMG or TIFF format; the Junior version can't.

because the software depends on large lexicons and dictionaries which have to be continually accessed. If

your system consists of a hand scanner, about 3Mb of RAM and two floppy drives, you'll be able to use *OCR Junior*, but you probably won't enjoy it. If on the other hand you've got a flatbed scanner, 8Mb of RAM and a hard drive, then you'll probably think the full *Migraph/Power OCR* package is one of the best pieces of software you own.



The OCR software is pre-trained in a couple of dozen typefaces, so even when it's not sure of a character it guesses correctly most of the time. You can also train it to recognise typefaces it doesn't already know.

# Type

Outline font designer ■ £12

**FONT DESIGN PROGRAMS** are not new to the Amiga, but the release Workbench 2 and desktop publishing

*Migraph/Power OCR* has no problem with text like this in three different fonts, although it cannot recognise very large text – anything over about 24pt in size.

only be loaded once in a blue novel.

But if you do want OCR, then you have four choices: *Migraph OCR*, *Migraph OCR Junior*, *Power OCR* and *Power OCR Junior*. Actually this is only two choices really because the *Power OCR* packages are in essence exactly the same as the *Migraph* ones except that they have added built-in support for the Power monochrome and colour hand scanners and have "Power" on the

without doubt the best. But they still contain a fair amount of noise and are certainly not £161 better than PowerColour's 12-bit scans. You do get the *OCR Junior* optical character recognition software thrown in (it's £50 to buy separately – see "The typeface is familiar" below), but that still leaves ColorBurst over £100 more expensive than PowerColour. But of course PowerColour doesn't (yet) work with the A600 and A1200, so for owners of these machines PowerColour isn't an option. The AlfaColor is an option, so you'd better read all about that one now and discover why a package that uses the exact same 18-bit scanner head as ColorBurst produces a different quality of scan.

**SHOPPING LIST**

ColorBurst ..... £399  
 By Migraph Inc,  
 32700 Pacific Highway South, Suite 14,  
 Federal Way, WA 98003, USA  
**Distributed in the UK by**  
 Golden Image (UK) Ltd, Unit 12a  
 Millmead Business Centre,  
 Millmead Road,  
 London N17 9QU.  
 ☎ 081 365 1102

## CHECKOUT COLOURBURST

### Scan Quality

● ● ● ● ● ● ○ ○ ○ ○  
 But don't expect photo-realism from 18 bits, it just ain't enough colour.

### Ease of Use

● ● ● ● ● ● ○ ○ ○ ○  
 Simple scan-and-save software that my dog could operate.

### Features

● ● ● ● ● ● ○ ○ ○ ○  
 Works with all Amigas, has enough features to enable you get a good grab and save it – which is what it's all about – and it has OCR software thrown in.

### Documentation

● ● ● ● ● ○ ○ ○ ○  
 No War and Peace, but enough to get you started with both colour scanning and OCR.

### Value for Money

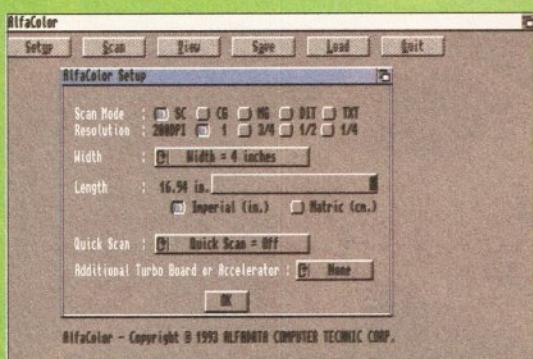
● ● ○ ○ ○ ○ ○ ○ ○ ○  
 For less than twice the price you can buy a full A4 24-bit colour flatbed.

### Overall rating

● ● ● ● ○ ○ ○ ○ ○ ○  
 Way, way overpriced, but of the three colour hand scanners it is the fastest and does produce the best results.

example, then the green (G) component of every RGB colour will be too much, thus giving bright colours that contain a high ratio of green an overall greenish tinge and making colours that contain a lower ratio of green appear dull and muddy.

And that's what AlfaColor does. It has to do with the power supply. AlfaColor takes its electricity from the external disk drive port, and it simply isn't getting enough. Hence the availability of an optional external power supply unit (PSU), which costs a staggering £39.95 extra.

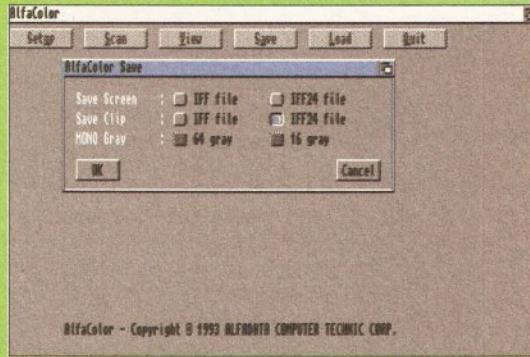


AlfaColor's Quick Scan mode is unique to that package, but it is of little practical use.

save, which is the essence of scanning software. Then there is a puzzling QuickScan mode. It sounds like a neat feature but I can't imagine what you'd use it for – the results obtained from scanning in this way are of a very poor quality. Possibly it is intended for doing

rough "positionals" for preliminary layouts – but why would you bother to take the time to do an inferior scan if you then have to do a proper one?

AlfaColor's strong point is its interface. Housed in a casing that is similar in shape and size to that of an external floppy drive, the interface is solidly built and



AlfaColor – Copyright © 1993 ALFRONTO COMPUTER TECHNIC CORP.

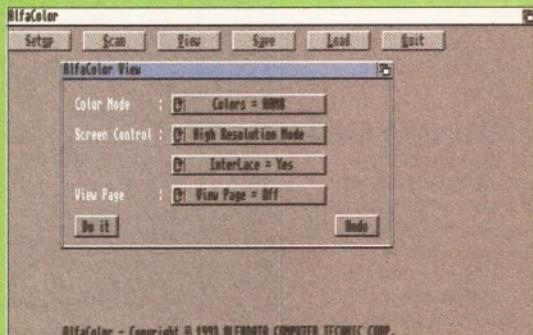
The IFF24 save in AlfaColor produces enormous file sizes because the software doesn't appear to employ any IFF compression. Watch that disk space vanish!

This PSU supplies the interface with 12 volts, which should in theory be enough to fully illuminate the fluorescent tube in the scanner head. But the interface is obviously not putting out the full whack because while the results obtained with AlfaColor are much better with the external PSU attached, bright colours still have a slight greenish tinge. ColorBurst, which uses exactly the same scanner head, comes with a 13 volt external PSU and produces bright, vibrant, well-balanced colours. So AlfaColor

obviously needs another volt. The distributors, Golden Image (UK) Ltd, have known about this problem for some time, yet 12 volts is still (at the time of writing) the only external PSU option.

Like the ColorBurst software, the AlfaColor software is just the essentials – scan, render, crop and

has plenty of cable to enable you to bring it round the side of the Amiga or lift it up on to the Amiga's casing. It plugs into the parallel port, and a printer throughport is built into the rear of the interface, with a push



AlfaColor – Copyright © 1993 ALFRONTO COMPUTER TECHNIC CORP.

AlfaColor's View Page feature enables you to see a thumbnail of complete scans that are larger than the screen – handy for checking that you've got it all.

button on the front that enables you to manually switch between scanner and printer. One of two lights illuminates to inform you whether it is the printer or the scanner which is currently active.

A feature unique to AlfaColor is a buzzer. With the first model Golden

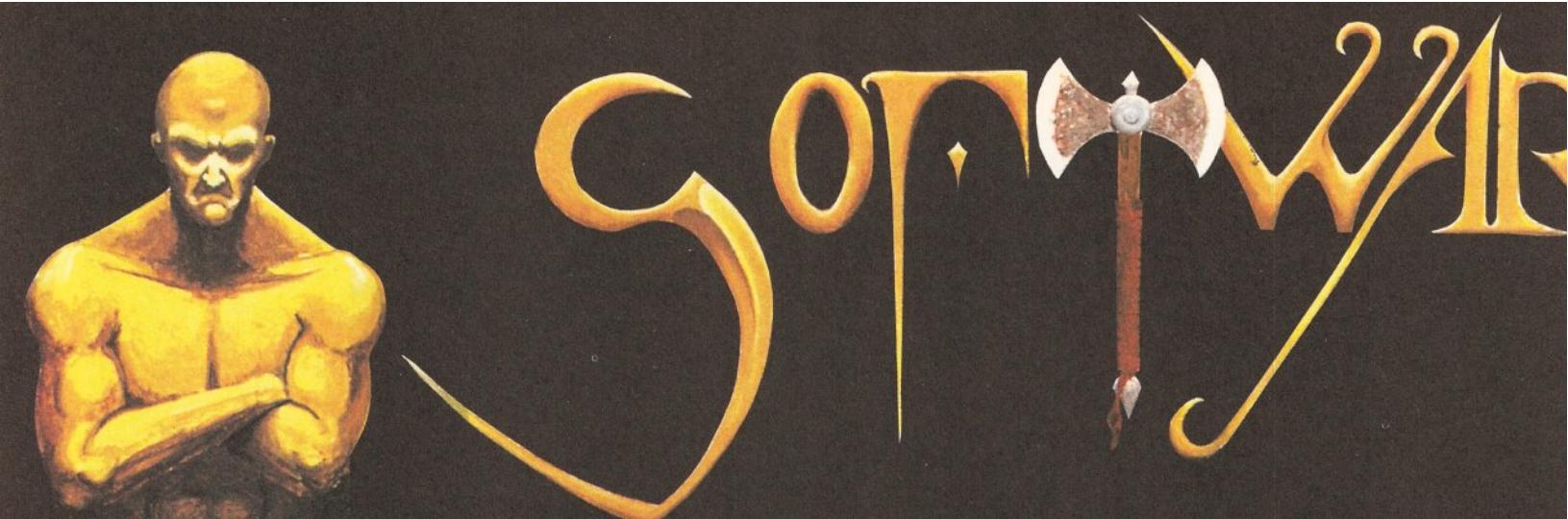
continued on page 20

# ALFACOLOR



When I was a kid my mum was always telling me that greens were good for me. But then she never had to use the AlfaColor hand scanner. It's like this: If the light which the scanner shines on the original image is a "natural" light containing an even amount of

every colour in the spectrum – close to daylight in other words – then the colours picked up by the scanner head should be well balanced and fairly true to the colours in the original. But if the light has an unnatural bias toward any part of the spectrum, too much green for



#### SOFTWARE DEMON LTD

38/40 QUEENS CHAMBERS  
QUEENS STREET  
PENZANCE TR18 4HB  
CORNWALL

PHONE (0736) 331039  
FAX (0736) 331499  
TRADE (0438) 315988

OPEN 6 DAYS A WEEK  
MON-FRI.....9.00AM-6.00PM  
SAT.....10.00AM-3.00PM

#### HOW TO ORDER

##### BY PHONE

To order by phone you'll need your credit card number and expiry date. Please be sure to quote the correct card address so as to avoid delays.

##### BY POST

When ordering by post please include a full description of the goods and the price. It is a good idea to phone before ordering so as to avoid disappointment. Please make all cheques and postal orders payable to SOFTWARE DEMON LTD. and allow 5 working days for cheques to clear.

#### OR VISIT OUR SHOP

If you are in the area or live locally please don't hesitate to visit our shop. Our friendly staff are available for advice and are willing to demonstrate any of our stock to give you a better idea of what you want. Our shop also carries the full range of latest entertainment software and has a games zone where you can park the kids or play the latest games.

*Please note that in our effort to bring you the best value available our prices are subject to change without notice. This does not necessarily mean that the prices will go up.*

#### DELIVERY

All purchases are made up to order and then dispatched. All customer modifications generally take 3-4 days to fit. The goods are then dispatched via our courier service on a 24 hour delivery schedule. If no-one is available to receive the goods then the courier will leave a card explaining how to arrange a delivery to suit you. Saturday delivery can be arranged at a small surcharge.

DELIVERY £10  
PICKUP & FIT SERVICE £29

## COMPUTERS AND HARD DRIVES

### AMIGA A4000/040

The flagship of the Commodore Amiga range. Based around the 68040 processor. Comes with Hard Drive, 2+4 RAM and WB3.

85Mb version	£1899
120Mb version	£1919
170Mb version	£1939
250Mb version	£1979
340Mb version	£2069
426Mb version	£2149

### AMIGA A4000/030

The same specifications as it's big brother but designed around the EC68030 processor. Comes with a Hard Drive, 1+1 RAM and WB3.

FOR 2+2 ADD £69

85Mb version	£939
120Mb version	£969
170Mb version	£1029
220Mb version	£1059
256Mb version	£1089
340Mb version	£1149
426Mb version	£1199

HAVE A SECONDARY HARD DRIVE

FITTED AT THE SAME TIME AS

PURCHASING YOUR A4000

85Mb	£129
120Mb	£149
170Mb	£189
212Mb	£229
250Mb	£249
330Mb	£229

### MONITORS FOR CD32

Why tie-up your TV this Christmas? Buy a composite input monitor for sharper gameplay and graphics.

### 1084S MONITOR PHONE FOR LATEST PRICES AND AVAILABILITY

### AMIGA A1200

#### DESKTOP DYNAMITE PACK

The A1200 sports many features of the A4000 series. Based around a 68020 processor, 2Mb of RAM and WB3 as standard. A full range of hard drives are also available. The desktop dynamite pack is supplied with a range of software written specifically for the AA chipset, including DPaint AGA and Wordworth AGA plus others with a total RRP of over £300

Basic	£289
20Mb HD version	£369
40Mb HD version	£388
60Mb HD version	£445
85Mb HD version	£468
127Mb HD version	£494
170Mb HD version	£528
220Mb HD version	£548
256Mb HD version	£578

#### IDE HARD DRIVE KITS

These drives can be fitted to the A1200 at any time by us or the end user. The kit comes complete with all software necessary to configure the drive.

40Mb	£139
85Mb	£179
120Mb	£279
209Mb	£399

### A1200 HARD DRIVES

These hard drives can be added to your existing system and are installed by our technicians to ensure the best fit. They come with a 1 year return to base warranty on the drive and the computer.

40Mb	£99
85Mb	£179
120Mb	£239
170Mb	£269
250Mb	£329
330Mb	£399
426Mb	£499

All hard drives fitted after time of purchase must add £29 fitting fee

## UPGRADES

### CD ROM DRIVE

The ultimate in data storage and speed transfer rates for the A4000 series. These multisession CD drives come complete with all the necessary mounting software, controller card and software to enable the use of CDTV discs. Welcome to the future of home entertainment.

### CD ROM DRIVE

PLEASE ADD £29 FOR 2 CD FRED FISH DISCS(OVER 100)

### MATHS CO-PRO (PLC)

25MHz 68882 £  
40MHz 68882 £

### MEMORY

single sided SIMMS module for  
1Mb RAM £  
4Mb RAM £

### ACCELERATOR

Our accelerators are produced for the A1200 by GVP, a watch word in quality and reliability. Both boards are user-fittable via the trapdoor so as to maintain your warranty.

### GVP SCSI/RAM BOARD

This board has slots for up to 8Mb RAM, a maths co-pro and has an SCSI interface as standard.

### 0Mb/NO FPU

4MB/33MHz FPU £

### SCSI CABLE KIT

GVP A1230 BOARD

This board features a 68030 processor as standard and also has slots for 8Mb of RAM and maths co-pro.

### 0Mb/NO FPU

4Mb/40MHz FPU £

### GVP ACCESSORIES

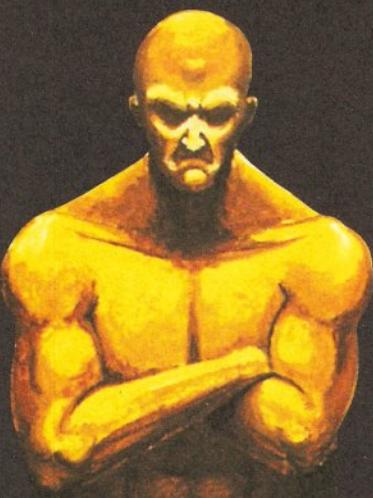
33MHz 68882 FPU £

40MHz 68882 FPU £

32bit 1Mb RAM £

32bit 4Mb RAM £

# DEMONS



## THE OVERDRIVE EXTERNAL HD



### THE OVERDRIVE 35

These external hard drives come in an ABS box styled to match the Amiga 1200. They plug in via the PCMCIA slot and include an external PSU so as not to invalidate your Commodore warranty. Ultra fast data transfer rate of 2Mb/sec. Full 1 year return-to-base guarantee. They come supplied with all the necessary software to mount and configure the drive.

40Mb	£189
85Mb	£249
170Mb	£319
220Mb	£339
250Mb	£369
340Mb	£419
426Mb	£519

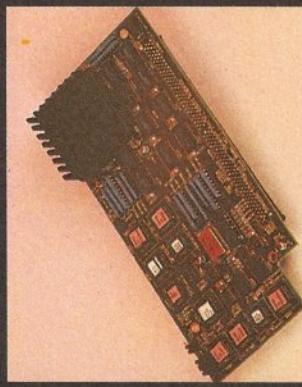
### THE OVERDRIVE 25

The compact version of the OVERDRIVE 3. This model is designed to be transported, it's size has been reduced, the internal hardware has been upgraded to deal with the problems created by moving hard drives around and the power is now drawn internally. So, they just put it in your pocket and away you go.

TYPICAL TRANSFER RATE:-1.2Mb/sec

20Mb	£99
40Mb	£169
60Mb	£199
80Mb	£249

## TURBO CHARGE YOUR A4000/030



### PHOTON UPGRADE

Finding that your A4000/030 isn't quite man enough for your present projects? Never fear Software Demon is here. We are now able to offer an upgrade service, saving all the hassle of selling your old Amiga. So, to upgrade just send in your main CPU module and front panel and we will part-exchange it for a genuine Commodore 040 CPU module; which includes an MMU and built in FPU and a new A4000/040 front panel.

### PHOTON UPGRADE £799

### HELLFIRE UPGRADE AVAILABLE SOON

Our latest development has produced a stunning new way to improve the performance of your A4000/030 at an incredibly low price. It comes in the form of a replacement CPU module which slots in where your present module sits. It's features include a 50MHz standard clock speed; an MMU as standard and a built in 50MHz FPU. To upgrade will require you sending us your original CPU module which we will then part exchange for our new A4000/030 accelerator.

PRICE?  
PLEASE PHONE FOR  
DETAILS  
PROJECTED RRP £299

## LEISURE & ENTERTAINMENT CIVILIZATION AGA

This is it, the bees knees. It's the ultimate god game. This game is Microprose's flagship, it's won a host of awards and now it's been upgraded to make the most of the new AGA chipset. If you don't already own a copy of Civilization then you don't know what you're missing, and if you have an original copy then you'll be stunned by the improvements. So either buy it now or upgrade and get into the most serious game of all time.

### CIVILIZATION AGA UPGRADE £39 £19

To upgrade just send the 4 original disks including £19 and your name and address.

### CD32 CONSOLE

This machine represents the future of home entertainment and video game play. A self contained CD console which you can expand to a full CD based home computer. It is built around true 32bit technology with 256 screen colours, 68020 processor with a 14MHz clock speed and high resolution screen display. Read the reviews and hear what the experts have got to say about Commodore's new baby. I think you'll agree it's time to kiss Sonic Goodbye and wish Mario a fond farewell because the future is here. Optional extras include a keyboard, floppy drive, mouse and a hard drive. All of which will be available soon. CD32 is supplied with 2 great software titles written for the AGA chipset and designed to display the full range of CD32's assets.

### ALL FOR THE MEASLY PRICE OF £279

## SOFTWARE DEMON LTD CUSTOMER SERVICE

### GENERAL POLICY

We at SOFTWARE DEMON LTD endeavour to bring you the best value at the cheapest price possible. This is not easy in this day and age of multi-national corporations bulk buying everything in sight and then shifting it as fast as possible, not caring where it goes just as long as they get the cash. Here we believe in the personal touch, all purchases are made-up to order for each individual then tested and dispatched. No box shifting and no rush. We may not be the fastest but we take pride and great care in what we do. Each customer receives the best service possible.

### OUR GUARANTEES

All our standard Commodore products are genuine UK specification, no foreign manuals and no dangerous electrical standards. They all receive a 1 year on-site warranty.

All the products modified or fitted by SOFTWARE DEMON LTD receive our own 1 year Return-to-Base, fix or replace warranty. If a Software Demon product fails within 1 year of purchase due to faulty parts or workmanship; we will pickup the goods by courier; return them to base; fix or replace them and return them to you free of charge.

### AFTER SALES SERVICE

At SOFTWARE DEMON LTD we firmly believe in caring for our customers, past and present. There will nearly always be somebody available online to answer any question or help with any problems you may have. We are also willing to give advice on purchasing any computer related products and help you choose the right equipment to suit your needs. If you have any queries just phone:-

### TECHNICAL SUPPORT (0736) 331499



ALL PRICES SUBJECT TO CHANGE  
WITHOUT NOTICE E&OE  
ALL TRADEMARKS ACKNOWLEDGED

continued from page 17

Image sent me this buzzer buzzed whenever the interface could sense that data was being lost because you were pulling the head too fast. A second model duly arrived with updated software and interface, and the buzzer had been changed to a blipper. Now, the faster you pull the scanner head, the faster the blipper blips. Bit like a playing card stuck in the spokes of a bicycle. Sounds silly, but the new blipper is incredibly useful for helping you to learn the classic hand-scanning technique of a



Because the AlfaColor is underpowered, scans always have a greenish tinge to them.

**SHOPPING LIST**

AlfaColor	.....	£299
External PSU	.....	£39.95
By AlfaData Computer Technic Corp, 3FL No.8 Lane 263, Chung Yang Road, Nan Kang, Taipei, Taiwan, ROC		
Distributed in the UK by Golden Image (UK) Ltd, Unit 12a Millmead Business Centre, Millmead Road, London N17 9QU. 081 365 1102		

### HANDY TIPS

Hand scanning is a skill that only practice can perfect. For optimum results you need to pull the scanner head quite slowly and very evenly. As is true in life generally, it's the jerks that cause most of the problems. And the reason you jerk the head is almost always because you are pressing down on the head too heavily.

Colour hand scanners have been designed to be pulled more easily than some of the older design monochrome scanners. To start with, the button that puts the head into scan mode is a toggle switch, which means you don't have to keep it held in while pulling the head. The rear of

the head is conveniently raised slightly, a bit like the rear spoiler of a racing car, and these two design features enable you to press the scan button once, rest a finger lightly on the raised lip at the rear of the head, and gently pull the head without any downward pressure at all. No downward pressure means fewer jerks. Fewer jerks means better scans.

Sometimes the physical qualities of the image you are scanning can cause you to jerk the scanner head. The biggest problem is the front of the head catching the top of a photograph right at the start of the scan, causing you to give the head a little tug to free it. The solution is to

slow, even pull, which is crucial to the quality of the scan.

As supplied as standard the interface takes its power from the external floppy drive port. A through connector is provided so that your external floppy drives can still be connected. But as explained earlier, the interface can't get enough power this way, so the external PSU is a requirement rather than an optional extra. Even then the results you get are questionable.

### CHECKOUT ALFACOLOR

#### Scan Quality



Unless you happen to like the colour green, you'll need the external PSU, and even then there is still a slight green tinge to scans that will have to be adjusted using a decent image-processing package.

#### Ease of Use



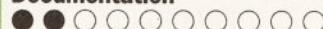
Simple scan and save type software, a doddle to use, but slow compared to the others.

#### Features



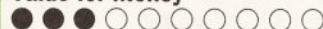
The software is rudimentary, but the excellent interface shows the rivals how it should be done.

#### Documentation



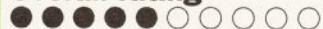
Eight and a half pages of poorly translated English in an A5 dual language booklet. The words "service" and "lip" spring to mind.

#### Value for Money



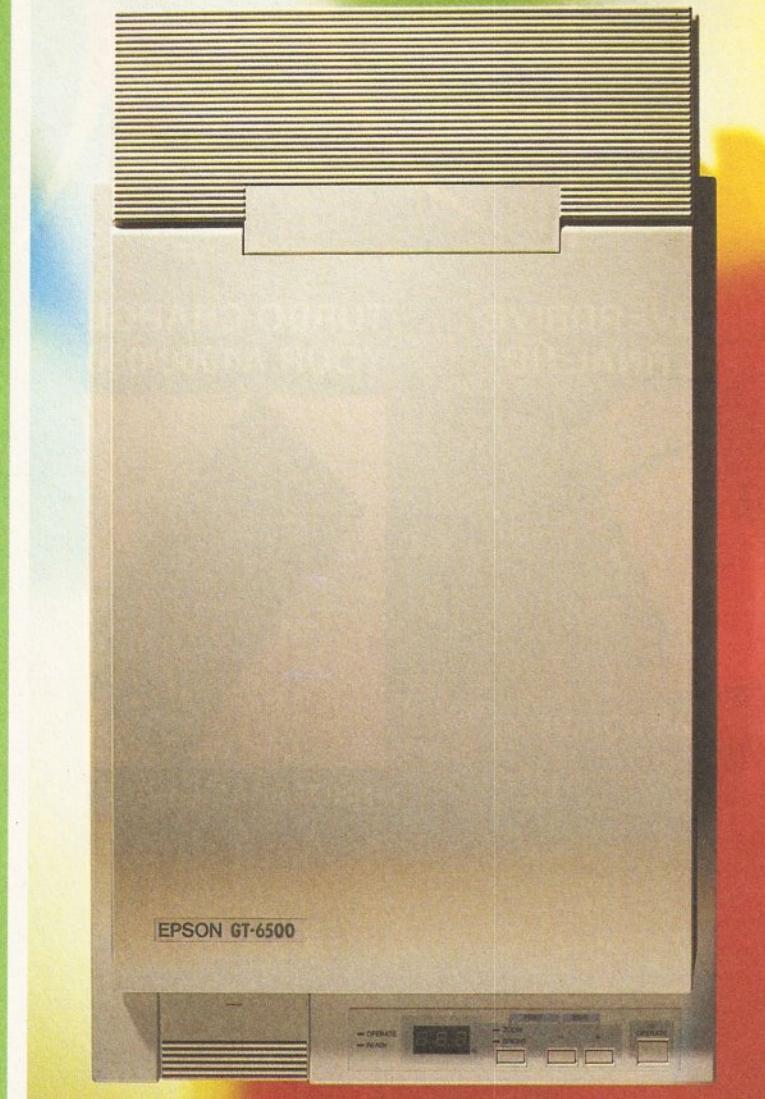
Still way too expensive for what is essentially a hobbyist tool, especially considering that it is next to useless without the external PSU.

#### Overall rating



The person who designed the interface should get an award. Shame about the PSU and slow software.

# EPSON GT-6500



The new lower price of the Epson GT-6500 flatbed colour scanner has attracted many customers and has resulted in four Amiga software packages being written for it, three of which are integrated into image-processing programs. But let's first look at the hardware.

The GT-6500 is an upgraded

version of the GT-6000 reviewed in *Amiga Shopper* 17. It cost £1,300 back then and we reckoned it was the bee's knees - "the kind of useful, high-quality package that gives one faith in the Amiga's ability to be a serious machine," said the reviewer, a certain C Ramshaw.

The GT-6500 now weighs in at

picked up when scanning printed material.

Another way to try to reduce the moiré pattern is to scan the printed image at a slight angle. Often as little as 10 degrees off the upright is enough, but there are no hard and fast rules because many different screen angles are used when publishing colour pictures, so you'll just have to experiment.

Getting the scanning speed right can be a problem, and the quickest way to get a feel for the optimum scanning speed is to scan a circular image over and over again until you get a true circle on the screen every time. If the circle is squashed it means that at some point you were

an amazingly low £799 – and not because the GT-6500 is a cut-down version of the GT-6000 either. It's the complete opposite – faster, better and with even more features.

The scanner is a rather large 22in deep by 13in wide and needs 20in of height when the cover is fully raised. The maximum scanning area is 8.5in by 11.7in, so it will handle A4 length and US Letter width. At the front of the unit are four buttons. One is the on/off switch; the other three enable you to control the zoom and brightness levels when the scanner is connected to a printer. Connected to a printer? Yup, you can scan directly from the GT-6500 to any 80-column or 136-column Epson LQ compatible 24-pin colour printer, or to a Hewlett-Packard PaintJet (HP3630) with parallel interface, so you can use it as a colour photocopier. This feature doesn't work with 9-pin or monochrome printers.

On the rear of the unit is a bi-directional parallel interface, and (for scanning) the cable goes from here to your Amiga's parallel port – and only the parallel port, not to any extra port on a multiport card, nor to a switch box or any other kind of parallel throughport.

What's more, the cable is not a normal printer cable, and it is not provided with the scanner. Power Computing supply one with their own bundled software, but it works only with the Power software. You get one when you buy the ASDG Epson scanner *ADPro* module, and this cable works with all the other software. The GVP software bundled with *ImageFX* doesn't come with a cable, but it works with the ASDG cable and there are pinout details in a README file on the *ImageFX* v1.03 distribution disks (but not on the v1.50 upgrade disks). The *Metadigm* software that comes with Black Belt Systems' *ImageMaster* works with the ASDG cable and a "Standard" cable (presumably as per the pinouts detailed in the GT-6500 manual).

moving the head too quickly and data has been lost. Keep in mind that different resolution and scanning modes will operate at different speeds. The rule of thumb is: the more data that has to be transferred from the scanner to the computer, the slower you will need to scan. So you'll have to pull more slowly for 200 dpi 18-bit colour than for 50 dpi 6-bit greyscale.

Keeping your scanner clean is important. There's the obvious task of ensuring that the clear plastic underneath the head through which the light shines is dirt and dust free. A cotton bud dipped in a little glass cleaner helps here, and for getting the dust out of those nooks and

crannies get one of those cans of compressed air that professional photographers use to clean camera lenses. You should also keep the rollers clean so that you don't have to pull too hard. Use a lint-free cloth for this – otherwise you'll get fluff all over them.

The GT-6500 manual is rather good, providing easy setting-up instructions and lots of useful information about scanning.

There are 23 built-in scanning resolutions, from 50 to 600 dpi. On top of this there is a zoom mode that can be set from 50% to 200% in 1% steps. This gives you the ability to simulate scanning in any resolution from 25 dpi right up to 1,200 dpi.

The GT-6500 can scan from 1 to 8 bits per pixel per primary colour (R, G and B). That means it can scan in two colours (1-bit), four colours (2-bit), eight colours (3-bit), 16 colours (4-bit), and so on up to 16.8 million colours, which is 24-bit. There are seven brightness levels to choose from, five sharpness levels, four colour correction settings, and six gamma correction settings, one of which is downloadable. It has three halftoning modes and four dither patterns, plus facilities for two more downloaded dither patterns.

This unit can scan in three different ways. Colour line sequence mode does one pass of the image, reading red, green and blue for every line. Because in this mode the colour for each pixel can be determined as soon as it is read, you can use the colour correction functions. In the other colour mode, page sequencing, the scanner does one pass of the image each for red, green and blue, then combines these three pages of image data to give full colour information. Colour correction is not available when scanning in this mode, and in fact this is the only way

to switch colour correction off completely. Scans done in page sequence mode look almost exactly the same as those done in line sequence mode, the only discernable difference being that the reds tend to be redder in page sequence mode.

The third scanning mode is monochrome – that's black and white, not shades of grey. Scanning in shades of grey is a colour mode, except all the colours are grey – up to 256 of them. The monochrome mode has a dropout function that enables you to instruct the scanner not to "see" one of either red, green or blue – very handy for scanning line art and text that is on a coloured background. The halftoning and dithering modes were designed for use in this monochrome mode, but some of the software lets you use them in certain colour and greyscale modes – handy for special effects.

All of these built-in features are accessed and controlled by software. Not all the Amiga packages support all the GT-6500 features, and none of them supports the downloadable gamma setting and dither patterns. This is mainly because most of the software was written for the GT-6000

scanner, which has fewer features.

There are four stages to colour flatbed scanning: full page preview; closer preview to mark the scan area more accurately; the actual detailed scan; and finally any necessary retouching or image processing. Bear this in mind while we now look at what software does what.

## CHECKOUT EPSON GT-6500

### Scan Quality

● ● ● ● ● ● ● ● ○  
Produces truly photo-realistic results because it is 24-bit colour.

### Speed

● ● ● ● ● ● ● ● ○  
Depends on the software driving it and the speed of the Amiga you own, but it fairly flies along on a 4000/040.

### Features

● ● ● ● ● ● ● ● ○  
Has 23 different scan resolutions from 50 to 600 dots per inch, eight dithering methods, seven brightness levels, five sharpness levels, four colour correction methods and five gamma correction methods.

### Documentation

● ● ● ● ● ● ● ● ○  
A professional manual that discusses dithering and colour and contains plenty of scanning advice.

### Value for Money

● ● ● ● ● ● ● ● ○  
This kind of equipment used to cost thousands, and the GT-6500 is better than some flatbeds that still do cost thousands.

### Overall rating

● ● ● ● ● ● ● ● ○  
Unbeatable at the price.

**SHOPPING LIST**

**Epson GT-6500 scanner £799**  
By Epson UK Ltd, Campus 100, Maylands Avenue, Hemel Hempstead HP2 7EZ  
0442 61144

**Distributed in the UK by**  
Power Computing Ltd, Unit 8, Railton Road, Woburn Road Industrial Estate, Kempston MK42 7PN.  
0234 843388

# POWERSCAN

**W**hen you buy your GT-6500 from Power Computing you get the *PowerScan Professional* flatbed scanning software and cable free. This software has possibly the poorest user-interface I've ever seen – a crying shame because it is the only software that supports the very useful colour page sequence (three-pass) mode.

Getting the initial full-page preview out of PowerScan is simple enough, although it is one of the great mysteries of life why you have to click on no less than two icons in the shape of hand scanners to get at the **Preview** button. This stupid design flaw sets the scene for almost every feature. There is no **Abort** or **Cancel** button to stop the preview when the area in which you

are interested appears on the screen; instead you have to wait (snore) for the full page to finish. To mark out the area to be scanned you first select another icon of a hand-scanner (?) which provides you with cross-hairs attached to the mouse pointer. You have one chance to mark out the scan area. No moveable box with handles is provided, just the cross-hairs that work in a similar same way to cutting out a brush in a painting program. Professional? Ha. Good job it's free.

The next panel that appears enables you to control the features built into the scanner. From here you select the scan mode and resolution. The panel is ugly and

continued on page 22

crannies get one of those cans of compressed air that professional photographers use to clean camera lenses. You should also keep the rollers clean so that you don't have to pull too hard. Use a lint-free cloth for this – otherwise you'll get fluff all over them.

Do keep in mind that strictly speaking it is a breach of copyright to scan any printed material, except for the purposes of review or "private study or research". You cannot legally use and distribute scans from books or magazines in any way whatsoever without a licence or specific permission from the copyright holder. They are not your property. It's called stealing.

continued from page 21

confusing and provides you with measurements in millimetres only. Come on, guys! What bloody use are millimetres when you are working with a device that scans in pixels (dots) per inch? Yes, millimetres may come in handy, but we *need* inches and pixels.

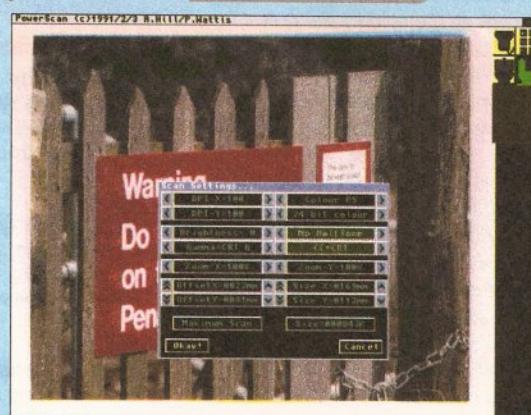
Several features of the GT-6500 cannot be controlled by the PowerScan flatbed software. While it is the only software to support page sequence mode, which gives you redder reds, and the only software that lets you manually set different scan resolutions for the X and Y directions, it does not support the sharpness function, nor the dither patterns (just the three halftones), nor the dropout function, nor the optional transparency unit and document feeder.

I understand that Power

**SHOPPING LIST**

**PowerScan Professional (Flatbed)** £POA

By Power Computing Ltd,  
Unit 8, Railton Road,  
Woburn Road Industrial Estate,  
Kempston MK42 7PN.  
0234 843388



**The PowerScan flatbed software has you looking every which way but loose in its cluttered and confusing Scan Settings panel, and the scan is very fiddly to set up. It nevertheless makes a excellent job of the scan.**

Computing are currently having the software re-written to support these last two options; it needs more. The



**PowerScan's page sequence mode enables you to scan an image in three passes, which often results in better reds with less blue in them.**

PowerScan Professional flatbed software is far too slow and awkward to use professionally, and the fairly frequent crashes show that it has been programmed in a rush as well as designed in a rush. Suffice it to say that it is adequate to enable you to use the GT-6500 if you can't afford better software.

## CHECKOUT POWERSCAN PROFESSIONAL (FLATBED)

### Scan Quality



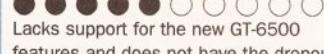
Support for the page sequence mode sometimes gives better reds than the rival packages.

### Ease of Use



Too awful for words.

### Features



Lacks support for the new GT-6500 features and does not have the dropout function.

### Documentation



This kind of software should not need documentation.

### Value for Money



What else can I give it? It's free.

### Overall rating



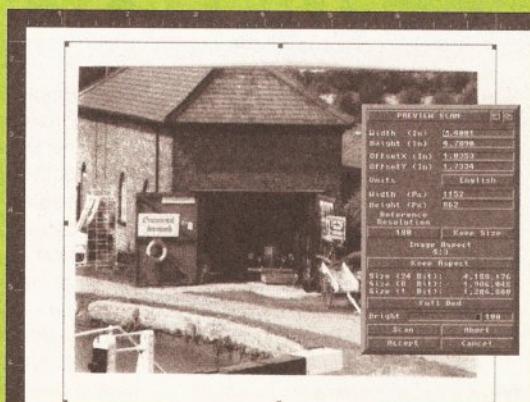
Professional my foot.

## ADPRO MODULE

**T**he ES300C scanner module for *Art Department Professional (ADPro)* is the software most GT-6000 and GT-6500 owners are using on the Amiga – not because it's the best, but because it's the cheapest and the easiest to get hold of.

This software – which gets renamed to *EPSON\_SCAN* after you use the patch on the *ADPro* 2.3 update disks – works in two ways. If you don't own *ADPro* then you can use the *Scan\_To\_Disk* program, which, funnily enough, scans directly to hard disk. All you get is a 16-greys preview, no final colour image is displayed. To get that you'll need *ADPro*, and then you'll use the *EPSON\_SCAN* loader, which is the same as the *Scan\_To\_Disk* program except that after completing the detailed scan it passes the image data to *ADPro*, from where it can be processed and

displayed. If you own a graphics board then of course you will be able to "save" the image to that board from *ADPro*, provided there is an *ADPro* saver for it, and thus be able to view the image in however many colours your graphics board supports. AGA owners can render to 256 colours or HAM-8; the rest of us



**The ADPro Epson scanner module interface may look a little old-fashioned, but it is fast and simple to operate.**

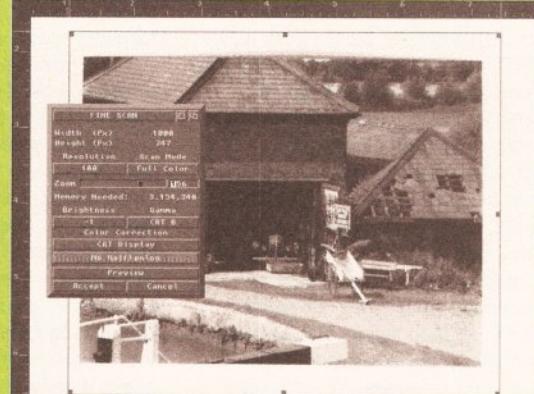
will have to live with fewer colours, which makes very hard work of processing 24-bit images because you can't see what the hell you are doing. Upgrade or suffer.

The *EPSON\_SCAN* module user

interface is in line with the overall *ADPro* user interface, and although this is looking a little old-fashioned these days, it is quick and very usable. The full bed Preview can be aborted as soon as you see what it is you want to scan, and a dragable box with handles is provided for you to encompass the area in question.

Hitting the **Preview** button again zooms in on this area with another quick preview, providing you with the facility to mark the area more accurately.

Since it was written for use with the GT-6000, the *EPSON\_SCAN* *ADPro* module lacks support for all the new GT-6500 features, so there is no sharpness function, no dither patterns (just the three halftones), no support for the transparency unit or document feeder. The dropout function, which is not a new feature – it merely prevents the red, green or blue strobe from firing – is not supported either, and neither is the page sequence mode.



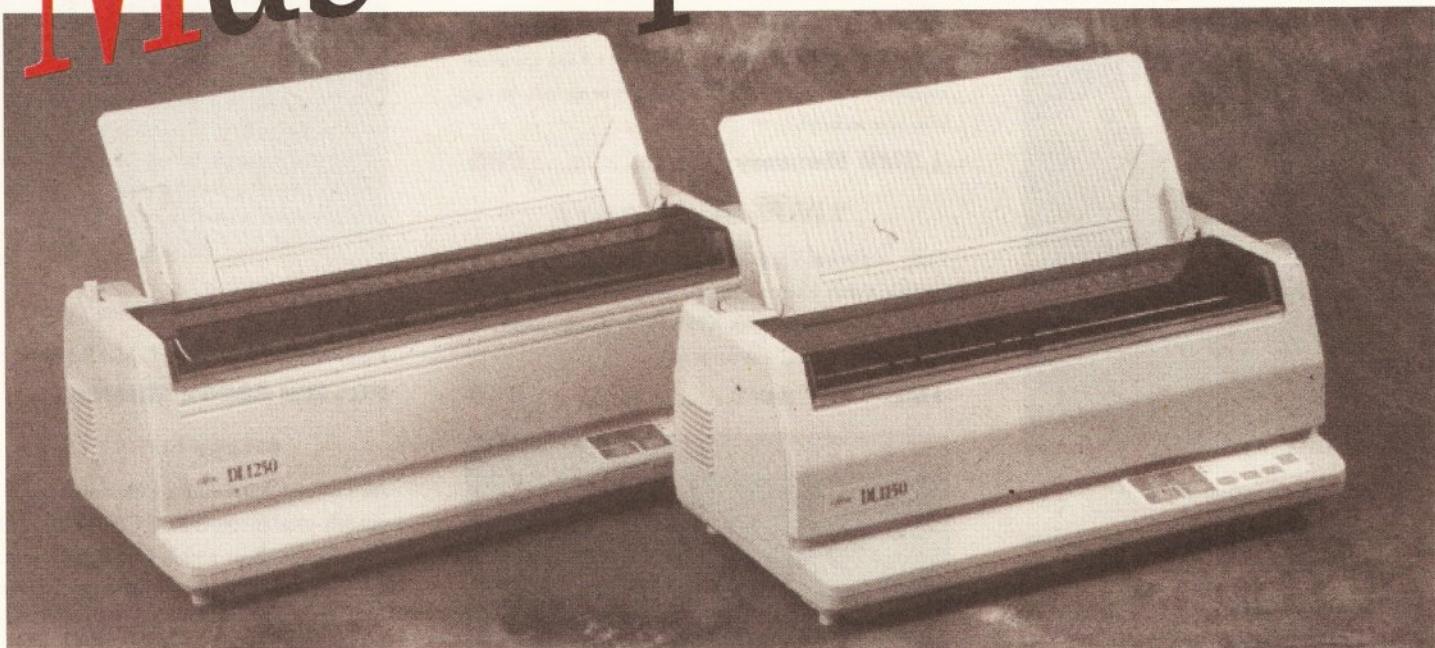
**Full support for the GT-6500 is lacking from the ADPro Epson scanner module because it was written for the previous GT-6000 model, which had fewer features.**

You have three scan modes: 24-bit colour, 256 greys, and monochrome. As described earlier, the GT-6500 can actually scan in any number of bits from 1 to 24, but the *ADPro* module does not support these modes. While it is possible in *ADPro* itself to render the image in 256 colours (8 bits) or HAM-8, there is no facility to reduce the image to fewer bits, so you've lost 12-bit, 15-bit, 18-bit and 21-bit compatibility. Only you will know if this is important to you or not.

Everything else is supported, and there are very useful features that enable you to keep the current

*continued on page 26*

# Two Smart Masterpieces in Colour



The DL1150 Colour and DL1250 are two smart masterpieces from Fujitsu – the second largest computer manufacturer in the world. Thanks to a unique design, these printers will save you a lot of valuable desk space.

The DL1150 is the smaller model and prints in colour on a A3/portrait or A4/landscape. If you need larger printouts, the DL1250 is the perfect choice – it prints on A2 format.

The DL1250 is monochrome but can easily be upgraded to a colour printer by use of an optional colour kit.

The 24-pin dot matrix technology offers high resolution. Many

resident fonts provide a multitude of printout options. You can easily connect your computer with our printers, thanks to Fujitsu's unique DL-menu. Drivers are available, both for Windows and Amiga. For further information please contact your Fujitsu representative, Amiga-Warehouse, Tel. 0753-554338, Fax 0753-551211 or FUJITSU PRINTER PRODUCTS OF EUROPE, Tel 081-573-4444, Fax 081-813-7371 directly.

£259.99  
NEW LOW  
PRICE

**FUJITSU**

COMPUTERS, COMMUNICATIONS, MICROELECTRONICS



### power optical

<b>128MB Optical Internal</b>	£779
<b>128MB Optical External</b>	£879
<b>128MB Optical Disk</b>	£39.95
<b>SCSI Controller A2000</b>	£129

### video backup



Use a VCR as a backup storage device, 200 Amiga floppy disks fit on to a 4Hr tape which can be used for an alternative hard disk backup system. What's more you can watch T.V. on your 1084s monitor.

**£60**

### floptical drive

The Floptical stores 20MB of data on a 3.5" disk (a SCSI interface is required).

<b>Floptical A2000 Kit</b>	£289
<b>Floptical A500 External</b>	£389

### syquest drive

3.5" Removable HD from Syquest. Each cartridge stores 105MB.

<b>3.5" Syquest 17ms</b>	£739
<b>3.5" 105MB Cartridge</b>	£79

### scsi drives

We can supply SCSI or IDE 3.5" drives in many sizes.

<b>52QMB</b>	£169
<b>80MB</b>	£179
<b>160MB</b>	£249
<b>200MB</b>	£349

### ide internal

2.5" Miniature internal HD for the A600/A1200, (these drives come complete with a cable and installation software)

<b>60MB Internal HD</b>	£160
<b>80MB Internal HD</b>	£179
<b>120MB Internal HD</b>	£230

### icd products

<b>Trifecta 2000 LX Bare</b>	£139
<b>Trifecta 2000 LX 80MB HD</b>	£239
<b>Trifecta 2000 LX 160MB HD</b>	£329
<b>Trifecta 2000 LX 200MB HD</b>	£399
<b>Trifecta 500 LX Bare</b>	£195
<b>Trifecta 500 LX 80MB HD</b>	£295
<b>Trifecta 500 LX 160MB HD</b>	£359
<b>Trifecta 500 LX 200MB HD</b>	£459

Goods are sold subject to our standard terms and conditions of sale and are available on request. Specifications and prices are subject to change without notice, trademarks are acknowledged. All prices include VAT.

### a600 memory

1MB RAM with battery backed clock.	
<b>A600 Memory</b>	£39.95

### 1.5MB memory

Fully supports 1MB of chip RAM and compatible with Fatter Agnus. (Requires Kickstart 1.3 and above, not compatible with A500+. Your Amiga needs to be opened, this may effect your warranty)

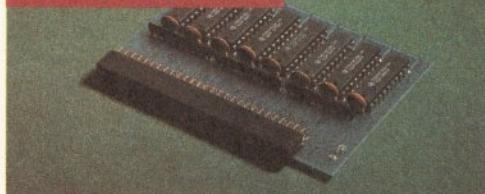
<b>1.5MB Memory</b>	£85
---------------------	-----

### 1MB thru' port

Fully supports 1MB of chip RAM and fully compatible with Fatter Agnus. (Requires Kickstart 1.3 and above, not compatible with A500+. Your Amiga needs to be opened, this may effect your warranty)

<b>1MB Thru' port</b>	£49
-----------------------	-----

### PC501+ card



High quality memory card comes with 1MB of RAM on-board to expand your Amiga A500+ to 2MB of Chip RAM. (Fits in the trap-door, does not affect your warranty)

**£36**

### a500 memory

4 Chip 512K RAM expansion with or without battery backed clock. Free software included. (A500+ compatible)

<b>A500 Card with clock</b>	£29
<b>A500 Card without clock</b>	£24

### a500 8mb board

Expand your Amiga from 2MB to 8MB of RAM. Plugs into side slot, full auto config. and full through port.

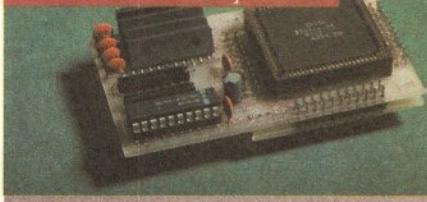
<b>A500 2MB Board</b>	£129
<b>A500 4MB Board</b>	£189
<b>A500 8MB Board</b>	£289

### a2000 8mb board

2MB to 8MB expansion for the A2000. Full auto config. and 12 months warranty

<b>A2000 2MB Board</b>	£99
<b>A2000 4MB Board</b>	£149
<b>A2000 8MB Board</b>	£239

### new 2MB chip ram



Increase your Amiga's memory to 2MB of RAM, including 2MB 8375 Agnus, easy to (internal fitting), unlike every other 2MB RAM board currently available you A500 memory still works! fully compatible.

**£15**

### special offer

PC1208 68882-20MHz OMB RAM board.

<b>PC1208 68882 20MHz</b>	£
---------------------------	---

### power drives

All Power Computing's disk drives come with month guarantee. The PC800B is available Blitz Amiga, Blitz and X-Copy or Cyclone compatible (this drive is only available to registered owners of X-Copy Professional). The drive comes in choice of two colours, black and cream.

<b>PC880B</b> with Blitz Amiga	£
<b>PC880B</b> with Blitz, X-Copy	£
<b>PC880B</b> with black case (CDTV)	£
<b>PC880E</b> Economy Cyclone Comp.	£49.95
<b>PC881</b> Amiga 500 internal drive	£
<b>PC882</b> Amiga 2000 internal drive	£
<b>PC883</b> Dual disk drive	£1

### PC880B drive



The award winning external disk drive which includes Anti-click (cures that annoying click), Virus blocker (prevents viruses) and built in backup hardware. Now available with Cyclone compatible chip.

**£69.95**

### x-backup pro

Extremely powerful disk back-up utility, uses latest custom chip design. Hardware designed by Power Computing.

<b>X-Backup Pro</b>	£29.95
---------------------	--------

A600/A1200 Colour Scanner available soon

# power computing ltd

## epson GT-6500

high resolution 24-bit colour flatbed scanner from Epson. Scan up to A4 in size on this 600DPI scanner. Comes with PowerScan or ASDG (ASDG is an extra £99). GT-8000 scans up to 10DPI.



epson GT6500 PowerScan	£699
epson GT6500 ASDG	£798
epson GT8000 PowerScan	£1199
epson GT8000 ASDG	£1298
Document Feeder	£399



Completely re-designed powerful user interface, produce 256 greyscale images (on a AGA machine), scan 64 greyscales (non AGA Amiga can only display 6), add colour to greyscale images, special effects, new support for 18-bit scanner, add text to scans, available with mono or colour scanner.

£119

## power scanners

powerScanner 4 (mono)	£119
powerScanner 4 (colour)	£239
powerScanner 4 inc. OCR	£159
powerScanner 3	£99
scanner 4 Upgrade inc. interface	£50
scanner 4 Upgrade software	£20
CR Junior Software	£49
CR Full Version Upgrade	£49

CR full version is only available to registered users of OCR Junior

## auto rom sharer

OM Share	£19.95
OM Share inc. v2.04	£50
OM Share inc. v1.3	£39
OM Share A600	£29
OM Share A600 v1.3	£55

## home music kit

00KHz sampling rate, dynamic filtering, anti-aliasing filter, over 32 special effects and many more	
home Music Kit	£29.95
midi Interface	£15.95



The new Amiga CD-32, 32-bit technology, AGA chipset, 256,000 colours, 2MB 32-bit chip RAM, 14MHz 68EC020 processor, MPEG FMV expansion capability, controller pad and two free games.

£289

## amiga 1200

A1200 0MB HD	£295
A1200 60MB HD	£449
A1200 80MB HD	£465
A1200 120MB HD	£519

## amiga 4000

A4000 040 330MB HD 4MB	£2229
A4000 030 330MB HD 4MB	£1399

Both systems come with 2MB of chip RAM

## colour monitors

Commodore 1084st	£179.99
Commodore 1942	£399.99
Commodore 1940	£299.99

Multi-sync monitors are available £POA

## printerrange

Huge range of printers available, Star, Citizen, Hewlett Packard and Epson. Please telephone for prices and your requirements.

## chips & spares

Power Computing can supply a huge range of chips and spares, including RAMS for the Amiga, hard drives, power supply, cables etc.

## supra modems

Supra Modems come complete with English phone cable, RS232 serial cable, heavy duty PSU and comms software, send and receive fax's, 100% compatible with industry standard 'AT' command codes, free trial offer to various services and V42 bis data compression.

Supra Fax Modem+	£119
Supra Fax Modem 32BIS	£249

## electric fingers club

The Power BBS is a bulletin board service. Phone 0234 841503. Speeds up to 16.8K. This service is available 24 hours a day, and its free!

telephone 0234 843388  
facsimile 0234 840234  
technical 0234 841882  
(technical is available from 2-5.30pm)

## pro software

Home Accounts 2	£39
Deluxe Paint 4	£74
Morph Plus	£149
Real 3D Classic	£79
Real 3D v2	£380
SBase Personal 4	£119
SBase Professional 4	£225
Art Expressions	£149
ProDraw v3	£69
Art Department Pro v2.3	£149
Art Dept. Pro conversion	£59
Vista Pro v3	£49
Makepath (Vista)	£25
Terraform (Vista)	£25
Amos Pro	£35
Amos Pro Compiler	£25
Lattice C v6+	£279
Bars & Pipes Pro v2	£265
Superjam v1.1	£95
Technosound Turbo	£45
Brilliance	£152
Directory Opus	£49
Scala 500	£79
Scala Professional	£185
Video Director	£119
Final Copy II	£80
TurboPrint Pro	£39

## miscellaneous products

PowerMouse	£15
Optical Mouse	£29.95
Replacement Optical Mat	£10
100 Branded Disks + Box	£49.95
10 Branded Disks	£4.99
A1200 Dustcover	£5
Intruder 1 Joystick	£29.99
Maverick 1 Joystick	£15.99
Python 1 Joystick	£9.99
Apache 1 Joystick	£7.99

## order form



Return this order form to Power Computing Ltd, Unit 8 Railton Road, Woburn Road Ind. Estate, Kempston, Bedford MK42 7PN  
Name \_\_\_\_\_  
Telephone No. \_\_\_\_\_  
Description \_\_\_\_\_  
I enclose a cheque/P.O. for £ \_\_\_\_\_  
Credit card No. \_\_\_\_\_  
Expiry date \_\_\_\_\_  
Signature \_\_\_\_\_

Address \_\_\_\_\_  
System owned \_\_\_\_\_  
Make cheques payable to Power Computing Ltd  
Power Computing Ltd

continued from page 22



**This 24-bit scan has not been processed in any way, simply scanned by the ADPro Epson scanner module at 150 dpi (the same as all the others) and saved in JPEG format. Brightness, contrast, colour balance and a lot more are adjustable in the ADPro software.**

**SHOPPING LIST**

ADPro ES300C module .....£POA  
By ASDG Inc, 925 Stewart Street, Madison, WI 53713, USA.  
Distributed in the UK by Meridian Software Distribution Ltd, East House, East Road Industrial Estate, East Road, London SW19 1AR.  
081 543 3500

aspect ratio while resizing the scan area or keep the pixel size of an area while adjusting the scan resolution. Measurements are provided in inches, pixels and centimetres. A memory meter continually informs you how much memory the scan requires; while it remains displayed in white you have enough memory, if it turns black you need more. I've tested it fully with the Gigamem virtual memory system, and it works reliably and as fast as Gigamem and your hard drive will allow it to work. (Don't forget you need a memory management unit (MMU) in your

## CHECKOUT ADPro ES300C MODULE

### Scan Quality

● ● ● ● ● ● ● ● ○  
Indistinguishable from the results gained with the rival packages.

### Ease of Use

● ● ● ● ● ● ● ● ○  
So intuitive that after an hour playing around with all the buttons you know all there is to know.

### Features

● ● ● ● ● ○ ○ ○ ○ ○  
Lacks support for the new GT-6500 features, does not have the dropout

function and cannot scan colour in anything but 24 bits.

### Documentation

● ● ● ● ○ ○ ○ ○ ○  
It doesn't need a manual, honest.

### Value for Money

● ● ● ● ○ ○ ○ ○ ○  
You really need the full ADPro package, which adds another £200 to the price.

### Overall rating

● ● ● ● ● ○ ○ ○ ○  
About time ASDG brought it up to date.

Amiga to work with virtual memory.)

When you return to the scanning module after processing a scanned image, the preview of the scan you did previously is still there on-screen and all your settings have been preserved, which makes re-scanning an image a much faster operation than with software that forces you to do another preview scan and mark out the scan area again.

The ADPro module's greatest strengths are its ease of use and its speed. No way do you need a manual to learn how to use it, and it operates and scans faster than any of the rival packages. Its weakness is the lack of support for a long list of features, plus the fact that to use it productively you need ADPro and the Pro Conversion Pack as well, which raises its price to about £300.

## IMAGEMASTER

**M**etaScan, the GT-6500 scanning software that comes with Black Belt Systems' ImageMaster package, is developed by a different company entirely and is available separately in the States, but the simple ARexx script provided is all it takes to get the two working together as if they were just parts of one program. It works with the ASDG cable or a standard cable, but no cable is supplied. The standard cable can be assembled from the pinout details in the scanner manual.

The version of MetaScan that comes free with ImageMaster is missing some features, but these are mostly present in ImageMaster anyway, like support for 24-bit displays. The only important thing missing is a Scan To Disk for those times when you haven't got enough memory for the job in hand. And while with a lot of fluffing about I did get ImageMaster and MetaScan to work with the Gigamem virtual memory system, because of the way ImageMaster works with data, Gigamem runs very, very slowly indeed. Way too slow to be usable.

Once again, MetaScan was written for use with the GT-6000, so it lacks support for the new GT-6500 features – the sharpness function and the four extra dither patterns – and it can't control the transparency

unit or document feeder. Support for the two add-ons and the dither patterns is not that important, but the sharpness function really can make a big difference to the quality of a scan. It is especially useful for de-focussing scans of printed material in order to help eradicate the moiré patterns produced by the screening process during printing. But MetaScan does support the dropout feature, in both monochrome and greyscale modes, which is useful for lifting the details of an image off a uniform background colour.

MetaScan also supports colour scanning in most modes from 8 to 16.8 million colours, and in 8 and 64

colour mode you can even have a halftone enabled.

The biggest problem with this software is memory. MetaScan provides details of how much memory a scan will require in its title bar, and you are expected to know how much memory you have available and to keep an eye on this scan memory figure yourself. Attempt to scan something that requires more memory than there is available and MetaScan won't complain. It will report to ImageMaster how much memory to allocate, so ImageMaster will complain (eventually) if there isn't enough memory available, but this process can take a little time, time during which nothing appears to be happening. Sometimes nothing does happen, usually when you are attempting to rescan an image at a lower resolution because your first attempt resulted in a "not enough memory" message from ImageMaster. Switch off the scanner, close down the software, start all over again. But you soon get used to these idiosyncrasies and it's not much effort to work round them.

Like the ADPro module, MetaScan has features that make accurate

scanning easier. Aspect ratios and pixel sizes can be fixed or free. When pixel size is fixed, the software automatically adjusts the scan resolution and magnification level to get an image as close to the pixel sizes specified as possible. There are nine reference measurement systems, including inches, pixels, centimetres, picas, points and ciceros. MetaScan is the only Epson



**MetaScan, bundled with ImageMaster, has a unique feature that enables you to customise scans' aspect ratios to compensate for different screen displays.**



**ImageMaster reduced this 1,300K 24-bit ILBM produced with MetaScan down to 105K using the least glossy JPEG/JIFIF compression method. ADPro reduced it to 135K; ImageFX could only get it down to 384K. What you are looking at is the 105K JPEG image by the way. (All the others are JPEG'd as well.)**

# IMAGEFX

The latest version of *ImageFX*'s Epson scanner module, the one that comes with the *ImageFX 1.50* upgrade, supports more features of the GT-6500 scanner than any other software – the five levels of sharpness, from Very De-focussed to Very Sharp; the four extra dither patterns; colour and gamma correction, and brightness, and the dropout feature. And this is the only Amiga software that can control the optional transparency unit or document feeder.

*ImageFX* is also unique in providing a colour preview. It's only eight colours, dithered to simulate more, and even the manual admits it is not as detailed as the grey preview and takes twice as long to produce. So why bother? Well, it's there if you want it. But unfortunately, support for the zoom function isn't. Nor is a fixed-pixel-size feature (with which you can specify that you want a scan of say 640 x 512 and, as you drag

the handles of box over the preview scan, the software controls the zoom and scan resolution functions in conjunction so that you get an image of the specified size). *ImageFX* also lacks a fixed aspect ratio feature, which would be handy when you know the shape of the hole you have to fill on the page – if you want to avoid doing any cropping in the DTP software, you have to enter the pixel, inch or metric dimensions by hand.

Too little thought has gone into the preview scan feature as well. If you've scanned an image and find you've done it wrong, to re-scan the image you have to first preview it again. Bit of a time-waster, that one, though I guess it conserves memory because it means the preview screen can be closed between scans.

Luckily the *ImageFX* Epson scanner module has those unique GT-6500 features. And the aces up its sleeve are the built-in so-called virtual memory system (a data

caching system really) and its user interface. Buttons cycle two ways depending on which end of the button you click – *ADPro* and *MetaScan* do the same – but if you double-click in the middle of a button in *ImageFX* you get a "cycle list" which contains all the functions on that button, and you can double-click on any entry in this list to select it. This system means that the interface is uncluttered (and therefore less confusing) and you can still select options very quickly.

The *ImageFX* Epson scanner module scans in 1-bit (black and white), 8-bit (256 greys) or 24-bit (16.8 million colours), just like the *ADPro* module. And like the *ADPro* module, there's no facility to scan colours in fewer bits; only *MetaScan* and *PowerScan* give you this option.

The dropout feature, designed primarily for use with monochrome (1-bit) scans, is highly suspect. You can select a dropout colour in 8-bit and 24-bit mode as well, which could be a useful option, but it doesn't seem to work. If, for example, you select red as the dropout colour, only the red strobe in the scanner should be fired, but you can clearly see that it is firing all three strobes.

It never ceases to amaze me how bugs like this get through beta-



*ImageFX* is currently the only Amiga software that supports the new features built into the GT-6500, including the transparency unit and document feeder.

testing. It's a damn shame because this race is a toss-up between *ImageMaster/MetaScan* and *ImageFX*, and if the Epson scanner module in *ImageFX* worked reliably it would win by a nose. Instead it's lost by a couple of lengths. **AS**



## SHOPPING LIST

**ImageFX** ..... £199.95

By Great Valley Products Inc, 657 Clarke Avenue, King of Prussia, PA 19406, USA.

010-1-215-354-9495

Distributed in the UK by Silica Systems Ltd, 1-4 The Mews, Hatherley Road, Sidcup DA14 4DX.  
081 309 1111

## CHECKOUT IMAGEMASTER MODULE

### Scan Quality

● ● ● ● ● ● ● ● ○  
Same excellent quality as the rival flatbed software.

### Ease of use

● ● ● ● ● ● ● ● ○  
Shoddy memory management lets down an otherwise impeccable user-interface.

### Features

● ● ● ● ● ● ● ● ○  
If it supported the sharpness function it would have got top marks.

### Documentation

● ○ ○ ○ ○ ○ ○ ○ ○  
Strangely, there isn't any documentation provided for *MetaScan*, but then you don't really need any.

### Value for Money

● ● ● ● ● ● ● ● ○  
The price is worth paying: *ImageMaster* has more image-processing features than any other Amiga software.

### Overall rating

● ● ● ● ● ● ● ● ○  
This is the kind of software that keeps you up all night for "just one more go".



*The sharpness function in ImageFX can be used to good effect to de-focus screened images and give a little lift to photographs. This was scanned with the Very Sharp function. You can just about see a difference on-screen (around the hat and the strands of the hair) between it and those produced with its rivals.*

## CHECKOUT IMAGEFX

### Scan Quality

● ● ● ● ● ● ● ● ○  
Same excellent quality as its rivals.

### Ease of use

● ● ● ● ● ● ● ○  
The best user interface of the lot is spoiled by bugs, no fixed aspect ratios, no control over the zoom function, and having to re-preview an image before re-scanning it.

### Features

● ● ● ● ● ● ● ● ○  
The only software that supports the new GT-6500 features.

### Documentation

● ● ● ● ● ○ ○ ○ ○  
The few things that do need explanation are adequately explained.

### Value for Money

● ● ● ● ● ● ● ○  
It costs a powerful lot, but then *ImageFX* is powerful software.

### Overall rating

● ● ● ● ● ● ○ ○  
Get rid of the bugs, support the zoom, think about how it is going to be used, and it could be unbeatable.

## SHOPPING LIST

**ImageMaster** ..... £POA

By Black Belt Systems, 398 Johnson Road, Glasgow, Montana 59230, USA.

Distributed in the UK by

Amiga Centre Scotland, Harlequin House, Walkerburn EH43 6AB.

089 687 583

# All that glisters...?

**Jeff Walker casts his fastidious eye over Brilliance, the program they say will be a new standard in Amiga paint and animation.**

**D**elete Paint is the standard by which all other Amiga painting programs are judged. That's just stating the obvious - I've lost count of how many "Best Amiga Productivity Software" industry awards every version of DPaint has won. It must be 20 or more by now, counting magazine awards. And, to be brutally honest, it hasn't deserved any of them. There have always been better Amiga programs than *Deluxe Paint*, but these programs are quite expensive specialised professional tools that require fast machines and lots of memory, the kind of software that most users have no need for. So *Deluxe Paint* gets the awards and the developers of software like *TV Paint*, *Real 3D*, *Superbase*, *AMAX*, *Caligari*, *Bars & Pipes*, *Scala* and a host of others are left year after year grinding their teeth and sticking pins in a map of Langley, Berks., the home of Electronic Arts.

Pretty soon those same developers may be moving their pins to a map of Folsom, California, because Digital Creations, a company better known for their high-end desktop video hardware like DCTV, have stormed on to the

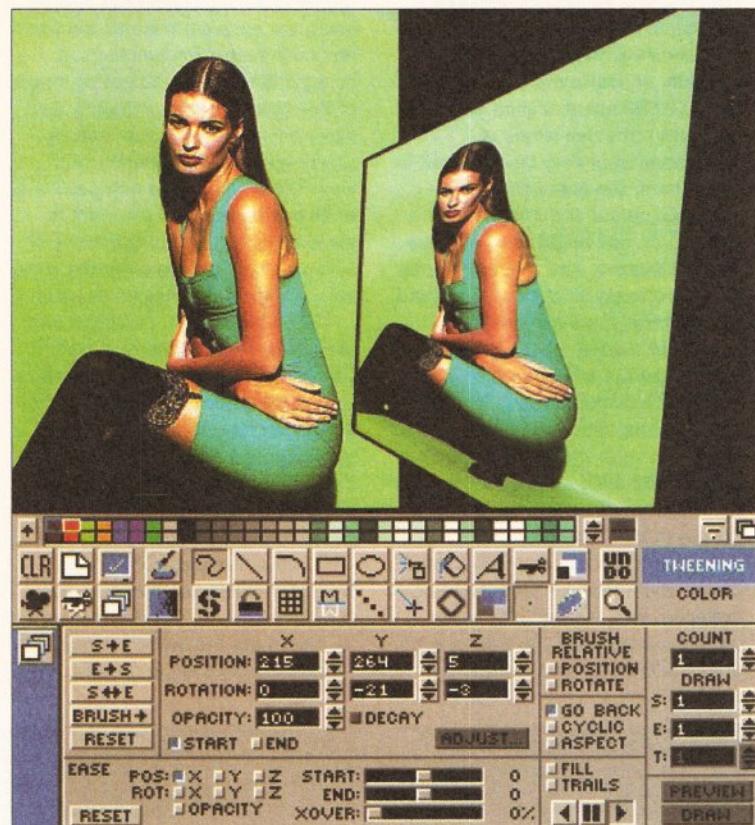
software market with *Brilliance*, a daring attempt, put bluntly, to blow *Deluxe Paint* away.

Have they done it? Well... yes and no. The immediate reaction when you see *Brilliance* for the first time is Wow! But when you take the price into consideration and ponder the "Professional" tag that Digital Creations have tacked on to the "Paint and Animation" description of *Brilliance*, you have to take more than a first impression into account before writing that cheque.

### MOVE AND GROOVE

Let's look at the animation facilities first, because it is in this area more than any other that *Brilliance* fails to live up to its "professional" tag.

For creating animations you have a few basic tools. Firstly there's the facility that Digital Creations call "tweening" but is actually just an automatic move-and-rotate facility; it performs the same function as the **Move** requester in *Deluxe Paint*. Tweening is far too grand a description for this function, and I'm labouring the point because you must be clear that *Brilliance* will not be able to calculate the in-between frames of real motion like walking or talking or similar actions. What



*Perspective effects on brushes are achieved in Brilliance through the Tweening facility by using just one frame for the tween instead of many.*

*Brilliance*'s tweening function does is calculate the in-between frames of a brush that starts at coordinates X,Y,Z on or off the screen, ends at other X,Y,Z coordinates on or off the screen some frames later, and in the process of moving from start to end position the brush may be rotated about its X, Y and Z axes.

*Brilliance*'s Tweening panel has more features than DPaint's equivalent **Move** panel, including an **Opacity** setting that can fade in or fade out a brush over a series of frames. The major improvement is the **Adjust** mode that enables you to set the start/end coordinates and rotation of a brush by interactively manipulating an outline of it on the screen - no more having to use your mind's eye or calculate coordinates. But while this is certainly an enhanced feature, it hardly counts as "professional". Any automatic movement must be in a straight line. If you want your brush (or animbrush) to wander around the screen, this will have to be done in several steps. Along the same lines (no pun intended), to get a brush to speed up or slow down while traversing the screen you must use the **Ease** facility. While this gives you separate control over the velocity of both position and rotation, another improvement on DPaint, to get a

brush to frequently change velocity again requires many steps.

In other words, this kind of animation is still hard work in *Brilliance*, as it is in DPaint. The interactive **Adjust** mode helps to lessen the workload, but a professional would want to specify a "time line", a path for the brush to follow which also enables you to specify the velocity at which the brush moves along every step of that path. *Brilliance* cannot do this. Okay, neither can DPaint, but that is not the point; shouldn't a program that says it is for professionals contain the tools that professionals require?

Nevertheless, *Brilliance*'s automatic move-and-rotate facilities are more comprehensive and work more quickly than those in DPaint, which I suppose is the goal Digital Creations were aiming at.

Control over animbrushes in *Brilliance* is pretty comprehensive too, with easy control over the number of frames to cut and the direction of the cut. **Actual** and **Fit** gadgets enable you to mould an animbrush into more or fewer frames of animation, and a small VCR-style panel is provided to make it easier to paint the animbrush frame by frame. There is a **Morph** facility (what DPaint calls **Metamorph**) that calculates the necessary frames that will transform



*Any brushes you cut can be stored for easy retrieval when you need them - just drop them into the wells provided, the eight "holes" under the main control panel. Note the pattern to the right of the image designating an area that cannot be painted because the image is not as wide as the screen.*

one brush into another in a given number of frames. This isn't proper morphing of course – in fact it looks positively ridiculous when compared to the facilities provided in programs like *Imagemaster*, *CineMorph* and *MorphPlus*. *Brilliance's Morph* feature has its uses – it does at least give you the power to change shapes – but once again it is a mile away from the kind of morphing required for truly professional work. Don't expect to be able to create with *Brilliance* the classic morphing example of changing one person's face into another.

Still with animbrushes, of course these have to be drawn frame by frame before you can cut them. The classic technique for creating animated motion is to draw the first frame, draw the last frame, then decide how many frames you want between and draw them one after

about them.

Before leaving the subject of animations I should mention that *Brilliance* can save them in four formats: the old Op 5 Byte format, the more modern and faster-running Op 8 Word and Op 8 Long formats, and as sequential files.

### TRUE COLOURS

Animation is however only *Brilliance's* second fiddle. I'd hate you to get the impression that *Brilliance* is a poor program because it can't cut the professionally animated ice. *Brilliance* is first and foremost a painting program, so we must consider its potential in this area to form a balanced opinion.

When you buy *Brilliance* you actually get two painting programs, both of which contain the animation facilities discussed above. *Brilliance* itself is a "register-based" program.



A fine array of drawing modes is available, the ghosted buttons denoting which options are not available for use with the tool currently selected.

the other. This is what real tweening is – the process of producing the "in-between" frames. Typically this might be an arm bending and moving, legs bending and walking, a puff of smoke appearing and then dissipating... the sort of stuff that it is impossible to do with the simple move-and-rotate facilities in both *Brilliance* and *DPaint*. So you must do it by hand.

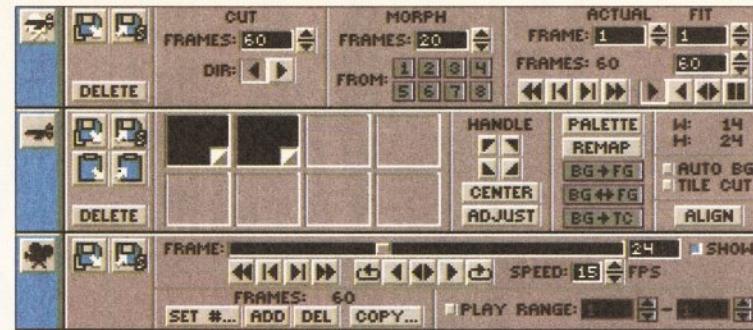
### LIGHT ONION, ANYONE?

Now, something that helps when drawing the in-between frames of an animation is the ability to see the previous or following frame "underneath" the frame you are drawing, thus making it easier for you to draw the current frame. Traditional animators use either a kind of tracing paper or clear acetate for this "onion skin" technique. *DPaint* provides something called a light table that simulates the onion skin technique. *Brilliance* does not. This inadequacy is perhaps not as important as the limited movement and morphing facilities, but it is an inadequacy nevertheless.

So while *Brilliance* absolutely has more animation facilities overall than *DPaint*, and while those animation facilities certainly create frames more quickly and to a higher standard than *DPaint* does, there isn't much that is truly professional

That means it will enable you to paint and animate in 2 to 256 colours. The second program is called *TrueBrilliance*, and this works in HAM-6 and HAM-8 screen modes only. The reason for the "True" part of the name is that although the picture you see on your screen will be in HAM-6 or HAM-8 (so from 4,096 to a maximum of a few hundred thousand colours), colour fidelity is maintained in memory in either 15 or 24 bits (your choice), and another term for 24-bit colour is true colour.

Put briefly, what this means is that *TrueBrilliance* provides you with the ability to paint in up to 16.8 million true colours without the need to own a 24-bit graphics board and 24-bit painting software to see what you are doing. Of course the limitations of the way Hold-And-Modify (HAM) screen modes work mean that what you see on the screen is not exactly what you get if you save your work as a 24-bit ILBM, but I went to the enormous effort of testing *Brilliance* with a 24-bit graphics card (I just happened to have one handy) and can affirm that the colour discrepancies are not great enough to prevent you painting with confidence. Of course if you are never able to view 24-bit pictures in all their glory you'll have to take this



The animbrush (top), tweening (middle) and frames panels contain enough features between them to keep all but the most discerning animator happy.

on trust until such time as you can.

Strangely, *TrueBrilliance* has no support at all for graphics boards. Yes, okay, don't shout, I'm not missing the point. I completely understand and appreciate that the whole thinking behind *TrueBrilliance* is that you don't need to own an expensive graphics board, but how difficult would it have been for Digital Creations to provide some kind of viewing facility via external modules, in the same way that programs like *ADPro*, *ImageFX* and *Imagemaster* do, thus providing the ability to have at least limited support for any graphics board? Still, all the graphics boards come with 24-bit viewers anyway, so I shan't go on about it.

As far as features go, *Brilliance* and *TrueBrilliance* are almost complete clones of each other except for one or two enhancements in *TrueBrilliance* that are there because it isn't limited to a 256-colour palette. So all of what follows applies to both programs unless I say otherwise. A full discussion of the features in *Brilliance* would fill a book. Funnily enough, it does fill a book. It's called The Manual. But the tutorial section of the *Deluxe Paint* manual is larger than the entire

*Brilliance* manual, which contains just 24 pages of tutorials – actually just short walk-throughs, five-minute guided tours, as it were. During these walk-throughs, which cover a microscopic fraction of *Brilliance's* potential, no attempt is made to explain why you are doing what you are doing. For example, the four pages on stencils, a feature which is always one of the most complex in any painting software, amounts to "do this, do that, do this, do that... understand?" The almost blank fourth page of the stencils section would seem an appropriate place to write NO in large red letters. And this in a program that costs £200. In case you are unfamiliar with the UK monetary unit, two hundred of it is a lot of money. You can buy a week's holiday in Spain for less.

### DOING THE DO

Ah well, who reads manuals anyway? What about the program? Well, considering that almost all Amiga users own *Deluxe Paint*, it will be easier to tell you what *Brilliance* can't do, rather than what it can. Filled shapes can't have a different outline colour than the fill colour or

continued on page 32



Retouching Images in this way requires you to work in high magnification, and you have all the tools you need to do it. Alas, in zoom mode *Brilliance* will not allow you to cut a brush that is larger than the zoom window, forcing you to work in a lower magnification than perhaps you would like.



# COMPUTER WORLD

Free FAST! UK DELIVERY • SAME DAY DESPATCH\* • All prices INC. VAT  
COMPUTER WORLD - WORKING TOWARDS BRITISH STANDARD BS 5750 FOR QUALITY & SERVICE



Canon



CITIZEN

HEWLETT  
PACKARD

Panasonic



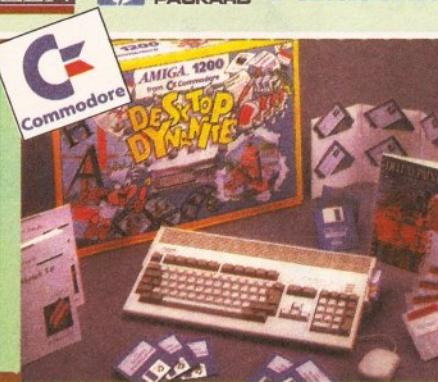
CITIZEN

HEWLETT  
PACKARD

## 5 REASONS

For buying your Desktop Dynamite Pack from Computer World this Christmas

- 1 All machines have high quality Factory Fitted hard drives in them.
- 2 Prices include EXPRESS UK mainland Delivery.
- 3 All machines are covered by a FULL One years On-site maintenance by ICL.
- 4 All machines are fully bench tested by our in-store engineers before despatch.
- 5 Be safe in the knowledge that Computer world have supplied countless packs through the year.



## COMPUTER WORLD PROVIDING YOU WITH THE BEST SERVICE & RANGE

### DESKTOP DYNAMITE

THESE PACKS ARE OFFICIAL DESKTOP DYNAMITE PACKS with built-in hard drives and backed by an official full 1 years on-site warranty with ICL, one of the UK's leading computer maintenance contractors!

PACK INCLUDES: A1200 • Wordworth V2.2 (AGA)  
Amiga Format Gold • Deluxe Paint 4 (AGA)  
Oscar (AGA) • DENNIS (AGA)  
• and Digitas's print manager.



**Base Pack** £339.99

**64Mb HD** £489.99

**85Mb HD** £537.99

**127Mb HD** £564.99

**209Mb HD** £629.99

A1200 Summerpack **£289.99**  
Inc. A1200 Nigel Mansell & Trolls!

A 600 THE WILD, THE WEIRD & THE WICKED  
1 Mb A 600 as standard and includes the excellent value  
Software titles: Deluxe Paint III • Formula One Grand Prix •  
Putty • Pushover.

CW BARGAIN PRICE **£194.99**

A 1200 ACCESSORIES  
CW A1200 real-time clock **£13.99**  
incl. 1 yr warranty & rechargeable battery  
CW A1200 600 HD prep disk **£3.99**  
Control Centre (FREE cable) **£3.99**  
Dust Covers **£5.99**  
Multi-Sync Monitor adaptor cable **£12.99**

## AMIGA CD32

CBM's salvation?? - The worlds first 32-Bit CD games system has been released and is sending shock waves through the industry!! Based on the 68020 Processor and sharing the same chip set as Commodore's flagship, the A1200, it looks set to become a major force within the home computing environment.

FEATURES INCLUDE: A4 size footprint, 2Mb 32-bit graphics, 128K flash memory (storing high scores), includes Fingers & Oscar built-in workbench, Plays audio CD's, 7 titles anticipated before Christmas '93

**£26.99**

James Pond-RoboCod<sup>TM</sup> including 7 CD soundtracks & a 6 minute introduction.

**£17.99**

Now that's what I call games... **£17.99**  
100 great games on CD.

**£29.99**

Pinball Fantasies **£29.99**

**£99.99**

AM570 CD-ROM Fred Fish Disks (1/60) and Hutchinson's Encyclopedia

**£4.99**

Pandora's S. CD - Over 500 Mb of Sound, Clip Art and Animation on one feature packed CD!

**£4.99**

## A1200 - HD UPGRADE PACKS

COMPUTER WORLD are now offering a FREE fitting service in store for Hard Drives to the A1200/A600 Ask for Steve or Chris. This Service is available seven days a week. Add £20 for additional warranty (only available from date of original purchase if proof of purchase is supplied). This service has already proved popular with hundreds of COMPUTER WORLD customers.

DON'T DELAY - VISIT TODAY!

All 2.5" IDE Hard disks offer ultra fast access time and are supplied from leading manufacturers such as Western Digital/Seagate. Pack also includes cable screws and software. 1 year warranty on all models!! 30Mb pack... **£99.99** 60Mb pack... **£169.99**  
85Mb pack... **£194.99**  
120Mb pack... **£209.99**  
A1200 - PCMCIA FAST RAM EXPANSION  
2Mb... **£114.99** 4Mb... **£169.99**

## AMIGA 4000

This has got to be the greatest development to the Amiga since its conception in 1985. The 4000-030's are packed full of features and truly represent a milestone in design and value for money from C.B.M.

### WHAT YOU GET!

68030ec processor • 25MHz clock speed  
• Optional chip and fast RAM configurations (expandable to 16 Mb on mother board, 2 gigabyte max • 9 interfaces • 4-16/32 bit Zorro III expansion slots •

80/120 hard disk and lots more!!

### WHAT YOU PAY!

Due to the varying specification of products being shipped by Commodore in terms of chip and fast memory and in conjunction with the massive increase in prices of additional memory, we can only ask you to

CALL AMIGA SALES FOR BEST PRICES!!

• MASSIVE PRICE CUTS ON ALL 4000's

• PRICES TOO HOT TO PRINT!

• REMEMBER, ALL PRICES INCLUDE

NEXT WORKING DAY DELIVERY

A4000-030 with 80/120 HD options

Chip Ram Fast RAM

A4000-030 80Mb 1 ... ~~£299.99~~ **£26.99**

A4000-030 80Mb 2 ... ~~£299.99~~ **£26.99**

A4000-030 80Mb 3 ... ~~£299.99~~ **£26.99**

A4000-030 80Mb 4 ... ~~£299.99~~ **£26.99**

A4000-030 120Mb 2 ... ~~£299.99~~ **£26.99**

A4000-040 With Massive price reductions call now for the best deal!!

Prices include FREE next working day delivery.

NEED EXTRA FAST RAM?

NOW AVAILABLE! 32-Bit Memory Modules

1 Mb **EPOA** 4 Mb **EPOA** 8 Mb **EPOA**  
EPOA 25 Mb/50 Mb **EPOA**

All memory prices have gone up in price - call AMIGA SALES for the best deals!

## HARD DRIVES

GVP IMPACT SERIES II Hard Drives, the fastest Hard Drive/Controller for the Amiga. Features Game Switch, external SCSI port, FAASTROM SCSI Driver, GVP's custom 40MHz chip and internal RAM expansion up to 8 meg! Units use high specification fast-access QUANTUM Hard Drives coming with 2 yr. guarantee.

500/500+

A500-HD8+ 42 Mb... ~~£194.99~~ **£194.99**

A500-HD8+ 80 Mb... ~~£294.99~~ **£294.99**

A500-HD8+ 120 Mb... ~~£389.99~~ **£389.99**

A500-HD8+ 213 Mb... ~~£564.99~~ **£564.99**

A500-HD8 controller only... **£179.99**

1500/2000

Series II Hard Disk Controller/RAM card... **£122.99**

Series II 42 Mb Hard Disk and RAM card... **£284.99**

Series II 80 Mb Hard Disk and RAM card... **£329.99**

Series II 120 Mb Hard Disk and RAM card... **£406.99**

Series II 213 Mb Hard Disk and RAM card... **£544.99**

## GVP A1200 ACCELERATORS

GVP A1230 ACCELERATOR  
THIS TOP SELLING 68030ec-accelerator chip, running at a blistering 40 Mhz with an optional 40MHz fpu (68882) and memory configurations of up to 32 Mb is simply awesome and it's on demo in our LEEDS SUPER STORE!

0 Mb, no fpu... **£239.99**

4 Mb, no fpu... **£379.99**

4 Mb, 68882 fpu... **£479.99**

## ACCELERATOR HARD DRIVES

500/500+

GVP Combination Accelerators & Hard Drives-The ultimate expansion product for the Amiga 500!

A530 Combi 40MHz+42Mb... ~~£389.99~~ **£389.99**

A530 Combi 40MHz+80Mb... ~~£484.99~~ **£484.99**

A530 Combi 40MHz+120Mb... ~~£579.99~~ **£579.99**

A530 Combi 40MHz+213Mb... ~~£679.99~~ **£679.99**

A530 68882 Co-Processor... **£219.99**

## 1500/2000

GVP G-Force 030-25MHz + 1Mb... **£474.99**

GVP G-Force 030-40MHz + 4Mb... **£575.99**

GVP G-Force 030-50MHz + 4Mb... **£1136.99**

GVP G-Force 040-33MHz + 4Mb... **£1419.99**

## GVP Accelerator RAM

1Mb Simm-32 Bit 60 Nanoseconds... **£65.99**

4Mb Simm-32 Bit 60 Nanoseconds... **£179.99**

4Mb Simm-32 Bit 60 Nanoseconds... **£179.99**

4Mb Simm-32 Bit 60 Nanoseconds... **£179.99**

## OFFICIAL POWER DEALER

These highly rated top selling British-made boards have proved to be market leaders, already renowned for premium quality products. POWER will let no one down with the PC1204 - Gold Award Amiga Format.

1204 MEMORY EXPANSION

FEATURES: Zero wait state • Optional Ultra fast FPU (50MHz) • Real time battery backed clock • Optional Ultra disable switch

PC 4 Mb (no FPU)... **£214.99**

PC 4 Mb (20 Mb 68881 FPU)... **£259.99**

PC 4 Mb (25 Mb 68882 FPU)... **£279.99**

PC 4 Mb (33 MHz 68882 FPU)... **£289.99**

PC 4 Mb (40 Mb 68882 FPU)... **£299.99**

PC 4 Mb (50 Mb 68882 FPU)... **£339.99**

includes real time clock

## PC 1208 TRAPDOOR EXPANSION

FEATURES: SIMM Technology allows use of 1, 2, 4 and 8Mb modules • Optional Ultra fast FPU (50MHz) • Zero wait state • Real time battery backed clock • Low power • Optional FPU disable switch • Easy to fit • PCMCIA Friendly

PC 1208 Bare... **£59.99**

PC 1208 1Mb... **£89.99**

PC 1208 2 Mb... **£139.99**

PC 1208 4 Mb... **£214.99**

PC 1208 8 Mb... **£379.99**

## PC 1208 FPU TRAPDOOR EXPANSION

PC 1208 FPU PLCC PGA

20 Mhz 68881... **£39.99** **£39.99**

33 Mhz 68882... **£76.99** **£67.99**

40 Mhz 68882... **£94.95** **£94.99**

50 Mhz 68882... **N/A** **£132.99**

## SIMMS FOR PC1208

1 Mb SIMM... **£44.99** 2 Mb SIMM... **£92.99**

4 Mb SIMM... **£169.99** 8 Mb SIMM... **£349.99**

4 Mb SIMM... **£169.99** 8 Mb SIMM... **£169.99**

## POWER MEGA CHIP TWO

For AMIGA 500/1500/2000. Upgrade your Amiga to 2 Mb of RAM. Supplied with everything you need including M20375 Agnes chip, Easy to fit, no soldering, internal fitting, still allows A500 trapdoor expansion to work. Fully compatible with all known software

COMPUTER WORLD PRICE... **£144.99**

A 500 +

Expand your RAM to 2 Mb using the trapdoor expansion port.

All boards carry a 2 yr replacement guarantee.

COMPUTER WORLD PRICE... **£39.99**

A 600

PA 601-populated-1Mb...

PA 601-unpopulated-0Mb...

PA 6020 2 Mb PCMCIA card...

PA 6040 4 Mb PCMCIA card...

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99 £169.99

£29.99 £29.99 £174.99

## PRINTERS

COMPUTER WORLD ARE A

### CITIZEN SUPER DEALER

SWIFT 90 COLOUR - 9 PIN  
colour printer is fast quiet, has  
additional fonts and comes complete  
with a 2 year warranty and V.2.0 driver disk!

Swift 90 Mono. **£159.99**

Swift 240 Colour. **£249.99**

Swift 240 Mono. **£259.99**

Swift 200 Colour. **£209.99**

Swift 200 Mono. **£192.99**

Citizen Auto sheet feeder. **£79.99**

Citizen printers come with 2 year warranty. + V.2.0 Amiga driver disk

## BUBBLE JET

MAJOR DEALER • MAJOR DEALER

### anon Canon

CANON BJ 10Sx. **£199.99**  
Fast print times, many fonts, 95% Amiga Inc. BJ10Sx  
Driver Disk! FREE T-SHIRT while stocks last.

CANON BJ 600 (Colour) 360 dpi  
New print control for non banding  
solids • Fast dry inks that don't blur  
or mix • Online Black ink for true  
black on same page • Print plain  
paper, OHP film special papers and envelopes • Epson/IBM  
emulation + Canon advanced drivers • Built in 100 sheet  
autoloader • Auto cleaning function.

CANON BJ 200 95% Amiga Gold. **£309.99**

Feature include: 300 dpi. • Min 80 page Auto sheet feeder •  
minimum 3 pages per minute

CANON BJ 230. **£369.99**

Wide carriage version of BJ200

CANON BJ 300. **£429.99**

80 column bubblejet provides laser quality output.

CANON BJ 330 136 column bubblejet. **£499.99**

CANON BJ ex/sx cartridges. **£17.99**

CANON BJ 200 cartridges. **£24.99**

Bj 10 ex/sx Autosheet feeder. **£49.99**

## HEWLETT PACKARD

H.P. Portable. **£359.99**

H.P. 510 Mono. **£262.99**

Successor to the top selling 500 Mono

H.P. 500 (Colour). **£309.99**

H.P. Deskjet 550 (Colour). **£519.99**

4 x faster than previous HP range • Top sellers •

Superb printers HP printers come with 3 year warranty.

H.P. Deskjet 1200C Laser/Inkjet. **£1369.99**

45 scalable fonts, P.C. level 5, 6 ppm • 300x600 dpi

• 2Mb to 26 Mb • Laserjet compatible.

H.P. Laserjet 4L. **£602.99**

4 ppm • Laser easy to install & use • no on/off switch • 1 tray

100 input 50 output • 26 scalable typefaces • Max of 2Mb.

HP black ink cartridge. **£24.99**

HP colour ink cartridge. **£29.99**

\*Official Double Life

## PRINTERS

### COMPUTER WORLD PRINTER PACK

Containing 1.8m std. printer cable, printer ribbons/cartridge  
and 250 sheets of paper with all printers absolutely **FREE**!

Star Printers Now  
With Extended  
Warranty

LC-100 Colour. **£155.99**

LC24-100. **£189.99**

LC-20. **£132.99**

LC-24-20 (II). **£224.99**

LC-200 Colour. **£199.99**

LC24-200 Colour. **£264.99**

XB24-200 Colour. **£379.99**

SJ48 Bubblejet. **£219.99**

LS-5 Laser Dual Bin, 0.5 Mb. **£589.99**

LS-5ex Laser as above with 1Mb 600x300 dpi. **£669.99**

LS-5TT Laser 2Mb. **£899.99**

CW PRICE. **£169.99**

**NEW NEW £514.99**

A stunning new thermal printer from Star. Full 360 x 360 dpi, in both mono and colour, 3 ppm in mono, 1.4 ppm in colour. Can print up to 500cps. CPS Sheet leader as standard, virtually portable printers, small footprint. Zoom mode to offer easy printing in A4 and A5 sizes. NOW IN STORE. MUST BE SEEN TO BE BELIEVED!!!  
Star printers come with one year warranty.

STAR AUTO SHEET FEEDERS

LC20. **£57.99** LC200. **£59.99**

LC24-200. **£62.99** LC24-20. **£62.99**

SJ48. **£49.99**

SJ 144 cartridges pack of 3. **£36.99**

## PRINTER ACCESSORIES

We have a large range of high quality printer accessories for all the printers we sell including: dust covers from £2.99 -

Ink cartridges from £13.99 - Mono ribbons from £3.50 -

Colour ribbons from £7.99 - Printer stands from £7.99

## SCANNERS

Powerful image processing tools for the office or the home environment.

POWER-Features include: 100-400 dpi • 64-  
Grayscale Thruport to printer • Free Editing software.

Power Scanner v3.0. **£99.99**

Includes Free upgraded editing software.

Power Scanner v3.0+OCR. **£149.99**

Includes Free upgraded editing software.

Power Scanner Colour. **£234.99**

Includes Free upgraded editing software.

GOLDEN IMAGE-

Alfascan Features: Scan and Save • Migraph Jrn. OCR  
software • 400 dpi • 256-Grayscale • Not At120/4000  
compatible.

CW NEW LOW PRICE. **£139.99**

Alfascan + Features: Touch up an merge it • Migraph  
Jrn. OCR software • 400 dpi • 256-Grayscale • 100%  
compatible with all Amigas.

CW PRICE. **£169.99**

**Now level in price  
with SuperB  
Approved**

## MODEMS

### U.S. ROBOTICS AUTHORISED RESELLER

The No 1 name in fax modems, US  
Robotics pride themselves on high  
quality modems at an affordable price.

They come backed with a 5 year  
warranty and are fully B.A.B.T. approved.

THE SPORTSTER. **£249.99**

Comes Complete with optimicons 2 software  
and standard Amiga to Modem Cable. This modem incorporating  
data pump technology, operates at 14400 bps standard. It is 50%  
faster than 9600 bps modems and has full error control and data  
compression. It has the ability for  
throughput to reach 57600 bps.

93% **£284.99**

Vidi Amiga 12 RT (AGA sprt). **£135.99**

Real time colour capture from any video source

Vidi Amiga 24 RT (AGA sprt). **£224.99**

24-80 Real time colour capture from any video source for the  
professional/serious user

Vidi Amiga 12 (AGA version). **£77.99**

Vidi Amiga 12 (Std version). **£75.99**

Rendale Genlock 8802 FMC. **£169.99**

GVP Genlock. **£284.99**

Vidi Amiga 12 min includes postage for extra pages of mail!

HAMA Genlock 292. **£284.99**

(10 Mbit bandwidth) Compatible with all Amigas. Hi band &  
composite video, Separate RGB connector cable, RGB colour  
control for Amiga signal. Output fader control (video  
only)special Amiga 3000 switch.

Rocgen Plus. **£139.99**

Rockey Chromakey. **£129.99**

Rocktech PIP View (picture in picture unit). **£89.99**

Rocgen VGA. **£359.99**

**Now level in price  
with SuperB  
Approved**

THE FASTER YOU GO THE LESS IT COSTS!

2Mb FILE TRANSFER  
Calculated at 5.6 pence per unit  
(peak rate long distance)

256 MINS **£53.08**

1022 MINS **£26.54**

1307 MINS **£2.56**

9.3 MINS **£1.76**

0.2200ps V.22 5000ps 5000b/s 4K256 14.000ps Data Compression

0.2200ps V.22 5000ps 5000b/s 4K256 14.000ps Data Compression

V32 bis+fax. **£383.99**

As above with 5 year warranty, cable & software

Courier HST 16.8. **£399.99**

As above with 5 year warranty, cable & software.

Courier HST Dual 16.8 + Fax. **£509.99**

As above with 5 year warranty, cable & software.

LEADS & CABLES

Premier Control Centre. **£34.99**

For the A600,A500 and A500+

CW Stereo Speakers. **£37.99**

DATA SWITCHES-(25 pin D type)

2 way. **£15.99** 3 way. **£17.99** 4 way. **£19.99**

Connecting Cable for the above. **£9.99**

Action replay cartridge for A500/500+. **£54.99**

Optical Mouse, High precision pointing device. **£29.99**

Hi-Fi Stereo Speakers (new style). **£39.99**

Spectrum Emulator (on 2 disks with 0 games). **£2.99**

Amiga-Multisync. **£9.99**

Amiga-Microvitec. **£9.99**

Amiga-CPC monitor. **£9.99**

Amiga-RGB/TV. **£9.99**

SCSI Cable various. **£9.99**

Printer 1.8m. **£5.99** Printer 2.0m HQ. **£7.99**

AMIGA MUSIC

Technosound-turbo 1. **£29.99**

Technosound-turbo 2. **£36.99**

Pro-Midi 2 Interface. **£24.99**

professional quality midi interface is very flexible. It  
has four ports 2 in, 2 out, (inc. FREE midi lead)

GVP Digital Sound Studio. **£39.99**

GVP Digital Sound Studio+. **£64.99**

MIRACLE KEYBOARD. **£249.99**

It really does teach you how to play!!!

Full size keyboard with built in MIDI interface • 100  
onboard sounds with effects • ability to customise  
lessons by use of artificially intelligent software!!

BOOKS

We stock the best range of Bruce Smith books

Mastering Amiga DOS Vol 1. **£21.95**

Mastering Amiga DOS2 Vol 2. **£19.95**

Mastering Amiga DOS3. **£19.95**

Mastering Amiga W.B. 2. **£19.95**

Mastering Amiga C. **£19.95**

Mastering Amiga Printers. **£19.95**

Mastering Amiga Assembler. **£24.95**

Mastering Amiga System. **£29.95**

Mastering Amiga AMOS. **£19.95**

Mastering Amiga AREXX. **£21.95**

Mastering Amiga Beginners. **£19.95**

Mastering Amiga A600. **£14.95**

A600 Insiders Guide. **£14.95**

A1200 Insiders Guide. **£14.95**

PERSONAL PAINT

Alternative 3D Textures. **£29.99**

Essence. **£49.99**

Pixel 3D Pro. **£144.99**

ENTERTAINING & NAVIGATING

Alternative 3D Textures. **£29.99**

Mastering Amiga AMOS. **£19.95**

Mastering Amiga AREXX. **£21.95**

Mastering Amiga Beginners. **£19.95**

Mastering Amiga A600. **£14.95**

A600 Insiders Guide. **£14.95**

A1200 Insiders Guide. **£14.95**

ENTERTAINING & NAVIGATING

Alternative 3D Textures. **£29.99**

Mastering Amiga AMOS. **£19.95**

Mastering Amiga AREXX. **£21.95**

Mastering Amiga Beginners. **£19.95**

Mastering Amiga A600. **£14.95**

A600 Insiders Guide. **£14.95**

A1200 Insiders Guide. **£14.95**

ENTERTAINING & NAVIGATING

Alternative 3D Textures. **£29.99**

Mastering Amiga AMOS. **£19.95**

Mastering Amiga AREXX. **£21.95**

Mastering Amiga Beginners. **£19.95**

Mastering Amiga A600. **£14.95**

A600 Insiders Guide. **£14.95**

A1200 Insiders Guide. **£14.95**

ENTERTAINING & NAVIGATING

Alternative 3D Textures. **£29.99**

Mastering Amiga AMOS. **£19.95**

Mastering Amiga AREXX. **£21.95**

Mastering Amiga Beginners. **£19.95**

Mastering Amiga A600. **£14.95**

A600 Insiders Guide. **£14.95**

A1200 Insiders Guide. **£14.95**

ENTERTAINING & NAVIGATING

Alternative 3D Textures. **£29.99**

Mastering Amiga AMOS. **£19.95**

Mastering Amiga AREXX. **£21.95**

Mastering Amiga Beginners. **£19.95**

Mastering Amiga A600. **£14.95**

A600 Insiders Guide. **£14.95**

A1200 Insiders Guide. **£14.95**

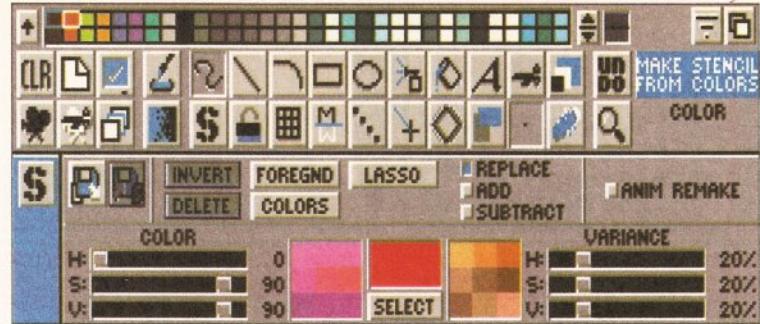
ENTERTAINING & NAVIGATING

continued from page 29

pattern, so this has to be done in two steps. There is no **Blend** drawing mode. *Brilliance*'s equivalent of *DPaint*'s **Symmetry** tool is just a simple X/Y mirror. No traces can be left behind when painting with lines and rectangles and so on, except if it is done by "tweening". There is no block copy facility in the palette requester. And that's about it. Everything else *DPaint* does, *Brilliance* can do, and in almost every instance it does it either faster, better or in a more intuitive way.

The two big selling points for *Brilliance* are its speed and the 24-bit colour support. Even on a 68000-based Amiga, *Brilliance* is fantastically fast in HAM mode compared to rival software. Remember how *Deluxe Paint III* used to feel in 32 colours? *Brilliance* in HAM feels even faster. It doesn't do everything quickly, mind you. Switching anti-aliasing on slows it down considerably. And the wait while *TrueBrilliance* loads anything but a HAM image is quite long. Both of these feel very slow even on a 4000/040. Loading an animation into *TrueBrilliance* takes forever. At least it seems like forever, and the wait feels longer than it really is because there is no progress meter, so you have to sit and stare at that stupid watch that needs winding. A small oversight in the load/save requester is the lack of a **Cancel** button. All the best graphics software will allow you to cancel a load or save operation these days.

As far as speed is concerned no Amiga owner will be unhappy with



The Stencil panel in *TrueBrilliance* is possibly the most complex feature of the software. Some experimentation will be required to learn how it works.

*Brilliance*. Memory is another matter. The back of the box says 2Mb required, 4Mb recommended. As usual you can double those figures to get more sensible ones. You see, the *Brilliance* programs themselves are over half a megabyte each, and 24-bit data takes up a lot of memory. A 640 x 512 picture will consume almost 1Mb. So if you've only 2Mb of memory you will not have enough left for a swap buffer, or a spare page as it is often called. With 4Mb you'll have enough for a 640 x 512 swap buffer, but because of the way the Amiga graphics and expansion memory works, that swap buffer will be consuming precious display memory even when it isn't being displayed. Even then you won't have enough memory for yet another buffer, and one of the major features of *Brilliance* is its ability to have as many pictures or animations loaded at once as memory will allow.

### A BRUSH WITH INFINITY

Thanks to the effectively-unlimited palette in *TrueBrilliance*, the pictures

in every buffer can use as many colours as they need and whatever colours they like, and brushes can be freely cut and pasted between buffers without worrying about re-mapping palettes. Of course the register-based *Brilliance* consumes only a third of the memory that *TrueBrilliance* does, because it is limited to 256 colours – or 8-bit pictures, to put it another way.

The images you load into *Brilliance* need not be screen-sized. For instance if you import a 200 x 400 pixel picture, then the area to the right and below the image is not padded out with the background colour, which is what *DPaint* does – which is a right pain in the bum because you have to cut and save the image as a brush if you want to preserve its dimensions after working on it. Instead *Brilliance* simply masks off that area of the screen with an obvious pattern and will not allow you to paint in it. Major plus point in this workplace, I can tell you.

In *TrueBrilliance*, because you have a 16.8 million colour palette, you can load anything into any buffer, no holds barred, memory permitting of course. I mention this because in the register-based *Brilliance* each buffer must be the same screen mode and resolution (but not necessarily the same dimensions), which restricts your options slightly.

Swapping between buffers is neatly handled via a slider in the buffer panel, from where also you can copy and merge buffers. Alas, complete animations cannot be

merged together, only single frames; there's not even the facility to merge the corresponding frames of two animations.

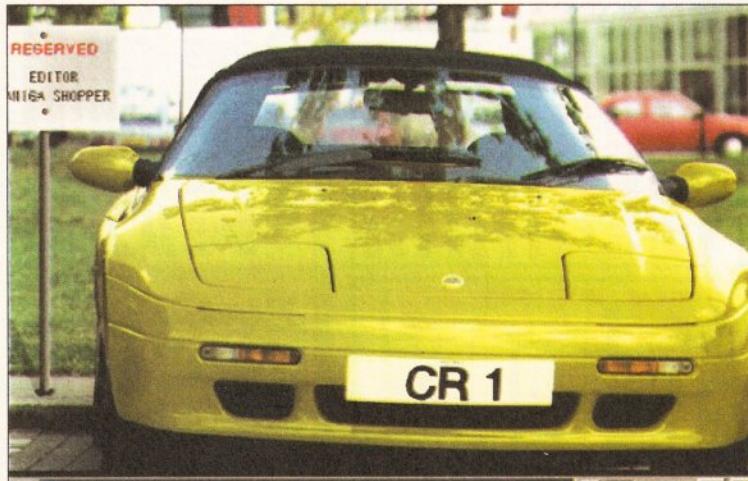
One enormously useful feature is the ability to view a thumbnail of an image that is larger than the screen. Okay, nothing special about that. But clicking the left mouse button on this thumbnail puts you back into normal viewing mode at the position you were at before the thumbnail. Nice. Clicking the right mouse button puts you back into normal viewing mode but moves you to a position centred on where you clicked. Terrific. And this position is remembered, so swapping between buffers will always put you back where you were when you left a buffer. Brilliant!

You can have multiple brushes as well as multiple buffers, although here there is a limit of eight, which is six more than *DPaint*. The brush panel contains wells for the brushes, in which a thumbnail of each is rendered. To pick a brush you simply click on it. Brushes can be re-sized, flipped, bent, sheared, rotated, outlined with one pixel of the current foreground colour, or trimmed by one pixel. The wells take animbrushes as well as ordinary ones, so you can have eight of those on the go at once as well.

### PAINT MY WAGON

*Brilliance* sports a reasonable array of drawing modes – again, a few more than *DPaint*. The **Brighten** and **Darken** modes are useful for creating see-through panels for text to sit on, like the captions you see on the telly. **Darken** can also be used to create realistic shadows. The percentage for **Darken** and **Lighten** can be set in 1% increments.

**Tint** and **Colorize** are useful for changing the colours of objects. When you are working with a 16.8 million colour palette, altering a colour's RGB values in the palette will have no effect on the picture because the palette will automatically re-map itself. If you've got something that is red and you want it green, altering red to green in



Altering the tones of the bodywork from red to yellow was a simple matter of selecting the colour, selecting the **Colorize** draw mode and drawing a freehand filled shape around the outline of the red bits. Nothing to it, really!

## FROM THE HEART

Something that annoys me and a lot of other people no end is YAFR – Yet Another File Requester – and YAFR is one reason why the famous ARP library was developed, and now the ASL library, of course, which is distributed with Workbench 2 onwards, so that all programs could share a common user interface. And that includes file requesters, do you hear me, developers? Digital Creations have

created Yet Another File Requester, and while it is slightly better and certainly bigger than the one in *DPaint*, how simple it would have been to give the user the option of using either the Digital Creations monster or the standard ASL requester, which is what all other good Amiga software does. I'm sure Digital Creations will put this small oversight right with the next release.

# FADE TO BLACK... OR ANY OTHER COLOUR

Brilliance gives you six types of gradient fill to choose from: the classic horizontal, vertical, linear, highlight, spherical and radial progressions. Two-, three- and four-way progressions are not supported, although these can be fudged by tiling. Setting up a gradient is a



**Setting up and using gradients in Brilliance is a breeze – one of its high points. Effects like this can be created in just a few minutes.**

breeze. Up to 128 real or "dynamic" colours can be specified, and Brilliance will automatically calculate the progression (the spread of colours) between any two colours. For instance if you put red at one end of the range and violet at the other

(so all you've done is select two colours) and then set the spread to be the greatest possible, Brilliance will automatically calculate more than 32,000 colours that progress from red to violet. And before the purists write in to remind me that no way are 32,000 colours required to progress from red to violet, that's not the point. In this particular example Brilliance has counted any duplicate colours in that total. The point is that should a gradient progression require that many colours, Brilliance will do it. So slap a green in the middle of that range and the gradient will progress from red to green to violet, traversing the entire spectrum (ROYGBIV) in about 32,000 steps. Of course your screen is only a limited number of pixels wide and high, so selecting progressions that contain more steps than you have pixels wide or high in the picture is a bit silly. In this example, selecting a spread of 4 creates a ROYGBIV

progression of 636 steps, which is enough to produce a smooth gradient of screen width (ish) so that every pixel across is a different colour.

In TrueBrilliance you can have all these colours; in the register-based Brilliance you can have only 256. Not to worry, a dither slider

enables you to simulate smooth changes using either a random or ordered pattern.

The slickest gradient feature is the **Hard Edge**. By specifying a double marker you can get the gradient to progress smoothly from the first dynamic colour to the top dynamic colour in the double marker, and then the gradient will change abruptly to the colour of the bottom double marker and progress smoothly to the next dynamic colour.

Up to eight gradient ranges can be set up but, alas, none can be saved individually, although they do get saved (and imported) with the image.

the palette won't help you. But with the **Tint** and **Colorize** drawing modes it is easy to make sweeping changes to colours. **Tint** affects all colours except black, **Colorize** affects only those pixels that have a colour content, so it has no effect on white, greys and black.

The **Stencil** drawing mode is an easy way to create a mask: by using lines, shapes or freehand you can protect an area of the screen from being over-painted. **Mix**, **Smooth** and **Smear** do what their names suggest. **Average Smear** does the same as **Smear** except that it affects only those pixels with a colour within the gradient range currently selected. **Range** causes each pixel under the brush or area being filled to be incremented or decremented one position in the current gradient range. When the **Cycle** mode is selected, paint applied to the canvas changes, cycling through the colours in the current gradient. The **Random** drawing mode works in a similar way to this except the colours are randomised instead of cycled.

## DITHERING ABOUT

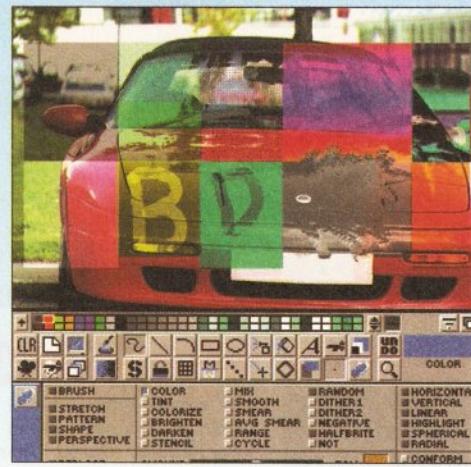
The two dither modes apply paint to the canvas using a dither pattern that changes according to the setting of the dither slider. **Negative** does what it says. **Halfbrite** is for converting colours under the brush to their halfbrite counterparts. **NOT** is a weird mode that games programmers

will doubtless use a lot.

Gradient fills are well supported, one of Brilliance's strong suits in fact – see the panel above for details.

The palette in both Brilliance and TrueBrilliance is controlled via a colour cube. If you've never used a colour cube before you might have trouble wrapping your brain around it because it works in three dimensions. But of all the colour cubes I've seen, this one is the easiest to understand and use. If the cube gives you a headache there is the traditional slider system for RGB, CMY and HSV. The **Saturation** and **Value** components on the HSV scale run from a more sensible 0–100 instead of the 0–255 scale that most other software uses.

The usual drawing tools are provided for freehand, lines, rectangles and ellipses. Two types of curves are supported, the traditional single curvature around the mid point of a curve, and the more complex and more useful curves that have start and end anchor points and a curvature around two user-specified control points. Bezier curves, in other words. Considering that Digital Creations have taken the trouble to implement Bezier curves, it is a puzzle why they didn't extend the facility to lines and shapes. The ability to alter the shape of a polygon by dragging corner points is extremely useful. Taking this a step further, the ability to alter the shape



**Special effects can be created using a mixture of drawing modes. The transparent gradient fills (above the smear here) are deeply wonderful.**

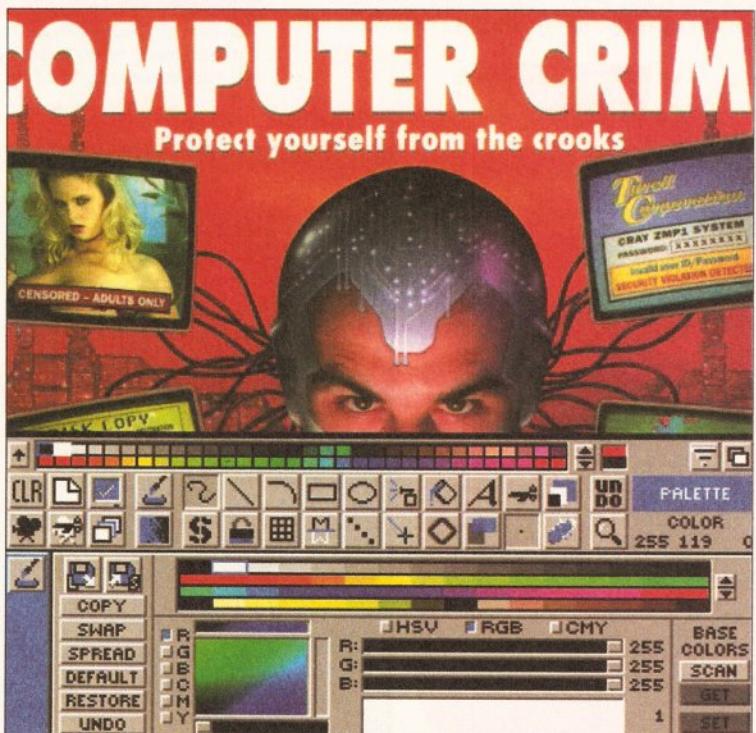
of a brush by dragging corner points is a very quick and intuitive way of adjusting perspective. Am I being too hard on Brilliance if I say that a truly professional painting program should contain these features? Sure, you can achieve perspective via Brilliance's interactive tweening

facility, but this is a cumbersome and inexact method in comparison.

The Airbrush tool has three modes. **Fine spray** is the traditional method that sprays single pixels with specified flow and focus rates.

**Splatter** uses the entire current

*continued on page 36*



**An effectively-unlimited palette in TrueBrilliance means that brushes can always be imported and used in their own colours – no re-mapping is ever required. There's a colour cube as well as sliders for playing with the palette.**

# QUALITY AT THE

## THE FIRST 9Mb 32 BIT INTERNAL RAM CARD FOR AMIGA 1200

### Features:

- ★ Integrated 32 bit Ram conveniently expandable to 5Mb or 9Mb (comes with 1Mb installed). Giving a maximum capacity of up to 11Mb to your Amiga 1200.
- ★ Option to conveniently install on FPU with up to 50MHz and Oscillator to increase performance.
- ★ Real-time battery backed-up clock, a must for hard drive users.
- ★ Auto-config with zero wait states.
- ★ More than twice as fast as the graphic RAM of the Amiga 1200 thanks to the double clock rates and shorter access cycles.
- ★ 100% compatible with all Amiga 1200.
- ★ Easy installation. Just plug in and go.

### Important:

Please note: to operate the Mathematic Co-Processor with clock rates over 14MHz you need a Quartz (Oscillator). The Quartz (Oscillator) must have the same clock rates as the Mathematic Co-Processor.

### ITEMS

ITEMS	PRICE
AF1200 1Mb with clock, no Oscillator, no FPU Processor	£115.00
AF1200 5Mb with clock, no Oscillator, no FPU Processor	£239.00
AF1200 5Mb with clock, Oscillator, 16MHz 68882 FPU	£285.00
AF1200 5Mb with clock, Oscillator, 20MHz 68882 FPU	£290.00
AF1200 5Mb with clock, Oscillator, 25MHz 68882 FPU	£295.00
AF1200 5Mb with clock, Oscillator, 33MHz 68882 FPU	£299.00
AF1200 9Mb with clock, no Oscillator, no FPU Processor	£369.00
AF1200 9Mb with clock, Oscillator, 16MHz 68882 FPU	£415.00
AF1200 9Mb with clock, Oscillator, 20MHz 68882 FPU	£420.00
AF1200 9Mb with clock, Oscillator, 25MHz 68882 FPU	£429.00
AF1200 9Mb with clock, Oscillator, 33MHz 68882 FPU	£439.00

### TRACKBALLS



This three button trackball is at its best, fully compatible with Amiga/Atari computers. Supports auto-fire and comes with two year guarantee and key lock function ..... £29.95  
Two Colour Shining crystal ball ..... £34.95

### CORDLESS INFRA-RED MOUSE

Remote control mouse, long working distance. Long life rechargeable battery. 260 dpi. Price includes hard Mouse Mat.

**£45.00**

### OPTICAL MOUSE

This superb 300dpi Optical Mouse with effortless micro switch buttons. Fast smooth and reliable. Price includes Optical Mouse Pad and Holder.

**£27.95**



### OPTICAL PEN MOUSE

A stylish Pen Mouse with quality construction and smooth fast movement. Micro switch buttons. Ideal for DTP, artwork etc. Price includes Optical Pad.

**£35.95**

### MEGA MOUSE

This 290dpi high resolution Opto-Mechanical Mouse, top quality construction will ensure rapid and smooth movement. With micro switch buttons. A gold award winner in Amiga Format.

Mouse only ..... £10.95  
Mouse with hard mat and mouse holder ..... £14.95

### GASTEINER 400DPI MOUSE



**£14.95**

## The Gasteiner Pledge

*We will beat any nationally advertised price.*

(while stocks last)

All prices are inclusive of VAT

Products advertised represent a small sample of our in-stock range. A complete price list is available on request.

### THE NEW 256,000 COLOUR HAND SCANNER FOR AMIGA

Powerful Colour Image Processing Tools for the Office or Home Environment.  
No longer a "Professional Task" to scan high quality images.

#### Software features:

- ★ Easy to learn and use intuitive user interface.
- ★ Real-Time scanning display on screen.
- ★ Supports 256,000 colours and 64 greys for Amiga 1200 and 4000 with new AGA chip sets.
- ★ Supports 4,096 colours, 16 greys, dithered colour and black & white capabilities for all Amiga models.
- ★ Image size is limited only by the amount of RAM available.
- ★ Memory requested does not have to be Chip RAM.
- ★ Full multi-tasking with all Amiga Computers.
- ★ Intelligent maximum scanning length indication.
- ★ Imports/Exports IFF file formats.

#### System requirements:

- ★ For all Amiga models with a monitor or compatible TV set, 1 megabyte of RAM and a floppy drive.
- ★ More memory and hard disk are recommended but not required.
- ★ Compatible with Amiga WB 1.3 and higher (WB 3.0 also supported).
- ★ Any painting, publishing and OCR programs that load IFF files. Examples: Deluxe Paint, Professional Page, Page Stream, Saxon Publishers, Mgraph OCR.

**PRICE  
£299**

#### Hardware features:

- ★ Easy installation, plug in and go in just minutes.
- ★ 256,000 colours, 105mm (4") scanning width.
- ★ Built-in over speed buzzer to prevent scanning too fast.
- ★ With SC (Super Colour), CG (Colour Grey) MG (Monochrome Grey) and D/T (Dithered/text) modes selection switch.
- ★ Selects 50/100/150/200 DPI by resolution selector switch for SC and CG modes.
- ★ Selects 100/200/300/400 DPI by resolution selector switch for MG and D/T modes.
- ★ Metal interface box with printer through port.

**E&OE. Prices subject to change without notice.**

**Goods subject to availability.**

**Specifications subject to change without notice.**

**All Trademarks acknowledged.**

# RIGHT PRICE...

## MIGRAPH PRODUCTS

ColourBurst Scanner + OCR.....	£399.00
Full OCR Software.....	£99.00
Touch-Up Version 3.1x.....	£49.00
Scanning Tray.....	£49.00
Touch-Up Upgrade & Junior OCR.....	£79.00
Touch-Up Upgrade v3.1x available.....	£29.95
Junior OCR.....	£49.00
Upgrade Junior to full OCR.....	£49.00
Scanning Tray.....	£49.00

## DESPITE APPEARANCES, WE OFFER YOU VERY LITTLE CHOICE

At Gasteiner, we will only offer any product when we are convinced that we can sell it at the best price with the right level of support. It's an approach that our customers appreciate; for we are now celebrating 5 years in the business. So as you look through all the lists of items you'll discover just how little choice you have, you must call now!

## ACCESSORIES

Animal Jungle Design Soft Mouse Mat.....	£5.00
Hard/Soft Mouse Mats.....	£3.00
Auto Mouse/Joystick Switch.....	£12.95
Auto Kickstart Switch for A500/2000.....	£17.95
Expansion Adaptor for 500+.....	£17.95

## AUTO MOUSE/JOYSTICK SWITCH

Automatic Switcher between two input devices with a click of a button. eg. mouse/mouse/joystick/joystick/joystick

**£12.95**

## HARD DRIVES

- ★ External IDE HDD for Amiga A500/A500+
- ★ Internal IDE HDD for Amiga A1500/A2000
- ★ Memory conveniently expandable to 2/4/6/8Mb by using 1M x 4 Zips.
- ★ 100% compatible
- ★ Easy installation, just plug in and go.
- ★ Auto boot, Auto config and zero wait states.

Controller for A500/A500+/A1500/A2000.....	£99.00
Controller + 40Mb Hard Drive.....	£169.00
Controller + 65Mb Hard Drive.....	£249.00
Controller + 85Mb Hard Drive.....	£269.00
Controller + 120Mb Hard Drive.....	£299.00
Controller + 240Mb Hard Drive.....	£399.00

## HARD DRIVES FOR A600/A1200

40Mb + IDE Cable.....	£149.95
65Mb + IDE Cable.....	£199.00
85Mb + IDE Cable.....	£279.00
120Mb + IDE Cable.....	£299.00
Fitting for A600 or A1200.....	£29.95

## MISCELLANEOUS

1Mb RAM with Clock A600.....	£29.95
1Mb RAM without Clock A600.....	£19.95
512k RAM with Clock A500.....	£19.95
1Mb RAM for A500+.....	£19.95
Kickstart Switch.....	£14.95
Bootselector Switch.....	POA
Power Supply for A500.....	£34.95

## GIGAMEM

### VIRTUAL MEMORY FOR AMIGA APPLICATIONS

Most recent powerful applications for the Amiga (eg for graphics, music, animation, raytracing D.T.P) require more main memory than is available or possible to integrate. GigaMem is a program which simulates up to 1 GigaByte memory, which swaps onto any mass storage system (i.e. hard disk). Intelligent management accomplishes simultaneous use of several programs in a multitasking mode.

**System requirements:-**

- ★ GigaMem works with all AMIGA <R> computers with MMU (Memory Management Unit): i.e. Amiga's with 68020 or 68030 accelerator and MMU.
- ★ No restriction on type of HD controller and hard disk.
- ★ GigaMem is compatible with Kickstart 1.2/1.3 and 2.x.

**PRICE £69.95**

## MONITORS

Philips CM8833 MKII.....	£199.00
Commodore 1960 Multisync Monitor.....	£369.00
Commodore 1942 Multisync Monitor.....	£369.00

## COMPUTERS

Amiga A600.....	£179.00
Amiga A600 with 40Mb Hard Disk.....	£269.00
Amiga A1200.....	£289.00
Amiga A1200 with 85Mb Hard Disk.....	£469.00
Amiga A1200 with 170Mb Hard Disk.....	£529.00
Amiga A1200 with 426Mb Hard Disk.....	£799.00
Amiga 4000 030 80Mb Hard Disk.....	£939.00
Amiga 4000 030 120Mb Hard Disk.....	£1039.00
Amiga 4000 030 170Mb Hard Disk ....Special Price £1035.00	£1035.00
Amiga 4000 030 250Mb Hard Disk ....Special Price £1089.00	£1089.00

## 256 GREYSCALE SCANNERS

With latest Touch-up, Merge-it, compatible with all Amiga's including the A1200 & A4000.....	£129.95
With Scan & Save, Merge-it.....	£89.00
With latest Touch-up, Merge-it and Junior OCR.....	£169.00
With Scan & Save, Merge-it and Junior OCR.....	£139.00

Official purchase orders welcome from Educational establishments and major companies. (Strictly 14 days net). Please phone for approval.

All prices include VAT. Prices and specifications subject to change without notice. E&OE.

Carriage at £8 + VAT on all peripherals. Computer Systems at £15 + VAT.

Unit 2 ,  
Millmead Business Centre,  
Mill Mead Road, Tottenham  
Hale, London N17 9QU.

Tel: 081 365 1151 (3 lines)  
Fax: 081 885 1953

Major credit cards accepted and may be subject to 2.5% maximum surcharge.



# ...No COMPROMISE

G  
A  
S  
T  
E  
I  
N  
E  
R

continued from page 33

brush as the "droplets" to spray. With the **Shape** mode the portion of the current brush that does not consist of the current background colour is used as a mask through which paint is sprayed, so every colour except the background colour is protected from being over-painted.

**Fill** works with the current colour or brush, and the manner in which the fill is applied is determined by the settings in the **Draw Mode** panel. For filling with brushes, as well as a straight **replace** there are **stretch**, **pattern**, **shape** and **perspective** options. Colour fills can use most of the drawing modes we've mentioned, including gradients and dithers.

Text is supported, of course; bitmap, CG fonts and colorfonts can be used. The text to be pasted is typed into a gadget. When you hit the <Return> key it becomes a brush, and you paste it down wherever you want using any of the drawing modes available for brushes, including the all-important anti-alias. A preview of the text is provided in the font and size specified, but because it is always previewed on a black background, you won't be able to see it if you have black, or any very dark colour, selected as the current colour. (Whoops!) Plain, bold, italic and underlined styles can be selected for any font. The special kerning character in the fonts created and marketed by Kara Computer Graphics is supported.

### BETTER THAN DPART?

There's stacks more features I've not got space to describe, but I've covered most of the important ones. I think you'll agree that *Brilliance* shines much more brightly in the painting arena than in animation. But



The airbrush tool has **Splatter** and **Shape** modes as well as **Fine Spray**, all flow and focus controllable. Your graffiti could be better than the real thing!

is it worth more than twice the price of *DPaint*?

Yes, I believe it is. Its greater speed and the 24-bit colour fidelity of *TrueBrilliance* alone are worth the extra money, even taking into account the absence of the truly professional features that *Brilliance* and *TrueBrilliance* lack.

The big question is: is it better than *Deluxe Paint*? Well, of course it is. It's miles and miles better. Chalk and cheese. No disrespect to Electronic Arts – *DPaint* has had a good innings and has served Commodore and the Amiga community well – but *Brilliance* is in a different class. If EA want to keep winning awards for *Deluxe Paint*, a complete re-think and re-write will be required – no self-respecting panel of

judges would give the tip to *Deluxe Paint* over *Brilliance*, even taking price into consideration.

But is *Brilliance* truly professional? I can't honestly say that it is. Too many of the powerful features that professionals would require are missing – including macros, by the way, which is staggering considering how easy it is nowadays to provide Amiga programs with an ARexx port. I almost wept when I discovered that in magnification mode you can only cut out brushes from the area that is displayed within the magnification window. And the lack of convolutions means that work with photo-realistic (scanned, digitised) images – which is surely a major use *TrueBrilliance* could be put to – is limited to over-painting with a few basic image-processing tools like **Darken** and **Lighten**. You may argue that *Brilliance* is a painting program, not an image processor, and I would argue that any professional true-colour painting software must by necessity contain a full array of image-processing features.

For working with photo-realistic images the likes of *Imagemaster* and *ImageFX*, despite their limited painting tools, are much more professional programs and cost about the same as *Brilliance*. For professional painting in 16.8 million colours it is hard to beat *TV-Paint* coupled with graphics tablet and display board, a combination that costs about £1,000 upwards (and requires a Zorro slot of course). *Brilliance* doesn't quite reach the professional standards set by the aforementioned software, but then does it really need to? I concede that most Amiga users may not require this power, so they won't miss what



When you are painting, the Opacity slider controls how much of the image underneath – whatever the background may be – will show through when the Transparent tool is activated. Perfect for uses such as caption panels.

they don't need.

And *Brilliance* has one asset that is arguably the most important feature any piece of software can contain. It is solid as a rock. After days of continual use it suddenly dawned on me that I had not crashed once and had not come across a single flaw in any part of the program. Never have I known a first version of any program stand up like this or be so perfectly polished. I tried my best to knock it over, but *Brilliance* handled everything I could throw at it. This is truly a remarkable achievement by Digital Creations and it augurs well for future versions. **AS**

### SHOPPING LIST

**Brilliance** ..... £199.95  
By Digital Creations, PO Box 97, Folsom, CA 95673-0097, USA.

0101 916 344 4825.

#### Distributed in the UK by:

Micro-PACE (UK) Ltd,  
Unit 10 Perth Trading Estate,  
Perth Avenue, Slough SL1 4XX.  
0753 551888

### CHECKOUT

#### BRILLIANCE

##### Features

● ● ● ● ● ● ● ● ● ●  
Does almost everything *DPaint4-AGA* can do and more, and it does it more quickly. But it lacks some features that truly professional 24-bit painting software should have.

##### Documentation

● ● ● ● ● ● ● ● ● ●  
Disappointing – less than half the size of the *DPaint4-AGA* manual, and no colour at all, even when it would have helped an explanation. No *AmigaGuide* on-line help.

##### Ease of Use

● ● ● ● ● ● ● ● ● ●  
The intuitive user interface makes up for the mediocre manual, although many of the panels are very cluttered and hence appear confusing until you are used to them.

##### Speed

● ● ● ● ● ● ● ● ● ●  
Except for a very few functions, most notably anti-aliasing and loading pictures and anims into *TrueBrilliance*, both painting programs outperform the competition by miles.

##### Value for Money

● ● ● ● ● ● ● ● ● ●  
*Brilliance*'s comparatively high price and lack of professional image-processing features take off some of the shine.

##### Overall rating

● ● ● ● ● ● ● ● ● ●  
I bet you were expecting 9 or 10. Go elsewhere if you want a knee-jerk reaction. But it's early days yet – the next version could be a killer.

## CONTENTS AT-A-GLANCE

Accelerators	40, 48
AGA	53
AMOS	40, 48, 54, 56
Anims	53
ARexx	54
Assembler	45, 46
Blitter	46
C	46
Canon printers	39, 48, 53, 56
Canon Studio	53
CD-ROMs	47, 48
Chip RAM	53
Citizen printers	39, 40
Code Clinic	53
Compiler	40
Compugraphic fonts	56
Deluxe Paint	39, 45, 53
DICE	46, 47
Faulty disks	56
Floating point unit	45, 48
Genlocks	53, 55, 56
Hard drives	47, 53
Intellifont	47
Joystick port	45
Keyboard	53, 54
Keymaps	48
LhA	47
Memory management unit	40, 45
MFLOP	48
Microbotics accelerator	40
Monitors	40, 45, 47
Operating system	46
Parallel port	45
Power supply	40, 47
Printer drivers	39, 53
RAM expansions	46, 48, 53, 56
Rocgen	54
Serial connections	40
Space Invaders	48
Star printers	46
Startup-sequence	48
TransWrite	45
TurboPrint Professional	53
V-Lab	54
Vidi Amiga	39
Vista Pro	48
Wordworth	46, 48

OUR EXPERTS TACKLE YOUR REAL-LIFE PROBLEMS

# AMIGA ANSWERS

Got a knotty problem? Can't see the wood for the trees? Getting saw? Turn the page for the plane answers!

## USING THE ICONS TO FIND WHAT A QUESTION'S ABOUT



Questions that raise basic problems or deal with elementary issues feature this icon.



This icon's for general Amiga-related queries or questions that don't fall under other headings.



This is the icon you'll find next to queries related to the whole area of desktop publishing.



Questions about monitors, including television display problems, will feature this icon.



This icon's for queries relating to general hardware, excluding kit covered by other headings.



This icon indicates a question asking for buying advice in any area, hardware or software.



If a query concerns printers, printer drivers and hardcopy problems, this is the icon you'll find.



Questions about coding (no matter which language) will have this icon next to them.



This one's for queries about using your Amiga with video hardware such as genlocks or digitisers.



This icon is for questions about MIDI, sampling, synthesizers and music software.



Queries about specific software packages or programs have this icon next to them.



If your question relates to comms, including modem problems, this is the icon we'll use.

# NO PROBLEM!

**H**ello and welcome to our magazine within a magazine – the place where we endeavour to solve all of your Amiga-related problems. We'll deal with any sort of problem, no matter how trivial or complex, no matter what aspect of the Amiga it involves. We devote more space than any other magazine to this service, and we use icons and jargon-busting boxes extensively to make sure you can find your way around the pages as easily as possible. We also try to put the problems in as wide a context as possible, so that their solutions will benefit not just the person who has written in, but all of you with related problems.

We draw on the services of a talented team of Amiga enthusiasts,



**Gus Chandler** is the man who coordinates the biggest problem-solving section in any Amiga mag

all of whom are widely regarded as experts in their fields. **Mark Smiddy** is our AmigaDOS expert. **Jeff Walker**

is our DTP, fonts and printer correspondent. Then there's **Gary Whiteley**, an expert on video applications and graphics. **Jason Holborn** has mastered the intricacies of AMOS, and with his advice you'll be able to do likewise. Jason also has an encyclopedic knowledge of what's available in the PD world. If you have a query about comms then we'll set recent star of the small screen **Dave Winder** on the case. **Toby Simpson** is our expert code clinician. If you're experiencing problems with anything from C to assembler, try taxing his little grey cells instead. You'll find his special Code Clinic section – in which he removes the bugs from your programs – on page 54. **Wilf Rees** is a man with an education – well, an expert on educational

software, at least. He's also got a jolly useful all-round knowledge of Amiga hardware and software. Last but by no means least is **Jolyon Ralph** – he also knows lots about hardware, and specialises in hard drives and CD-ROM systems.

So that's our batch of boffins – the rest is up to you. Keep those problems rolling in. If you've got any tips or hints to share then send them to us and you could soon be a tanner richer. Please mark the envelope "Tips".

Please don't include an SAE with your questions – we simply receive too much mail to be able to offer a personal reply service.

*Gus Chandler*

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, Avon BA1 2BW. Sorry, but we cannot reply personally to any questions – even if you include an SAE.

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

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

\_\_\_\_\_

Your machine:

A500  A500 Plus  A600  A1000  A1200

A1500  A2000  A3000  A4000

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  2.04/2.05  2.1  3.0

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

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

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

Agus chip (if known) \_\_\_\_\_

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

Extra drive #2 (3.5in/5.25in) 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:

\_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

## DISK FULL

**AB BEGINNERS**  
I am a complete beginner. I have an Amiga 600 with Kickstart 2 and Workbench 3. I've had it one month. I have no hard disk and just the one (internal) disk drive. How can I get my Canon BJ-10ex to work with DPaint 3? I have tried installing a printer driver, but all I get is "Disk (DPaint 3) Full" message. I have tried using other printers, like an Epson, but to no avail.

K Spooner  
Clacton  
Essex

I hope you've made a mistake about which version of Workbench you are using. You should be using Workbench 2.04, 2.05 or 2.1. Workbench 3 was designed for use with the "AGA" Amigas - the 1200 and 4000 - and should not be used with any other Amiga. Check again. The version number will be clearly

printed on the label of your original Workbench disk. Even so, select the **About** item from the **Workbench** menu. It should say Kickstart version 38.x and Workbench version 38.x, where "x" means any number. The "38" is the important bit - Kickstart 3 and Workbench 3 will be version 39.x. If you are using Workbench 3, contact your dealer and ask for the correct Workbench 2 disks.

Chapter 9 of the Workbench manual deals with printers and printer drivers. There are step-by-step instructions on installing a driver under the Printer Drivers heading. You must copy the driver from the **Devs/Printers** drawer on the Extras disk into the **Devs/Printers** drawer on your Workbench disk. The term "**Devs/Printers**" means in the drawer called **Printers** that is in the drawer called **Devs**. (If you are using Workbench 2.1 the **Printers** drawer will be in the **Storage** drawer on the **Extras** disk). If you can't see the **Devs** drawer, click once anywhere in the disk window and select the

## ROMBO'S VIDI AMIGA 12 - A CORRECTION

In a reply to a query from J Burns of Sunderland, Tyne & Wear, in *Amiga Shopper* 30, we said that the *Vidi Amiga 12* software install script overwrites Workbench 3.0 system files with older release 2.0 files, causing the machine to crash and requiring the reinstallation of Workbench. We would like to point out that this was true in version 1 of the software, but this was superseded 18 months ago and all new versions do not have this problem. Rombo Productions (0506 414631) will send an upgrade out to any owner of the *Vidi Amiga 12* who asks for one. The *Vidi Amiga 12* digitiser package currently costs £99.95. Apologies for any confusion.

Workbench **Window>Show/All Files** menu item - that means the **All Files** item from the **Show** sub-menu in the **Windows** menu on the Workbench title bar.

Workbench 2.1 comes with a proper BJ-10 driver, but 2.04 and 2.05 do not, so you should install the EpsonQ driver and ensure that the BJ-10ex dip switches have been set so that the printer is in Epson mode. (The manual will give you details of this.)

After copying the printer driver on to the Workbench disk you must then run the **Prefs/Printer** program and

select and save the EpsonQ driver as your preference.

Now, to use this driver with *DPaint*, or any program come to that, you must always boot with the Workbench disk, not with the *DPaint* disk, then remove the Workbench disk, insert the *DPaint* disk, open the *DPaint* disk window and double-click on the *DPaint* icon.

During all this, and even while running *DPaint*, you may be asked to re-insert the Workbench disk. Fed up with swapping disks? Then buy an external floppy drive or a hard drive. Always remember that the Amiga was

## A PARCEL OF PRINTOUT PUZZLERS



## PRINTERS

- How do I stop my colour printer ribbon from becoming contaminated with black?
- Why is my printer ribbon fraying at the edges, and how do I prevent this happening in future?
- What is the ideal printer driver for my Citizen Pro-dot 24 using *Citizen Print Manager*?
- My printer is very noisy when printing. Is there any way to add a "quiet mode" of some sort?
- I will be buying a DeskJet 500 Colour printer. In *Amiga Shopper* 15 you did a review of a public domain PostScript driver called *Post*. Would this be a suitable driver for the Deskjet?
- Would I be able to install *Post* on *Final Copy 2*?
- Can the maximum dpi of a printer be changed? Is it a hardware or software limitation?
- Imagesetters output at high resolution. When does it become irrelevant how many dots per inch an output device can print at? That is, at what level of resolution does it make no difference to the human eye?
- Does the screen resolution chosen in *Deluxe Paint* have any effect on quality of the printed output?
- How do I get a scanned image that is 4in wide and 1in high to print out at the same size in 360 by 360 dpi from *Deluxe Paint*?
- How wide and high is a low-resolution screen with respect to height and width in inches when outputting to paper?

A J Baldwin  
Thornaby  
Cleveland



## CAUTION

- You can't. There's really no practical way of getting at the print head pins to clean them after you've finished printing in black - and you shouldn't try, because the print head can stay dangerously hot for some time after printing. If the ribbon is picking up black from the paper, try printing the colours before you print the black.
- Because it's getting worn out. Buy a new one.
- Citizen Print Manager* doesn't come with a driver for the Pro-dot. You could try one of the other 24-pin drivers like the Swift24 or 224. You should phone Citizen Technical Help (0753 584111) and whinge at them about it.
- No. Your only solution is to buy one of those sound-proofing boxes they use in offices to reduce the noise level from dot-matrix printers. Or buy a quieter printer of course, like a laser or inkjet.
- No. The DeskJet is not a PostScript printer.
- Yes, but what's the point?
- No. It's a hardware limitation.
- True "type-set quality" is impossible to achieve at anything less than 5,000 dpi, but the untrained human eye can't really discern the difference between 1,270 and 2,540 dpi, the two resolutions used by most PostScript imagesetters. For greys that look like solid shades of grey as opposed to patterns of dots, 600 dpi is a minimum.
- Indirectly, yes. See 10 and 11 below.
- In the *Deluxe Paint Print* requester there are **%Wide** and **%High** gadgets, and you use these to scale the output. What percentage you have to scale by to get the image to print at the same size as the original depends upon what resolution you scanned at:
  - If you scanned at 400 dpi, scale to 19%.
  - If you scanned at 300 dpi, scale to 25%.
  - If you scanned at 200 dpi, scale to 38%.
  - If you scanned at 100 dpi, scale to 75%.
- This is not really a sensible question. Depending on what printer and printer driver you are using, what your Preferences settings are, and what program is doing the printing, Lo-Res screens (320 by 256 pixels) may print out at

different sizes. On top of this, screen resolutions and printer resolutions don't match perfectly, so some more automatic scaling is normally applied.

*Deluxe Paint*, for example, will print a 640 x 512 pixel screen the same width and height on paper as a 320 x 256 pixel screen. How does it know what size to print the picture? Well, it takes its cue from the **Paper Size**, **Print Pitch** and **Right Margin** settings in Workbench **Printer** preferences, and then scales the image to print at the largest size possible.

Look, try an experiment. In Workbench **Printer** preferences change the **Print Pitch** to **12-Elite**, and the **Right Margin** to **60**. Hit the **Use** button so you don't save these silly settings permanently. Now run *Deluxe Paint* (without rebooting the Amiga, else you'll lose the prefs settings), turn the screen background white and draw a black border all around the screen - one pixel thick will do; doesn't matter what screen mode you are in. Now Print that picture. Select the left-hand placement gadget and select **Yes** for a form feed before hitting the **Print** button.

When it's done, get out your ruler and measure from the left-hand edge of the paper to the right-hand edge of the box that has been printed. It's about five inches, is it not?

That's because a **Right Margin** of 60 characters at **12-Elite** Print Pitch (12 characters per inch) has told the Amiga that the page width is effectively 5 inches - 60 divided by 12 is 5. This has overridden the normal page width that is governed by the **Paper Size** option. The reason it is not exactly five inches is that the image has been scaled and small number-rounding errors have occurred.

Change the **Print Pitch** to **10-Pica** and the same picture will print about 6 inches wide - 60 divided by 10 equals 6.

So your question is the same as asking how long is a length of elastic. **JW**

designed to be booted from the Workbench disk as supplied by Commodore, not anyone else's version of a Workbench disk, even if that software suggests that you boot from its disk and not Workbench. If you do not boot from a proper Workbench disk it will be impossible for me, or anyone else, to help with your problems.

To get a proper BJ-10ex driver call Canon Technical Support on 081 647 4044 and ask for the free Canon Drivers disk. JW

### SOUNDS BAD...



I bought a second-hand Amiga 500 six months ago with a Philips CM8833 monitor, but the monitor has recently developed a "beating" sound in the right-hand speaker and total loss of all other sound output. D McIver

New Cumnock  
Ayrshire

If possible test the monitor with another Amiga and the Amiga with another monitor in order to isolate whether the problem is Amiga or monitor. If there is a fault with the monitor then a qualified TV repair technician is your best bet – monitors contain very high voltages that are potentially lethal and best left in expert hands.

If it's the Amiga then try one of the repair shops which advertise in *Amiga Shopper*. In any case, don't try to do the work yourself unless you are confident you know what you are doing. GW

### AMOS ANGST



I already have AMOS and I am considering upgrading to AMOS Professional. I have **BUYING** read very good reports about AMOS Professional, but considerable doubts have now started to creep into my mind. I phoned Shadow Software to enquire about their *Tome* extension for AMOS and was informed that *Tome* is not compatible with AMOS Professional. The guy I spoke to didn't seem too worried about this either – according to Shadow, no one is using AMOS Professional anyway! He said all the top "professional" AMOS coders are still using the "classic" version of AMOS. This seems to be a rather strange view, especially from a software house that is reliant on the success of AMOS.

If AMOS Pro is bugged, why is it that none of the reviewers has mentioned this? A list of known bugs and how to get around them would be very useful indeed and would certainly help potential

### buyers decide whether AMOS Professional is more trouble than its worth.

**My personal view is that if AMOS Professional is half as good as the reviewers claim, then it'll still be a very good package indeed. That is, providing the product is not so bugged that it's unusable! If it is, why have Europress failed to address these problems? They have, after all, released a total of three "update" disks for the language!**

N Corrigan  
Northampton

Something tells me that the person you spoke to at Shadow Software was Aaron Fothergill, who is well known for his dislike of AMOS Professional. Aaron has expressed these views to me also, but as far as I'm concerned, they're totally unfounded. I've even spoken to Richard Vanner, product manager at Europress Software, for comment on Aaron's views and Richard states categorically that AMOS Professional had no bugs that they were aware of. As a "professional" user of AMOS (I'm not sure about the "top" bit!), I use AMOS Professional and I've certainly found very few bugs in it. Indeed, I've just put the final touches to a book on AMOS programming entitled *Ultimate AMOS* (available in a bookstore near you very soon!) which includes a disk containing over 800K of source code, every single "K" of which was coded in AMOS Professional. About the only major bug that I've ever encountered is with AMOS's "Dual Playfield" command – which, incidentally, doesn't work properly under the "classic" version of AMOS either.

I think that Aaron is creating a lot of problems for himself by not making *Tome* AMOS Professional compatible. More and more AMOS users are upgrading to AMOS Pro and it's only a matter of time before another software house jumps in and fills the gap.

At the end of the day, it's down to you to decide whether or not you should upgrade to AMOS

Professional. With the AMOS Pro compiler now out on the streets, AMOS Professional certainly lives up to its name. On the rare occasions I do have to switch back to test that my AMOS Pro code is downwardly compatible, AMOS "classic" seems positively prehistoric! JH

• For a full review of the AMOS Pro compiler, see *Amiga Shopper* 30. If you missed that issue, our back issues service is on page 90.

### ANOTHER SERIAL MURDER



**PRINTERS** I recently bought a second-hand Citizen 120D printer. The only problem is that instead of the usual parallel interface, it is fitted with a serial one.

I have made myself a basic serial cable to connect it to the serial port of my Amiga 500 by connecting pins 7 to 7 (ground), 1 to 2, and 2 to 1 (crossing the TXD and RXD connections). This cable has enabled me to print text files, but only by copying files to SER: from a Shell because my text editor only supports parallel printers.

However, I have *Deluxe Paint*, and this has a serial driver option. The problem is I don't know the correct configuration for the printer's dip switches (there are 16) and I don't know whether I should have more wires connected in my lead in order to print graphics.

I have been experimenting with various combinations of switches. Most combinations print nothing at all, or a full page of garbage. One combination prints the top inch or so perfectly, then stops.

Is it possible for you to tell me what cable and dip switch settings I should use, and do you have an address for Citizen?

D J Butcher  
Horbury Bridge  
West Yorks

To get the details of the serial interface and the dip switch settings you'll need a manual. To get the

manual you'll have to contact Citizen. I wouldn't write them a letter if I were you, it'll just end up on that massive pile of other letters that have yet to be answered. Phone them on 0753 584111. While you're there, ask how to go about swapping the serial interface for a parallel one. JW

### POWER PROBLEMS



**BUYING** My power supply has a fault that appears to lie in the Thyristor marked RBX44Y018. I would like to do the repair myself, but I cannot find anywhere that stocks individual components. If, in your opinion, I should have the supply repaired, where should I have it done? Alternatively, should I get a replacement unit?

Alex Baldwin  
Thornaby  
Cleveland

There are a number of stockists specialising in electronic spares such as this – in particular, Tandy and Maplin both have stores near you, in Middlesbrough. Maplin's mail order sales number is 0702 554161; Customer Services (non-technical enquiries) 0702 552911. You could also try Bond & Mason in Church Road, Stockton, and Burniston Electronics on Borough Road in Middlesbrough. I could not find the equivalent spare in any of the usual component lists and it might be a custom-made part, but Burniston's suggested that if you brought the unit to them they would try to ascertain a suitable equivalent.

A number of regular advertisers in *Amiga Shopper* can supply you with a replacement power supply. The trick is to shop around, although I suspect most will be selling replacement switching power supplies for around £40. It is possible to use a standard PC power supply by fitting the correct plug, but this is not an option I recommend.

MS

### PULLING A FAST ONE?



**HARDWARE** I have purchased a MicroBotics M1230XA accelerator for the A1200. The card contained a 50MHz 68030 chip with MMU and 4Mb of RAM. I have some problems with it:

1. When I'm using software such as *SYSINFO* and *AIBB*, they indicate that the MMU is present, but not on. How do I switch my MMU on?
2. When the extra 4Mb of RAM is added, certain programs refuse to work properly. *Home Accounts 2* will not allow a date to be entered correctly. I am not using the clock supplied with the M1230XA, but the Prima clock module instead. I don't

continued on page 45

## JARGON BUSTING

**Accelerator** – A device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed. An accelerator is useful for calculation-intensive applications, such as 3-D rendering.

**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.

**Serial port** – An interface at the back of the Amiga, used mainly for connecting to a modem for communications purposes. With the serial port, data is sent at one eighth of the speed of the parallel port, which is more usually used for connecting to a printer.

# New Horizon Computers

The Hard Drive Specialist

## Amiga 1200/Hard Drive Desktop Dynamite now Available

**80 MEG**  
**£465.00**  
INC VAT & DELIVERY

Phone For Latest Prices

**40MEG**  
**£389.00**  
INC VAT & DELIVERY



**Other  
Sizes Available  
Call for Latest Prices**

**INCLUDES 2 YR  
EXTENDED WARRANTY**

### HARD DRIVE DIY KITS FOR A1200 OR A600

INCLUDES HD TOOL BOX AND INSTALL 3.0/2.0

PHONE FOR LATEST LOW LOW PRICES

20, 40, 63, 80, 85, 128, 137 & 210 Meg in Stock Now !!!

## MONITORS



MODEL	SIZE	DOT	RES	SOUND	SCAN	PRICE
Philips 8833 Mk II	14"	.31	LOW	YES	15KHZ	POA
Commodore 1084 ST	14"	.31	LOW	YES	15KHZ	POA
Commodore 1960	14"	.31	MED	NO	MULTI	POA
Commodore 1940	14"	.39	MED	YES	DUAL	POA
Commodore 1942	14"	.28	MED	YES	DUAL	POA
Microvitec Cubscan	14"	.28	MED	NO	MULTI	POA
New Horizon Vanilla	15"	.28	HIGH	NO	MULTI	POA
New Horizon Vanilla	17"	.31	HIGH	NO	MULTI	POA

### ★★★ INSTALLATION ★★★

New Horizon will collect your Amiga, fit the drive of your choice and deliver it back to you within 48 hours. Full 12 month RTB Warranty on your Computer when we install the drive. Wang UK carry out our repairs. Phone our Sales Hotline for further details.

### ★★★ SPECIAL OFFER ★★★

## A1200 BLIZZARD

### 32 BIT TRAPDOOR MEMORY AND FPU ACCELERATORS

Includes Real Time Clock and Zero Wait State Memory

MODEL	CONFIGURATION	PRICE
A1200/4	4 MEG 32 BIT FAST MEMORY	£179.00
A1200/4A	4 MEG PLUS 14 MHZ 68881	£228.00
A1200/4B	4 MEG PLUS 20 MHZ 68882	£258.00
A1200/4C	4MEG PLUS 33 MHZ 68882	£278.00
ADD4	ADDITIONAL 4 MEG MEMORY	£159.00

### HOW TO ORDER



1. By Phone. Next Day Delivery on small items please add £5.00. Next Day Delivery on computers, Monitors and Printers add £12.00



2. By Post. Send a cheque or Postal Order made payable to New Horizon Computers and post with your order to

New Horizon Computers (Mail Order)  
High Hope, Lee,  
Ross on Wye, Herefordshire HR9 7LN



CREDIT CARDS WELCOME



**SALES HOTLINE 0989 750260 TECH SUPPORT 0989 750337**

10.5

# FIRST COMPUTER CENTRE (LEEDS) Tel: 0532 319444

## AMIGA 1200 RACE & CHASE PACK only £289.99!

NOW WITH NIGEL MANSELL F1 AND TROLLS!

HARD DRIVE VERSIONS

20Mb.....	£379.99
85Mb.....	£499.99
209Mb.....	£599.99

## A1200 DESKTOP DYNAMITE PACK with Wordworth 2 AGA, Printmanager, Dennis, Oscar

### only £339.99

Hard Drive versions available ring for prices

## Amiga 4000/030

Based on the 68030 processor. Complete with hard drive & 2Mb of chip RAM & WB3

### only £909.99 for 80Mb version or £969.99 for 120Mb version

## Amiga 4000/040 from £1969.99 with 6 Mb RAM and 120 Mb hard drive

## AMIGA 600 Basepack now with

### X OUT game (LIMITED OFFER) only £194.99!

## AMIGA 600 20HD The Epic pack Mb Hard drive, Epic, Rome, Myth, & Trivial Pursuit, Dictionary, Language Lab & D. Paint 3

### only £289.99 (In On Site Maintenance)

## The A600 Wild, Weird & Wicked inc Micro Prose Grand Prix, Deluxe Paint 3, Putty & Pushover

### Plus "X OUT" shoot em up only £219.99

## A600 DELUXE.....ONLY £245.99

## A600 20HD DELUXE....ONLY £339.99

inc. ROM sharer with 1.3 & 2.04 ROM's making incompatibility a thing of the past. The A600 HD Deluxe comes with a built in 20 Mb hard drive

Just add 32.99 for a 2 Mb 600 Deluxe!!

## PRIMA A1200 REAL TIME CLOCK

at last now you can date and time stamp your files  
Fits directly onto the motherboard with no soldering.

### now only £14.99!

check for compatibility

## A600 & 1200's HD kits

### Add £14.99 for Real Time Clock!

20Mb.....	*£89.99	60Mb....	*£179.99
120Mb..	£219.99	80Mb....	£195.99
210Mb...*	£359.99	Just Add £10.00 for fitting	

All Amiga's come with Workbench, mouse & 12 month warranty. The A600's, A1200 & A4000 come with 12 months on site warranty. All 1200/600's also come with a built in integral hard disk option.

## THE AMAZING ZOOL PACK!

- ZOOL (97% Amiga Computing, Nov 92)
- STRIKER (94% CU Amiga, June 92)
- PINBALL DREAMS (94% AUI, Sept 92)
- TRANSWRITE word processor

### only £29.99

### only £19.99 with any AMIGA!

## NEW! AMIGA CD32 PACK

based on the 68020 processor, the CD32 features AA chip set, A4 size footprint, 2Mb RAM, 128K flash memory, built in WB & the ability to play normal audio CD's

### only £289.99

## CD Rom Amiga A570

Turns your Amiga 500 into a CDTV. Includes Fred Fish CDPD disk & Sim City

### now only £147.99!

## PRINTERS

All our printers are UK spec.

### Canon CITIZEN

SEIKOSHA COMPUTER PRINTERS

### hp HEWLETT PACKARD THE Star COMPUTER PRINTERS

All our printers come with ribbon/toner, printer drivers (if available), paper & cables!!

### CANON

Canon BJ10sx.....£219.99

Laser quality output. Large buffer

Canon BJ200.....£314.99

3 page a min speed, 360 dpi, small footprint & 80 page sheetfeeder

Canon BJ230.....£379.99

wide carriage version of above

Canon BJ300.....£419.99

Desktop bubble jet with laser quality

Canon BJ330.....£464.99

Wide carriage version of the BJ300

New! Canon BJC600 Col..£464.99

new bubble jet from Canon

BJ10 Autosheetfeeder...£52.99

Canon BJ10 cartridge.....£18.99

**CITIZEN NEW LOW PRICES!**

Citizen printers have a 2 year guarantee

Citizen Swift 90 Colour.....£169.99

Excellent value 9 pin colour. Highly recommended

Swift 200 Colour.....£209.99

Same out put as the 240 but with less facilities

Swift 240 Colour.....£259.99

24 pin, 240cps draft, 10 fonts, quiet mode, 240cps.

Swift Auto Sheetfeeder..£79.99

### SEIKOSHA

Seikosha SP-1900.....£124.99

Seikosha SP-2400.....£154.99

Seikosha SL-90.....£159.99

Seikosha SL-95.....£295.99

Seikosha Speedjet 300...£319.99

12 month extended warranty £10.00

### HEWLETT PACKARD

HP Deskjet Portable..only £369.99

New! HP510 mono..now £261.99

HP 500 Colour.....now £309.99

HP 550 Colour.....now £514.99

4 times faster than the HP500C!!

HP500 mono cartridges.....£14.99

Double life 500 cartridges.....£24.99

All HP printers come with a 3 year warranty

### STAR

StarLC20.....£132.99

180 cps draft, 45 cps NLQ, quiet mode and multi fonts, push button operation.

StarLC100 colour.....£155.99

9 pin colour, 8 fonts, 180 cps draft, 45 cps NLQ

StarLC200 colour.....£195.99

9 pin colour, 8 fonts, 225 cps draft, 45 cps NLQ, A4 landscape printing.

NEW! StarLC24-30 Col.....£232.99

StarLC24-20 MKII.....£224.99

NEW! StarLC24-300 Col.....£299.99

24 pin quality, 210 cps draft, 67 cps LQ, 39K buffer expandable to 48K, 10 fonts and quiet mode.

StarLC24-200 colour.....£264.99

Colour version with 30K buffer expandable to 62K

StarSJ48 Bubble jet.....£217.99

Laser quality, ultra quiet, Epson compatible & portable

NEW! StarSJ44 Colour Thermal

Stunning affordable colour printer. 3 PPM, low running costs

### only £534.99

StarSJ48 Autosheetfeeder.....£49.99

StarSJ48 cartridge.....£18.99

StarSJ44 cartridge (pack of 3).....£42.99

StarSJ48/BJ10 Refill kit.....£11.99

### Laser Printers

on-site warranty standard

Seikosha OP-104.....£579.99

4 PPM HP2P emulation

HP Laserjet 4L.....£609.99

1Mb RAM, 4 ppm, small footprint

OKI 400e.....£514.99

4 page laser, multi font, 512K memory, HP emulation

Ricoh LP1200.....£669.99

add just £114.99 for 2 Mb of extra RAM

Star Laserjet LS5.....£564.99

5 page laser, HP emulation, multi font, 300DPI

## MONITORS

All our monitors are UK spec. All monitors come complete with a free Amiga lead

PHILIPS CM8833 MK2 Colour

Colour stereo monitor. 600\*285 line resolution, green screen facility, one year on site maintenance.

only £204.99 UK Spec.

PHILIPS Tilt & Swivel stand..£13.99

PHILIPS TV Tuner for the 8833.£64.99

Commodore 1084ST Colour

features built in tilt & swivel stand this new colour monitor from Commodore is outstanding value

only £199.99

GOLDSTAR SVGA .28 dp

Colour monitor with overscan

only £249.99

Goldstar TV/Monitor..only £169.99

COMMODORE 1940

Dualsync, .39 dpi only £284.99

COMMODORE 1942

Dualsync, .28 dpi only £379.99

COMMODORE 1960

multisync .28 dpi only £379.99

MICROVITEC 14" MULTISYNC

3 year warranty only £409.99

SCANDOUBLER

allows VGA monitors to work in all screen modes on the A4000

only £139.99

RETINA 24 bit graphics card

from £334.99

## SUPRA MODEMS

### The Supra-Fax 144LC

V.32 bis (14400 baud !)

Low cost version of the classic V32Bis Fax modem. Features as below but class 1 fax only and LED display

only £194.99!

### The Supra-Fax Modem

V.32 bis (14400 baud !)

Send & receive fax messages using fax s/w. This new modem from Supra has full 14400 baud capability. Spec includes V.32Bis, V.32, V.22Bis, V.22, V.21, MNP2-5, V.42, V.42Bis, Class 1 & 2 commands, 9600/14400 Group 3 Fax. Includes free modem comms s/w & cable!!

only £244.99!

### Supra Fax +.only £119.99

Send & receive faxes!(needs FAX s/w) Even faster than the standard 2400 from Supra with auto dial & auto receive. 9600 bps Hayes comp., V22Bis, V42 BIS, MNP 2-5 & auto adjust to maximise transmission speeds. Includes free modem comms s/w & cable!!

Supra 2400...only £74.99

Get on line using this great value fast modem with auto dial & receive. 2400 baud Hayes comp., V22 BIS. Includes free modem comms s/w & cable!!

GP fax software

only £49.99!!

Fax software is not included with Supra modems

All Supra Modems come with a 5 year warra

## US ROBOTICS

PREFERRED DEALERS

Courier V32bis+FAX.....£379.99

Courier HST (16.8).....£495.99

Courier HST/Dual 16.8 Fax..£503.99

Sportster 14400 FAX.....£264.99

Sportster 2496+FAX.....£152.99

WorldPort 14.4+FAX.....£289.99

If you thought V32Bis was fast try the HST! All come with a 5 year warranty and are FULLY BABA Approved!

## PACE MODEMS

MicroLin V22b FAX.....£216.99

MicroLin V32b FAX.....£449.99

5 year warranty and FULLY BABA Approved!!

2% surcharge on AMEX

Access

MasterCard

Switch

Europay





continued from page 40

have these problems when the 4Mb of memory is not added.

Warren Jouet  
Greenhithe  
Kent.

Unless you have any programs that make use of the MMU, I'm afraid it's going to be one of those features of your 68030 that you will never know is there, and never miss. Programs like *GigaMem* and a lot of programmer's development tools make extensive use of the MMU, but normal day-to-day usage of your Amiga is unlikely to touch it.

With regard to the memory problem, it is likely that you have not set up your M1230XA properly using the *SetXA* tool. Make sure that you have set the memory to the correct speed. The instructions are not exactly helpful on this subject, I know, but we had much the same problem with the review board, which was solved by changing the RAM access speed to a slower setting. Also remember to remove the battery on the M1230XA if you are not using the clock feature. **TS**

## SAY AAAH...

**HARDWARE** Can you please provide an example of assembly code which will determine which type of CPU, FPU and MMU is being used, and at what speeds they are running? I can distinguish 68000, 68010, 68020, 030 and 040, as well as the FPUs, in my program, but I would like to go further and determine if the processor is an EC/LC version or if the 68851 is present. There is no documentation in Commodore's Include files for checking for the presence of an MMU, and I cannot find any information on checking CPU/FPU speeds.

Chris Brown  
Croydon  
Surrey

Well, if you are successfully detecting the various processor types, I presume that you are checking the **AttnFlags**, present in the **ExecBase** structure, which tells you which processors are being used and if any FPUs are present.

The bad news is that you will not be able to tell entirely accurately if the processor is an EC version or not, because quite a lot of EC030 chips have partially working MMUs. You might test one and find that an MMU is present, then make use of it only to find that it could fail because parts might not work correctly. Testing for an MMU can be done by executing MMU instructions and seeing if you get exceptions or not. Even if you successfully detect one,

you cannot be 100% sure that it is a fully working one. Make sure you get the data sheets for all the chips, because LC means different things. The LC040, for example, does not have an FPU, but does have an MMU. (This is easy to check, because the 68040 bit would be set in **ExecBase**, but the bit for 68040 internal FPU would not.)

As for checking speeds, I can't think of any particularly reliable way, and I couldn't find anything in the documentation. However, if you know the speed of a particular instruction in cycles, then you can execute it in a fixed length of time, and then divide it out to get the MHz. Bear in mind any caches that might be operating. You can do the same thing to work out MIPS – but be more careful with MIPS: caches can come up with some extremely fast speeds which are not accurate, since in the real world very few programs make good use of caches. **TS**

## PORT AND LEMON

**GENERAL** I am a GCSE Craft Design and Technology student and for a project that I am working on I wish to link my A500 to my electronics project. For this I wish to use the joystick ports for input and the parallel port for output. Could you please tell me which memory locations I have to "Poke" in order to use the parallel port for output? I wish to use AMOS Basic to control the two ports.

Stuart Adamson  
Taunton  
Somerset

As it stands, AMOS is perhaps not the best language to directly control the Amiga's parallel port. A much wiser solution would be to treat yourself to SwitchSoft's useful little Amiga Input/Output unit, which not only provides you with 11 digital outputs and 13 inputs, but also comes complete with full instructions on how to address the I/O unit from within AMOS. This little box of tricks

is available for £27.95 from SwitchSoft, who can be reached on 0325 365773. **JH**

## DO IT LEGALLY

**SOFTWARE** Whatever I do with page lengths and form lengths in *TransWrite*, either through the print requester or through the formatting codes, I cannot get a 70-line A4 printout. All I get are 11-inch prints. What am I doing wrong?

The other problem I have is with the *TransSpell* spelling checker. I have made supplementary files for inclusions and exceptions to the dictionary but I can't find a way to make them load automatically into the dictionary when I start it up.

Could you please make the answer simple? As a chronologically-disadvantaged person I need to be led by the hand through some things.

Chris Marquis  
Waltham Chase

You didn't tell me what make and model of printer you are using, so it is impossible to be specific with your first problem. But if you hit the **Preferences** button in the *TransWrite Print Document* requester, select **US Legal** (which is a 14-inch form length), select the tick button and then enter **70** in the **Lines per Page**, you'll find that you can now print 70 lines per page. Keep in mind that you may not be able to fit 70 lines on a page with your particular printer – it will depend on what size the printer-imposed top and bottom hardware margins are. If you had told me what printer you were using I could have been more specific. (For more on page length problems, see the feature in *Amiga Shopper* 29 – it's available on page 90 if you missed it.)

Pages 38 and 39 of the *TransWrite* manual ("Special *TransSpell Options*") tell you how to get the spelling checker to load with default user and reject (exception) dictionaries by adding Tool Types to the *TransSpell* icon. **JW**

# JARGON BUSTING

**CPU** – The Central Processing Unit is the part of the Amiga that controls everything else. It executes program instructions and performs general mathematical computations.

**FPU** – A Floating Point Unit is a chip that will work in conjunction with the CPU to carry out complex mathematical tasks. Carrying these out in hardware rather than

software greatly speeds up the running of certain programs, particularly those that make use of 3D graphics.

**MMU** – A Memory Management Unit, included with some processors, gives a computer greater flexibility over the way it manages its memory. It's useful for people with the virtual memory program *GigaMem*.

## CHUNKY GRAPHICS

**MONITORS** I bought an A1200 and *Deluxe Paint IV AGA* so that I could create stunning graphics like those I've seen in *Amiga Shopper*. But when I try to draw, the pictures look very blocky and jaggy.

To try to remedy this I've read all I can about monitors and I've come to the conclusion that it must be the TV I am using in place of a proper monitor (though it could be the crappy mouse which comes with the A1200). So I plan on buying a monitor and I wondered if you could tell me which is better, the *Commodore 1960* or the *Commodore 1942*?

**NAP**  
**Pontefract**  
**W Yorks.**

First, I doubt very much that your TV is the culprit – I bet it shows TV programmes okay. I'd be more inclined to think that you may be working in a lo-res mode, for instance 320 x 256, where the pixels that make up the image are larger and as a result tend to produce the stepped edges that you describe. Try working in a higher resolution, such as hi-res interlaced (640 x 512) and see if this helps before you start thinking about buying a monitor.

Of course buying a monitor is a good move, because you'll be able to feed it with the much cleaner RGB output from the Amiga, but you may well find that a Philips CM8833 or Commodore 1084 monitor will solve your problems – and more cheaply than buying a multisync such as the 1942. Incidentally, the 1960 is no longer in production, so the 1942 would be a better buy. There is also a 1940 monitor, which has a larger dot-pitch than the 1942 – that is, fewer dots per inch.

As for blaming the mouse, forget it. Although mice can be hard to get used to with paint packages, and controlling them takes practice, I think it's probably the least of your worries. Unless it really is broken, of course.

If you are running out of memory (2Mb isn't always enough) try reducing the number of colours you have in the palette, rather than reducing the screen resolution, because this will help avoid the jaggies too. **GW**

## PUSSY PEDIGREES

**DTP** I am a cat breeder, and now that I'm retired I have the time to produce pedigrees on my Amiga instead of laboriously printing them by hand on pre-printed layouts.

A pedigree is a landscape A4

document which has several lines of text down and across it. Below the text is the box which contains the family tree. The box is divided into four columns. Each column has a heading – parents, grandparents and so on. The first left-hand column is divided into two boxes. Each box contains the registration number, sex, name, breed number, colour. The second column is divided into four boxes with contents as before. The third is divided into eight boxes, with the contents limited to sex, name and breed number. The fourth is divided into 16 boxes, the contents limited to sex and name.

Typefaces are likely to be variable, and the correct selection makes for an attractive document.

**Problem.** I have a Star LC240-200 printer. I also have *Wordworth 2*, and that doesn't allow for landscape printing. I have *Professional Page 2* and I cannot find a way with this of rotating and printing with a dot-matrix printer. What would you advise?

John A Churchill  
Letchworth  
Herts

This is the kind of page that would be particularly difficult to design in a document processor like *Wordworth*

2 or *Final Copy II*. What you need is a dedicated desktop publishing program that enables landscape A4 designs on the screen to be rotated by 90 degrees before sending them to a portrait A4 printer. Version 2 of *Professional Page* doesn't support this feature, but the latest version (4.1) does. So does the rival *PageStream DTP* package. Take your pick, either will do the job perfectly well.

Rotating the printed output of bitmapped image data (DTP documents are printed as graphics, not text) is one of those things that consumes lots of memory. At some point two versions of the image data must be in memory at once. First the software will have to construct the upright image data in memory, then it will have to rotate that image data and store it again before sending it to the printer. You may very well find that you'll need more than the 3Mb of total RAM you have to produce rotated A4 output from *Professional Page* and *PageStream*. JW

### A600 QUESTION TIME



I have recently bought an Amiga 600.

1. Can I use any external drive with it?
2. Do I really have a

**Workbench 2.04 machine or simply an A500 Plus in an A600 case?**  
**3. I have seen 1Mb expansions, 2/4Mb cards for sale. In theory, if I fitted a 1Mb trapdoor expansion and a 4Mb PCMCIA card, will this give me 6Mb of RAM? Is this the maximum amount of RAM that the A600 supports?**  
**No name supplied**

1. You certainly can use any external 3.5-inch disk drive with the Amiga 600, providing that it has been specifically designed for the Amiga. The Amiga requires an extra bit of circuitry that handles the "auto disk sensing" feature of AmigaDOS, so a drive designed for the PC-compatibles or even an Atari ST will not work without this extra board. All Amiga drives have this built in as standard, so go for a drive that is advertised as Amiga-compatible and you won't go far wrong.
2. The answer to your question is a bit of both. The machine you own is technically almost exactly the same as an A500 Plus (apart from the extra PCMCIA card slot that the A600 offers) but the A600 uses what is known as "Surface Mount Technology" (SMT), which has allowed Commodore to squeeze the A500's board into a smaller casing.

The version of Workbench and Kickstart bundled with both machines is almost identical too – the only difference between Workbench 2.05 (bundled with the A600) and Workbench 2.04 (bundled with the A500 Plus) is that 2.05 supports the A600's PCMCIA slot. 3. Yes – adding all the cards that you've mentioned will give you a total of 6Mb of RAM. And yes, 6Mb is the maximum amount of RAM that an A600 can handle. JH

### SO NOW YOU C



I am a student with about £30 to my name, and I have taken an interest in C. I have a copy of *North C*, and *Mastering Amiga C* by Bruce Smith Books. I require some form of instruction manual, which you would expect to get with any programming language. I have been following your series on C, but I do not wish to spend over £200 on *SAS C*. Do you have any suggestions?

Chris Webb  
Bursledon  
Southampton

Recently, in the *Amiga Shopper C* programming series, we changed over to DICE by Matt Dillon. This is



**CODING**  
**I have recently started to learn assembly language with the primary aim of coding games and demos. My problem is that, while I can find many books which deal with assembly programming through the operating system, I cannot find any hardware-orientated programming books. I resisted buying Abacus's *System Programmer's Guide* because you have said that it contains a very bad programming style which is incompatible with Workbench 2.00 and above. Surely it is possible to program the hardware directly and still maintain a high degree of compatibility? After all, most new games hit the hardware and still work on Wb 2.0 and above.**

**I have the hardware reference manual, but it does not state how I will be able to take over the machine, making the provided examples no use at all. I would be most grateful if you could recommend some books on the subject, and specify which of the Rom Kernel Manuals are necessary, as well as provide some source code to shut down the operating system. Having looked at the RKM's, it looks like programming the hardware is easier than programming through the OS.**

Krishna Kotacha  
Kenton  
Harrow

This is a very odd subject. In theory, no-one should access any hardware registers directly, ever, at all, and the hardware reference manual

should never have been written. Everyone should use the OS, and there would be peace throughout the world and everyone would have just the right amount of money. In practice, of course, things never work this way. The Amiga OS is not fast enough for games and demos unless you have Kickstart 3 or above (which is much faster, and contains a lot of functions that games programmers would need). There is no hardware guide for the AGA chipset, so if you want to use 256 colours, you will need to go through the OS.

The degree of compatibility is a different kettle of fish altogether. If you are going to use the information in the hardware reference manual, there are some basic things you can do to help yourself out in the future with regard to compatibility. Here are a few pointers:

- Always allocate your memory using the **exec.library**. Never take memory without properly allocating it. Also, allocate the right type. Bear in mind that the graphics hardware cannot access anything other than Chip RAM.
- If you need interrupts, allocate them using **exec.library**.
- For blitter access, call **OwnBlitter** before using it, and **DisownBlitter** afterwards. Always use Commodore's **WaitBlit** (in the **graphics.library**) rather than your own versions. Commodore's is very fast and does not corrupt any registers. It is as good as any you could write, and is guaranteed to work with *all* versions of the blitter, unlike a lot of blitter wait code I have seen.
- Don't disable the OS. Simply stop it from hogging the CPU. Do this by raising your task

priority to a large value – say 20 or 30. This will stop the rest of the OS from doing anything without killing it, so essential OS interrupts and code will still occur.

- If you are going to use your own copper-list, execute these instructions before installing it:

```
suba.1      a1,a1
GRA        LoadView      ; Load a
blank view - i.e. clear display.
GRA        WaitTOF
GRA        WaitTOF ; Wait for the
LoadView to definitely take effect.
now install copper list...
```

Where GRA is a macro that calls the **graphics.library**. You'll have to open it first. I have my GRA macro set up like this:

```
GRA:      macro
move.1  GraBase,a6
jsr    _LVO\1(a6)
endm
```

- Don't busy wait. For example, don't perform a delay by looping. Time it, because different processors operate at different speeds.

For more advice and information on interrupts and memory allocation, consult the ROM Kernel Manual on *Libraries*. Ideally, you would write your games using the OS, but to maintain Workbench 1.3 compatibility and get the speed you want, you may find you have little choice. However, a few basic steps (like those outlined above) will help ensure your programs which will run on future Amigas, regardless of processor and chipset. TS

available on various Fish disks from good public domain libraries, or if you can wait a month there may be something to interest you on next issue's *Amiga Shopper* cover disk (a hint to the wise). The version used in the C programming articles in AS is 2.06.21. As for a good instructional book, the best one I can recommend is the standard reference book, *The C Programming Language*, by Brian Kernighan and Dennis Ritchie, the designers of C. It is currently in its second edition and is published by Prentice Hall. The ISBN is 0-13-110362-8. But again, you might find that something interesting just happens to be bundled with *Amiga Shopper* next issue... if everything goes according to plan. Better reserve your copy with your newsagent now, or turn to page 98 and think about subscribing. **TS**

## NOT VERY INTELLIFONT



**GENERAL**  
1. When I try to run **Intellifont** a requester states: "Bullet not correctly installed, please re-install. [File FONTS: \_Bullet.lf.fnt] missing". What is going on?

2. Later versions of Workbench 3 have **Install** and **AmigaGuide** on disk – but mine does not, so I bought Fish Disk 870 to add these items to my hard disk. There is an ample supply of text files but none with a step-by-step guide for installation.

In the public domain section it stated that the **LhA** archive has to be extracted from the disk and installed with the **Installer**. I can find none of these! For instance the **AmigaGuide** drawer only contains **AmigaGuide.LHA** plus five text files. Any attempt to open this icon results in an "Execute File" requester with **AmigaGuide.LHA** on the command line. Pressing OK just results in an Output window stating that the file is not executable. This is also true of the **Installer** program.

**A D Mayfield**  
Ryddington  
Nottingham

1. This is a thorny one – and I must confess it's the first time I have come across this bug. I can only assume there was either something wrong with your disk set (as your second query suggests) or possibly that the full font set has not been installed for some reason. Using **Show...All Files** on the **Icons** menu, find the offending drawers (**\_Bullet** and **\_Bullet\_Outlines**) on your master fonts disk and copy them into the **Fonts** directory of the hard disk. With luck, that will cure it.

2. Nothing is ever quite as simple as it appears. It's all too easy to assume that everyone knows what **LhA** is, never mind what it does. The



### CODING

In the listing **window.c** in your C programming article in *Amiga Shopper* 30 there is an include file called **proto/all.h**, and I cannot find this. I tried using **all\_protos.h**, in the **clib** directory but DICE finds several errors in its own **stdio.h** file. Could you please clarify this matter for me?

It would be helpful if comments could be made about what functions in the listing require these includes, particularly one such as **all\_protos.h** which includes all the prototype includes.

icons you're referring to are not executable programs – even though Workbench might think they are. They're "archives" produced by a shareware archiving program called **LhA**. Workbench tries to execute these because they are marked as "executable" by their protection flags (see **Icons...Information**). Unfortunately, this flag defaults to ON for every file AmigaDOS creates – which is one of its endearing little eccentricities.

The cure is simple enough, although you will have to dip into AmigaDOS for a while. First, you will have to find a copy of **LhA** – you should be able to get it from whoever sold you the Fish disk, or it may even be on the disk already. It has been on some past *Amiga Shopper* cover disks as well. Here's how to find out if you already have it in your collection:

1. Open the Shell icon.
2. When the prompt (1.SYS>) appears, enter the following:

SEARCH DF0: LHA#? ALL FILE

Insert Fish870 in your internal drive and press <Return>. AmigaDOS will hunt through the entire disk and tell you if the file is there like this:

I hope you can shed some light on this – it is frustrating not being able to get the thing working!

**CG**  
Bristol

I must apologise. In the effort to get the program working, I included an old file called **proto/all.h** (which is now superseded by the **clib/drawer**, as you correctly found out). This simply includes everything, thus ensuring that any OS call I make has a prototype. The result of this was that the program took much longer to compile than necessary. Replace the line:

### Fish\_870:C/LHA

3. If you cannot locate **LhA** (LHArc) on that disk, try some others from your PD or shareware collection – or the cover disks from *Amiga Shopper*. If you manage to find a copy, use the Workbench to find and copy it from disk your hard disk's **c:** directory.
4. Get the offending disks and drag the icons marked "xxx.lha" into the RAM disk.
5. Open your Shell and enter this:

CD RAM:  
LHA e "xxx"

where "xxx" is the name of the icon concerned (without the LHA part). (If you have a copy of LHArc, enter that in place of LHA.) For instance, if you had copied **Install.LHA** to the RAM disk, you would enter:

LHA e Install

or

LHArc x Install

6. This command should take all the files from the archive and leave them on your RAM disk. It is up to you to move them to the correct place on

#include <proto/all.h>

with this (which needs to be typed in all as one line):

#include  
<clib/intuition\_protos.h>

This is because we're only using OS functions from **intuition.library**. If you have problems with your **stdio.h** file, in conjunction with the includes, you might have an old version of DICE. I am using 2.06.21 to write the C programming series, and all listings are compiled and tested with this version. **TS**

your hard disk drive. (**LhA** can do this for you, but I do not want to leave that to a chance typing error.)

A basic knowledge of AmigaDOS is still the only way to master the Amiga – it gives you access to a huge amount of free and low-cost software, and enables you to harness the power of your machine.

### MS

## WHICH MONITOR?



**MONITORS**  
I've had an A500 for three years and I've just bought an A1200. Now I have a couple of questions:

1. I'm currently using a TV for display but I need to get a monitor. I've been wondering about the CBM 1960 but I heard that the picture quality is bad. Is this so?
2. I also want a hard drive and a CD32 drive. Will the A1200 power supply be enough for both of these? If not, will my old A500 PSU do the trick?

**Joseph Robinson**  
Lymington  
Hampshire

1. The CBM 1960 is no longer being made (and it wasn't that good anyway, as you heard), so your better bet would be for either a CBM 1940 or 1942 – the 1942 is better, but more expensive. But do you really need a multisync? Of course you'll get flicker-free images, but you could save money and buy a CBM 1084 or equivalent instead, and put the saved money towards your hard drive.

2. Unless you have information to the contrary I think you'll find that the CD32 is a stand-alone unit complete with its own PSU (and not yet able to be connected directly to another Amiga), so don't worry about this aspect for the time being. If you mean a CD-ROM drive, these are not available for the A1200. As for hard

## 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 are gained from the machine.

**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. As a result, it is used extensively for animation.

**Include files** – Supplied by Commodore, provide all the offsets needed to access system library routines, and the formats for all system structures.

drives, if you buy the recommended types of IDE drives for your A1200 then your existing power supply should cause no problems. **GW**

## STEPS TO HEAVEN

 **DTP**  
I started to read the article in the September issue of *Amiga Shopper* (AS 29) on desktop publishing and when I got to the bit saying "When you print multiple pages does the text creep further and further down each page?" I screamed "Yes!", thankful that after six months puzzling over this problem all would now be revealed.

But after reading and re-reading the article, my cry of joy turned to a scream of anguish! Nowhere could I find the answer to the only question I wanted answered. Please put me out of my misery and give me the reason for this problem. It occurs with the Canon DeskJet printer I borrow from work on occasions, using *Wordworth* 1.0.

**Paul Matthews**  
Blackpool  
Lancs

You have confused the issue by claiming to be using a "Canon DeskJet", which is like saying you drive a Ford Metro, so it is difficult to give you specific help. I'm going to guess that because you mentioned the manufacturer's name you're actually borrowing a Canon bubble jet from work, not a Hewlett-Packard DeskJet. And I'm going to guess that the model of bubble jet you are using is the BJ-10.

Set up your Workbench printer preferences as described in the "Right a bit, down a bit..." article in AS 29. (Anyone who missed that will have to order a copy on page 90 of this issue.) The BJ-10 has hardware top and bottom margins of half an inch, so enter a paper length of 63 lines, which works out to 10.5 inches at six lines per inch (lpi). Make sure you have **Fanfold** selected as the **Paper Type** in your Workbench 1.3.2 printer preferences.

*Wordworth* 2 understands about printer hardware margins, but *Wordworth* 1.0 does not, so you'll have to compensate manually by reducing your on-screen page length to 10.5 inches. Select **Continuous** when printing from *Wordworth* – don't select **Cut Sheet, Sheet Feeder** or anything else like that. Follow these instructions and the top line on each page in your multi-page documents will not start lower and lower down the page.

The reason this happens is because of those half-inch hardware margins that the BJ-10 insists upon. This means that you have not got 11.69 inches of paper on which to

print, only 10.69 inches. If you select an A4 page size in *Wordworth* (69 lines of text at 6 lpi), the bit at the bottom of each page, which is normally blank (the software bottom margin), cannot be printed on the very first page of the document, so the printer feeds that page out, feeds in another page, prints the software bottom margin of the first page, and then starts printing the next page, which normally begins with a blank area, the software top margin. As more and more pages are printed, so the printout gets more and more out of step. Some printers feed the "software bottom margin" pages out before printing the next page of text, resulting in a blank sheet every other page of the document.

This was explained in the "Down a bit, right a bit..." article quite clearly, and I'm puzzled how you could have missed it. Page 58, bottom left-hand corner of the page, the paragraph beginning "But what about the bottom margin?". Go read pages 57 and 58 again; the rest of that article is specific to *Professional Page, PageStream, Final Copy II* and *Wordworth* 2. **JW**

## £\$?#\* KEYBOARD, AGAIN?



**GENERAL**  
In *Amiga Shopper* 29, your reply to Ralph Crosby suggests that the problem of Locale keyboards not being recognised can be cured by adding the PATH keyword to the KEYMAPS assignment in the Startup-sequence. I have a similar problem, only my keyboard appears correctly in LOCALE. Is this a hardware fault?

**Peter Cassidy**  
Belfast

It always galls me when basically good (and tested) advice fails for some reason on a different machine. I find it highly unlikely you have a hardware fault however, so you can rest easy there. When you say "LOCALE", you do mean "INPUT", don't you? LOCALE sets the country,

but not the keyboard layout for that country – the layout is determined by INPUT. If you have made the correct settings and are sure your keyboard is wrong (the only sure test is to type into AmigaDOS) then something else is amiss. You could try adding the following to your Startup-sequence after IPREFS:

**C: SetKeyBoard KEYMAPS:gb**

If that still doesn't work, send me a copy of the disk c/o *Amiga Shopper* at the usual address and I'll do my best to sort it out. **MS**

## COMPACT PROBLEMS



**HARDWARE**  
I bought a Commodore A570 CD drive for my machine in April 1993 and it had given hours of trouble-free service until I decided to upgrade the RAM. I bought a second-hand Power Computing 8Mb expansion (populated to 2Mb) planning to connect the A570 through the RAM expansion's "full through port".

The RAM worked fine, but the CD drive refuses to work at all. It appeared in one of the boot menus, but totally refused to work. Power's technical helpline tell me that the A570 is not compatible with most throughports. Is there a cure for this? Failing that, when will Commodore release a RAM expansion for it?

**Martin Frost**  
Ipswich  
Suffolk

A cure? Probably not. Commodore have only made two main expansions for that slot – the A570 and the A590 – and neither has a throughport. A grim message in itself. My experience has been that most throughports do not work with DMA-based devices such as the A590 – I can only assume the A570 falls into that category too. Supra's RX500 8Mb expansion suffers from exactly the same problem – so the finger should, perhaps, be pointed in Commodore's direction.

As for Commodore's plans: pass. (But I'd conjecture it seems unlikely.) **MS**

## INVADERS FROM NORTHALLERTON

 **CODING**  
I am writing a *Space Invaders* style game in AMOS. The demo is almost finished but I

am stuck on how to get the missiles to fire from the enemy ships. I have tried to make them work but to no avail. And how do you get rid of the orange screen when you press the run key or go into "Direct Mode" before you load any files? You can see it when you compile your work.

**Jason Howells**  
Northallerton

I've never actually tried to write a *Space Invaders* game, so what I'm about to tell you is based entirely on theory. I recently wrote a horizontally scrolling shoot-'em-up game, however, which employed a routine that could quite easily be adapted. My routine simply generated a random number between 1 and 4 that was used to decide whether the aliens wanted to actually fire a missile. If the value returned was equal to 1, then a missile is fired – this gives a one in four chance of a missile being fired. In order to decide which ship actually fires the missile, simply generate another random number that points to one of your aliens. If, for example, your attacking alien force uses computed sprites 8 to 48, then simply generate a number between 1 and 40 and then add 8 to it to find out which ship should fire the missile.

The AMOS Compiler should have a switch that allows you to turn off AMOS's default screen. Failing that, why not simply perform a "Screen Close" at the start of your program? **JH**

## HOW MANY FLOPS?

 **HARDWARE**  
I have recently purchased a 4Mb RAM board for my A1200, complete with a

33MHz accelerator (68882). My problem is not knowing whether the 68882 is running or not. I have the program *SysInfo*, which recognises its presence and tells me it is running at 0.64 MFLOPS. This means nothing to me. What is an MFLOP?

Secondly, is there any way I can do a test which would enable me to visibly see the increased speed I am getting from the processor? I have done some tests in *Vista Pro* in which I rendered a picture both with the processor installed and with it not installed, but the results were

*continued on page 53*

## JARGON BUSTING

**Accelerator** – A device which either includes a central processor like the Amiga's, or a more advanced one in the same range, but operating at a higher speed.

**Compiler** – A means of translating a program to render it understandable to the computer. A compiler translates the whole thing into machine code before it is run. The compiled program is generally

much faster than its interpreted counterpart.

**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.

# OPEN ALL HOURS

WELL, NEARLY!  
9am-10pm Mon-Sat  
10am-6pm Sunday

## SPECIAL OFFERS!!

### 2.5" Hard Drives for A600/A1200

40 MEG	£109
80 MEG	£189
120 MEG	£219
210 MEG	£349

### External A1200 Hard Drives

(These do not void your warranty)

210 MEG	£299
340 MEG	£419

### A500/A500+ Hard Drives

170 MEG	£249
210 MEG	£269
340 MEG	£389

By the time you read this, Hard Drive prices may have fallen.  
Please phone for latest prices

## LOOK! LOOK! LOOK!

### V2.04 Rom + Workbench 2, Disks + Workbench 2 Manuals Only £29.95

## PRINTERS & RIBBONS

Star LC20	£133.00
Star LC100 Colour	£169.00
Star LC200 Colour	£194.00
Seikosha 24 Pin Colour	£199.00
Star LC24-200 Colour	£274.00
LC100 mono ribbon	£4.50
LC100 colour ribbon	£6.75
LC24 200 mono ribbon	£5.50
LC24 200 colour ribbon	£13.50
LC20 mono ribbon	£4.50

## LEADS & CABLES

Printer	£3.99
Serial	£3.99
Null Modem	£5.99
Joystick Extender 3 metre	£3.99
Joystick/Mouse Extender	£3.99
Amiga to SCART	£7.99
Amiga to 1084S/8833	£7.99
Analog Joystick Adapter	£4.99
4 Player Adapter	£5.99

## LOOK! LOOK! LOOK!

### TRACTORFEED DISK LABELS

Now you can print your own professional disk labels!  
500 Plain white disk labels on tractor feed, complete with FOUR disks of software and artwork.

Yours for ONLY  
£9.95

1000 Labels with software  
ONLY £13.50

## AMIGA HARDWARE

A1200 Race & Chase pack	£289.95
CD32 + Oscar/Diggers	£289.95
A4000-030 2Mb Ram 170Mb	
Harddrive	£999.95
1084 S Monitor	£174.95
Cubscan 1440 Multisync	£399.95
External Amiga Floppy Drive	£49.95
A500 Internal Floppy Drive	£48.95
A500 512k Ram exp	£18.95
A500 512k Ram exp + Clock	£23.50
A500 1.5 Meg Ram exp	£76.95
A500+ 1 Meg Ram exp	£33.95
A1200 2 Meg Ram exp	£109.95
A500 Power Supply	£29.95

## DISKS & LABELS

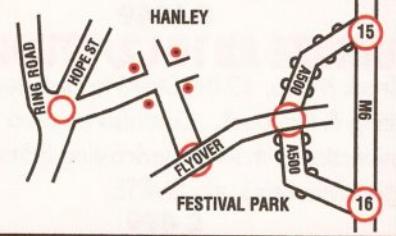
All disks are supplied with labels.  
UNBRANDED DISKS are 100% error free.  
In the unlikely event that any of our disks are faulty, then we will replace the disks **AND** reimburse your return postage!

3.5" DSDD Grade A	£0.37 each
3.5" DSDD Grade B	£0.29 each
3.5" Rainbow	£0.44 each
3.5" DSHD	£0.58 each
3.5" DSDD Fuji (box of 10)	£4.90
3.5" DSHD Fuji (box of 10)	£8.90
5.25" DSDD Fuji (box of 10)	£2.50
5.25" DSHD Fuji (box of 10)	£4.90
1000 3.5" labels	£6.50
1000 3.5" tractorfeed	£8.50

## STORAGE BOXES

Most types are available for 3.5" or 5.25" disks.	
10 capacity	£0.95
40 capacity	£3.49
50 capacity	£3.95
100 capacity	£4.50
80 capacity Banx drawer	£8.49
150 capacity Posso drawer	£15.95
200 capacity drawer	£14.95

VISIT OUR NEW SHOP 9am - 5.30pm  
Mon - Sat 9am - 1pm Thursdays



## MISCELLANEOUS

Mousehouse	£1.80
Mousemat 9mm thick	£2.50
Diskdrive cleaner	£1.80
A500 Dustcover	£3.50
A600 Dustcover	£3.50
A1200 Dustcover	£3.50
Monitor Dustcover	£3.50
LC20 Dustcover	£3.50
LC100 Dustcover	£3.50
LC200 Dustcover	£3.50
LC24-200 Dustcover	£3.50
Roboshift	£13.95
Amiga Lightpen	£32.00
Optical Mouse	£32.00
Manhattan Mouse	£9.99
Megamouse	£12.95
Megamouse II 400 DPI	£12.95
Point Mouse	£12.95
Altadata Trackball	£26.95
Crystal Trackball	£32.00
Zydek Trackball	£25.95
Zyfi Amp/Speakers	£37.50
Action Replay Mk III	£56.95
Midi Master	£26.00
Tilt/Turn Monitor Stand	£9.95
2-piece Printer Stand	£3.49
Metal Printer Stand	£8.99
A4 Copyholder	£5.99
Metal Angle Poise Copy Holder	£14.95
A500/A600 ROM Sharer	£14.95
V1.3 ROM	£25.95
Micropert Tractorfeed Paper: 500 sheets	£4.50
2000 sheets	£13.00

## JOYSTICKS

All joysticks have autofire feature except those marked \*.  
Trigger Grip Models  
Quickshot turbo

Python 1M	£7.99
Jetfighter	£12.00
Topstar	£19.50
Intruder	£21.50
Base Fire Button Models	
Maverick 1M	£12.95
Megastar	£21.50
Zipstick	£12.95
Comp Pro 5000*	£10.95
Comp Pro Extra	£12.95
Comp Pro Star	£12.95
Cruiser Multicolour*	£9.95
Comp Pro Star MINI	£14.95
Aviator 1 Flightyoke	£23.50
Handheld Models	
Speedking	£10.50
Navigator	£13.95
Bug	£12.00

## ANALOG JOYSTICKS

These Joysticks will fit any Amiga	
Warrior 5	£14.95
Saitek Megagrip 3	£19.50
Speedking Analog	£13.95
Intruder 5	£25.50
Aviator 5 Flightyoke	£27.50
Adapter to use any PC analog joystick on an Amiga	ONLY £4.99

**COMPUTER SUPPLIES**  
**Direct**  
0782 206808 - Anytime  
0782 642497 - 9.00am-5.30pm Weekdays  
0630 653193/0782 320111 - Evenings & Weekends



**BUSINESS HOURS**  
9am to 10pm Mon-Sat, 10am to 6pm Sun

All items and offers subject to availability. E&OE

**P&P £3.30 All Prices inc VAT**

We accept POs, cheques & credit cards

Please write Cheque Card Number on cheque for instant clearance

BUSINESS AND EDUCATION ORDERS WELCOME



# White Knight Technology



PROFESSIONAL  
AMIGA  
SPECIALISTS

2.5% Surcharge on  
Credit Cards only.  
Not Switch or Visa Delta.

PO BOX 2395, WALTHAM CROSS, HERTS, EN8 7HQ



0992 714539

10am-7pm Monday - Friday  
11am - 4pm Saturday



## A500 ACCELERATORS

<b>GVP A530</b> Turbo 40MHz 68030, 1Mb	
with: 42 Mb hard drive	£ 395
80 Mb hard drive	£ 495
120 Mb hard drive	£ 595
213 Mb hard drive	£ 695

## A500/1500/2000 ACCELERATORS

<b>SUPRA 28MHz TURBO</b> (68000)	£ 129
<b>CSA DERRINGER</b> 25MHz 68030 & MMU, WITH 0Mb 32-BIT RAM	£ 299
<b>CSA DERRINGER-PLATINUM 50</b> 50MHz 68030 optional 50MHz 68882 WITH 0Mb 32-Bit RAM	£ 449

SEE MEMORY BOX FOR 32-BIT SIMMS

## A1500/2000 ACCELERATORS

<b>GVP G-FORCE</b> 25MHz 030/882 + 1	£ 305
<b>GVP G-FORCE</b> 40MHz 030/882 + 4	£ 689
<b>GVP G-FORCE</b> 50MHz 030/882 + 4	£ 989
<b>GVP G-FORCE</b> 33MHz 68040 + 4Mb + Serial, Parallel & SCSI Ports	£ 1279
<b>CSA MAGNUM</b> 28MHz 68040, 0Mb & SCSI2 (Optional Serial & Parallel)	£ 849
<b>RCS FUSION 40</b> 28MHz 68040, 0Mb, uses standard 1x9 or 4x9 SIMMS	£ 765

## A1200 ACCELERATORS

<b>GVP A1230</b> , 40MHz 030, 0Mb	£ 245
<b>GVP A1230</b> , 40MHz 030, 1Mb	£ 305
<b>GVP A1230</b> , 40MHz 030, 4Mb	£ 395
<b>GVP A1230</b> , 40MHz 030/882 + 4	£ 489
<b>MICROBOTICS M1230XA</b>	
WITH: 25 MHz 68030, MMU, 0Mb	£ 229
33 MHz 68030, MMU, 0Mb	£ 249
40 MHz 68EC030, 0Mb	£ 269
50 MHz 68030, MMU, 0Mb	£ 319
<b>CSA 12 Gauge</b>	
50 MHz 68030 & MMU + SCSI, 0Mb	£ 549

SEE MEMORY BOX FOR 32-BIT SIMMS

ALL PRICES INCLUDE VAT

## AMIGA 4000

<b>A4000/030</b> , 2Mb RAM, 80Mb	£ 929
<b>A4000/030</b> , 6Mb RAM, 80Mb	£ 1079
<b>A4000/030</b> , 6Mb RAM, 120Mb	£ 1179
<b>A4000/030</b> , 6Mb RAM, 200Mb*	£ 1149
<b>A4000/030</b> , 6Mb RAM, 250Mb*	£ 1199
<b>A4000/030</b> , 6Mb RAM, 340Mb*	£ 1299
<b>A4000/030</b> , 6Mb RAM, 420Mb*	£ 1419
<b>A4000/040</b> , 6Mb RAM, 80Mb	£ 1899
<b>A4000/040</b> , 6Mb RAM, 120Mb	£ 1999
<b>A4000/040</b> , 6Mb RAM, 200Mb*	£ 1989
<b>A4000/040</b> , 6Mb RAM, 250Mb*	£ 2029
<b>A4000/040</b> , 6Mb RAM, 340Mb*	£ 2119
<b>A4000/040</b> , 6Mb RAM, 420Mb*	£ 2229

<b>EXTRA,</b>	4Mb SIMM,	£ 150
or	1Mb SIMM,	£ 45

\* Drive not covered by WANG/ICL On-Site Warranty

## HARD DRIVE + CONTROLLER

### A500

<b>GVP HD8+</b> 80Mb	£ 295
<b>GVP HD8+</b> 120Mb	£ 389
<b>GVP HD8+</b> 213Mb	£ 489

### A1500/2000

<b>GVP HD8+</b> 80Mb	£ 295
<b>GVP HD8+</b> 120Mb	£ 389
<b>GVP HD8+</b> 213Mb	£ 489

## BARE DRIVES

### A600/1200

80Mb & Cable	£ 205
120Mb & Cable	£ 249
250Mb & Cable	£ 355

## A1500/2000 & A3000

40Mb SCSI 3.5"	£ 109
105Mb SCSI 3.5"	£ 195
180Mb SCSI 3.5"X1.6"	£ 229
240Mb SCSI 3.5"	£ 275
330Mb SCSI 3.5"	£ 375
425Mb SCSI-2	£ 499
525Mb SCSI-2	£ 639
1.0Gb SCSI-2	£ 949
1.2Gb SCSI-2	£ 899
2.0Gb SCSI-2	£ 1199
3.5Gb SCSI-2	£ 2750

### A4000

200Mb IDE 3.5"	£ 199
212Mb IDE 3.5"	£ 215
256Mb IDE 3.5"	£ 239
340Mb IDE 3.5"	£ 329
420Mb IDE 3.5"	£ 399

## HARD DRIVE CONTROLLERS

### A1500/2000

<b>GVP HC8/A4008</b>	£ 129
<b>BSc AT-BUS 2008</b>	£ 89

### FASTLANE Z3

SCS1-2 + Up to 64Mb RAM  
(A3000/4000)  
£ 459

## MEMORY

8Mb SIMM-32	£ 350	4Mb SIMM-32	£ 150	
2Mb SIMM-32	£ 80	1Mb SIMM-32	£ 45	
1Mb SIMM-8	£ 39	4Mb SIMM-8	£ 159	
GVP SIMM-32'S	1Mb	£ 69	4Mb	£ 175

## REMOVABLE DRIVES

"The Box" Bernoulli By IOMEGA	
150Mb SCSI-2 Internal Drive	£459
150Mb SCSI-2 External Drive	£549
150Mb Removable Cartridge	£ 89

Drives are supplied with 1 FREE Cartridge  
BERNOULLI drives are up to 290% quicker  
than Syquest drives with better £/Mb ratio.

Syquest 44Mb SCSI Internal	£ 295
Syquest 44Mb SCSI External	£ 365
Syquest 88Mb SCSI Internal	£ 365
Syquest 88Mb SCSI External	£ 435

For 88e drive that reads and writes both the  
44Mb and 88Mb cartridges, please add £20  
All drives now include a FREE cartridge

Syquest 44Mb Cartridge	£ 70
Syquest 88Mb Cartridge	£ 100

## OPTICAL DRIVES

Fujitsu 128Mb SCSI Internal	£ 779
Fujitsu 128Mb SCSI External	£ 899
128Mb Optical disk	£ 40

## TAPE BACKUP

Sankyo 250Mb Streamer (int)	£ 429
Conner SCSI DAT - 2Gb (int)	£ 829

## VIDEO BACKUP SYSTEM £ 59

Backup 120Mb of Hard Drive Data or  
200 Floppy Disks on a 3 Hour Video Tape!  
SCART VERSION AVAILABLE

## SOFTWARE

Brilliance	£ 135
Bars & Pipes Professional	£ 209
Multiframe	£ 70
Real 3D Professional V2	£ 375

Other Professional Software Available On Request

## MONITORS

Commodore 1084S	£ 199
Commodore 1940	£ 289
Commodore 1942	£ 385
Microvitec Cub-Scan 14-40	£ 419

## 68881/68882 FPUs

68881 12MHz PGA	£ 35	68882 25MHz PGA	£ 99
68882 33MHz PGA	£ 129	68882 50MHz PGA	£ 159
68882 25MHz PLCC - for A4000/030 etc		£ 79	
68882 33MHz PLCC - for A4000/030 etc		£ 105	
68882 40MHz PLCC - for A4000/030 etc		£ 129	

DON'T FORGET TO CALL THE  
BIG BANG BURGER BAR BBS  
081 909 2064

## VIDEO PRODUCTS

### DIGITAL BROADCASTER 32

This Zorro III card performs the major functions of a full, broadcast quality, digital video editor. It provides REAL-TIME, FULL MOTION JPEG (25 fps) Capture & Compression, direct to disk. The captured video can then be edited and subsequently decompressed and played back in REAL-TIME, at 25 fps in broadcast quality, direct to video, laser disk recorder etc. Also included on the board is full SMPTE timecoding, read & write. The card also interfaces with the AD516 Studio 16, 8 track stereo audio card from Sunrise and the VIVID 24 Image Rendering Engine.

FOR FURTHER DETAILS, PLEASE CALL.

## OPALVISION

<b>MAIN BOARD (V.2)</b>	£ 529
24-Bit Professional Graphics board with Paint, Animation & Presentation software.	

Release date of following items now mid November

<b>VIDEO PROCESSOR</b>	£ 849
Real-Time frame grabber, professional genlock, Digital Video Effects (DVE) etc.	

<b>VIDEO SUITE</b>	£ 849
19" Rack Mount Audio & Video switcher. 9 Video & 10 Audio inputs, Frame Store.	

<b>TIME BASE CORRECTOR</b>	£ 849
An infinite window RGB Time Base Corrector (TBC) which also includes a flicker-fixer outputting a 31KHz signal for use on a multisync monitor.	

FOR FURTHER DETAILS, PLEASE CALL.

## GVP IMPACT VISION 24

24 - Bit Professional Graphics board with Frame Grabber/Digitiser, Flicker-Fixer, Genlock & Picture-In-Picture etc. With Caligari 24, Macro Paint 2, MyLad & Desktop Darkroom software.

<b>IV24 with VUI-S</b>	(RGB/Comp)	£ 985
<b>IV24 with VUI-CT</b>	(RGB/S-VHS)	£ 1279
Adaptor for Amiga 1500/2000		

£ 45

## HARLEQUIN + (WITH FREE VLAB Y/C)

<b>With 4Mb</b>	Vram/double buffered	£ 1595
<b>With 2Mb</b>	Vram/single buffered	£ 1495

FOR FURTHER DETAILS, PLEASE CALL.

<b>RETINA</b> Display Card 2Mb	£ 405
<b>RETINA</b> Display Card 4Mb	£ 499
<b>VLAB Y/C</b> Real-time digitiser	£ 379

## NEW PRODUCTS

<b>Picasso 11</b> 24-Bit Graphics Card	£ 329
A2/3/4000 up to 1280 x 1024 (2Mb)	£ 389
<b>Piccolo</b> Display Card, 1Mb	£ 489
<b>Peggy</b> MPEG Playback Card	£ 1499

**Rainbow 111** Display Card

FOR FURTHER DETAILS, PLEASE CALL.

## MODEMS

<b>SUPRA FAXMODEM 2400+</b> (Inc Extras)	£ 149
<b>SUPRA FAXMODEM V.32</b> (no s/w)	£ 219
<b>SUPRA FAXMODEM V.32bis</b> (no s/w)	£ 249
<b>SUPRA FAXMODEM V.32bis</b> (Inc s/w)	£ 299
<b>US Robotics Courier Dual Std. 16.8</b>	£ 539

## NEW IN

A3000/A3000T  
Call for prices and  
availability

DKB 128Mb RAM Card for

A3000/4000 (0Mb) £ 275

BSC Multiface 3 - 1/0 Card.

2 Ser/1 Par £ 109

## SYSTEM BUILDING

We have the expertise to build  
a complete system for your  
application -  
Call to discuss your  
requirements.

## SPECIALISTS ?

We know about the products  
that we sell, and are happy to  
advise you.

## SERVICE

For a personal service, and  
after-sales backup that is  
second to none,  
LOOK NO FURTHER.

## PRICE MATCH

Sorry, we can't always match  
on price - however our  
expertise is FREE!

## DELIVERY CHARGES

Express £ 6

Economy £ 4

For timed deliveries, or heavy  
orders, please call.

## SURCHARGE

If ordering with ACCESS or VISA, there is  
a 2.5% surcharge. No surcharge for  
VISA-DELTA, CONNECT or SWITCH.

## HOW TO ORDER

Have your debit or credit card details  
at hand, and call:-

**0992 714539**

10am-7pm Monday-Friday

11am-4pm Saturday, Closed Sunday.

or by post, always phone first to verify

price and availability, before sending

your order to:

"WHITE KNIGHT TECHNOLOGY"  
PO BOX 2395, WALTHAM CROSS,  
HERTS EN8 7HQ



continued from page 48

the same each time – 13 minutes – which leaves me to believe all is not well, because surely it is with rendering a picture that an accelerator will give great benefits. That is what I believed anyway. If not, I have spent a lot of money for nothing.

R J Ayers  
Mansfield  
Nottinghamshire

MFLOPS is a standard benchmark for measuring the speed at which the co-processor, in this case the 68882, is working. It stands for Millions of Floating Point Operations per Second. In other words, in one second your 68882 can perform 640,000 operations involving "floating point" calculations – which are calculations accurate to varying decimal places (so the decimal point "floats").

Referring to the 68882 as an accelerator is technically incorrect, although in some ways the speed is increased. The 68882 is a co-processor, intended for calculating floating-point mathematics, where the normal 680x0 chip in your Amiga would be clumsy and slow. Generally, FPU are useful in number-crunching activities. Unfortunately, software has to be written specially for FPU, so programs like Vista do not actually make use of them. There are, however, many programs that do make use of a 68881/2, such as *Imagine 2(fp)*, which is greatly improved by this option in both rendering time and wire-frame construction time.

Perhaps the best way to graphically see the increase in speed due to the 68882 co-processor is to run a shareware program called *AIBB* (Amiga Intuition-Based Benchmarks), which will conduct a series of tests, one of which will ray-trace a beach ball. The picture is drawn many times faster with an FPU (Floating Point Unit – the 68881/2). *AIBB* will then display a bar chart showing the performances of other machines against yours. We reviewed *AIBB* back in *Amiga Shopper* 25 – if you want to get hold of a copy for all the details, turn to page 90. **WR**

## ASKING THE IMPOSSIBLE?

**VIDEO**  
I am interested in making an educational video on astronomy for use in schools. I have already made three 16mm films but I find it much easier to make animations on my Amiga with *Deluxe Paint IV AGA*.

I already have several completed shots saved on my hard disk – one of which is 1,500 frames long. The problem is that I can't get any help or advice on how to

transfer these anims on to a blank VHS tape. Can you help? Am I asking the impossible?

**C W Carson**  
Chadwell Heath  
Essex

No, you're not asking the impossible! There are several ways to solve your problem. I'm assuming that you have an A1200, judging by the spec you give and the peripherals you have (though your Answers form says you have a six months old A1000!). If this is so, then the simplest way is to connect the composite video output from your A1200 to your video deck, making sure that the deck is selected for external input (a switch marked "Camera/Tuner" or similar may require setting), put in an unprotected tape and press **Record**. Then play your animation back and it should record on to tape.

A second method is to connect a genlock or modulator to the Amiga's RGB port and then take the video output from there to your VCR – though since the A1200 already has a video output this is a waste of time and money unless you require S-VHS or Video8 output.

Thirdly, you can take the modulated output from your A1200 (the output that you plug into a standard TV) and plug it into your VCR's aerial socket instead of the usual TV aerial. Make sure the input switch is set to "Tuner" this time and record as usual.

And that's all there is to it! If you are at all in doubt about how to record with your VCR I suggest you study the manual, if only to ensure that you are using the right connectors, switch settings, and so on. But otherwise I expect you should have no trouble. **GW**

## CANON WORRIES

**PRINTERS**  
I am planning to buy a Canon BJ-200 printer. Is there a suitable printer driver on the Workbench 3.0 System disks? Will this driver enable me to print at 360 dpi? Is there a driver in

# JARGON BUSTING

**Archive** – A collection of files (and directories) all held in a single file for easy transfer between systems. Archives are usually compressed by special techniques so the whole is somewhat less than the sum of the parts.

**Genlock** – A way of slaving one video source (say, an Amiga) to another (say, videotape) in order to synchronise their signals to allow

the *Turboprint Professional* package which is compatible with the BJ-200? You have advised several readers to buy *CanonStudio*. Will the *CanonStudio* drivers be compatible with software like *Wordworth 2* and *Professional Page 3/4*? Is *Flexidump* compatible with the BJ-200?

**Sam Aitcheson**  
Aberdeen

Workbench 3 does not come with a suitable driver for the BJ-200, only the BJ-10/20. And let me answer all your other questions by saying that Canon UK were actively involved in the development of *CanonStudio*, and the drivers and programs that come with this package are all you need, and the best drivers available, to operate your BJ-200 with the Amiga. Any software that prints in the normal Amiga way through Preferences (and that includes the programs you mention) can use the *CanonStudio* drivers and enhanced preferences options. **JW**

## CAP IT ALL



**HARDWARE**  
I have been an owner of an A500 for a year now and it has been perfect, but lately this marvellous machine has been driving me crazy. To be more precise, my computer keeps crashing. The caps lock LED switches itself on and the keyboard will cease to respond, although the mouse, disk drive and hard disk seem to work perfectly. If during the crash I need to type anything, I am lost because it will only return to normal after I re-boot. This occurs with any software and at any time and completely without warning. When it happens I sometimes press the GVP hard drive against the Amiga or press the expansion port and the caps lock LED will blink but the keyboard will still not work. Please can you help me?

**Sergio de Pina**  
Brazil

It sounds to me that the keyboard

## BIG PROBLEM

**HARDWARE**  
I own an A500 with an A590 connected to the throughport of my 2Mb SupraRAM 500RX, with this in turn connected to the A500 bus. I have successfully carried out a conversion giving 1Mb Chip RAM and (I know you don't approve of this) a switch to allow me to switch between 512K and 1Mb of Chip RAM. My computer has had new CIA chips fitted (odd and even), which proved satisfactory.

On booting up from a cold start with 1Mb of Chip RAM enabled, the computer crashes when carrying out a graphical task. This can range from opening the Amiga copyright window through to a menu selection from the Workbench screen or even just running a program. This is not a

logic circuitry inside your Amiga has developed a fault. Take it along to your local Amiga repair agent and they should be able to remedy the fault. **JH**

## UNPREFERABLE PREFERENCES



**GENERAL** I have invalidated the warranty on my A1200 by fitting an 80Mb hard drive, but I have recently heard about early machines fitted with faulty modulators and I suspect I might have one. With an eight-colour, PAL Workbench (set from ScreenMode Preferences) certain applications refuse to work. It happens with programs such as *TDM*, *Uedit*, *Edword* and *Maxiplan*. I can still use them provided I move Workbench to the front of the display, then pull it down to reveal the program behind. I would like to know if my machine is faulty or if this is some peculiarity of the AGA chips. The problem does not occur with *DPaint AGA* unless I change screen format a second time.

**Andrew Greany**  
Perth  
Scotland

This has nothing to do with your modulator – this is bypassed in your setup by feeding the television directly through its SCART socket. It also has less to do with the hardware and more to do with a software problem. The programs you mention pre-date the AGA chipset and will not be aware of some of the subtleties required by the AGA support software in ROM. To be brief, this just sounds like the sort of bug you'll have to live with until (if) better versions are released – although you could try running Workbench in four colours and configuring the software to run on that screen instead. **MS**

fixed routine time wise. It may load Workbench and then crash or get as far as the copyright window. When a crash occurs, the computer just locks up without guruing. It may take ten or more attempts before I am able to use the machine normally.

If, however, I boot up with 512k Chip RAM, the computer will commonly get to the copyright screen and crash, causing the screen to go black with rolling diagonal lines and a squealing noise from the television. But again it may boot up, working normally before doing this.

I also have problems with running some programs in that they will work on a friend's machine but not mine. I feel that this problem is to do with the Chip RAM upgrade, but I took the machine to two different people who both said that this is not the case and that they had no trouble in getting the machine to work. I have checked the speeds of the memory chips and all add-ons and these all appear to be fast enough. A friend has suggested that it is possible that I

may need a new Gary chip.

J Douglas  
Ashford  
Kent

Without actually testing your set-up, I'm afraid it is almost impossible to give a diagnosis based upon the information you gave me, but I can suggest that you try a few different things. First, I would recommend that you try out your friend's power supply on your machine, seeing as the fault does not seem to fit to any time routine. Power supplies are often the culprits behind inexplicable errors. If this is not the problem, static damage to your Agnus chip could result in this kind of failure, or damage to memory chips. You can check this if you can somehow run a memory checking program on your computer, checking each megabyte in return. Try connecting your computer up without the SupraRAM 500RX attached. Generally, because the fault seems hard to pin-point, maybe replacing the Agnus and Gary chips could be the solution to the problem. In cases like this, it has to be a matter of trial and error to find

what is causing the trouble you're having. WR

### PAINT POSER

Following *Amiga Shopper's AMOS tutorial* I have been writing my own version of a paint program. I am trying to use a filled paint command with a specified range of colours like in *Deluxe Paint*. My problem is that I don't know which parts of the screen should be painted from where you click the mouse. Could you please explain in AMOS how I can work out which areas of the screen to paint or is there a way I can use the AMOS "Paint" command to do this?

Richard Geraghty  
Co. Dublin  
Ireland

The easiest way to fill an area with colour is to use the AMOS "Paint" command with its optional mode one setting – this stops the fill as soon as AMOS encounters a pixel that is a different colour from the colour that you're painting over. If you do want

to add a "dithered" fill, however, this is considerably more involved. I would personally use the AMOS "Point()" function to find out what areas of the screen should be filled. This issue our AMOS paint package project is on page 101 – stick with the series and we'll take you through how to program all the important functions. JH

### FREEZING BUGS

 I have just updated my AMOS Pro to version 1.11. Now when I am using the editor or when I am entering data into a home-produced AMOS program, I frequently get the keyboard freezing up. I never had this problem with the original AMOS Pro. Is there a known bug in the update or could it just be my geriatric machine? Not that it has given me any trouble before!

Alf Denham  
Bristol

AMOS Pro version 1.11 did introduce a couple of new bugs that could explain the problems you're

## CODE CLINIC



### TOBY SIMPSON DEBUGS ANOTHER READER'S PROGRAM

Author: Maurice Scorey  
Program: MFM Decoding  
Language: Assembly language  
Fault summary: Amiga crashes when program is run

This is quite an interesting one. The author has written an assembly language routine to decode MFM (Modified Frequency Modulation) data. This is the raw data that comes off floppy disks before it is converted back into normal information. In normal circumstances, this is done transparently by the operating system. The program responsible for this, the **trackdisk.device**, does this by using the blitter. Decoding MFM is a reasonably processor-intensive and laborious job that the Amiga's blitter can do much faster in most cases – it also frees up the CPU to be doing something else.

There are few reasons why anyone would ever need to deal with raw MFM data themselves, unless a disk utility of some sort or a custom disk loader was being written. Having looked carefully at Maurice's source code, I cannot work out what the

reason for it is. If it is a disk loader, there is certainly no reason these days to write one. This is true particularly with games and demos, seeing that people expect to be able to put games on hard disks, and custom disk loaders prevent this – and also, for the most part, cause compatibility problems with different Amiga drives. (Some "clever" people who wrote games in the late '80s on the Amiga tried to speed up disk loading considerably using various tricks, including stepping the disk head faster than it was rated to do. On most Amigas, this worked, by luck rather than judgement; on some, however, it caused all sorts of strange problems, including the possibility of a damaged drive!)

Although this program was well commented, it took me nearly a day to entirely figure out what was causing it to crash. There were numerous reasons in the end, some less serious than others. The problem I had was not being able to follow what was going on. Although each line was commented, functional groups were not – so although I could see a line commented like this:

```
move.l    #$40004,bltbmod(a0)
Set modulo for a and b
```

I did not know anything about the

## CODE CLINIC

values, how they were derived, or what they actually did. You can easily get "carried away" commenting programs, commenting every line and explaining what it does, even when it is extremely obvious – and in these cases, you're not actually helping yourself. The key to good self-documenting code is to comment functional groups as well as single instructions of importance, for example:

```
; — Signal our task and let it
; know that we've finished blitting
....
```

Another thing that can help make programs easier to understand is usage of macros in the right place. When calling OS routines, it is a good idea to have a macro that will load the A6 register for you, and call the routine. This means there is one less thing that you can mistype. Here is a macro to call a graphics library function:

```
GRA: macro
move.l  GfxBase,a6
jsr _LVO1(a6) ; Macro to
call a graphics.library function
endm
```

Using macros in this way helps to make programs more readable, and they become neater. Another thing that would have helped to make bug-hunting in this particular program easier, would have been if

proper structure offsets had been used, rather than fixed numbers. This is part of the code that set up a blitnode structure:

```
Link A2,$-22 ;Make
Space On Stack
Movem.l D0/A0-A1,-$E(A2) -▼
;Enter Length/Source/Dest
Lsl.w #$3,D0 ;Length
*6 = N0: Rows
Orl.w #$02,D0 ;2 Words
Per Line
Move.w D0,-$18(A2) ;Value
For Bltsize
Move.l #UnCodeData,-$1C-(A2) ;Enter Address Of
Function
Lea -$20(A2),A1 ;Address Of BltNode Structure
```

This section could have been almost self-documenting if the **hardware/blit.l** file had also been included and used. Then, instead of meaningless values like **\$18** and so forth, real names for offsets could have been used, like **"bn\_bltsize"**. This would have reduced the scope for making typing errors.

Also, for programs like this, I would personally not recommend allocating space on the stack for a structure like this, because it tends to get confusing. One thing frequently forgotten is that space allocated on the stack is uninitialized – that is, it contains random data. This means that unless you remember to set everything to what it should be, you can get undefined results, which was one of the things going wrong here. I

encountering. I'd suggest you contact your local PD supplier for a copy of the AMOS Pro 1.12 update disk. This fixes a few bugs that 1.11 introduced and a couple of bugs in the original that 1.11 missed. Better still, why not buy the AMOS Professional Compiler? That program includes yet another update that takes AMOS Pro up to version 2.0. I've yet to find any problems with it.

JH

## ROCGEN RUMBLE

Since I replaced my A500 Plus with an A1200 I've been unable to get my Rocgen Plus genlock to work correctly, though it worked perfectly before. I've tried a separate power supply and disconnecting everything but the Rocgen from my Amiga, but with no success. My questions are:

1. Are RocTec bringing out a new version of the Rocgen Plus which is compatible with the A1200?
2. Will they take back the old version in exchange for the new one?



### 3. Are they bringing out a DIY upgrade kit?

I'm beginning to wish I'd kept my A500 Plus – at least everything worked. It now seems that like with many others I am £150 down the drain.

**S Woodall**  
Hartlepool  
County Cleveland

Don't be too harsh on RocTec – it's not their fault that Commodore changed the specs of the RGB port when they built the A1200, is it? And to their credit they did solve the problem with later releases of the RocGen Plus, though I'm afraid this doesn't help you much.

I very much doubt that RocTec would take part exchange deals on used equipment and I wouldn't expect there to be an upgrade kit (even if an upgrade were possible). But you could try asking your dealer what the situation is – you *might* get lucky (but don't hold out much hope of it).

I know you feel bad about this – just like the people who bought A1000s only to find that they can't

have Workbench 2, pre-AGA Amiga owners who can't upgrade their chipsets to let them use the new display modes, and those who bought A530s and A590s for their A500s only to find they can't use them with an A1200. But unfortunately things move on. Products evolve and old technology becomes redundant, for one reason or another.

I wish this weren't always the case, but there seems little that the average punter can do about this. It looks like you just can't win. **GW**

## PALETTE LOCKING NEEDED

Using *V-Lab* there is an option ("Record Sequence") to record frames from my video and save them to memory. There is also an *ARexx* script to change these frames from YUV data into Amiga IFF files – resulting in a number of pictures, each with its own colour palette, but not in ANIM format!

I tried some PD programs (such as *Animation Station*) but this

doesn't support AGA (I have an Amiga 1200). There's a utility in *Real 3D 2* that can do the conversion, but it doesn't solve the colour difference. I'd consider *ADPro's FRED*, but you said in *AS 28* that it is very difficult to use. What should I do?

**Luc Depraeter**  
Wevelgem  
Belgium

Reading between the lines, I presume that you are referring to the colour changes that occur between each frame when you play the converted YUV frames back as an animation in *Deluxe Paint IV AGA*?

There's a simple answer to the problem – you need to "Lock" the palette for each frame, forcing each frame of the sequence to use the same colour palette. Unfortunately there's no way to do this from within *V-Lab* (as far as I can see), so you'll have to first convert your YUV frames (as you have been doing) and then adjust them so that they all use the same colour palette.

You could convert all the YUV frames directly into an IFF ANIM with

## CODE CLINIC

## CODE CLINIC

## CODE CLINIC

changed this section of the code to look a little like this:

```
UnCodeBlock link      a2, #-20
; Make Space On Stack
  lea  -$20(a2), a3 ; Address Of Bltnode Structure
;
; — Clear next blit parameter —
(required) and set up blitter
; and cleanup function ....
  clr.l bn_n(a3)
  move.l #UnCodeData, bn_
function(a3)
  move.l #CleanUp, bn_
cleanup(a3)
;
; — Calculate blitsize ....
  lsl.w #3,d0 ; Length
*6 = NO: Rows
  ori.w #$02,d0 ; 2 Words
Per Line
  move.w d0, bn_blitsize(a3)
;
; — Ensure our cleanup —
function is called ....
  move.b #$40, bn_stat(a3)
  clr.w bn_beamsync(a3)
;
; — Length, Source and —
Destination of blit ....
  move.l d0,$12(a3)
  move.l a0,$16(a3)
  move.l a1,$1a(a3) ; Length, Source, Dest.
;
; — Queue our blitter —
operation ....
  move.l a3,a1
  move.l Gfxbase,A6
  jsr QBlit(A6) ; Queue —
Blitter Operation
;
; — Wait for it to complete, —
de-allocate stack space and —
return ....
  bsr WaitSignal
  unk a2
  rts
```

Although it ended up a little longer than the previous version, at least this way I was able to see what was going on. I resisted changing it to use a fixed bltnode structure, as follows:

```
my.blit_node:
  dc.l 0, bn_n
  dc.l UnCodeData, bn_
function
  etc etc...
```

This was because I wanted to get the existing code working. Now that it was a little neater, I was able to try and hunt down some other problems.

A brief explanation of the **QBlit** function. Basically, you call this routine to say "I'd like the blitter in the near future please, but I'm not desperate." Then, when the blitter is free, your specified function (at **bn\_function** in the structure) will be called. This then performs the blitter operation, and returns a zero when it is finished. At this point, the **QBlit** call will call your **bn\_cleanup** routine if required. A sensible thing to do is to use this routine to signal your main task to say "Hey, great, everything is done now, you can carry on". This is sort of what Maurice was doing, but not using the **bn\_cleanup** mechanism.

The action of neatening this lot up uncovered several potential bugs. One was that the **bn\_n** pointer was not being initialised. The ROM Kernel Guide says that this should be set to

zero by the application and then not touched. I cleared this. I also found that the **bn\_cleanup** function pointer was also required. If it was to be called, however, the **bn\_stat** flag should be set to **CLEANUP (\$40)**. I specified an empty routine just containing an **RTS**, and put a pointer to this into the **bn\_cleanup**. Running the program now at least didn't crash the computer immediately – instead it locked.

I then checked the actual blitter routine itself. Although the documentation is a bit skimpy on this, I discovered through trial and error that you must push every register you corrupt to the stack. I moved the call that sends the main task the "We're finished now" signal to the **bn\_cleanup** routine (which is only called after everything is complete), and then experimented by pushing all registers to the stack and recalling them before exiting (with **dc** a zero). This worked, and the program no longer crashed.

Another fault I did find, which is easy to make and real hard to find in the program, is that the test data started on an odd boundary. This is how it happened:

```
Gfxname  Dc.b "graphics."
library", 0
BlockData
  Dc.w $2AAA, $AAA9, $2AAA, $AA44
```

The string "graphics.library" with one

zero is 17 bytes long, meaning that the first **\$2aaa** of the test data is on an odd address boundary. This won't cause any problems in this case, because it is copied elsewhere before it is used – but it is a common mistake and a very easy one to make.

If you want to ensure that a **dc.w** is on an even boundary, put the first line of data on the same line as the label, and it will be on an even boundary – at least if you are using DevPac. If you are using another, less common, Amiga assembler, consult your manual to see if it will do this correctly.

## JARGON BUSTING

**MFM** – A double-density disk storage method. Although a number of modern machines use MFM as a method of storing data, their formats are not necessarily compatible. MFM is a method of storing data, rather than a specific disk format.

**QBlit** – An OS-legal way of queuing blitter requests to be performed one after the other. The Operating System calls your specified routine when the blitter is idle. You share the blitter with other OS tasks.

a locked palette by using a program like ASDG's *ADPro*, either with the aid of an ARexx script, using *SENTRY*, or using *ProCONTROL*, which is a third-party front-end to *ADPro* that makes using *ADPro*'s complex functions almost child's play. Alternatively, you could use GVP's *ImageFX* software instead, which can be made to do much the same thing via scripts.

You could also use a PD program such as *Rend24* (v1.05 or later) to lock all the palettes together after you've converted them to IFF files with *V-Lab*, possibly automatically if you told *Rend24* to wait for each image to be processed first before palette-locking them. *Rend24* could also be used to make the frames directly into a palette-locked animation. All of this should solve your problems. **GW**

## EMPTY BOXES

  
**DTP**  
I own a Canon BJ-10 printer and I am using *PageSetter 3* to desktop publish with my Amiga 1200HD. I have just the 2Mb of standard graphics memory, no expansion memory. When trying to print Compugraphic typefaces, all I get is boxes where the letters should be. Also, *PageSetter 3* sometimes screws up when printing *ProDraw* clips. I am using the BJ10 driver as supplied with Workbench 3.

Paul Cotterill  
Kingston Hill  
Stafford

More memory, Paul, that's the solution. Sorry, I know it means spending a few hundred pounds, but 2Mb of graphics memory is simply not enough memory with which to desktop publish, despite the claims on the *PageSetter 3* box. With another 4Mb in the trapdoor I promise you that those boxes will go away and you'll get the text and *ProDraw* clips as you see them on the screen. But please, think hard before buying an A1200 memory expansion board that can take only 4Mb of RAM – it could be a false economy. Even 6Mb is not enough to desktop publish big documents that contain graphics and lots of different Compugraphic typefaces in many different sizes, and if you don't have the option to fit more RAM to your memory board you will have to buy yet another board and then try and sell the first one second-hand.

If you want to really improve the BJ-10's output from *PageSetter 3*, contact JAM about the *CanonStudio* software (they advertise in this magazine). *CanonStudio* makes a massive difference and makes the Workbench driver's output look pathetic. **JW**

## BLEEDING COLOURS!

  
**VIDEO**  
I wish to use my Amiga 2000 and Sony CCD V200 video camera for animated titles but have only been able to do so via a MiniGen genlock. The results are poor, with extreme colour-bleeding and even total loss of colour on occasion. I have now given up the idea of overlaying titles on video footage and want merely to transfer the graphics directly to videotape. Until I can afford to upgrade the genlock I wish to know if there is any way I can output the Amiga's RGB signal directly into the camera, which has both video/audio inputs and outputs.

I have tried to connect the Amiga RGB cable to the camera via a female 6-pin DIN plug, pigtailing into video/audio phono, but without success. Commodore have been of no help – it would seem easier to get an audience with the Pope!

The Amiga's only video output is black and white, which seems rather anachronistic for a supposedly "high-tech" machine – and few users will have a use for it anyway. Is there some special reason why this socket could not have been made a composite output?

Various high street computer and video dealers have expressed doubts that any domestic camera is capable of receiving a full RGB signal from a computer without a genlock. Is this correct, or is there some cable I can buy which would change the RGB signal to a composite one acceptable to the camera's video input?

Finally, is GVP's G-Lock any improvement over the MiniGen as far as the problem of colour bleeding is concerned?

John Morgan  
Thornton Heath  
Surrey

You sound like a confused chap indeed! First, I take it that the MiniGen you are using is quite old –

the recent ones I've seen produce excellent results (bearing in mind that they cost less than £50, of course). The older ones had far more problems, including the occasional colour bleeding you mention. But you still shouldn't expect top-quality results, because it isn't designed to be a top-quality genlock. Even its makers, Lola Electronics, would agree with me on this. If you want top quality you'll have to pay top dollar.

Are you using good-quality video cables to make the transfers? Is the quality of the video signal you are feeding to the genlock reasonable? Do you use good-quality videotape? These are all factors which could affect the output quality of any genlock, not just the MiniGen. Try looking at these factors and see if the situation improves.

Regarding recording RGB to a video camera – everything you've been told is correct. You cannot input RGB to your camera, however hard you try. In fact, I think you're lucky that you've not accidentally damaged your camera by indiscriminately plugging external signals into it. The only way you can input video to your camera is through the proper video input – in which case you'll still need to convert the Amiga's RGB output using a genlock.

As for the Amiga 2000's video output being anachronistic, I'd agree, but I suspect the reason that it is only monochrome (it is composite, by the way) is that the colour composite output provided by its predecessor, the Amiga 1000, was of rather poor quality and Commodore didn't want to spend money improving it. After all, people could always buy a Commodore 2300 genlock card, so rather than drop it altogether they removed the chroma side, resulting in the monochrome output of which you are so derisory. On the other hand, the A4000 has no video outputs at all – and that's supposed to be high-tech as well – but the A1200 has both RF and composite video outputs (and excellent they are too). Only Commodore know the

answers to these conundrums. Also, don't forget that the A2000 has been out of production for several years now, so while it was high-tech when it first appeared it has been rather overtaken nowadays.

Finally, the G-Lock is okay, though it suffers from a few design quirks which mean having to boot up twice and only being able to perform graphics/video fades through software. If you only need composite video and if cost is a prime concern, then I'd recommend taking a look at Lola's new MiniGen Pro (reviewed on page 80 of this issue). In either case, the colour bleeding is minimised and the quality is pretty good – but do remember that quality doesn't come cheap. **GW**

## NOT AN AMIGADOS DISK



**GENERAL**  
I have been writing an educational program using AMOS Pro. I was in the middle of copying some samples over to my program disk when up pops a message that the program disk is no longer an AmigaDOS disk! I have tried to load my programs into the AMOS interpreter but it just informs me that it is not an AmigaDOS disk. I loaded up a disk repair program (*DiskSalv*) and it showed me that all my data is still on my program disk, but it failed to repair it. Can you please tell me how I can get my data on to a new disk?

Michael Pearson  
Bisham  
Blackpool

First, I would recommend that you try to make a copy of your faulty disk, as is, and then put it away. This is because if the disk surface is at fault, there is no way that a disk repair program will be able to fix such a defect. Use a copier with Nibble copy, such as *X-Copy*.

Next, get hold of a copy of the PD program, *Fixdisk*. This program allows greater control over the repair of disks, and should be available from any good PD library (see the directory on page 120 this month).

*Fixdisk* will read each cylinder of the disk, scanning for errors. Once this phase is complete, the program will list all of the files on the disk. At this point, you may wish to copy the files over to another pre-formatted disk. To do this, just select the relevant files and click on **Copy**. A requester will appear. Click on the **Header** button and type in the path and filename of where you would like to copy the file to. This procedure should enable you to copy all your data over without further problems, but do try to use only good-quality, branded disks to be on the safe side. **WR**

**AS**

## 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. AmigaDOS concerns itself with device-handling: control of the keyboard, basic screen output, disk drives, printers etc.

jagged with magnification, a Compugraphic font represents the shape of each character within the font as a mathematical equation of the outline. Consequently, as the magnitude of the character is varied in printing, no information is lost and the result always looks smooth.

**Compugraphic fonts** – Rather than a simple bit-mapped image of each character, which grows more

RGB – Video signal made up of three parts: red, green and blue.

# CITIZEN PRINTERS FROM SILICA

## • FREE DELIVERY

Next Day - Anywhere in the UK mainland

## • 2 YEAR WARRANTY

(including the dot matrix printer head)

## • FREE STARTER KIT

## • WINDOWS 3.1

Free Windows 3.1 driver with Starter Kit

## • FREE HELPLINE

Technical support during office hours

With Citizen dot matrix printers from Silica



FREE! STARTER KIT  
WORTH £57.58  
INC VAT

## FREE STARTER KIT INCLUDES:

- 3½" Disk with Amiga Print Manager
- 3½" Disk with Windows 3.1 Driver
- 1.8 Metre Parallel Printer Cable
- 200 Sheets of Continuous Paper
- 100 Continuous Tractor Feed Address Labels
- 5 Continuous Envelopes on Tractor Feed

## AMIGA PRINT MANAGER V2.01

For faster printing from your Amiga, with clearer images and more vibrant colours. Available free of charge as part of the Silica Printer Starter Kit.

Features include:

- Improved Image Smoothing
- Image Scaling
- Gamma/Colour Correction
- Colour Selection
- Reduces/Removes Banding

KIT VALUE £49 + VAT

## PERIPHERALS & ACCESSORIES

### EXCLUSIVE OFFER



## CITIZEN SHEET FEEDER

For Swift 9, 20, 24, 24e, 200, 240, 224

Semi-Automatic Cut Sheet Feeder for smooth trouble free paper handling. Requires manual sheet injection using lever.

FREE DELIVERY  
RRP £19.95  
EXC VAT  
+VAT = £23.44 - PRA 1228

## INKJET

## 180 CPS 80 COLUMN



## NEW!

## 2 YEAR WARRANTY

• Citizen Project II Inkjet - 80 col  
• 180cps Draft, 100cps NLQ (100%)  
• 50 Nozzle Head - Whisper Quiet 46dB(A)  
• 50K Printer Buffer  
• 1 x IC Card Slot for RAM, Emulation and Font Upgrades  
• 3 Fonts Built-in  
• Optional HP Compatible Font Cards  
• Parallel Interface  
• Graphics Resolution: 300 x 300dpi  
• HP Deskjet Plus (PC3+3) Emulation  
• Low Running Costs - Replace Ink Cartridge Only  
• Auto Sheet Feeder (70 Sheets)  
• Includes Windows 3.1 Driver  
• 2 Year Warranty

RRP £316  
TOTAL VALUE: £316  
SAVING: £97  
SILICA PRICE: £219

+VAT = £257.33 - PRI 2093

£219

+VAT = £257.33 - PRI 2093

# CITIZEN PRINTERS WITH 2 YEAR WARRANTY

24 PIN 270 CPS 80 COLUMN



FREE! STARTER KIT  
WORTH £49  
SEE ABOVE

FREE DELIVERY

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 200 MONO

RRP £259  
STARTER KIT £49  
TOTAL VALUE: £308  
SAVING: £139  
SILICA PRICE: £169

+VAT = £198.58 - PRI 2490

SWIFT 200C COLOUR

RRP £279  
STARTER KIT £49  
TOTAL VALUE: £328  
SAVING: £139  
SILICA PRICE: £189

+VAT = £222.08 - PRI 2495

9 PIN 144 CPS 80 COLUMN



FREE! STARTER KIT  
WORTH £49  
SEE ABOVE

FREE DELIVERY

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

CITIZEN 120D+

RRP £199  
SILICA STARTER KIT £49  
TOTAL VALUE: £248  
SAVING: £133  
SILICA PRICE: £115

+VAT = £135.13 - PRI 2120

£115

24 PIN 300 CPS 80 COLUMN



FREE! STARTER KIT  
WORTH £49  
SEE ABOVE

FREE DELIVERY

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 240 MONO

RRP £339  
STARTER KIT £49  
TOTAL VALUE: £388  
SAVING: £139  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2560

SWIFT 240C COLOUR

RRP £359  
STARTER KIT £49  
TOTAL VALUE: £408  
SAVING: £139  
SILICA PRICE: £219

+VAT = £257.33 - PRI 2571

9 PIN 240 CPS 80 COLUMN



FREE! STARTER KIT  
WORTH £49  
SEE ABOVE

FREE DELIVERY

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 90 MONO

RRP £199  
STARTER KIT £49  
TOTAL VALUE: £248  
SAVING: £139  
SILICA PRICE: £139

+VAT = £163.33 - PRI 2290

SWIFT 90C COLOUR

RRP £219  
STARTER KIT £49  
TOTAL VALUE: £268  
SAVING: £119  
SILICA PRICE: £149

+VAT = £175.08 - PRI 2297

• Citizen Swift 24/24C - 24 pin - 136 col  
• 192cps Draft, 64cps NLQ

• 8K Printer Buffer - 4 Fonts

• Parallel Interface

• Graphics Resolution: 360 x 360dpi

• Epson, IBM and NEC P20 & CEL Emulations

• Quarter Printing Facility

• Auto Set Facility - Bi-directional I/F, Auto Emulation Detection

• Ultra Quiet Mode - 43dB(A)

• Colour Printing Standard - Swift 240c, Colour Printing Optional - Swift 240

• FREE Silica Printer Starter Kit

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 24 CPS 136 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

2 YEAR WARRANTY

COLOUR VERSION AVAILABLE

SWIFT 64 CPS 80 COLUMN

RRP £325  
TOTAL VALUE: £325  
SAVING: £126  
SILICA PRICE: £199

+VAT = £233.83 - PRI 2100

£199

+VAT = £233.83 - PRI 2100

## WARNING

Due to the exchange rate, or manufacturer's changes or due to current RAM shortage, some prices may alter, either up or down, during the several weeks between going to press and the end of the month of issue. We would ask that, prices be confirmed by telephone before ordering.

## OLD AMIGA TRADE-IN\*

The best trade-in allowance, extra for peripherals and accessories. Trade in your old machine for a brand new A600/1200/4000/CD32 or even a PC.

After trade-in, equipment is checked and refurbished by our engineers and is then offered at bargain prices, complete with 3 months warranty.

**A500s FROM £139  
A1500s FROM £199**

A600 SD/HD .....from 159 HDs + Controllers ...from 179  
A3000s .....from 499 GVP HD8 40/52 .....209/229  
CDTV .....179 XT/AT BBoard .....50/91  
A590 20/40MB .....129/159

OTHER ACCESSORIES - PLEASE ASK.  
\*Acceptance of pre-V2 machines may be limited

## A500/600/CDTV

## STARTER PACK

A Must for new users!

Microswitch joystick. 'Get the Most from your Amiga' book, 10 Blank discs, 80 capacity lockable disc box, mouse mat, dust cover, Virus Killer.

INCLUDED AS STANDARD ALONE STARTER PLUS WARR- EXTRAS

**A500+ 1MB REFURBISHED** 179.99 194.99  
12 months return to base

CAPTAIN PLANET, LEMMINGS, THE SIMPSONS, DPART III\*

**A600 SD 1MB** 164.90 179.90

**A600 SD WILD, WEIRD AND WICKED** 194.99 209.99  
12 months return to base

**A600 HD 20** 259.99 274.99

**EPIC PACK 40** 274.90 289.90

**PLUS 64 AMIGA TEXT, DELUXE PAINT III, 700 CLIP ART SET** 339.99 404.99

**PLUS 85 ART SET** 389.99 404.99

12 months return to base

**A600 HD 80** 365.99 379.99

**120** 415.99 429.99

**210** 569.99 584.99

12 months return to base

**CDTV** 229.99 244.99

**MULTI MEDIA** 229.99 244.99

**CBM 1084 SD** 178.90 1 year

**CBM 1940** LEADS. IDEAL FOR AGA 264.99 1 year

**Philips 8833 II T & SWIVEL** £10 209.99 1 year at home

**Star LC100C** TOP 9 IN COLOUR PRINTER 149.99 159.99 1 year

**Citizen 240C** 24Pin COLOUR 252.90 262.90 2 year

Return to base HD versions are SD units fitted with top quality 3rd party drives and come with install disc + full documentation. \*DPIII needs 2MB for animation on HD models.

## NO OTHER DEALER CAN BEAT OUR CREDENTIALS

- Multi-million company with 9 years experience in Commodore product and here to stay
- Commodore trained staff are friendly and helpful and are parents, multimedia, educational, games, programming or technical specialists (usually more than one!)
- Open 9-6 pm Monday to Saturday and 10.00 am to 4.30 pm Sundays PLUS December late nights on Thursdays (St Albans only) for convenient shopping.
- Callers welcome for advice and demonstration at our 1600+ sq ft High St, Town Centre branches
- Same day despatch for most orders received by 5.30 pm; express am and Saturday services available
- Hardware carefully handled and delivered safely and reliably by caged, insured, top name carrier service
- Pre-despatch testing on Amiga systems
- Free 30 day courier collection and delivery of NEW replacement (except product with on-site maintenance)
- Hotline support and in-house engineers
- Upgrade and trade in offers to keep you up to date
- Exceptional after sales service
- BFPO and export welcome

## NOT JUST ANOTHER MAIL ORDER COMPANY

For years a major player in Amiga Mail Order, Hobbyte also boast extensive expertise and experience in specification and support of multi-machine and specialist systems. Hobbyte have been recommended and trained by Commodore and successfully won major orders and support contracts from London Boroughs, MOD, educational establishments etc. We are pleased to be placed on tender lists.

This expertise is available to all our customers.

## Hobbyte

COMPUTING ESTABLISHED 9 YEARS

10 MARKET PLACE ST ALBANS  
HERTS AL3 5DG TEL: (0727) 856005/841396  
THE GALLERY ARNDALE CENTRE LUTON  
BEDS LU1 2PG TEL: (0582) 457195/411281

## A4000/ 30 &amp; 40

**A4000/30:** AGA Chip Set + 68030 processor, 68882 25/50 MHz co-processor option, 256,000 colours from 16.6M, scan doubling for flicker free display, Mouse, Amiga 3.5" 1.76 MB 3.5" drive, Hard Drive as below, Amiga DOS 3.0 system and utilities. **Next day on-site warranty**  
**A4000/40:** As above, but featuring the blistering 68040 processor, with full floating point facilities **NOT EC** version. UK models with on-site warranty...**NOT imports!**

## TRADE IN AVAILABLE

## A4000/30

## A4000/40

## EXTRAS

1+1MB  
HD  
SIZE MB  
SUBTRACT  
£702+2MB  
STANDARD  
VERSION2+4MB  
SUPER EXP.  
VERSION2+4MB  
VERSION

## EXTRAS

80  
965120  
1054160  
1099240  
1149340  
1279540  
1599

## A4000/30

## A4000/40

## EXTRAS

1889  
1915

## 1959

2139  
2299

## 2459

## EXTRAS

1200 2MB  
1200 +20MB HD  
1200 +60MB HD  
1200 +80MB HD  
1200 +120MB HD  
1200 +207MB HD264  
379  
439  
459  
519  
589Extra 4MB +  
clock fitted **ADD £200**

## \*CBM APPROVED HARD DRIVES

## Full legal installation/utility disc and documentation and come with CBM on-site warranty service.

DON'T FORGET YOUR  
STARTER PACK! ADD £15  
(SEE VALUE PACKS BELOW)SPECIAL  
Deskjet 500c and Starter Pack  
with any Amiga **ONLY £285**

**HOW TO USE THIS AD**  
Exclusively from Hobbyte, you can choose your own Amiga and software combination and still benefit from the huge savings only available from package deals.  
Want an A600 pack for small children? No problem! A professional pack for music or programming? It's up to you!

**WE WANT TO BEAT ALL PRICES!**  
CALL US!!

CD32 CONSOLE  
LIMITED STOCKS NOW

## CD32 SOFTWARE

15 to 20 titles specially written for the CD32 should be in stock by the time you read this, including Syndicate, Zool 2, Jurassic Park, Chaos Engine, Robocod, many of which include a full CD music track alongside the game. About half of existing CDTV titles are compatible. CD32 will also play normal music CDs and CD+G discs

## CD32

Standard warranty is 12 months return to base.  
12 months on-site warranty £39.99  
Extra 2yrs on-site warranty £69.99

CD32 Console (with Oscar AGA, Diggers +Joypad FREE)

**£279**

CD32 + FMV Card as above  
PLUS FREE MUSIC VIDEO DISC

**£465**

## AVAILABLE NOW!

Full Motion Video module for CD32 (with Free Music Video Disc) £18

COMING SOON

Floppy drive, Keyboard, Mouse CD32 for A1200

## A1200

## 1200 2MB

1200 +20MB HD  
1200 +60MB HD  
1200 +80MB HD  
1200 +120MB HD  
1200 +207MB HD

264  
379  
439  
459  
519  
589

## WITH ANY COMPUTER

ZOOL, STRIKER,  
PINBALL DREAMS &  
TRANSWRITEOR LEMMINGS,  
SIMPSONS,  
CAPTAIN PLANET,  
PLUS DP III &  
GFA BASIC

## ADD £200

## \*CBM APPROVED HARD DRIVES

## Full legal installation/utility disc and documentation and come with CBM on-site warranty service.

DON'T FORGET YOUR  
STARTER PACK! ADD £15  
(SEE VALUE PACKS BELOW)SPECIAL  
Deskjet 500c and Starter Pack  
with any Amiga **ONLY £285**

## FREE WITH ALL 1200s

NIGEL MANSSELL AGA,  
TROLLS AGA and  
AWARD WINNERS

(410 games)  
WORKS PLATINUM  
(see Home App. Pack below)

## ON DESKTOP

## DYNAMITE PACK

Worms 2 AGA, Deluxe  
Point 4 AGA, Oscar AGA +  
Dennis Print Manager

**ADD £249** (1200s only)  
ON FREE WITH 80MB &  
120MB VERSIONS

## PUBLISHER'S CHOICE

RPP £99.99

inc. Kindrads - WVP, Pagestar -  
DTP, Artists Choice - Art Pack,  
Headline Font Pack

Limited - White Studio's Last

## HOBBYTE VALUE PACKS

Hobbyte are famous for their packs, allowing you to choose what you want, whilst still benefiting from package deal savings.

Remember, a bargain is only a bargain when you like what you get! So, if you aren't Wild, Weird or Wicked, Sleepwalker sends you to sleep, Space Ace leaves you feeling e

Paradroid does worse, if Basic basically isn't you, exercise your options and get real value for money from Hobbyte

## TRAMPY'S AND NODDY'S

## PACK

Fun and educational for  
2 to 11 years

(Some help may be required)

SPECIAL  
WITH AMIGA  
£39  
ALONE  
£59Noddy's Playtime  
OR Big Adventure  
OR Merlin's MathsThe Shoe People  
OR Fun School 2Fun School 3 or 4  
OR ADI Jnr Reading  
OR CountingDeluxe Paint II + 700  
Clip Art picsHobbyte Primary  
Educational PD PackHobbyte 30 Easy  
Children's Games Pack

## Easy Amos

OR AMOS Professional  
ADD £10 for this optionHobbyte AMOS PD  
GreatsDeluxe Paint III, plus  
700 Clip Art picsMIDI Recording Studio &  
MIDI Interface

## OR AmigaVision

## THE SERIOUS USER'S PACK

Interested in music,  
programming and graphics?

## Then this pack is for you!

WITH AMIGA  
£39  
ALONE  
£49

## The programming language. Wonderful manual is simple and entertaining - ideal for complete novices

## 97% AF rating - the second highest rating EVER

## Learn to professionally create your own games, utilities. Loads of sample progs included

## Dozens of utilities, Protracker music modules, example programmes that no AMOS programmer

## would be without.

## Create your own designs to incorporate into your

## AMOS progs

## If you have a MIDI instrument, this is everything you

## need to compose and edit your music

## Powerful presentation and production tool

## STARTER PACK

## A must for new users! All you need in one value pack

£15 £25

Make working copies of Workbench and other original

applications discs as soon as you get them

Check discs regularly, especially if sharing with friends

Help prevent dirt/dust collecting on mouse contacts

## 10 blank discs

## Virus Killer

## Mouse mat

## Plus Microswitched

## Joystick, 80 cap. lockable disc box, Dust Cover

## HOT BUG GAMES PACK

## The top-selling Hobbyte

## Hot Lot pack now

## includes the ultimate

## joystick!!!

## "THE BUG"

## 10 "Hot List" Games

## The GREATEST!

## 80 Prog, Hobbyte PD Greats

## Pack + see 'Hottest Lot Pack'

## Silkworm Helicopter 9

## Edd the Duck +

## Lemmings 92% A

## Round the Bend

## Continental Circus - 8 ro

## 92% AA@

## World Cricket

## Bar Simpson

## Spiderman/Captain Ameri

## Ice Hockey

## Xenon - C+VG Game of th

## Blade Warrior - A Power, A

## superb review

## Toobin Rapid Ridin

## AWARD WINNER

## Space Ace, Kick Off, PipeMan

## (counts as 2)

## + PARTICULARLY SUIT

## CHILDREN (MAY NEED

## @ NOT A1200 COMP

## TITLES MAY VAR

## \*DPIII needs 2MB for animation on

## HOME APPLICATION PACK

## Perfect for all Home

## Office needs

## Virus Killer Disk,

## 80 Prog, Hobbyte PD Greats

## Pack + see 'Hottest Lot Pack'

## Silkworm, 'Sideways' utility,

## spreadsheet, Database, graphics + comms module

## Keep track of credit card and bank

## accounts, budgets, etc

## STOP PRESS! Desktop Dynamite AGA pack (see 1200 box) £69 with Amiga £79 alone

\*DPIII needs 2MB for animation on

• AMIGA SPECIALISTS • STAR GOLD DEALER • CDTV CENTRE • PHILIPS APPOINTED DEAL



# Another great offer from a manufacturer you can trust



\*Price includes VAT and delivery

- High quality
- Renowned and proven reliability
- Styled plastic case
- Low power consumption
- Throughport facility for addition of further drives
- Suits any Amiga

Order with Confidence

✓ All Cumana products carry our 30 day money back guarantee

✓ All products carry our 12 month warranty

✓ All inclusive price

Cumana reserve the right to increase the price at any time. This offer is subject to availability.

NAME \_\_\_\_\_ ADDRESS \_\_\_\_\_

POSTCODE \_\_\_\_\_ TELEPHONE NO. \_\_\_\_\_

I would like to order ..... CAX354 Disk Drive(s) at £49.95 each

Please debit my ACCESS/VISA card (please delete);

Number \_\_\_\_\_ Expiry date of card \_\_\_\_\_ / \_\_\_\_\_

Signature \_\_\_\_\_

Cheques should be made payable to Cumana Limited.  
Orders may be placed by telephone - 0483 503121, or by fax -  
0483 451371, or sent to - Cumana CAX 354 Offer,  
Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH.



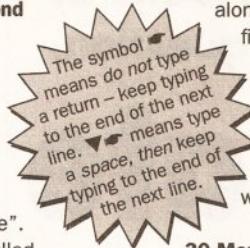
Manufacturers of quality products since 1979

# Readers' Listings

## Two Amiga Shopper readers win £25 for their AMOS programming efforts this month...

Our first listing this month is an image manipulation package written by Ian Dearing from Calcot in Reading. His code for handling image distortion is both cleverly written and concise. On the other hand the user interface is rather basic – or in Ian's own words “it stinks”. Obviously though you can re-write this section to add your own all singing and dancing routine. The second listing is a short routine to enlarge a sprite and centre it on the screen.

Now that we have a cover disk with each month's *Amiga Shopper* you don't even have to risk contracting “keyboard cramp” – you'll find the source code sitting on the disk in a directory sensibly named “Source\_Code”. Also in this directory you'll find a file called



“Distort\_Info.txt”, which contains some brief suggestions from Ian as to how you may wish to further develop his image package.



We're always interested to receive listings from readers – and remember, any that we print earn the sender the grand sum of £25. Please send us a hardcopy of the program along with a disk containing copies of all the files on it (source code, object code if any, plus all the appropriate documentation). Don't forget: it is theft to use anyone else's code without permission, so don't. And please include a signed statement that your code is all your own work. You know how we worry.

The address: *Listings, Amiga Shopper, 30 Monmouth Street, Bath BA1 2BW.*

```
*****
*** Image Distortion Program ***
*** By Ian Dearing ***
*** Finished on 20/09/93 ***
*****
```

```
*** User Enterable Information ***
SCR_WIDTH=320
SCR_HEIGHT=200
NUM_COLS=16
RES=Lowres
FILE$="" ** put the name of the IFF file that you wish to manipulate here ***
***
```

```
NUM_DIV_X=16
NUM_DIV_Y=10
```

```
** Set up screen with picture
** to distort on **
Screen Open
  0,SCR_WIDTH,SCR_HEIGHT+1,NUM_COLS,RES
Curs Off : Flash Off : Cls 0 : Palette 0,$FFF
Load Iff FILE$
```

```
** Set up screen to distort onto **
Screen Open 1,SCR_WIDTH,SCR_HEIGHT,
  NUM_COLS,RES
Curs Off : Flash Off : Cls 0
Screen Copy 0 To 1 : Get Palette 0
```

```
*** Screen for 'user interface' ***
Screen Open 2,SCR_WIDTH,SCR_HEIGHT,
  NUM_COLS,RES
Curs Off : Flash Off : Cls 0 : Get Palette 0
```

```
** Set up VARIABLES **
DIV_LEN_X=SCR_WIDTH/NUM_DIV_X
DIV_LEN_Y=SCR_HEIGHT/NUM_DIV_Y
Dim GRID_X(0,0,NUM_DIV_X,NUM_DIV_Y),GRID_Y(
  (NUM_DIV_X,NUM_DIV_Y)
Dim SP_X(DIV_LEN_X,DIV_LEN_Y),
  SP_Y(DIV_LEN_X,DIV_LEN_Y)
```

```
Global DIV_LEN_X,DIV_LEN_Y,
  NUM_DIV_X,NUM_DIV_Y
Global GRID_X(),GRID_Y(),SP_X(),SP_Y()
```

```
** Set initial values in grid *
For Y=0 To NUM_DIV_Y
  For X=0 To NUM_DIV_X
    GRID_X(X,Y)=X*DIV_LEN_X
    GRID_Y(X,Y)=Y*DIV_LEN_Y
  Next X
Next Y
```

```
** Change the grid layout **
Repeat
  Screen Copy 0 To 2
```

```
DISPLAY_GRID
Repeat : M=Mouse Key : Until M<>0
If M<>2
  X=X Screen(X Mouse) : Y=Y
  Screen(Y Mouse)
  X_GRID=(X+DIV_LEN_X/2)/DIV_LEN_X : Y_GRID=(Y+DIV_LEN_Y/2)/DIV_LEN_Y
  Repeat : Until Mouse Key=0
  Repeat : Until Mouse Key=1
  GRID_X(X_GRID,Y_GRID)=X Screen(X Mouse)
  GRID_Y(X_GRID,Y_GRID)=Y Screen(Y Mouse)
End If
Until M=2
```

```
Screen Close 2
For Y=0 To NUM_DIV_Y-1
  For X=0 To NUM_DIV_X-1
    X1=GRID_X(X,Y) : Y1=GRID_Y(X,Y)
    X2=GRID_X(X+1,Y) : Y2=GRID_Y(X+1,Y)
    X3=GRID_X(X,Y+1) : Y3=GRID_Y(X,Y+1)
    X4=GRID_X(X+1,Y+1) : Y4=GRID_Y(X+1,Y+1)
    If X1<>X*DIV_LEN_X Or X2<>(X+1)*DIV_LEN_X
      Y1<>Y*DIV_LEN_Y Or X2<>(X+1)*DIV_LEN_Y
      Or Y2<>Y*DIV_LEN_Y Or X3<>Y*DIV_LEN_Y
      Or Y3<>(Y+1)*DIV_LEN_Y
      Or X4<>(X+1)*DIV_LEN_X Or Y4<>(Y+1)*DIV_LEN_Y
      DISTORT_AREA[X,Y,GRID_X(
        (X,Y),GRID_Y(X,Y),GRID_X(X+1,Y),
        GRID_Y(X+1,Y),GRID_X(X,Y+1),GRID_Y(
          (X,Y+1),GRID_X(X+1,Y+1),GRID_Y(X+1,Y+1))]
    End If
  Next X
  Next Y
```

```
Procedure DISPLAY_GRID
  Ink 7
  For X=0 To NUM_DIV_X
    Draw X*DIV_LEN_X,0 To
      X*DIV_LEN_X,NUM_DIV_Y*DIV_LEN_Y
  Next X
  For Y=0 To NUM_DIV_Y
    Draw 0,Y*DIV_LEN_Y To
      NUM_DIV_X*DIV_LEN_X,Y*DIV_LEN_Y
  Next Y

  Ink 15
  For Y=0 To NUM_DIV_Y
    Plot GRID_X(0,Y),GRID_Y(0,Y)
    For X=1 To NUM_DIV_X
      Draw To GRID_X(X,Y),GRID_Y(X,Y)
    Next X
  Next Y

  For X=0 To NUM_DIV_X
    Plot GRID_X(X,0),GRID_Y(X,0)
    For Y=1 To NUM_DIV_Y
      Draw To GRID_X(X,Y),GRID_Y(X,Y)
```

```
Next Y
Next X
End Proc
```

```
Procedure DISTORT_AREA[GRID_X,
  GRID_Y,X1#,Y1#,X2#,Y2#,X3#,Y3#,X4#,Y4#]
  ** Create point X and Y's
  ** Work out all the individual values **
  YDIV#=DIV_LEN_Y*1.0
  DIFF1_X#=(X3#-X1#)/YDIV# : ▶
  DIFF1_Y#=(Y3#-Y1#)/YDIV#
  DIFF2_X#=(X4#-X2#)/YDIV# : ▶
  DIFF2_Y#=(Y4#-Y2#)/YDIV#
```

```
For YP=0 To DIV_LEN_Y
  DIFF_X#=(X2#-X1#)/(DIV_LEN_X*1.0)
  DIFF_Y#=(Y2#-Y1#)/(DIV_LEN_X*1.0)
```

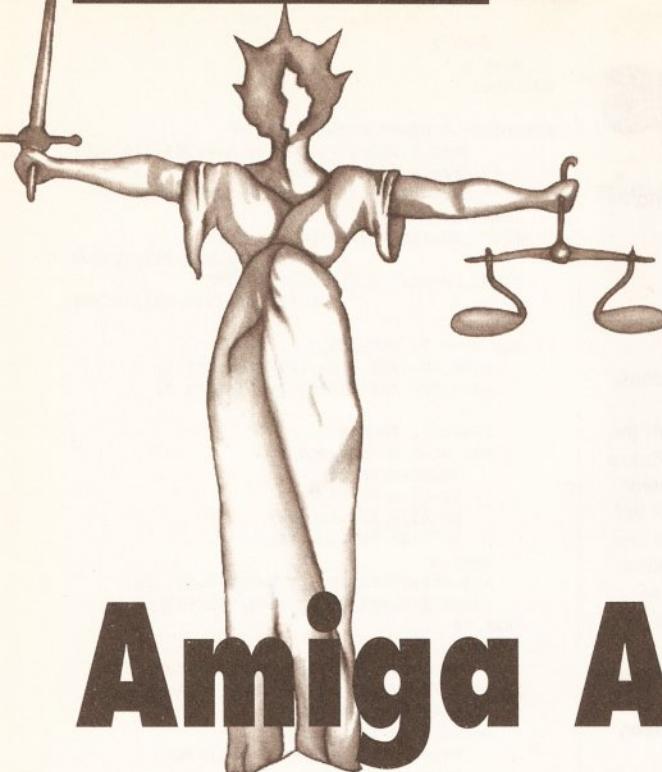
```
  X#=X1# : Y#=Y1#
  For XP=0 To DIV_LEN_X
    X#=X#+DIFF_X#
    Y#=Y#+DIFF_Y#
    SP_X(XP,YP)=Int(X#)
    SP_Y(XP,YP)=Int(Y#)
  Next XP
  X1#=X1#+DIFF1_X# : Y1#=Y1#+DIFF1_Y#
  X2#=X2#+DIFF2_X# : Y2#=Y2#+DIFF2_Y#
  Next YP
```

```
  ** Displays distorted quadrilateral **
  XA=GRID_X*DIV_LEN_X : YA=GRID_Y*DIV_LEN_Y
  For Y=0 To DIV_LEN_Y-1
    For X=0 To DIV_LEN_X-1
      Screen 0 : I=Point(X+XA,Y+YA)
      Screen 1 : Ink I
      Polygon SP_X(X,Y),SP_Y(X,Y) ▶
        To SP_X(X+1,Y),SP_Y(X+1,Y) ▶
        To SP_X(X+1,Y+1),SP_Y(X+1,Y+1) ▶
        To SP_X(X,Y+1),SP_Y(X,Y+1)
    Next X
    Next Y
  End Proc
```

And finally, here's a little AMOS routine from Tim Blacklock of Sheffield, whom we last met back in *Amiga Shopper* 29. This routine enlarges a sprite to the size of the current screen and then centres it in the middle of the screen. You should substitute the name of the sprite bank you want to use in the **Load** instruction at the second line.

```
' Bob Picture
' By Tim Blacklock
'
If Exist("Amos:Zoom.abk")=True Then ▶
  Load "Amos:Zoom.abk"
Load "A_Sprite_Bank.abk"
Screen Open 0,320,256,32,Lowres
Curs Off : Flash Off : Cls 0
Screen Hide : Hide On
Get Sprite Palette
_ZOOM_SPRITE[1,7,15]
Screen Show
Wait Key
Procedure _ZOOM_SPRITE[_BOB_NUM,SCR,BORD]
  SC=Screen : SCC=Screen Colour : ▶
  SW=Screen Width : SH=Screen Height
  A=Sprite Base(_BOB_NUM)
  SPW=Deek(A)*16
  SPH=Deek(A+2)
  Screen Open SCR,16+((SPW/16)*16) ▶
    ,16+((SPH/16)*16),SCC,Lowres
  Curs Off : Flash Off : Cls 0
  Screen To Back SCR : Paste Bob 0,_BOB_NUM
  Zoom SCR,0,0,SPW,SPH To SC,0,0,SW,SH
  Screen Close SCR
  Screen SC
  X=(SW/2)-(SPW/2)
  Y=(SH/2)-(SPH/2)
  Ink 0
  Bar X,Y To X+SPW,Y+SPH
  Paste Bob X,Y,_BOB_NUM
  Ink BORD
  Box X,Y To X+SPW,Y+SPH
End Proc
```

For full details of all the other goodies on this issue's cover disk, turn to page 12. **AS**



**Buying hardware or software isn't the only time you need to know your rights as an Amiga shopper. Alex Soboslay explains where you stand when you need to get your Amiga kit repaired, then looks at the copyright question.**

# Amiga Advocate

**I**n past instalments of Amiga Advocate, we have looked at the legal position when you buy something either in a shop or by mail order, what you are entitled to expect and what your rights are if the goods are faulty in some way, and how to get things put right if there is a problem, including how to enforce your rights through the County Court's "small claims procedure". But buying goods is not the only time you might come up against legal problems. What if you have owned your Amiga for some time and it needs repairing?

If your Amiga is less than a year old, you should have no problem – it will still be under the manufacturer's warranty and should be fixed free of charge by an authorised repairer. The only exception to this will be if the fault was caused by misuse, some form of unauthorised tampering or accidental damage, not a manufacturing defect or "fair wear and tear". In this case, the same legal principles will apply as if the

machine was out of warranty.

Let's be clear right from the start that problems with repairers are very rare. There is generally not a lot of profit to be made from computer repairs, so there are not many cowboys in the field, just skilled professionals with a genuine commitment to customer service – they wouldn't stay in business very long if they were anything less. However, we have received complaints even about large repair companies, so it's always possible for things to go wrong, and always best to know your rights.

There are three possible areas where disputes might arise: the cost of the repair, whether the repair is done satisfactorily in the first place, and what happens if things go wrong afterwards. Let's look at the question of cost first.

In general, a repairer is entitled to ask any reasonable price he likes – it really pays to shop around here, even more than when you're looking to buy, but remember that an unrealistically cheap repair may be a

bad bargain if you then have to get your equipment repaired all over again, or worse, if a bodge job causes even more damage.

When you're shopping around, ask for a *quotation* in writing – if you accept it, there is a binding contract and that is the price you will pay. An *estimate* is only an approximation – the final cost may turn out to be higher, though you should still ask for it in writing as well. Of course, the terms "estimate" and "quotation" are often used loosely, so it is wise to make absolutely sure in plain language whether the price you are quoted is a *firm, fixed* price or not. Sometimes repairers will specify that a quotation or estimate is valid for 14 days or a month, giving you time to think it over and get other quotes, but it is always a good idea to have both the offer and the acceptance in writing, setting out exactly what work is to be done and what the agreed price is.

Sometimes an estimate will have the letters "E&OE" on it somewhere in fine print. This stands for "Errors

and Omissions Excepted", and simply means that the price may be different if something has been overlooked or a mistake has clearly been made. If for instance a repairer has accidentally written "£30" and you accept the price because everyone else has quoted £300, you are not going to get away with it just because it is written down (and you don't deserve to either, just for trying to pull a fast one!). This applies even if the estimate gives a "firm" price. However, putting "E&OE" on an estimate does not entitle the repairer to ignore the quoted price entirely – if the work done is substantially what was quoted for and there is no *obvious* error of this sort, the price should not vary much.

## THE PRICE OF CHIPS

The general principle is to agree as much as possible in detail (and ideally in writing) before the repair is begun. It is reasonable to ask for a firm price and a firm time for the work to be completed, but a repairer is fully entitled to reserve the right to charge more than estimated if there is a rise in the cost of labour or materials – to cover himself, for instance, against unpredictable events such as the recent worldwide rise in the cost of memory chips, caused by a fire in the factory in Japan that manufactured most of the world's supply of the resin which integrated circuits are embedded in. You can however always ask for the estimate to become a firm price once you accept it – the repair will presumably be carried out soon afterwards, and the repairer should have a good idea of current costs. If he won't agree to this, try at least to get a *maximum* price in writing. You are also entitled to object to any conditions the repairer tries to impose limiting his responsibility for any damage he causes to your property or for defective work – these would be regarded as "unfair" contract terms and cannot be enforced.

Sometimes the repairer may say it is not possible to tell exactly how

## WHO HAS THE RIGHT TO COPY?

**A friend and I are starting up a disk-based magazine, and we were wondering if we could legally include screenshots of games we reviewed (grabbed with an Action Replay or similar). Other magazines do it...**

**Simon Lewis, Devon**

What you suggest is perfectly legal, Simon. The Copyright Designs and Patents Act specifically says you may reproduce copyright material as part of a bona fide review – but beware of using screenshots out of the review context, just as

decorations or pretty pictures on their own. That would be more questionable.

### PIRATES AHOY

**A local market stall has a box of Amiga software for sale, but they have no boxes or manuals and the disks have hand-written labels. Is this legal? No. These are obviously illegal "pirated" copies. Strictly speaking, you don't even have the right to copy a program you've bought yourself unless the manual or the licence agreement that came with it**

specifically says that you can copy it to make a back-up. You can never legally make copies for friends. The exception is programs that are clearly marked "public domain" or PD, which means that the author has given permission for anyone to copy and distribute the program – but always check the document file on the disk to make sure you are allowed to copy it and always leave the document file intact on any copies you make.

Pirates should be reported to the Federation Against Software Theft (FAST) □ 0628 660377.

much work is required until he opens up the computer and takes a look. This is entirely reasonable. But bear in mind that a repairer is entitled to charge you for the work involved in assessing what is needed and preparing a quotation even if you don't have the repair done by him – so check first!

### VARYING THE COST

As we've seen, there are some circumstances in which even a "firm" price might vary – if there has been a clear error, for instance, or if the repairer had reserved the right to cover increases in costs. You can also expect the bill to be higher if you ask for something more to be done once the repair work has been begun, or if you want some of the agreed work changed – but in these cases you should ask for a new "firm" price before giving the okay for the work to continue.

If any extra work is done without your prior agreement, you are *not* obliged to pay for it. A reputable repairer should contact you if he discovers something else that needs attention, not just go ahead and then add it to the bill afterwards. And speaking of adding things: the repairer cannot just slap an extra 17.5% on top of the quoted price for VAT. If there was no mention of VAT, the law is that VAT is assumed to be included in the price. VAT can be added only if the price quoted *explicitly excluded VAT*.

And finally, don't panic: even if no price was agreed at all up front, the law says that the price charged must be "reasonable", so you have some legal fall-back even if you haven't protected yourself in advance.

### POSSESSION IS NINE-TENTHS OF THE LAW

Unfortunately, we now come to the most onerous aspect of getting repairs done. The law gives repairers what is called a "lien" (pronounced "lean", more or less) over goods left for repair – that is, the right to retain possession of the goods until paid. This means that even when you disagree with a repairer's charge, *you must pay it to get your property back*. This applies even if the bill is substantially more than an estimate or quotation.

If you find yourself in this position, make sure that the repairer knows you disagree with the price charged. Let him know that you are paying "under protest". As soon as possible afterwards, put it in writing: write confirming that you paid under protest to get your property back and asking the repairer to refund the overcharge. Set out the grounds for your protest: the price was substantially higher than the

estimate, or included work you had not agreed to in advance, or was simply not "reasonable" – but if you claim this, you must be prepared to prove what would have been reasonable, by producing firm quotations from other repairers for the same work, for example. State what you think the price should have been, and give the repairer a reasonable time to respond (say about 10 to 14 days). If he does not do so, or digs in his heels, you have exactly the same legal options open to you as if you had a dispute over goods: talk to a solicitor, your local Citizen's Advice Bureau, local Trading Standards Office, or County Court.

### ALL WORK GUARANTEED

What about problems with the quality of the repairs? The law says that you are entitled to have the repairer use professional care and skill and use only materials fit for the purpose. We've all heard stories about repairs that were not done properly, or not done at all but still charged for – cases where somebody later opened up his Amiga and found that a component had not been replaced as claimed at all, and so on. In such cases, the law is the same as for defective goods: you should complain as soon as you discover the defect and seek to have it put right. If you continue to use the goods, you may be presumed to have accepted the quality of the repair.

Obviously you will have difficulty if the defective nature of the repair does not show up for some time – you clearly shouldn't open up your Amiga and have a poke around just to check up on the repairer, even if you know your way around its insides pretty well, because this will make it impossible to prove that the defect was attributable to the repair and not to you yourself. However, you should certainly check that the fault you originally wanted repaired has been fixed. If possible, ask the repairer to show you the machine working in the shop and try it out before you accept it back. If it's not okay, politely insist that the repair be done to your satisfaction. No repairer is likely to argue if he can see that the machine is still not working properly.

If the same problem comes back some time later, you should politely ask the repairer to put it right again. Most repairers will guarantee their work for some specified time – usually 30 days, but sometimes longer – so you won't have to pay anything if the fault recurs within this period, and many repairers will take another look for nothing even beyond their guarantee time if the fault is identical, though they are not legally obliged to. The law will step in only if the fault recurs because the original repair work was not done

professionally or was done with unfit materials – but this will be up to you to prove, and that means finding an independent expert such as another repairer who is willing to say so, preferably in writing.

If the repairer has deliberately misled you about what he'll do and the materials he'll use, he can be prosecuted under the Trade Descriptions Act. If you think this is the case, contact your local Trading Standards Office (listed under your local council in the telephone book).

### DISASTER RELIEF

What if the repair has been a real bodge job and gone seriously wrong later? In one case, a badly-repaired Power Supply Unit blew up, causing damage not only to the Amiga it was connected to but also flash burns to other property near it. The law is clear-cut: a repair where the repairer has not used professional care and skill, or where he used materials not fit for the purpose, is a breach of contract, and you are entitled to sue for:

1. the cost of having the original defects put right by someone else,
2. the cost of remedying any new defects for which the repairer is responsible (in this case, the cost of replacing chips damaged by the explosion of the PSU),
3. the cost of damage to property caused by the defects (in this case, the damage caused by flash burns – but this "consequential" loss may be limited only to *direct* consequences of the defect, though in some cases the courts have awarded compensation for more remote losses such as loss of earnings),
4. compensation for the loss in value of the goods caused by the defects, and
5. compensation for any injury caused by the defects.

It will make no difference if the repairer has inserted a condition into the contract seeking to limit his liability – "Liability is limited to the first £50 of damage howsoever caused", or something of that sort.

The Unfair Contract Terms Act specifically says that such conditions have no effect in law.

You can also sue a repairer for damage to your property while it was in his possession or for loss of it, but only if he has been negligent. If your Amiga is stolen from his shop, for example, despite normal and "reasonable" security precautions (there's that word again!), you will not be entitled to sue him, because he has not been negligent. (The exception is if the thief was one of his employees.) For this reason, it is important to arrange your own temporary insurance when you leave something for repair – or check your Home and Contents insurance: many policies include coverage for goods left for repair.

A repairer is not entitled to sell your property, nor are receivers if the repairer has gone bust, except if you owe money for the repair, have not returned to collect the goods, and have not responded to reasonable attempts to contact you.

### TIME, PLEASE

Finally, what if the repairer just seems to be taking forever to carry out the repair? If you have agreed a time in advance, this may be an enforceable term of the contract, though there may be some argument about whether it is an *essential* condition – if it is not, you may not be entitled to cancel the contract because he is taking too long. The Supply of Goods and Services Act 1982 says that if no time is specified, repairs must be carried out in a "reasonable" time. If they are not, and you can't get your computer returned to you, a court may be willing to grant you an "order for specific performance" – a court order telling the repairer to finish the job within a given time, which makes time an essential condition – or else order the return of your equipment. But if time is really important to you, the best advice is to make sure you say so up front. Here again, it is always good practice to know exactly what you are agreeing to. **AS**

## HAVING PROBLEMS?

If you are involved in a dispute of any kind, always try to resolve the problem with the dealer or supplier first in an amicable way. If that doesn't work, seek advice from a solicitor or from one of the following (check your local phone book for the number or address):

- Citizen's Advice Bureau
- Trading Standards Office (listed under your local council)

- Office of Fair Trading
- County Court (ask about the "small claims procedure").

Amiga Advocate is intended only as a guide to the law in England and Wales, and you should not rely solely on anything said here. We cannot give direct advice on individual cases, act as arbitrators in any dispute, or reply personally to any correspondence.

# Reader Ads

...or your chance to reach 50,000 fellow Amiga owners for only a fiver.

## FOR SALE

**Amiga Video** blender, frame grabber broadcast titler £600. Action replay 3 £30. Aviator joystick, *Epic, Desert Strike, B17* £70. South East London area. ☎ 071 237 7762 after 6 p.m. and ask for John

**Amiga Shopper** magazines for sale. Every issue 1 - 30 as new with disks. Offers to Alan ☎ 0622 758801

**A1200**. Two 100Mb hard drives, and one floppy in a mini tower. Internal clock, joysticks and Phillips monitor. Serious software and games. All Insured for two years. Only £800. ☎ 0244 383639

**A600 2Mb RAM**, 60Mb hard drive £195. 1084ST colour monitor £100. Panasonic KXP1123 24pin mono printer £95. All little used, mint. *Gold Disc Office* £25. *Home Office* £18. ☎

0270 882765

**Amiga 1200** 60Mb hard disk, software, Commodore monitor. *Degrader* software for compatibility. Excellent condition £800 ☎ Exeter 0392 214983

**Power Computing** 4Mb RAM expansion for A500 £79. Rendale 8802 Genlock with control cable £69. Keyboard ROM sharer £10. ☎ Kelso 0573 223242 after 6 pm.

**SASC 5.10** complete package £120. *Scrabble* boxed new £20 ono. *Take 2* boxed new £25 ono. ☎ 081 6904061

**Amiga 1500**, WB 2.04, 80Mb GVP hard drive, 9Mb RAM, 1081 monitor, mouse, ten blank disks, lots of software, joystick, all excellent condition £700 ono. ☎ David 0902 789448

**Amiga Shopper** back issues at good prices. Issues 1 -

27 all as new. Where Future Publishing has sold out I will supply. ☎ Daniel 0257 253367 Make me an offer.

**Pagesetter II** £15, *DPaint III* £10. *Falcon + Mission disk* £10, *Maniac Mansion* £10, *Word Perfect V4.1* £25, *Sleep Walker* £10, *Gunship 2000* £15, *Blues Brothers* £8. ☎ Warrington 0942 270417

**Amiga 500 WB2**, 1Mb, 20Mb A590, 2Mb RAM. All disks and manuals. Original games and software included by negotiation £250 ono. ☎ Rob 071 281 7549 evenings.

**KCS PC** power board for A500. Boxed (as new) with DOS. Will accept any reasonable offer. ☎ Mike 081 561 0361

**GVP 52Mb** H-drive £150. GVP 52Mb H-drive, 4Meg 24bit RAM £250. Swift 24e colour printer £200. A500

internal d-drive £20. Workbench 2.04 + 1.3 ROM-chips £30. Originally cost £1150. £600 the lot. ☎ 0343 549046 (Scotland) after 6 pm.

**Amiga Magazines**. *Amiga Shopper* 1-17. *Amiga Computing* 31-50. *Amiga Format* 9-52. All with cover disks. GVP HD8 hard drive 52meg, 2meg memory. Offers please. ☎ 0506 52795

**Amiga 500+** 2meg RAM extra disk drive A590HD colour monitor complete with workstation and colour printer. All leads, all boxed as new. Excellent condition, loads of extras £484. ☎ 0329 663283

**Amiga 4000**, two 1MB SIMM modules £65. ☎ James 0752 558847

**Supra RAM** memory card for Amiga 2000 with 2Mb £65. *Lattice C* compiler version

5.1 £85. *Sculpt 3D* and *Animate 3D* £65. ☎ 0305 770453 after 6 pm.

**Three and half inch** 1.44Mb PC drive with cable £25. *Vista Pro 3.0* £40. *DRT'S Tiger Cub* sequencer £30. Both boxed. ☎ West Sussex 0403 242102

**Amiga 1500 / 2000 GVP** series II HC8 with 50Mb hard drive, 8Mb RAM software £300 ono. ☎ Doug 0842 815049 after 5 pm.

**Amiga in Checkmate** case with KCS PC board, GVP 52Mb HD, 4Mb fast RAM, VXL-30 plus 2Mb 32bit RAM with 1084S monitor plus £300 of software. £900. ☎ 0382 644619 after 6 pm

**68030 MMU** A500, 68882 FPU both 36MHz. 12.5Mb total RAM. 105Mb hard drive, monitor, BJ10EX printer, Suprafax 32Bis modem. May sell separately. Make me an offer. ☎ 0733 266719 (24 hour Ansaphone)

**US Robotics** 16.8 dual standard modems for sale! Only £390 each!!! ☎ 0279 843693 and ask for Richard. After 5 pm please.

## It's only £5 to sell your used hardware and software in *Amiga Shopper*

Sell your excess hardware and software with *Amiga Shopper* Reader Adverts. Just fill in the form and send it to us along with a cheque (made payable to Future Publishing) or postal order for £5. But **BE WARNED**. This magazine is not a forum for selling pirate software or other illegal goods. Software must include all issue disks, manuals and

a signed statement that all other copies have been destroyed. Please advise us if you are offered pirate or copied software by advertisers. All ads are accepted in good faith. The editor reserves the right to refuse or amend ads. We accept no responsibility for typographical errors or losses arising from the use of this service.

Trade ads will not be accepted, including anyone advertising the sale of PD software.

Name .....

Issue 32

Address (not for publication) .....

Postcode .....

Date .....

Tel .....

Tick one box to show required section heading

For sale .....

Wanted .....

Personal .....

Fanzines .....

Use one space for each word. Only the words in this section will be printed.


Return with your

cheque to:

**Reader Ads,**

**Amiga Shopper,**

**30 Monmouth**

Street,

Bath,

**Avon BA1 2BW**

**GVP HD8+** 105MB HD, 2Mb Fast RAM, inc. manuals, boxed £300, or with A500, WB 2.04, 1Mb Chip mem, + manuals, Fatter Agnus, £400. ☎ Chris 061 628 0314

**A1500 1.3/2.04** switchable, two floppy drives, Supra 48meg hard drive, 10meg RAM, manuals, *Deluxe Paint 3* £550. Rendale 8802 S-VHS genlock faders, wipes, both items excellent condition £300 ☎ York 0904 421968

## FANZINES

**Upstream Magazine**. A new disk magazine selling for £3. Write to Mark Crosby, 78 Beckingham Green, Basildon, Essex, SS13 1PF. Cheques payable to Mark Crosby or ☎ Basildon 0268 559164

Unfortunately we cannot guarantee insertion in a particular issue.  
I have read and understood the conditions for the inclusion of my ad.

Signature .....



## DATAPLEX COMPUTERS LTD.

129 Bath Road,  
Slough,  
Berkshire,  
SL1 3UW  
Tel: 0753 535557  
Prices including VAT

19 High Street,  
Old Town,  
Swindon, Wilts  
Tel: 0793 488448

SHOWROOM  
open:  
Mon - Fri  
9.30 - 5.30  
Saturday  
9.30 - 4.30

MAILORDER  
Consumables  
add £2.50  
Hardware  
add £14.00  
(courier)

### AMIGA A1200

- \* 2 Meg RAM
- \* PSU, Mouse
- \* Free box of 10 disks
- \* Mouse Mat
- \* Summer Pack

**£299.99 inc VAT**

### AMIGA A1200

Plus Free Games

#### PACKAGE AS ABOVE PLUS

- \* ZOOL
- \* Striker

\* Pinball Dreams \* Trans Write (word processor + spell checker)

**£299.99 inc VAT**

### INTERNAL HARD DRIVE

60 Meg Internal Hard Drive Kit.....£159

80 Meg Hard Disk Kit.....£229

120 Meg.....£329

(The above are suitable for A600 and A1200 but will invalidate your Amiga warranty)

### AMIGA A1500

new version

A1500 Accounts Plus pack including Puzznick, Toki, Elf, Operation Systems Software, Home Accounts, Platinum Works, Deluxe Paint III + manual

**£499 inc VAT**

### ADDITIONAL PACKS

Amiga A500 Plus Cartoon Classics with 10 extra games.....£299

### ACCESSORIES

512K Ram + clock	£35.00
1 Meg Ram + Clock	£115.00
A500 Power Supply Unit	£45.00
1Mb Upgrade for A500 Plus	£49.00
14" screen filter	£17.00

### MONITORS

Philips CM8833 MK II Colour Monitor + FREE Lead.  
**£199 inc VAT**  
with 1 year on-site maintenance

### PRINTERS

Star LC20 Mono	£135
Star LC200 Colour (9 pin)	£188
Star LC24-20 (24 pin)	£194
Star LC24 200 Colour (24 pin)	£258
Panasonic KXP 1193	£170
Panasonic KXP2123 (24 pin black)	£185
Panasonic KXP2123 (24 pin colour)	£225
Citizen 120D +	£110
Citizen Swift 24E + Colour Upgrade	£990
Citizen Swift 9 + Colour Upgrade	£195
Citizen 24OC (colour)	£990
Starjet Bubblejet Printer, SJ48	£99
Canon BJ10SX	£209
HP Deskjet 500 + Leads	£340
HP Deskjet 500 (colour)	£420
HP Deskjet 550 (colour)	£585
HP Laserjet 4L	£585
All above come complete with leads	

### AMIGA HARD DRIVES / HARD CARD (GVP SERIES II)

FOR A1500	
89Mb h/card (0.8Mb)	£325
120Mb h/card (0.8Mb)	£390
FOR A500	
40Mb h/dive (0.8Mb)	£99
89Mb h/dive (0.8Mb)	£359
120Mb h/dive (0.8Mb)	£455
Upgrade the above with 1Mb SIMM module	£39

### AMIGA DRIVES

1 Meg 3.5" Internal	£55
1 Meg 3.5" External (Roclite)	£59

# POOLSWINNER

1993/4 THE POOLS PREDICTION PROGRAM WITH ARTIFICIAL INTELLIGENCE

## Gold



£42.50

THE LEGENDARY POOLS PREDICTION AID, Poolwinner, now has artificial intelligence. The latest version of the program, Poolwinner Gold, has the power to learn from the results of its own predictions, constantly adjusting the prediction formula to improve performance.

• AUTOMATIC FIXTURE GENERATION : Fixtures for English and Scottish League matches are generated automatically by Poolwinner Gold (yearly updates are available from Selec).

• MASSIVE DATABASE 22000 match database over 10 years.

• PREDICTS SCOREDRAWS, NO-SCORES, AWAYS AND HOMES

Predictions are based on many factors .. recent form, the massive database, league standing, goal scoring rates, and draw averages.

The user can adjust all parameters.

• SUCCESSFUL Selec guarantee that Poolwinner performs significantly better than chance.

• LEAGUE AND NON-LEAGUE matches are covered. Can be used for the non-league and amateur matches often on the coupon.

• FULL LEAGUE TABLES (home & away) are automatically generated by the program as results come in.

• UPDATED WEEKLY. Poolwinner Gold is supplied fully updated with all league results from the start of the season

• IMMEDIATE USE No need for tiresome input of previous results. All results are already in the program - predictions can start immediately.

• PACKAGE CONTAINS disc, detailed operating manual and support literature.

Also available from Selec ...

### COURSEWINNER V4 £36.50

THE PUNTER'S COMPUTER PROGRAM. With artificial intelligence. Uses past form, going, distance, speed ratings, prize money etc. Contains British course statistics - best jockeys, trainers, draw effect etc. Detailed analysis of all runners in a race, with profit. Sophisticated aid to successful betting, with a long pedigree.

### POOLS PERM PLUS £32.50

Perm analyser and checker, complete with 5 years of coupon results and popular perms for analysis. Checks your weekly entry for winning lines, or tests your theories on results over the last 5 years. Reveals all the weeks a bet would have won, and the probable dividend.

Formats available:

IBM (386), AMIGA, ATARI ST / Falcon

All programs are supplied on disc, packaged with detailed instruction manual, and support literature.

Prices are inclusive of VAT & delivery



Send cheque / PO  
for return of post service to ....

**Selec Software** (Est. 1984)

62 Altrincham Rd, Gatley, Cheadle, Cheshire SK8 4DP

(send for full list of our software)



£0.95

# Audio Gallery

Educational Software \* Foreign Languages

### Chinese



### Japanese



### English



### Korean



### French



### Russian



### German



### Spanish



(Italian and Portuguese also available, Dutch in Nov, '93)

### Testimonials from Audio Gallery Users:

"It is really more than just a dictionary. I would have bought this much sooner had I known how in depth it is. As a Foreign Language teacher, I really appreciate it. This is a very high quality product... one of the first computer FL programs to use current FL methods." *Ankeny, IA*

"Wowee! The Spanish Audio Gallery Demo Disk is wonderful. Words can't describe how pleased we were with the sample. What a great learning tool. Please let us know when you have available Spanish Audio Gallery #2... Thanks again for such a wonderful product. You have a winner on your hands." *Bartonville, IL*

### Reviews from Amiga Magazines:

"A truly original idea is a rare thing... Fair-Brothers, Inc. in the US has apparently achieved the impossible by releasing a product that stands alone in the market, offering the answer to a question that's hitherto been ignored... the mastering of a foreign language... it could become the perfect learning tool for all ages." *Amiga Computing*

"There has been nothing like this on the market before and I recommend it for language teachers and anyone (who) wishes to add to their language skills." *Peter Furey, Western Australia Times*

"The program makes use of the Amiga's excellent sound capabilities and provides digitized voices of native speakers - a most expedient way to learn a foreign language." *Amiga World*

- \* All words and phrases Fully Digitized Speech
- \* Includes Dictionary, Pronunciation Guide, Quizzes
- \* 25-30 Topics such as Weather, Numbers, Food, etc.
- \* 7-8 Disk Set - For the Student, Traveler, Businessman

### Coombe Valley Software

18 Nelson Close

Teignmouth

Devon TQ14 9NH

0626 779695

European Languages: £29.95

Oriental Languages: £34.95

Please specify language when ordering. Free brochure available (send SASE). Send £1 (rebatable on registration) for Demo Disk (specify language). *Audio Gallery* is copy right © 1993 by Fair-Brothers, Inc., 5054 S. 22nd Street, Arlington, Virginia 22206, USA. Tel: (703) 820-1954. Fax: (703) 820-4779. Distributed in Australia by Mallee Software, David G. Campbell, Underboor South Road, Underboor, Victoria 3509, Australia. Tel: (050) 946-358.



# THE CENTRE OF TEC

## WTS ELECTRONICS LTD, CHAUL END LANE, LUTON



### Amiga 1200 Packs

- 32-bit 68020 Full power
- On site warranty
- Two Python joysticks
- Free Paint package software
- Mouse mat
- A1200 Standalone £274
- A1200 with 20 MB £354
- A1200 with 40MB £399
- A1200 with 60MB £424
- A1200 with 80MB £439
- A1200 with 120MB £509
- A1200 with 200MB £599



### Amiga 4000 Packs

- AGA Chip set
- 68030/40 processor
- Co-pro option
- 2MB/4MB RAM
- A4000 030 with 80MB HD & 2MB £89
- A4000 030 with 80MB HD & 4MB £99
- A4000 030 with 120MB HD & 4MB £106
- A4000 040 with 120MB HD & 6MB £199

### A1200 Dynamite pack

Simply add to pack price  
CD32 £45  
CD32 £28

### A1200/A600 Hard Drives



- Easy to install upgrade kits
- Full instructions and cables where necessary
- All drives supplied with formatting instructions and software
- Free fitting available - phone for details
- 20MB HD Upgrade Kit £85
- 40MB HD Upgrade Kit £135
- 60MB HD Upgrade Kit £154
- 80MB HD Upgrade Kit £169
- 120MB HD Upgrade Kit £249
- 200MB HD Upgrade Kit £329

### A1200/A600 Memory Upgrades

- A1200 PC 1204 4MB + clock (Co-pro option) £198
- ProRam 2MB PCM-CIA A600/A1200 £118
- ProRam 4MB PCM-CIA A600/A1200 £127
- ProRam 1MB A600 £37
- A1200 Real Time Clock £17

### Amiga 500 Hard Drives



### High Quality GVP Hard Drives

	A500	A1500
120MB	£429	£382
500MB	£989	£942
1GB	£1189	£1142

### Internal Hard Drives for A500

- Easy to install - Full instructions
- ICD technology
- Pro Internal 20MB hard drive £175
- Pro Internal 40MB hard drive £245
- Pro Internal 80MB hard drive £295
- Pro Internal 120MB hard drive £355
- Pro Internal 200MB hard drive £455

### Monitors



- Philips 8833 MKII Monitor £189

- Commodore 1084s £174

- When purchasing with an Amiga deduct £10 from above pricing

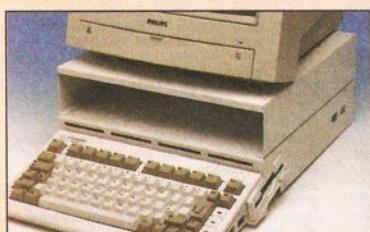
- Dust cover for the above £5

### SVGA /Multisync Monitors



- 14"/20" Super high resolution colour display
- Professional IBM compatibility
- Complete with cable
- Full UK warranty
- Tilt & swivel stand
- A1200 SVGA Monitor (Displays high productivity modes) £22
- A1200 SVGA+ Monitor (Medium resolution, displays all modes high and low) £27
- A1200 SVGA+ Monitor (High resolution, displays all modes) £36
- A1200 SVGA plus 20" Monitor (Displays all modes ideal for DTP,CAD etc.) £104

### Workstations



- Ergonomically sound
- Facilitates up to three external floppy drives
- Made in the UK
- Strong and robust
- Aesthetically pleasing
- Keep your desk neat and tidy
- Supplied complete and assembled with free mouse mat

• A500 Workstation	£36
• A600 Workstation	£36
• A1200 Workstation	£36
• Workstation Coverall dust covers	£5

### Peripherals



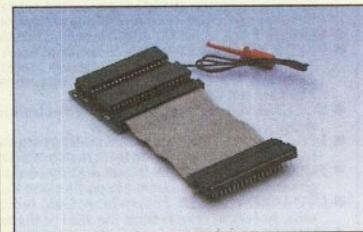
- 100 Capacity lockable disk box £13.99
- Squick mouse £1.99
- Mouse mat £9.99
- TDK high quality DSD (10) disks £6
- Computer Mall DSD (10) disks £13.99
- Jet Fighter joystick £6.99
- Apache joystick £9.99
- Python joystick £14.99
- Zipstick joystick £29
- Screen Beat speakers £39
- Zi-Fy speakers £4.99
- A500/A600/A1200 Dust covers £36
- A500 Modulator £54.99
- Mini Office package £89
- Supra 2400 Modem £148
- Supra Fax Plus Modem £358
- Supra v.32 BIS Fax Modem £229

### Scanners



- Allows image processing in a useful and unique fashion
- Comes complete with operation manual
- One of the fastest growing applications for home and professional users
- High specification coupled with cost effective pricing
- Power Hand Scanner
- 64 greyscales 100-400 DPI
- Thru'port to printer
- Fully compatible with Delux Paint 4, etc.
- Advanced software
- Power Hand Scanner v3.0 £96
- Power Hand Scanner Colour £229

### Pro ROM Swapper



- Swap between Kickstart chips
- Fits A500, A500+, A600,A1500
- Auto swapping via keyboard contr
- Flexible cable allows the swapper work in conjunction with accelerators etc.
- Simple to fit - full instructions
- Pro ROM Swapper
- Pro ROM Swapper + 1.3ROM £3
- Pro ROM Swapper + 2.04ROM £4
- Workbench 2.04 plus manuals £4

## TECHNICAL EXCELLENCE

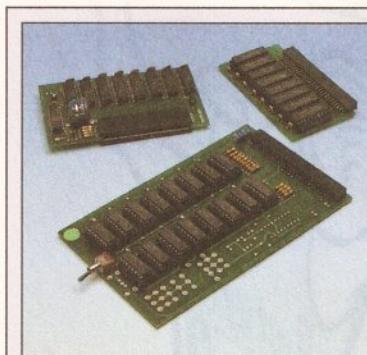
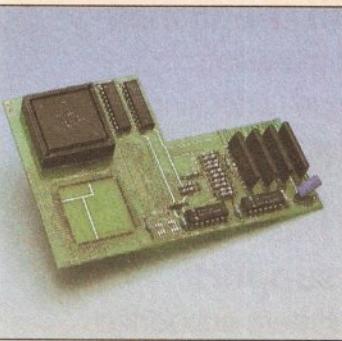
BEDS, LU4 8EZ TEL (0582) 491949 (6 LINES)

Est. since  
1984

## Pro Agnus 2MB

- Provides a full 2MB of Chip Memory for the Amiga 500 and A1500/2000
- Designed and built in England
- Supplied with 8375 Obese Agnus
- Includes 2MB Memory on board in the form of low power Zips
- Allows the processing of elaborate animation and sound sampling
- Provides the same max. chipmemory as the A3000/A600 &500+
- Increases addressable memory space from 9MB to 10MB
- Complete with full instructions and flying leads
- British made

• Pro Agnus 2MB  
(Free fitting available - Phone for details)

**£139**

## A500 Memory Expansions

## A500 Pro-RAM 0.5 Meg. Upgrade

- Allows 1MB software to run
- Chip memory compatible
- British made
- Without clock
- With clock

**£16**  
**£19**

## A500 Pro-RAM 1.5 Meg Upgrade

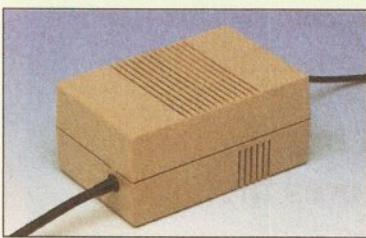
- Gives a full 2MB of memory

**£74**

## A500+ 1MB Meg Upgrade

**£29.95**

## High Current Power Supply



Allows the addition of peripherals without damage to computer or power supply  
Why risk damaging your expensive kit when one simple investment will ensure total peace of mind now and for the future

Switch mode design  
Full crow bar protection  
British made

A600 Power supply unit  
A500 Power supply unit  
A590 Power supply unit  
A1200 Power supply unit  
A2000 Power supply unit

**£44.95**  
**£44.95**  
**£44.95**  
**£54.95**  
**£99.95**

## Cumana 3.5" External Drive



- High Quality
- Renowned and proven reliability
- Top notch specification
- Anti-click
- Long moulded cable
- Slimline design
- High impact plastic
- Cumana external drive
- Cumana external drive + 100 capacity disk box
- Cumana external drive + 100 disk box + 20 blank disks
- A500/A500+ Internal replacement disk drive

**£59**  
**£62**  
**£68**  
**£46**

## Printers



- High quality premium range of Amiga printers
- Two year manufacturers warranty.
- Complete with cable to Amiga 500
- Citizen registered for Dealer plus service
- Swift 1200+ (9 pin, 80 column, 144 CPS draft, 30 NLQ, 4KDB Buffer) **£129**
- Swift 90 Colour (9 pin, 80 column, 216 CPS draft, 54 LQ, 45dB quiet mode) **£168**
- Swift 200 (24 pin, 80 column, 216 CPS draft, 72 LQ, 43dB quiet mode) **£186**
- Swift 240 Colour (24 pin, 80 column, 240 CPS draft, 80 LQ, 43dB quiet mode) **£259**
- Swift Pro Jet (80 column, 50 nozzle print, 360 CPS draft, 120 LQ, HP emulation 8KB buffer, 3 fonts, virtual lazer quality) **£299**

## Chips and Spares



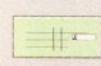
- WTS have sole distribution rights from Americas biggest Commodore chip distributor
- Workbench 2.04 Kit (includes manuals, disks & chip) **£78**
- Kickstart 2.04 **£24**
- Kickstart 1.3 **£29**
- Kickstart ROM Swapper (Swap between Kickstarts) **£18**
- Fatter Agnus 8372 **£29**
- Obese Agnus 8375 **£39**
- High Res Denise **£24**
- 1MB x 9 Simms (3 chip) **£29**
- 1MB x 4 Zips **£14**
- 8520 CIA **£9**



SALES HOTLINE 0582 491949 (6 LINES), 0480 471117 (24HR), FAX ON 0582 505900



Credit Card ordering by phone is easy. Simply phone our sales hotline quoting your credit card number, expiry date, name and address and the products you wish to order and we'll do the rest. Alternatively write the above details on your letter when ordering by post.



When ordering by post in cheque form please write your cheque card guarantee number on the reverse of the cheque and send along with your order. Postal Orders are also accepted.



NO DELIVERY CHARGES TO UK MAINLAND. MINIMUM ORDER AMOUNT £15.00.

Should you wish your order to be sent by courier service please add £5. This method includes Comprehensive insurance.



WARRANTY: One year return to base (excluding chips).

ONE YEAR EXTENDED WARRANTY: Available on all products (excluding chips) at 10% of purchase price when ordering.

## WHERE TO FIND US!

Head Office  
WTS Electronic Ltd  
Chaul End Lane  
Luton  
0582 491949

Computer Mall Bedford  
No.16 Downstairs  
The Harpur Centre  
Bedford  
0234 218228

Computer Mall St. Neots  
No.6  
Priory Mall Shopping Centre  
St. Neots  
0480 471117

Computer Mall Hertford  
49 Railway St.  
Hertford  
0992 503606

Computer Mall Dunstable  
84 High Street North  
Dunstable  
Bedfordshire  
0582 475747

# Protext 6 - A Winning Performance



## Some highlights of Protext 6

### Styles

Styles let you make flexible use of printer fonts and effects. You can change a font throughout a document with a single operation.

### Document Layout

An easy to use dialogue lets you lay out your page precisely as you want using inches or cm for the page length, margins and tabs.

### Graphics

Graphic images may be imported into a Protext document. Supports IMG, PCX, GIF and IFF. You can select any resolution and scale the image. Dot matrix, inkjet and laser printers.

### Printers

Protext's unrivalled understanding of printers gives you the highest quality printing at the highest possible speed. Using a printer's built in fonts enables Protext to print pages in seconds rather than the minutes taken by some programs.

The list price of Protext 6 is £152.75 but you can order direct today for just £99 inclusive. For any Amiga with 1Mb memory and WB 2.0 or later. Phone us today and we will send you a usable demo version and a full specification, absolutely free. Upgrade offers available - please call us for the current price.



### Protext is still the fastest

- Fastest at editing.
- Fastest at spell checking.
- Fastest at printing.

### Protext still has the best printer support

- Hundreds of printers supported
- PostScript driver included **NEW**
- Scalable font support **NEW**
- Colour printing **NEW**
- Automatic line spacing **NEW**

### Protext still has the most advanced features including:

- Styles **NEW**
- Graphics import **NEW**
- Spelling checker
- Thesaurus
- Hyphenation
- Document analysis
- Glossary **NEW**
- Footnotes
- Widows and orphans
- Index and contents
- Addition of numbers
- File sorting
- Mail merge
- Programming language
- Macro editor **NEW**
- Dictionary editor **NEW**

### WorkBench New Look

- New WB menus, requesters, gadgets
- Screen requester to select mode **NEW**
- ARREXX interface **NEW**

This month we'll be combining some of our file access code into some more advanced gadget handling code to prepare ourselves for a working program.

This month we're going to make the first real version of the Address Book application, a sort of "alpha test" version, by combining the file access code we worked on back in the summer, with the more recent window code.

It's time for some design work again. The last time we looked closely at design was in *Amiga Shopper* 26, where we decided that a good thing to do would be to open a window on the screen, with a whole load of neatly-stacked string gadgets for entry of data and some buttons at the bottom for moving around the file, perhaps VCR-style with little images on them. Well, let's not get too carried away initially. A good starting place would be to open that window with the basic gadgets on. How many are we going to need, and of what type? Looking back to our file specification, we have nine fields in our file. We'll need to supply entry gadgets for all of these, neatly labelled down the left hand side so that the user knows what they are.

As well as those, we'll need some gadgets at the bottom. We'll want to be able to go backwards and forwards, and save any changes we might make, and a direct "goto".

button would be handy so that we can skip to a particular record. **Search** would be a great additional feature also, so that we can quickly find any given record.

A very good thing to do if you're designing a user interface is to load up a program like *Deluxe Paint* and draw it. This way you can play with a whole load of different layouts very quickly. There are also some PD programs out there – *GadToolsBox* for example – which enable you to play with user interfaces. It's much easier to sort out layouts at this point in the program, before you've actually programmed several screens of numbers!

Having designed our user interface, we're now ready to start programming. You will recall that so far our C program consists of two main programs, the **address\_book.c**, where our **main()** function is, and **address\_functions.c**, where we have put all of our file access code. It's time for a new .c file. We're going to create one called **address\_gui.c**, and we'll put all of our Graphic User Interface (GUI) things in here, such as opening and closing of windows. The modified **address\_book.c** file to type in is below in Listing 1. The new module – **address\_gui.c** – is in Listing 2 on the following page. You'll also have to modify the files **address\_includes.h** and **functions.h** to the versions shown in Listings 3 and 4 respectively (both shown on



## Toby Simpson shows you how to add a graphical front end to our on-going address book program.

page 72).

In order to get our new file working, we're going to have to add a new line to the file **dice\_make**. Simply add this line to the end of it:

**address\_gui.c**

Now, our Dice compilation script

(shown fully in Listing 4 on page 72) will look for this file also. And that means we'll have to create the file itself.

We'll need two functions initially: one to open our window and one to close it. Here's the prototypes:

**BOOL open\_window(void);**

## LISTING 1: THE MAIN ADDRESS\_BOOK CODE

```
*****
* address_book.c
*
* MAIN CODE MODULE
*
* TO COMPILE USING DICE:
* "execute make_app" - Where make_app is
our application maker -
* see earlier issues of AS.
*
* Address book application for Amiga
Shopper.
* By Toby Simpson.
* (C) Copyright AmigaShopper 1993.
*/
#include "address_includes.h"

/* Definition for the intuition library base */
struct IntuitionBase *IntuitionBase = NULL;

extern struct Window *addr_window;
/* External definition */

/* Embed a version string in our program */
UBYTE *version = "\0$VER:VERSION_STRING";

/* Our "main" function */
void main(void)
{
    BOOL quit_program = FALSE;
    long signal_mask = 0;
    struct IntuiMessage *imsg;
    struct Gadget *gad_pressed;

    /* Open the intuition library */
    if (!(IntuitionBase = (struct IntuitionBase *) OpenLibrary("intuition.
library", 34L)))
    {
        printf("Can't open intuition.library\n");
        cleanexit(10);
        /* Exit, error code 10 */
    }

    /* Open our window */
    if (!(open_window()))
    {
        printf("Can't open my window.\n");
        cleanexit(10);
        /* Exit, error code 10 */
    }

    /* Work our our signal mask */
    signal_mask = 1L << (addr_window->UserPort->mp_SigBit);

    /* Window opened, now wait for events */
    while (!quit_program)
    {
        /* Wait for something to happen */
        Wait(signal_mask);

        /* Act on any messages */
        while (imsg = (struct IntuiMessage *)GetMsg(addr_window->UserPort))
        {
            /* Remember the gadget number for
identifying presses */
            gad_pressed = (struct Gadget *)imsg->>IAddress;

            switch(imsg->Class)
            {
                /* If it's the close gadget, set the
exit flag */
                case CLOSEWINDOW:
                    quit_program = TRUE;
                    break;
            }
        }
    }
}

quit_program = TRUE;
break;

case GADGETUP:
printf("Gadget number was %d\n", gad_pressed->GadgetID);
break;

/* Now we've dealt with the message,
reply to it */
ReplyMsg((struct Message *)imsg);
}

/* Now exit gracefully with no error code */
cleanexit(0);
}

*****
* void cleanexit(error_code)
*
* This routine simply tidies up anything
which is open before exiting
* the program.
*/
void cleanexit(int return_value)
{
    if (IntuitionBase) CloseLibrary((struct Library *)IntuitionBase);
    close_window();
    /* Close our window if it was opened */

    /* Exit the program */
    exit(return_value);
}
```

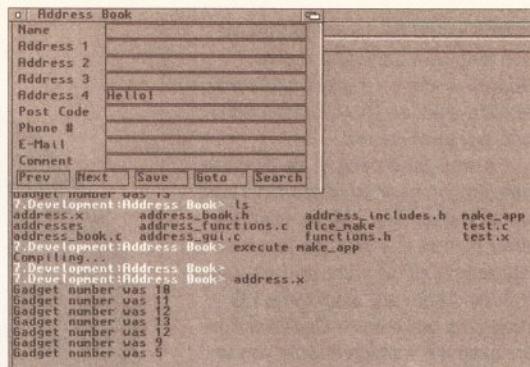
```
void close_window(void);
```

Our **open\_window** function will return **TRUE** if it was able to open the window, **FALSE** otherwise. As well as opening the window, we'll get it to build and attach the gadgets to the window. The **close\_window** function will simply close our window if it was open, and free any other resources.

Now that we are using Intuition functions in our main code, we'll also have to open the **intuition.library**, and include a couple of new files in our **address\_includes.h** file. Our main code, **address\_book.c**, will now be responsible for calling the **open\_window** routine, waiting for events, calling functions according to events, and then exiting and closing the window when the user selects

the close gadget. This means a re-write of the **address\_book.c** code, and a new code module, as discussed above, to handle the windows. Fortunately, in our last instalment of this C programming series in *Amiga Shopper* 30, we had an example program which opened a window, waited for a close gadget and then exited. You can save yourself a lot of typing by cutting parts out of this and inserting them into your existing code.

There is nothing particularly new



Here's what the interface code produces - each gadget's number is printed if the user clicks on it.

in this code, except that we are using a loop in **open\_window** to create our new gadgets, rather than type in nine individual gadget structures for the fields and a further

five for our control buttons. Since each one only differs slightly from the first, we can use a loop to save ourselves some work - and another advantage of doing this is that if we needed to add further buttons at a later date, it would be very easy to do, because we'd simply have to change a number or two.

Note that to determine the headings for the field types and the gadget string lengths, we are using information we already have. Also, the code is pretty much font-independent and should adapt nicely to whatever Workbench font you use. The only catch is that in order to keep our window nice and compact, we'll have to shorten some of these names to prevent over-run in some

continued on page 72

## LISTING 2: THE WINDOWS AND GADGETS CODE

```
/* address_gui.c
 *
 * Functions for the support of our graphics
 * user interface. Responsible
 * for opening and closing windows, and
 * dealing with gadgets.
 */

#include "address_includes.h"

#define CONTROL_BUTTONS 5

/* Note -
 * Defining gadgets, stringinfos and buffers
 * out of a function means
 * that they are all set to zeros at the
 * start, rather than being
 * allocated on demand onto the stack, and
 * containing random data. We
 * can assume, therefore, that un-initialised
 * fields contain zero. */

/* Gadget Structures */
struct Gadget
window_gads[TOTAL_FIELDS+CONTROL_BUTTONS];

/* String info structures for each string
gadget */
struct StringInfo string_info[TOTAL_FIELDS];

/* Character entry buffers for string gadgets
*/
char char_buffers[TOTAL_FIELDS][128];

/* Text strings for button labels */
struct IntuiText
gad_text[TOTAL_FIELDS+CONTROL_BUTTONS];

char *control_names[] =
{
"Prev", "Next", "Save", "Goto", "Search"
};

/* This is our newwindow structure */
struct NewWindow window_definition =
{
0,0, /* Top left position of
window. In this case, 0,0 */
320,200, /* Width and height of
window. */
0,1, /* Block and detail
pens. (Ignored if you have 2.04 or above) */
CLOSEWINDOW |
GADGETUP, /* IDCMP flags. We want
to know if user selects gadget
or clicks on close gadget */
SMART_REFRESH |
ACTIVATE |
WINDOWCLOSE |
WINDOWDRAG |
WINDOWDEPTH, /* Flags. This
*/
```

lot says our window will activate itself on opening, have a close gadget and a sizing gadget, be draggable and have the standard depth gadgets \*/
`&window_gads[0], /* Pointer to first gadget. */`
`NULL, /* Ignore this one */`
`(UBYTE *)"Address Book", /* Window title: Self explanatory I hope! */`
`NULL, NULL,`
`64,64, /* Windows minimum size */`
`640,200, /* And maximum */`
`WBENCHSCREEN /* Open on the workbench screen */`
`*/;`
`/* Border vectors: elements 5 & 7 are heights */`
`UWORD str_border_data[] =`
`{`
`0, 0, 200+3, 0, 200+3, 0, 0, 0, 0, 0`
`};`
`UWORD btn_border_data[] =`
`{`
`0, 0, 50+3, 0, 50+3, 0, 0, 0, 0, 0`
`};`
`/* The border definition for our string & button gadgets */
struct Border str_border =
{
-2, -2, 1, 0, JAM1, 5, str_border_data, NULL
};

struct Border btn_border =
{
-2, -2, 1, 0, JAM1, 5, btn_border_data, NULL
};

/* These are various pointers to structures,
including our window and any messages we might receive */

struct Screen wb_screen;
struct Window *addr_window = NULL;

/* Definitions we'll need from
address_functions.c */
extern int field_lengths[];
extern char *field_names[];

*****

*
* BOOL open_window(void);
*
* Attempts to open our window with our
* gadgets on it. Returns FALSE for
* a failure, or TRUE if the window was
* opened successfully.

```
/*
* window_gads[loop].Activation
= GACT_RELVERIFY;
window_gads[loop].GadgetType
= GTYP_STRGADGET;
window_gads[loop].GadgetRender
= &str_border;
window_gads[loop].SelectRender = NULL;
init_gadget_text(&gad_text[loop],
field_names[loop], TRUE);
window_gads[loop].GadgetText
= &gad_text[loop];
window_gads[loop].SpecialInfo
= &string_info[loop];
window_gads[loop].GadgetID
````

continued on page 72

# P.M. Solutions Ltd

5A Ashby Square, Loughborough LE11 0AA

9am to 5pm Monday to Friday



## Amiga A4000/030

2Mb Chip 0Mb Fast 80Mb £940  
2Mb Chip 0Mb Fast 120Mb £1040

## Amiga A1200

A1200 2Mb Chip 0Mb HD 0Mb Fast £285  
A1200 2Mb Chip 85Mb HD 0Mb Fast £495

## GVP Accelerators

A1230 40MHz 68EC030 0Mb £280  
A1230 40MHz 68EC030 4Mb £480

## Misc

4Mb Simms  
Bridgeboard A2386sx25 £145  
£195

## Amiga A4000/040

2Mb Chip 4Mb Fast 120Mb £1980

## Monitors

Microvitec 1440 15KHz to 38KHz £430  
(No sound)

Commodore 1940 dual sync 0.39 £275

Commodore 1942 dual sync 0.28 £375  
(Come with internal amp 1 Watt and Speakers)

**Order Line: 0509 260172**

**Fax Line: 0509 238561**

**Prices include VAT at standard rate.  
All prices subject to change & delivery.**

## SELECTAFONT

THE UK'S  
LARGEST COLLECTION  
OF FONTS

PIC n MIX  
from over 80 disks in ADOBE or  
COMPUGRAPHIC Format. Each Disk  
contains 12 Fonts and costs between  
£1.65 and £3.00

THE UK'S MOST  
INEXPENSIVE  
FONTS

250 new fonts  
recently added!

Each Font Costs  
Between 13p-25p

**STARBURST POWERLNER AMY NORM  
CHINESE BUMBLEBEE WEDDIE hairpin  
HEADHUNTER AEEVOOSE MEDUSA  
CSD JERSEY CHILLI CARPENTER**

## INKJET BUBBLEJET SERVICES

Having used inkjets for 3 years, we feel we are in a unique position to offer a first class service to all our customers. We only supply PREMIER ink refills (for all printers) which we GUARANTEE will give a BETTER quality than your original Cartridge. We also supply a comprehensive range of Ink-Jet/BubbleJet consumables including:

COLOUR KITS/ORIGINAL CARTRIDGES/ CLEANING KITS.

Single Refills .....£6.99  
Twin Refills .....£12.99  
6 Pack Refills .....£24.99 } available in Black/Cyan  
Magenta/Yellow/Brown  
Green/Red/Blue

**CLIPART**  
We only supply Hi-res clips that we  
have created ourselves. All disks  
come with image catalogues

**PROBLEMS? 24 HOUR  
TECHNICAL HELPLINE FOR  
ALL CUSTOMERS**

**SCALEABLE CHIPS**  
available for PAGESTREAM  
P-PAGE/PSETTER

For a Comprehensive Printout of all Fonts and Details  
of our other Services, Please send a large SAE with 36p  
Postage. (or Phone for an information pack).  
Please include details of your system and the  
Software that you will be using.

**SELECTAFONT (DEPT AS), 84 THORPE  
ROAD, HAWKWELL Nr HOCKLEY,  
ESSEX SS5 4JT**



ACCESS/VISA BARCLAYCARD  
MASTERCARD  
and all major Credit Cards

accepted CHEQUES payable to SELECTAFONT  
CREDIT CARD HOTLINE 0702 202835

**PHONE AN INFO-PACK:  
TEL: 0702 202835  
24 HOUR SERVICE**

# kosmos educational software

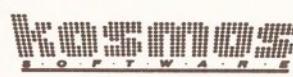
the connoisseur's choice

Our extensive range of educational subjects now include:

<input type="radio"/> MATHS	<input type="radio"/> GEOGRAPHY	<input type="radio"/> SPORT
<input type="radio"/> FRENCH	<input type="radio"/> HISTORY	<input type="radio"/> FIRST AID
<input type="radio"/> GERMAN	<input type="radio"/> ENGLISH WORDS	<input type="radio"/> GENERAL KNOWLEDGE
<input type="radio"/> SPANISH	<input type="radio"/> SPELLING	<input type="radio"/> ENGLAND
<input type="radio"/> ITALIAN	<input type="radio"/> ARITHMETIC	<input type="radio"/> SCOTLAND
<input type="radio"/> SCIENCE	<input type="radio"/> FOOTBALL	<input type="radio"/> NATURAL HISTORY

Write or phone for our FREE 16-page colour catalogue of  
Educational & Leisure Software (State computer type) to:

Kosmos Software Ltd, FREEPOST (no stamp needed)  
DUNSTABLE, Beds. LU5 6BR  
Telephone 0525 873942 or 875406



...48 hour mail order service...48 hour mail order service...

# THE SOCCER EXPERT

**Football Result Forecasting**

**FOR FIXED ODDS & POOLS**

Instantly updates all major English & Scottish  
league data from result information.

**THE INTELLIGENT WAY TO WIN**

Interactive prediction system & statistics - help narrow those odds.

**HOME WIN? AWAY WIN? DRAW?**

Gives a 'Certainty' value based on stored information.  
All easily accessed with superb flexibility & control.

**POINT AND CLICK USER INTERFACE**

Database of 1993/94 fixtures, including results - up to date of  
despatch. Editable league tables and  
bookmakers' 'handicap' starting points.



**£16.95 inc. p&p**

32c HIGH STREET, WELSHPOOL, POWYS, SY21 7JP U.K.  
Rush me  copy/copies of 'The Soccer Expert' at £16.95 each TODAY!

NAME: .....  
ADDRESS: .....  
POST CODE: .....  
Please make cheques/  
postal orders payable to VOITHIA.  
Orders normally despatched  
within 24 hours.

## LISTING 2: THE WINDOWS AND GADGETS CODE CONTINUED

continued from page 70

```

= loop;

/* Set up this gadgets special info
structure */
string_info[loop].Buffer
= &char_buffers[loop][0];
string_info[loop].MaxChars
= field_lengths[loop];
}

for (loop = TOTAL_FIELDS; loop <
TOTAL_FIELDS+CONTROL_BUTTONS; loop++)
{
    window_gads[loop].NextGadget
= &window_gads[loop+1];

    /* Gadget positioning */
    window_gads[loop].LeftEdge
= 10 + ((loop - TOTAL_FIELDS) * 60);
    window_gads[loop].TopEdge
= bar_height + 4 + (TOTAL_FIELDS *
gadget_spacing);
    window_gads[loop].Width
= 50;
    window_gads[loop].Height
= font_height;

    /* Gadget flags and rendering information */
}
    window_gads[loop].Flags
= GFLG_GADGHCOMP;
    window_gads[loop].Activation
= GACT_RELVERIFY;
    window_gads[loop].GadgetType
= GTYP_BOOLGADGET;
    window_gads[loop].GadgetRender
&btn_border;
    window_gads[loop].SelectRender
= NULL;
    init_gadget_text(&gad_text[loop],

```

```

control_names[loop - TOTAL_FIELDS], FALSE);
    window_gads[loop].GadgetText
= &gad_text[loop];
    window_gads[loop].SpecialInfo
= NULL;
    window_gads[loop].GadgetID
= loop;

    /* Ensure window height gets set correctly */
    window_height = window_gads[loop].TopEdge
+ gadget_spacing + 4;
}

/* Terminate list of new gadgets */
window_gads[TOTAL_FIELDS+CONTROL_BUTTONS-1].NextGadget = NULL;

/* Now open our window */
window_definition.Height = window_height;
if (!addr_window =
OpenWindow(&window_definition))
    return FALSE;
/* OpenWindow failed! */

return TRUE;
}

***** */
* void close_window(void);
*
* Closes our window if it was opened,
freeing any resources that came
* with it. If the window is not open, this
routine does nothing.
*/
void close_window(void)
{
    /* Close window if it was opened */
    if (addr_window)

```

```

CloseWindow(addr_window);
    return;
}

***** */
* void init_gadget_text(struct IntuiText
*itext, char *string, BOOL str);
*
* Sets up the supplied intui-text structure
to point to the named
* string. If the str parameter is true, then
the string is placed neatly
* to the left of a gadget (ie, titling
string gadgets)
*/
void init_gadget_text(struct IntuiText
*itext, char *string, BOOL str)
{
    itext->FrontPen = 1;
    itext->BackPen = 0;
    itext->DrawMode = JAM1;
    itext->LeftEdge = 0;
    itext->TopEdge = 0;
    itext->TextFont = NULL;
    itext->IText = string;
    itext->NextText = 0;

    /* If this is a string gadget, place text to
left */
    if (str)
        itext->LeftEdge = -90;
}

return;
}

```

continued from page 70

fonts. The best thing to do is to change the definition in **address\_functions.c** to this:

```

char *field_names[TOTAL_FIELDS] =
{
    "Name", "Address 1",
    "Address 2", "Address 3",
    "Address 4", "Post Code",
    "Phone #",

```

## LISTING 3: INCLUDES

```

/* address_includes.h
*
* A file which includes all the stuff we need for
each part of the
* program.
*/

/* Those include files we keep talking about! */
#include <ctype.h>
#include <string.h>
#include <stdlib.h>
#include <stdio.h>

#include <exec/exec.h>
#include <exec/types.h>
#include <dos/dos.h>
#include <dos/dostags.h>
#include <dos/dosextens.h>
/* If using 1.3 includes, these are in
"libraries/" */
#include <intuition/intuition.h>

/* Prototype definitions for system functions */
#include <clib/exec_protos.h>
#include <clib/dos_protos.h>
#include <clib/intuition_protos.h>

/* Include our own include files */
#include "address_book.h"
#include "functions.h"

```

```

    "E-Mail", "Comment"
};

```

I tested this with a few common fonts, including Times and Topaz. A future version of the Address Book could check to see if the text will fit before printing it (this is something you might like to add).

The picture on the previous page shows the finished result. It

uses the Workbench screen font when rendering its window, so if you select a silly font, you'll get a silly looking window, because there is no checking yet.

And that's it for this month. Next time we'll properly combine the interface code with the main address book code module and actually get the whole thing working. This will be easy, as you can see from the listing of **address\_book.c** so far – most of

## LISTING 4: DICE\_MAKE

```

#
# DICE specific.
#
# This file contains a list of .c files to compile.
#
address_functions.c
address_book.c
address_gui.c

```

the groundwork has now been done, so it's simply a case of detecting certain gadget presses and performing actions. Currently each gadget's ID is just shown on the screen when you select it, but it could just as easily be part of a **switch** statement:

```

switch(gadget->GadgetID)
{
    case 0:
        printf("User just pressed %n
return in the 'name' string %n
gadget\n");
        break;
    case TOTAL_FIELDS:
        printf("User just pressed %n
'PREV'\n");
        break;
}

```

We'll be installing something like this next month, and simply calling the appropriate functions – most of which we've already written! **AS**

## LISTING 5: FUNCTIONS

```

/* functions.h
*
* All prototypes for our functions
*/

/* Prototypes for our test routines */
void read_record(void);
/* Create a new record */
void create_record(void);
/* Read a record */
void edit_record(void); /* Edit a record */

BOOL read_record_data(char *record_data,
record_number);
BOOL write_record_data(char *record_data,
record_number);
void show_record_data(char *record_data, long
record_number);

/* Functions in the main code section */
void cleanexit(int return_value);

/* Functions from address_gui.c */
BOOL open_window(void);
void close_window(void);
void init_gadget_text(struct IntuiText *itext,
char *string, BOOL str);

```

# AMIGA

## NEW! AMIGA 1200 PACKS AMIGA CD<sup>32</sup> CONSOLE

FROM SILICA - THE UK's No1 AMIGA SPECIALISTS

FREE! FROM SILICA

### ZOOL SOFTWARE PACK

ZOOL is the software pack of the year. It includes: Zool, Transwrite, Pinball Dreams and Striker - Value £127.92.

All Amigas from Silica (excluding CD<sup>32</sup> and Amiga 4000) include a FREE ZOOL pack and, many of them also include GFA Basic and Photon Paint II. Check individual panels for details.

ZOOL - Platform Title of the year - 97% Amiga Comp - Nov '92 ..... £25.99  
TRANSWRITE - Word Processor and Spell Checker ..... £49.95  
PINBALL DREAMS - Pinball Simulation - 94% AUI - Sept '92 ..... £25.99  
STRIKER - Soccer Simulation - 94% CU Amiga - June '92 ..... £25.99

ZOOL PACK: £127.92

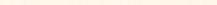
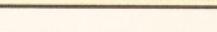
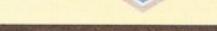
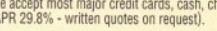
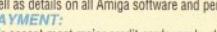
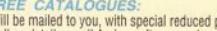
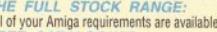
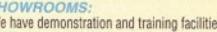
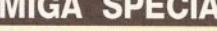
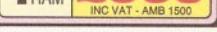
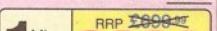
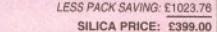
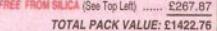
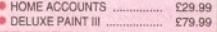
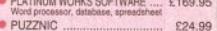
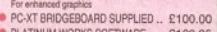
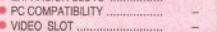
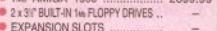
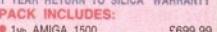
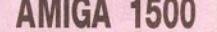
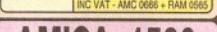
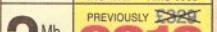
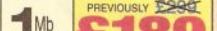
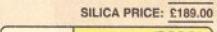
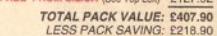
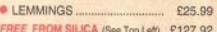
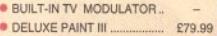
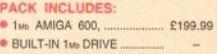
GFA BASIC v3.5 - Powerful Basic Programming Language... £50.00  
PHOTON PAINT II - Powerful Graphics Painting Package ... £89.95

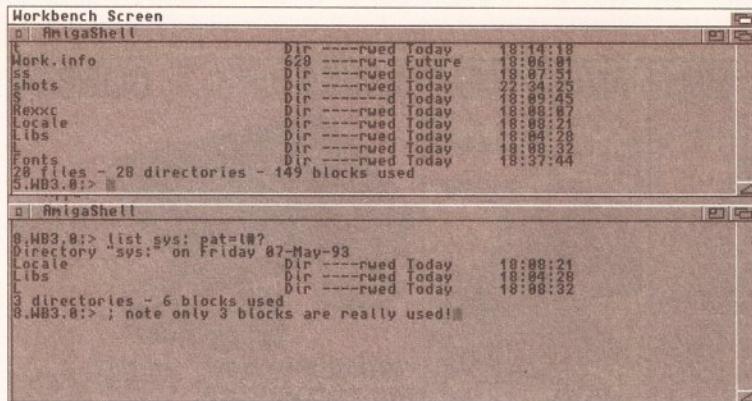
**TOTAL VALUE: £267.87**



**WORTH OVER £265**

### AMIGA 600 LEMMINGS PACK





AmigaDOS's LIST command generates a lot of output – certainly more than DIR! The second window uses a pattern to remove unwanted items.

## FIGURE 1: TYPICAL OUTPUT

```
Type LIST sys: and LIST
generates a lot of information about
all disk-based objects.

Directory "sys:" on Saturday 02-
Oct-93
CDir --rwed 07-May-93 18:09:52
SystemDir --rwed Thursday
12:59:10
System.info632 --rw-d 07-May-93
18:07:41
This "filenote" is attached to
System.info

...
WbstartupDir --rwed 07-May-93
18:07:41
Wbstartup.info632 --rw-d 07-May-
93 18:07:41
SDir --d Today 19:25:23
LibsDir --rwed 07-May-93 18:08:31
LDir --rwed 07-May-93 18:08:32
FontsDir --rwed 07-May-93
18:09:38
6 files - 13 directories - 44
blocks used
```

# Cracking the Shell

**Mark Smiddy examines one of AmigaDOS's most powerful and useful commands.**

The LIST command shows a listing of files on any disk or directory, like DIR. Unlike DIR though it does not sort the output, and early versions lacked the ability to list all files in all directories. LIST has been pivotal in the development of AmigaDOS as far back as version 1.3 when it was first used to create script files automatically.

The command shares a lot in common with DIR in that it is designed to display the contents of any directory. So why have two commands to do the same job? Well, there is more to LIST than meets the eye. Here are the most important differences:

- LIST displays all the requested objects as it finds them;
- DIR collects the requested object names and displays a two-column list of them sorted by name.
- LIST displays the object's name and a lot of extra information over many columns;
- DIR displays just the names of any objects in two columns.

### USING LIST

The command's synopsis (shown here) is quite complex:

```
LIST DIR/M, P=PAT/K, KEYS/S,
DATES/S, NODATES/S, TO/K, SUB/K,
SINCE/K, UPTO/K, QUICK/S, BLOCK/S,
NOHEAD/S, FILES/S, DIRS/S,
LFORMAT/K, ALL/S
```

The table on page 75 gives brief descriptions of these. Typical output (stripped down for the example) in Figure 1 on this page could be generated by the following command:

```
1>LIST sys:
```

The information that LIST gives you

breaks down into three separate items – head, body and tail.

#### • The Head

Directory "sys:" on Saturday 02-Oct-93

LIST's head contains information about the directory being listed, including its name, path and the date it was last modified. It is important to note that a directory's date is changed every time something it contains is modified or a new item is created therein. The date shown in the header is, therefore, the date of the most recent non-directory item shown. The date is only shown if the directory contains one or more items; otherwise the head is something like this:

Directory "T:" is empty

#### • The Tail

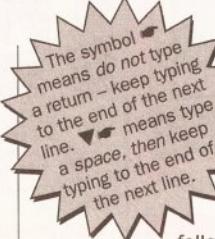
6 files - 13 directories - 44 blocks used

The tail shows the total number of files and directories (matching any pattern) in the specified directory. If more than one directory has been scanned (with the ALL option) a second footer line appears at the end of the list with the total number of blocks, files and directories listed.

#### • The Body

```
CDir --rwed 07-May-93 18:09:52
SystemDir --rwed Thursday 12:59:10
System.info632 --rw-d 07-May-93
18:07:41
: This "filenote" is attached to
System.info
```

The body is the meat in the


 The symbol **•** means do not type a return – keep typing to the end of the next line. **▼** means type a space, then keep typing to the end of the next line. By default, the following columns are arranged from left-to-right as follows:

- **Name:** The name of the object – up to 30 characters left-justified in a field of 31 characters.
- **Size:** The size of the object in bytes. If the object is a sub-directory the word "Dir" is inserted instead.
- **LIST** does not distinguish between links and real objects. Links are a topic for discussion at a later point.
- **Attributes:** The protection flags

### BEGINNERS BEGINNERS START HERE BEGINNERS

If you are new to the Amiga, the very idea of AmigaDOS – an environment where you have to learn and type commands, one at a time – might seem a little daunting. Why not just stay within the comfortable confines of the Workbench and handle the tricky bits with a CLI utility like Directory Opus or SID?

There are a number of reasons, but "eclecticism" is a good one. This greasy adjective is typically used in the art world meaning to be selective. I choose it to illustrate a point: AmigaDOS is full of big, strange-sounding words that mean little until

associated with the named object. Seven flags are available in the current release and can be changed from the Workbench via

**Icons...Information** (Workbench 2+) or the AmigaDOS command **PROTECT**. Possible flags are, when set:

- S:** Is an AmigaDOS script.
- P:** Is pure (can be made resident).
- A:** Is in archive. (Cleared on write).
- R:** Is readable. Not used in OFS.
- W:** Is writeable. Not used in OFS.
- E:** Is executable – probably.
- D:** Can be deleted.
- **Date:** The date part of the date-stamp.
- **Time:** The time part of the date-stamp.

### BEGINNERS BEGINNERS START HERE BEGINNERS

they are applied. An AmigaDOS user can be eclectic by choosing the best of several similar commands to achieve a similar goal. The SID or Workbench user must remain within the confines of the application's design – no matter how open-ended it purports to be.

Few people would disagree that many operations are more easily performed from Workbench, but very few operations can take full advantage of the machine's multi-tasking capabilities. For instance, what if you wanted to copy some files from one place to another? With

• **Comment:** If a comment is attached to a file, it is shown on the next available line. Comments are strings of 1 to 79 characters attached using the **FILENOTE** command.

This may seem like a lot of information to retrieve for every disk object, but in reality **LIST** involves no more work than **DIR**. All this information is stored in a special block on the disk – called a file header block – that must be read every time something requests information on a file. This information is handed to AmigaOS applications as something called a FIB or File Info Block. There is so little difference in speed, **LIST** is often more convenient.

## LIST OPTIONS

The command has a lot of different options and you can use any number of possible combinations. To keep things simple, this discussion will concentrate on the options in isolation – you should try experimenting with the different combinations yourself. Here are the more complex ones.

• **KEYS:** When this keyword is supplied, every object is shown with a number in square brackets corresponding to the key position of its FIB on disk. The key number is only useful for disk hackers – AmigaOS commands do not use them directly. (The maximum number of keys on any disk is given by doubling its storage capacity in K – so an 880K floppy has 1660 key blocks.) Example:

```
1>LIST C:LIST KEYS NOHEAD
List [ 302] 5904 -p-rwed Today
10:11:05
```

• **BLOCK/S:** The size of files and directories is shown as the number of 512 byte blocks it occupies. Note that **LIST** incorrectly shows a directory as being two blocks long. Directories are not shown as "dir" in this mode. Example:

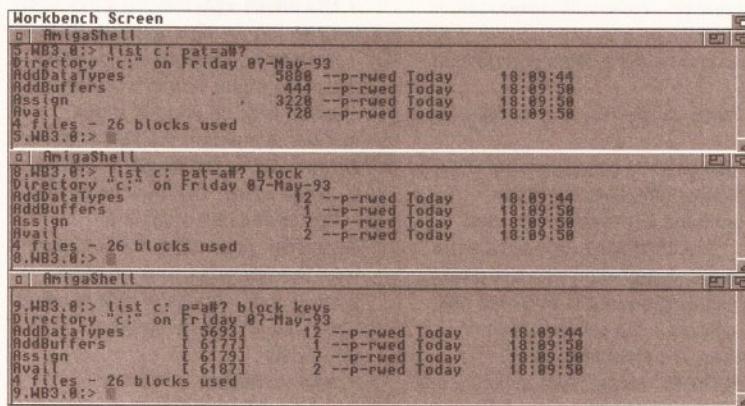
```
1>LIST C:LIST BLOCKS NOHEAD
List 10 -p-rwed Today 10:11:05
```

• **DATES/S:** By default, **LIST** attempts to substitute recent dates by a day name and future dates by the string Future. Example:

```
1>LIST C:LIST NOHEAD
List 5904 -p-rwed Today 10:11:05
1>LIST C:LIST DATES NOHEAD
List 5904 -p-rwed 24-Sep-93
10:11:05
LIST Patterns
```

Typically, **LIST** is used to get information about a complete directory or a single file. Used without arguments, the command lists the current directory. Therefore the following commands are valid:

```
1>LIST; list the current directory
1>LIST SYS; list the boot disk's root
directory
1>LIST DEVS:Printers/EpsonX; list
a single file
In AmigaOS 2, you can supply more
```



The effect of using **BLOCK** and **KEYS** switches is profound.

than one directory or file like this:

```
1>LIST DF0: SYS: DEVS:
```

That's fine if you want to get information on the whole directory, but what if you want to narrow down the search a little? Let's say you had a directory full of files produced on a word processor and each one ends in the "extension" .DOC. Every time

## LIST'S OPTIONS

These are the options in **LIST**:

**DIR/M:** One or more directories to be searched. May include a pattern from 2.0.

**P=PAT/K:** A file pattern to search for – obsolete from 2.0.

**KEYS/S:** The object's physical disk position is shown.

**DATES/S:** Absolute dates (weekdays are shown as dates).

**NODATES/S:** Date output is suppressed.

**TO/K:** A file to send output to.

**SUB/K:** A substring to match in the filenames.

**SINCE/K:** Files are listed occurring

after the date.

**UPTO/K:** Files are listed up to the specified date.

**QUICK/S:** Only filenames are shown.

**BLOCK/S:** File sizes are shown in blocks.

**NOHEAD/S:** The header and footers are disabled.

**FILES/S:** Only files are shown.

**DIRS/S:** Only directories are shown.

**LFORMAT/K:** A special output formatting string.

**ALL/S:** All directories are searched. (2.0+ only).

**PAT**) enables you to specify a pattern like this:

```
1>LIST MyDir P=#?.DOC
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
```

From AmigaOS 2, this keyword is retained for compatibility only and the following is simpler:

```
1>LIST MyDir/#?.DOC
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
```

In AmigaOS 2 you can narrow the search down even further by using a substring search too. This attempts to find any specified series of characters *within* a name. Substrings must be picked out with the **SUB** keyword like this:

```
1>LIST MyDir/#?.DOC SUB=File
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
```

Or, using **SUB** on its own:

```
1>LIST MyDir SUB=ork
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
Work1.BAK 22 —rwed 21-Sep-93
12:08:30
```

will illustrate what you really see.

```
1>LIST MyDir
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
MyFile.BAK4227 —rwed 18-Sep-93
19:21:04
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
Work1.BAK 22 —rwed 21-Sep-93
12:08:30
```

There could (and usually would) be dozens of files here, but these are sufficient for the example. The files marked ".BAK" are redundant and we only want to list those ending in ".DOC". AmigaOS provides a special facility called pattern matching which allows us to use an "ambiguous string" as part of a filename – it means that part of the filename can be anything.

Pattern matching is a complex topic to be covered later in this series on AmigaOS, but one particular pattern appears all the time "#?" – which means match anything. (PC users will be familiar with this as "\*".)

**LIST's pattern keyword (P or**

## LIST DATE MATCHING

Users with battery-backed clocks can also take advantage of **LIST's** ability to match dates. This option may be combined with the pattern and substring matching described above, but is shown singly here for clarity.

The **UPTO** keyword takes an AmigaOS date string and lists files that were created or modified up to and including a specified date:

```
1>LIST MyDir UPTO 20-Sep-93
MyFile.DOC4229 —rwed 18-Sep-93
19:21:05
```

Workbench you simply drag the respective icons from the source to the destination – from AmigaOS you have to enter a command.

Now what if you suddenly realise you have copied the wrong icons? You have to wait until Workbench finishes, go back and delete them, and start again from scratch. This can happen when you use AmigaOS but you can stop the command immediately – so the total time to complete the operation is much shorter. In addition, AmigaOS allows you to select files by group much more accurately than is

possible from Workbench. It also affords simpler access to a range of public domain and shareware utilities that can only be accessed from the Shell environment.

AmigaOS is powerful and perhaps a little difficult to learn – Workbench is suitable for everyday tasks when you are not in a hurry. The two systems complement each other wonderfully. You can "get at" AmigaOS by opening the Shell icon – you'll find it lounging around on your Workbench disk. Even if you have never done so before, try it now – you have nothing to lose.

```

5.WB3.8:> list c; p=a#? lformat "%s %s"
c: AddDataTypes
c: AddBuffers
c: Assign
c: Avail
5.WB3.8:> 
5.WB3.8:> list c; p=a#? lformat "Path1=%s Name1=%s Path2=%s Name2=%s"
Path1=c: Name1=AddDataTypes Path2=c: Name2=AddDataTypes
Path1=c: Name1=AddBuffers Path2=c: Name2=AddBuffers
Path1=c: Name1=Assign Path2=c: Name2=Assign
Path1=c: Name1=Avail Path2=c: Name2=Avail
5.WB3.8:> 
5.WB3.8:> list c; p=a#? lformat "%30.30n %a %d %5.5t"
AddDataTypes --p-rwed Today 18:09
AddBuffers --p-rwed Today 18:09
Assign --p-rwed Today 18:09
Avail --p-rwed Today 18:09
5.WB3.8:> list c; p=a#? lformat "%-30.30n %a %d %5.5t"
--p-rwed Today 18:09
--p-rwed Today 18:09
--p-rwed Today 18:09
--p-rwed Today 18:09
5.WB3.8:> 

```

The **LFORMAT** options are wide and varied. Here are a few examples.

```
MyFile.BAK4227 —rwed 18-Sep-93
19:21:04
```

Similarly, the **SINCE** keyword only lists files that were created or modified on or after a given date:

```
1>LIST MyDir SINCE 20-Sep-93
Work1.DOC3212 —rwed 21-Sep-93
12:08:31
Work1.BAK 22 —rwed 21-Sep-93
12:08:30
```

## USING LFORMAT STRINGS

The **LFORMAT** keyword is what makes **LIST** so very special. Without it, most people would manage with **DIR**. When used in combination with **TO**, this keyword can write entire script files automatically! This facility is used by the meta-AmigaOS commands (scripts) **SPAT** and **DPAT** incidentally, to add pattern matching to those few commands that lack it.

An **LFORMAT** string is made up of any combination of letters and special qualifiers – qualifiers are a percentage symbol followed by a letter. The only qualifier supported in AmigaOS 1.3 is **%S** – and it has different meanings depending on the number of times it is used (up to a maximum of four). However, this should not be viewed as a shortcoming. The available qualifiers are summarised in the table at the top of this page.

It is important to note here that thanks to an obscure bug in the 1.3 **LIST** command, **LFORMAT** strings do not work unless the date is set

correctly. If (and only if) you are using AmigaOS 1.3 and the date command returns like this:

```
1>DATE
<unset> <unset> <unset>
```

or

```
<invalid> <invalid> <invalid>
```

you should set a false date like so:

```
1>DATE 01-Jan-90; 1.3 patch only!!
```

This kludge is necessary if you want to make effective use of the command in the early versions.

The **LFORMAT** keyword can be used in conjunction with the date windowing and **PAT**, **SUB** and **ALL** keywords – the others have no effect. A simple example of **LFORMAT** usage might look like this:

```
LIST SYS: LFORMAT ▶
    "Directory: %S Object: %S*n"
```

**LFORMAT** strings do not send a newline character, so you must specify one – the **"\*n"** in the above example does this.

## ADVANCED LFORMATING

The introduction of AmigaOS 2 saw a large number of commands re-coded, and **LIST** was among them. The **LFORMAT** string is no longer hard coded and is instead passed through a ROM function called **RawDoFormat**. C and assembly language programmers may be

# LIST'S LFORMAT QUALIFIERS

These are the qualifiers available with **LFORMAT**:

**%S**: Pathname only.

**%\$%S**: The pathname and object name.

**%\$%\$%S**: Pathname and object name, pathname.

**%\$%\$%\$%S**: Pathname, object name, pathname, object name.

**From 2.0 onwards:**

**%A**: The object's attributes

(protection flags).

**%B**: File size in blocks.

**%C**: Comment.

**%D**: Creation (or last modified) date.

**%K**: Physical position on disk.

**%L**: Length in blocks.

**%N**: Name.

**%P**: Complete path (without an object name).

**%T**: The time associated with the object.

3. AmigaOS filenames are limited to a maximum of 30 characters, but few people use more than eight plus a three-letter extension (the maximum that PC-compatibles can handle in any case) – so we can set a maximum field width to 13 – that is, eight for the name, one for the extension plus one for the **".** like this (brackets are shown for clarity):

```
1>LIST C:LIST LFORMAT "(%13n)*n"
(      List )
```

4. If a name is too long, it is trimmed back to fit inside the field. Most will be flushed right – although you can override this by including a minus symbol like this:

```
1>LIST C:LIST LFORMAT "(-13n)*n"
(List      )
```

5. The length of filenames can vary between 1 and 30 characters. By using 30 as a field width, you can ensure that the listing lines up correctly like this:

```
1>LIST C:(LIST|DIR) LFORMAT ▶
    "%30n@%t*n"
List @12:31:32
Dir @12:31:34
```

6. AmigaOS always prints the seconds as part of the time. It has a fixed field width of eight digits – two for each of the three numbers and two extra for the colon separators. Therefore, we can use the precision digit to trim off the unwanted seconds and second colon like this (note the period in front of the digit):

```
1>LIST C:LIST LFORMAT "%n ▶
    modified at %.5t *n"
List modified at 12:31
```

There is no limit to the length of the **LFORMAT** string apart from the maximum length of the command line – 254 characters – so this gives a lot of scope.

Later in this series I'll be demonstrating how to use **LFORMAT** strings in conjunction with the **TO** keyword to produce script files. **AS**

## JARGON BUSTING

**Date-stamp** – The date and time form an important part of any object's description. A date-stamp is added to any file or directory when it is created or modified. Date-stamping is only useful when your machine is fitted with a real-time, battery-backed-up clock. You can get limited use from them by setting the time and date every time you boot the machine – but this is a nuisance.

**Extension** – Filename extensions have been around

almost as long as filing systems and are used to group files of the same type together in listings so they can be picked out quickly. Many computers are still limited to eight-letter filenames, separated by a period from a three-letter extension – **"work.doc"**, **"prog.exe"**, **"dump.asc"** and so on. While the Amiga does not suffer from these constraints, it can help to use extensions. Digita's *Wordworth*, for instance, saves its files with the extension **".WW"** whereas *Pen Pal* uses **".WTR"**.

# SOFTWARE DEMON

WE ARE NOW THE SOLE SUPPLIERS OF  
SOFTWARE DEMON 3.5 INCH INTERNAL  
DRIVES FOR A1200'S  
CHECK OUT OUR PRICES

## AMIGA A1200

NO HARD DRIVE	£279.99
64Mb HDD 2 <sup>1</sup> / <sub>2</sub> "	£429.99
85Mb HDD 2 <sup>1</sup> / <sub>2</sub> "	£479.99
170Mb HDD 3 <sup>1</sup> / <sub>2</sub> "	£499.99
220Mb HDD 3 <sup>1</sup> / <sub>2</sub> "	£519.99
340Mb HDD 3 <sup>1</sup> / <sub>2</sub> "	£649.99
420Mb HDD 3 <sup>1</sup> / <sub>2</sub> "	£889.99

### 2<sup>1</sup>/<sub>2</sub>" DRIVES

40Mb	£129.99
85Mb	£219.99
120Mb	£299.99

### 3<sup>1</sup>/<sub>2</sub>" DRIVES

85Mb	£199.99
120Mb	£219.99
170Mb	£239.99
220Mb	£269.99

### ORDERING DETAILS

Please place your order on one of our sales lines first to ensure a quick service.  
Payment by credit card or cheque or postal order.  
Call at our Doncaster store for fitting while you wait - call first.

Not up to date delivery £10  
per order  
Allow 7 working days for delivery

### MICROCENTRE

20a Westmorland Street Wakefield  
West Yorkshire WF1 1PJ  
20 Cleveland Street Doncaster  
South Yorkshire DN1 3ES

## BOOKS FOR THE AMIGA FROM DTBS



Amiga for Beginners	£14.95	Mastering Amiga Beginners	£19.95
Amiga BASIC Inside & Out	£19.95	Mastering AmigaDOS 2 Vol 1 (d)	£21.95
Understanding Imagine 2 (d)	£24.95	Mastering AmigaDOS 2 Vol 2	£19.95
Amiga 3D Graphics in BASIC	£16.95	Mastering Amiga C (d)	£19.95
Amiga Intern	£32.95	Mastering Amiga Printers (d)	£19.95
Amiga C for Beginners	£16.95	Mastering Amiga System (d)	£29.95
Mastering Amiga Workbench 2	£19.95	Amiga ROM Kernel: Libraries	£34.95
Amiga DOS Inside & Out (d)	£19.95	Amiga ROM Kernel: Devices	£25.95
Best Amiga Tricks & Tips (d)	£24.95	Amiga Hardware Ref. Manual	£25.95
Amiga A600 Insider Guide	£14.95	Amiga ROM Kernel: Includes	£34.95
Amiga A120 Insider Guide	£14.95	Amiga Interface Style Guide	£19.95
Amiga Desktop Video Power (d)	£24.95	Amiga DOS: Dabhand Guide	£14.95
Using Arexx on the Amiga (d)	£29.95	Amiga BASIC: Dabhand Guide	£15.95
AmigaDOS Reference Guide 4th ed.	£19.95	Get the Most from Amiga 1992 Ed.	£9.95
AmigaDOS Manual 3rd Edition	£21.95	2 Companion disks for the above	£4.00
Amiga 2nd Edition	£14.95	Mastering Amiga Assembler	£24.95
Amiga Graphics Inside & Out	£29.95	Becoming an Amiga Artist	£16.95
Amiga Desktop Video 2nd Edition	£18.95	Amiga Real Time 3D Graphics	£14.95
Mastering AmigaDOS 3: Reference	£21.95	Amiga Game Makers Manual	£16.95
Mastering Amiga AMOS	£19.95	Computers & Chaos Amiga Ed.	£14.95
Amiga Made Easy	£12.95	Little Blue Workbench 2 Book	£14.95
Little Red Workbench 1.3 Book	£14.95	Program Design Techniques	£16.95
Intuition Practical Guide	£16.95	Mastering Amiga Arexx	£21.95
Amiga Vision Handbook	£20.95	Amiga World AmigaDOS 2 Companion	£22.95
Amiga Five-0	£9.95	AMOS In Action	£12.95
Amiga Gamer's Guide	£14.95	Best Amiga Tips & Secrets	£16.95
Amiga Microsoft BASIC Prog. Guide	£10.00	Amiga Desktop Video (Compute)	£10.00
AmigaDOS Ref. Guide 2nd Ed (WB1.2)	£5.00	Visionary Programmer's Hbk (d)	£24.95
Amiga Hardware Ref. Manual 2nd Ed	£10.00	ROM Kernel Includes 2nd Ed	£15.00
Mastering AmigaDOS 3: Tutorial	£21.95	Mastering Amiga Workbench 3	£19.95

Prices include postage in U.K. Europe add £1 per book. Airmail outside Europe add 25%. Access & Visa cards accepted. Tel/Fax 0706-715028. Cheques/Postal orders payable to DTBS. Descriptive catalogue available on request. Books normally available from stock.

**SHOWROOM NOW OPEN** - 413 Manchester Road, Rochdale, Lancs, OL11 3PG. Monday closed, Tuesday 10-5, Wednesday 10-1 and 6-9, Thursday 2-9, Friday 10-1, Saturday 10-1 (this is subject to staff availability since we often attend shows at weekends), 24 hour answerphone when shop closed. Phone for travel directions and to confirm opening hours.

MAIL ORDER TO:

**D T B S**

(Dept AS), 18 Norwich Avenue, Rochdale, Lancs OL11 5JZ

UPGRADE FROM ANY 3D PACKAGE

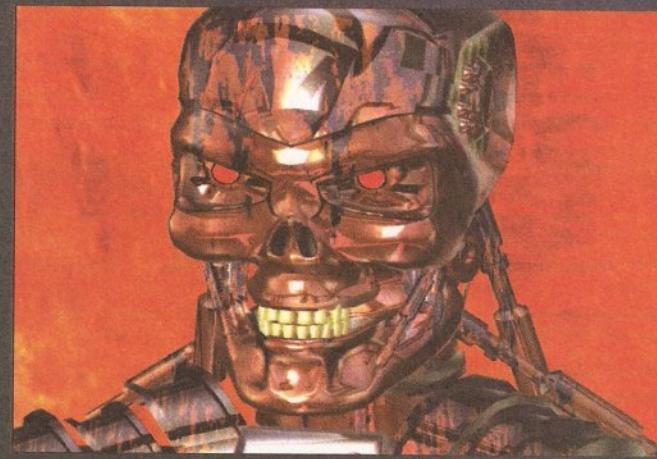
UNTIL 31 DECEMBER 93

£79.95

# CALIGARI 24

THE 3D POWERHOUSE THAT  
YOU CAN ACTUALLY USE

NOW ONLY £99.95



**CALIGARI 24** is the powerful 3D tool with the easy-to-use Virtual Reality interface. **CALIGARI 24** is a complete 3D modeler, photorealistic renderer and animator for anyone with the vision to create in 3D.

- Perspective Editing ■ Organic Deformations
- Fast Photorealistic Rendering ■ Hierarchical Animations ■ Runs on all Amigas w/HD
- Polygon Editor ■ Real Time Response ■ HAM8, 32 Bit Color ■ Visual Time Editor ■ Requires only 2Mb RAM ■ Much, much more... ■

Order from your dealer or call:

Silica Systems  
081-309-1111

Emerald Creative  
081-715-8866

Amiga Warehouse  
0753-554-338

Distributed by:  
Amiga Centre Scotland Meridian Micro-PACE SDL



CALIGARI CORP.  
1955 Landings Dr.  
Mountain View,  
CA 94043

Caligari24 is a trademark of Caligari Corporation; Amiga is a trademark of Commodore Business Machines. Knight and Terminator images created by Paul Safr.

# Textures revisited

**A year after the release of *Essence I* comes a new collection of algorithmic textures for *Imagine* users. Gary Whiteley cops a feel...**

**A**mazing as it may seem, only a year after the release of the excellent *Essence I*, *Apex* Software Publishing have unleashed a brand new set of amazing algorithmical textures for the discerning *Imagine* user. Better still, some of these textures don't exist on even the most high-spec rendering equipment in existence, so you'll be able to produce effects that no other software is currently capable of and make those Silicon Graphics Indigo 2 owners green with envy (even if only a little bit).

*Essence II* comes on two disks, each packed with textures, all divided into various sub-groups. There are textures to cover Space, Water, Bump, Organic, Tile and Miscellaneous, but don't get the idea that that's all they can be used for. Mixing and matching is the name of the game, and to make it all so much easier *Apex* have thoughtfully included a whole clutch of attribute settings to make using more complex combinations of *Essence II* textures a breeze. So if you wanted to cover a spaceship in hull plates that have a battered, space-weathered look, just select a

suitable attribute from the list (for instance, Dirty Tile) and your wish is granted.

You also receive a well illustrated, well laid out, easy-to-access manual that helps you get off to a quick start, though at times it does tend to take the level of a user's knowledge a little for granted, and I would have felt happier if a few tutorials had been included.

## GETTING YOUR FEET WET

Among the most spectacular of the new textures are probably those



All the textures in this image are from *Essence II* (except the fish, which use an *Essence I* texture).

associated with water and water-style effects. *Essence II*'s Water textures include waves, ripples, drops and caustics (the patterns that you see when light shines through rippling water). Like all the other textures, Water textures can be animated over time by morphing them from one

position to another, meaning that any texture can be made to change shape, move, appear, disappear, change colour or whatever its specific parameters allow. Take the Raindrops texture (which simulates raindrops falling onto a surface) as an example: you can specify how frequently and how hard the raindrops fall, the width and height of ripples they produce and an element of randomness so that the rain looks natural. When you morph the texture over time the result is a very realistic rain-on-a-puddle effect. The same applies to water drops, waves and caustics and there's even a Water texture that will reflect ripples back from predefined rectangular boundaries, so you can make convincing-looking baths with dripping taps.

But that's just the start. Let's take a look at the rest of *Essence II*'s textures.

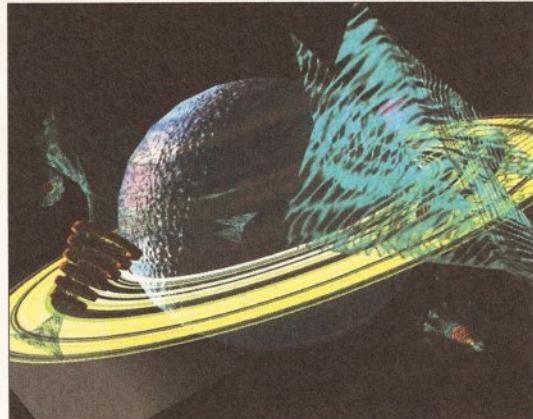
- **Bumpy** There are metallic sheens, bubbly blotches, crumpled paper, faceted, pitted and stucco textures for a wide range of uses. Rocks, walls, fungus-like growths and shiny lettering are but a few of the applications for bumpy textures.

- **Organic Textures** Some of these textures beggar sensible description, so it's no wonder that *Apex* have had to resort to some unusual terms such as "crusty alien snot" to try to

could also be used as backdrops, tiled onto floors, or used in a 2D paint program for textured backgrounds, special effects and so on. They might even be useful in DTP.

## THE BONUS DISKS

Bundled with *Texture II* are a couple of tutorial disks for either *Imagine* or *Real3D* (you choose which), including pointers to some of the more esoteric aspects of each program, with plenty of examples and projects for you to experiment with.



Space is no longer the final frontier if you have *Essence II*. Taste may be, but that's your problem.

invoke some idea of the effects available. Nevertheless, there are some real gems here. Crusts, flecks and veins are the three basic textures but the range is huge when colours and texture parameters come into play. Organic textures can be used to construct surfaces which can look like reptile skin, dandruff, pebbles, oozing crud, mould, coral or whatever else you can figure out.

- **Space** Apparently some of the most requested new textures have been for space-type stuff, so *Apex* have obliged with a fine collection which includes plasma, gas planets, spaceship hull plates (complete with ridges, discolouration and weathering), latitude and longitude lines for easy Earth maps, metallic machinery surfaces and planet rings.

- **Tiles** These are, as you might expect, textures that continuously repeat across a surface. There are flagstones (for crazy paving), scales (for reptiles, fish, armour etc), wooden shingles, roof tiles and soft checks. Like most of the other textures they all include an element of bumpiness so that they will look much more realistic than a flat brush-mapped texture.

- **Miscellaneous** This category includes fibre, woodgrain, polka dots,

## TEXTURES TOO

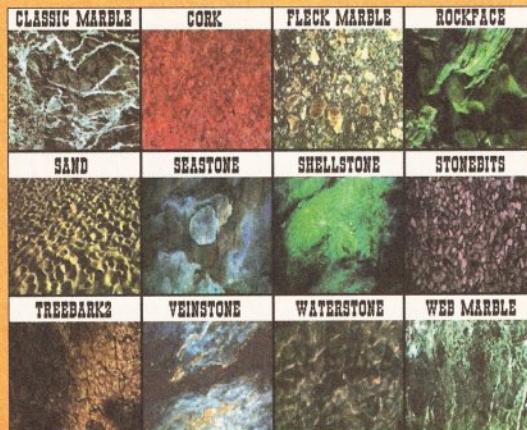
Here's another set of textures, but of the more traditional "brush-map" type – they are actual images which you can wrap directly onto 3D objects or use as backgrounds.

In *Textures II* from Alternative Image all the images are derived from scanned photographs of natural objects, mostly rocks, with the exceptions of cork, sand dunes and treebark – in all, 12 textures in a range of different formats. Each texture is supplied as a 400 x 400 pixel 24-bit image, 320 x 512 HAM, 8-colour 640 x 512 image and either 8-colour or 4-colour 640 x 512 greyscale image for bump or altitude mapping. This means that you get 12

disks, each containing one texture in its four various formats.

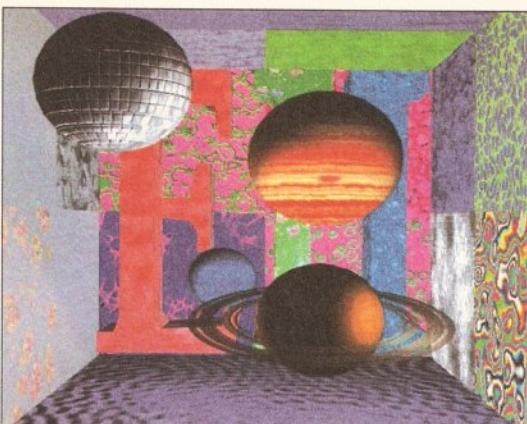
As textures go there is nothing particularly outstanding about this set, except that they save you a lot of time and effort hunting down, scanning and converting your own images. The quality is high but there are just too many rocks included and not enough of anything else – and several of the rocks are incorrectly named, but that's being pedantic.

The obvious uses are for mapping onto 3D objects as bump, filter, reflection or brush maps in programs such as *Real3D*, *Imagine*, *Lightwave* and *Caligari*, to give a more realistic look to a scene. They



*Textures II* brings you 12 new bitmap textures from Alternative Image, each of them in four formats.

For example, the *Real3D* tutorials include help in using Freeform curves, as well as improving your clip

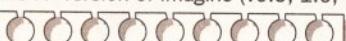


Planets, wallpaper, fancy surfaces – just a small part of the power of *Essence II*. Reminds me of my local...

radar (yes – a texture that looks like a radar screen, complete with scanning beam) and Julia, an effect similar to the Mandelbrot texture of *Essence I*.

One very useful feature is that *Essence II* comes complete with a set of "thumbnail" images which can be directly displayed on your Amiga screen, so if you aren't sure what the PlasticGiraffe, SmallPox or Cheese&Broccoli texture combinations look like all you have to do is display the pictures to find out. And no, I'm not making these names up. Apart from being very clever, Apex also have a finely-tuned sense of the ridiculous.

**Requirements:** *Essence II* requires the FP version of *Imagine* (v0.9, 1.0,

  
**SHOPPING LIST**  
**Essence II** .....\$140 (US).  
 Expect to pay around £100 (or less) in the UK.  
 By Apex Software Publishing  
 Available from  
 Alternative Image  
 0533 440041 and  
 other good Amiga dealers.

mapping abilities, and the *Imagine* disks include constructing a piston animation using the Cycle editor and how to successfully make a rotating, brush-mapped Earth.

I must declare an interest: the *Imagine* tutorial disk is all my own work, while the *Real3D* disk is by Henri Bujko of Alternative Image, designer of some past Amiga *Shopper* covers. The tutorial disks can also be bought separately.

  
**SHOPPING LIST**  
**Textures II** .....£40.00  
 From Alternative Image,  
 6 Lothair Road, Aylestone,  
 Leicester, LE2 7QB.  
 0533 440041.

1.1 or 2.0) or Turbo Silver, as well as an accelerated Amiga fitted with an FPU (that is, 68881 or 68882 maths coprocessor). You'll also need a couple of Mb of hard drive space free – so it helps if you have a hard drive too.

• Gary Whiteley can be contacted by e-mail as drgaz@ cix.compulink.co.uk (all one word).

## CHECKOUT ESSENCE II

### Features

● ● ● ● ● ● ● ● ● ● ● ● ○  
 Loads. About the only limits are your Amiga and your imagination. Mix these textures up for some really wild effects.

### Documentation

● ● ● ● ● ● ● ● ● ○  
 Clean, slick and well-presented, with a touch of wacky humour thrown in.

### Ease of Use

● ● ● ● ● ● ● ● ○ ○  
 As easy as you could hope, given the complexity of *Essence II* and *Imagine*.

### Quality

● ● ● ● ● ● ● ● ○ ○  
 You won't believe the textures are the products of mathematical equations!

### Value for money

● ● ● ● ● ● ● ○ ○ ○  
 Will probably sell for less than the projected price, but it's still worth the money if you're serious about 3D work.

### Overall rating

● ● ● ● ● ● ● ○ ○ ○  
 If you're into *Imagine*, buy *Essence II* (and *Essence I* as well!) – it may not be cheap, but nothing else comes close.

## CHECKOUT TEXTURES II

### Quality

● ● ● ● ● ● ● ○ ○  
 High quality images suitable for a range of applications.

### Documentation

● ● ● ● ● ● ● ○ ○  
 Scant, but not really necessary anyway.

### Value for Money

● ● ● ● ● ● ○ ○ ○  
 Reasonable.

### Overall rating

● ● ● ● ● ○ ○ ○  
 Not the most awe-inspiring set of textures around (unless you're really keen on rocks) but you'll find enough of use to make it well worth buying.

## VLAB YC IFR

Let me explain the cryptic heading. VLab YC is MacroSystem's excellent VLab YC video framegrabber card for any Amiga which has a spare Zorro slot (that is, not A500s, A600s or A1200s). *IFR* is the new software module for it which enables VLab YC to grab entire sequences of frames direct from any video recorder, regardless of whether or not it has remote control or timecode, even a plain old domestic VHS deck. *IFR* means Interleaved Frame Recording. All clear?

*IFR* is part of VLab YC's new software, used to grab any sequence of video frames from any kind of video source – as long as it has either a composite or YC output. However, the actual amount of data and the speed at which it can be grabbed depends entirely on the specifications of the host Amiga. *IFR* is very memory-hungry – for instance grabbing hi-res colour images takes about 0.5Mb for each frame, even before they are converted to IFF files, so if your Amiga doesn't have much RAM you'd better be sure your hard drive has plenty of space.

### HOW IT WORKS

Initially *IFR* searches for a unique-looking "Key Frame" near the point from which it has been told to start grabbing. This frame will be used as a reference by the software, because an *IFR* sequence requires multiple passes of the videotape in order to grab all the intermediate frames.

Once the key frame has been found the grabbing begins, with VLab grabbing subsequent frames as quickly as possible. The problem is that the hardware can't keep up with the 25 frame per second rate at which video images are displayed, so as a result it may only grab one in every ten frames (depending on the speed of the Amiga and the defined grab size).

Once the first pass has been made the user has to wind the tape back to just before the key frame and repeat the grabbing process, whereupon VLab will grab another sequence of images, but not those it has already captured. The process is repeated until all the frames are grabbed.

To make all this easier there's some additional hardware called an AirLink which can be used to control VCRs which have infrared remote control by simply running an ARexx script. At the time of writing the AirLink wasn't readily available, but the asking price is expected to be £69.

### THE RESULTS

Amazingly enough it is possible to get frame-accurate grabbing with the *IFR*. It takes a bit of setting up – especially adjusting the thresholds for the key frame definition – but once running it works very well. I grabbed sequences from both VHS and U-matic video and was very impressed with the results, even though I had to do all the rewinding and cueing up by hand – which is where the AirLink would really have come in handy.

I animated the sequences back together and they looked very smooth; it was certainly hard to tell if any frames were missing or not.

*IFR* will be invaluable to Amiga

artists who wish to take grabs from video sequences and alter them, rotoscope them, or otherwise process them for further use in video, graphics, DTP, MPEG, CDTV, or special effects applications.

• The *IFR* software is supplied with the VLab YC (£381.88). Contact Amiga Centre Scotland (0896 87583) for more details.

**Requires:** VLab YC, AmigaDOS 2 (minimum), a free Zorro slot and lots of free memory or hard drive space or both.



Grabbing consecutive frames in colour from any video is now easy with VLab YC's *IFR* software.

# The full genlock

**Gary Whiteley locks his sights on Lola's new L1000 MiniGEN Professional genlock and L520 modulator.**

**W**ith two new releases following the relaunch of the MiniGEN genlock (reviewed in *Amiga Shopper* last issue), Lola Electronics are rapidly re-establishing themselves in the Amiga video arena.

First up is the L1000 MiniGEN Professional genlock. Unlike the MiniGEN, this is a largish black box which connects to any Amiga's RGB port via an extension cable. It is a composite-video-only genlock with its own RGB pass-through, enabling you

because the only keying mode the genlock uses is Colour 0 (that is, the first colour in the Amiga's palette). One remarkable feature is that it can even output perfectly stable video signals without an external video input being needed to lock it up with the Amiga, so good-quality graphics can be recorded directly from the L1000 without bothering to connect it to a video input – a feature which is very unusual for a genlock in this price range.

As for the rest of its genlocking functions the L1000 works well, providing crisply-keyed output with little in the way of colour distortion or noise. I should note, however, that the first L1000 I was supplied with did have a tendency to exhibit a dark outline on the left of all keyed graphics, a problem which Lola quite rightly took seriously enough to investigate and then confirm that I had a faulty unit. Its replacement worked perfectly.

#### IT'S A MODULATOR!

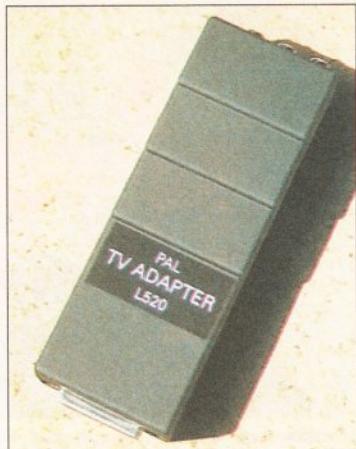
It's been a long time since anyone produced a modulator for the Amiga and you might well be wondering

why, but it would seem that Lola have sniffed out a potential market left by the disappearance of Commodore's own, almost unobtainable, A520 modulator and come up with their own solution – the L520.

If modulator is an unfamiliar term to you then here is what it does (in a non-technical nutshell): it converts the RGB and audio output of the Amiga into a signal which can be displayed on any domestic TV set simply by plugging the modulator's TV output into the aerial socket and tuning the TV in. Why? So that you can save money by not buying a real RGB monitor, of course! The L520 also has a composite video output (which is just the video signal on its own) so that you can either record the Amiga's output to tape or display it on a composite video monitor. Note that the composite output from the L520 cannot be expected to match the quality of a "proper" genlock or video encoder, however.

If you have an A600 or A1200, of course, you don't need a modulator – your machines already have modulated output built in. The L520 is mainly aimed at A500 users who want to use a TV set with their Amiga for playing games, though it will also work perfectly with A2000, A3000 and A4000 Amigas, should you have a need.

The quality is as good as can be

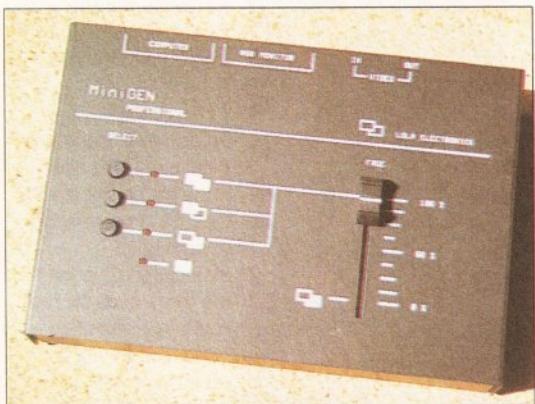


**Will it replace Commodore's elusive A520? Lola's L520 modulator enables you to use your A500 (or even A4000) with a TV set, as well as record its output to tape.**

expected (that is, nowhere near as good as RGB output) and I had absolutely no problems getting the unit up and running. After all, once it's plugged in and connected there's not much else to do. It sounds good too, pumping out Amiga sound rather nicely. The composite output is pretty good as well, especially for less than £30, though it's not up to anything much beyond domestic use.

The only trouble the L520 might cause is that it sticks out about six inches horizontally behind the Amiga, so you'll need the space to accommodate its long, black plastic, form. Alternatively you could always buy one of Lola's optional extra RGB extension leads.

AS



**The MiniGEN Professional is a low-cost, but good quality, British-made genlock which will give the RocGen Plus some serious competition.**

to continue using your RGB monitor for quality graphics production, instead of having to make do with a composite video monitor. It has selection buttons for Amiga, Video or genlocked graphics, and a fader for cross-fading between graphics and video. Power is drawn exclusively from the Amiga – something which might possibly be a cause of concern for users of underpowered A500s.

The MiniGEN Professional is easy enough to connect and uses professional-quality BNC connectors for its video input and output to ensure good, durable connections. There are no DIP switches to set up

**SHOPPING LIST**

**L1000 MiniGEN Professional** ..... £149.95  
From Lola Electronics, Freepost, Market Harborough, Leicestershire, LE16 7BR. ☎ 0858 880182.

## JARGON BUSTING

**Composite Video** – A common video-only signal used by many video recorders, genlocks and monitors. Contains all the components required to make a video picture in a single signal.

**Genlock** – Hardware for enabling graphics to be keyed over video, for titling and other effects.

**Modulator** – A unit that converts the Amiga's RGB output into a format usable by TV sets or VCRs.

**RGB** – Red, Green, Blue; the Amiga's internal video format. Can be used by compatible monitors but has to be converted to composite, S-VHS or other video formats for recording or genlocking.

## CHECKOUT L1000 MINIGEN PRO GENLOCK

### Quality

● ● ● ● ● ● ● ● ○ ○  
Very good output, both genlocked and free-running. Colours generally good and graphics keyed crisply, with little (if any) noise to degrade the image quality.

### Documentation

● ● ● ● ● ● ● ○ ○  
I saw only a pre-press version, but it looked thorough and easy enough to understand.

### Value for Money

● ● ● ● ● ● ● ○ ○  
Good value compared to most others.

### Overall rating

● ● ● ● ● ● ● ○ ○  
This has to be a good buy! Clean output, smooth fading and RGB pass-through – a well-produced, affordable genlock ideal for home video and more.

## SHOPPING LIST

**L520 Modulator** ..... £29.95  
including leads.

**From:** Lola Electronics, Freepost, Market Harborough, Leicestershire, LE16 7BR.  
☎ 0858 880182.

## CHECKOUT L520 MODULATOR

### Quality

● ● ● ● ● ● ● ○ ○  
Good quality RF or composite outputs.

### Documentation

● ● ● ● ● ● ● ○ ○  
Short and sweet. And useful.

### Value for money

● ● ● ● ● ● ● ○ ○  
£29.95 seems to be the standard price for modulators, so why should this one be any different?

### Overall rating

● ● ● ● ● ● ● ○ ○  
As the only modulator easily obtainable, the L520 has to be good value for money if you either can't afford an RGB monitor or want cheap composite video output for budget video recording.

# Creative sequencing

**Are you using your sequencer to its full potential? Tim Tucker shows how you can do a lot more with it simply by using more of it.**

**O**ne of the great things about MIDI is that it doesn't require a lot of equipment to yield good results. Armed only with an Amiga, a sequencing program and a multi-timbral keyboard, you can put very complex pieces of music together in your bedroom. But sequencers are capable of a lot more than just recording music, and if you use a little imagination you can get a whole lot more interesting ideas out of them. This month, we'll look at some of the extra benefits you can get from using the features of your sequencer.

One of the greatest assets of a sequencer is its ability to edit, or alter, the events that are recorded into it. Every sequencer has this feature, and it should certainly be taken advantage of as much as possible. Forget endlessly re-recording takes because they're not up to scratch – that problem should only apply to tape machines. With a sequencer, it can be far quicker to use the editor to tidy up the few mistakes you have made than to wear your fingers out playing the same part over and over again. Certainly a few wrong notes can be easily salvaged, even if they are sitting in the middle of complex chord changes.

If you find yourself playing the odd wrong note while you're

recording, don't stop and try again – carry on, and when you're finished, take a look in the editor to see how much damage has actually been done. It may have sounded awful at the time, but it can often turn out to be a simple matter of deleting a couple of notes, or moving the pitch of one up or down a semi-tone. Try recording a longer track and recording a few versions of the part in succession. For example, if the part you want to record is a two-bar piano riff, set the sequencer to record eight bars, and play the part over four times, ignoring any mistakes that occur. When you've finished, listen back to the whole thing, see which is the most successful and edit it if necessary. You may find that the first half of one two-bar sequence is perfect, and the second half of another has no mistakes either, in which case simply cut and paste them both together and get rid of the rest.

## TAKE THE PRESSURE OFF

It may sound unmusical to ignore mistakes and tamper with your natural playing, but you should find that taking the pressure off having to get it right every time actually relaxes you into performing better anyway. Also, continually stopping and starting to get the same part right is often more damaging to the feel of a piece, and you may find yourself

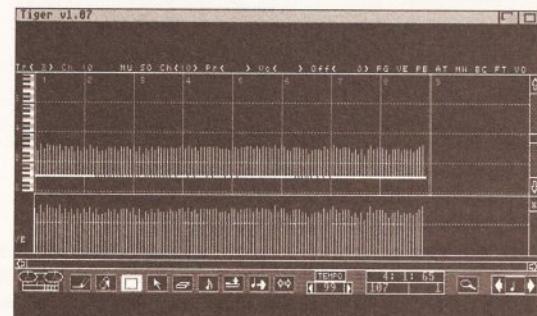
getting bored and powering down for the evening as a result. Initial ideas should be got down as quickly as possible, so that you don't lose track of where you were going with it in the first place. Once you've recorded more parts to complement it, you can always go back and re-record the original with a more natural feel.

Of course, most sequencers provide many ways of making the recording process easier in the first place. Don't be afraid to slow down the tempo to record tracks if they're especially tricky – you can speed them up in the sequencer afterwards. This technique can also work splendidly for creating ideas you simply wouldn't have come up with at the standard tempo. If you want to experiment with melodies or harmony parts, try slowing the piece down to half or even a quarter of its original tempo, and doodle about. You should find it a lot easier to fit two or four notes into every beat, and while it may sound a bit lame at the slower tempo, move it back to its original speed and it takes on a new life. Don't forget that it doesn't all have to be good. Your sequencer's cut and paste functions are extremely useful in these situations, and if you find the odd cluster of notes that

really work, save them and discard the rest. The best music is normally built up from the simplest ideas, and you could find whole new riffs or melodic phrases that will spark you off into new areas.

## QUANTISATION

Many of the problems you have with your music are associated with its timing. Either the notes go out of time completely, or the feel is not quite what you were looking for. The quantisation feature is very useful for these situations. You may say that you're looking for a natural groove, and that you don't want to commit it to strict timing values. But if you can't get the feel right by playing it, you can always use the editor to inject the groove, and it's far easier to tamper with the timing of a track if it's been quantised in the first place. Music recorded at higher resolutions has very subtle timing relationships, and altering one note can throw the whole thing into confusion. It's better to get it exactly right, then move individual notes or clusters around. The effects of what you're doing are



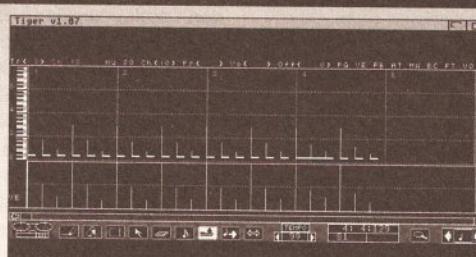
*A good graphic editor enables you to look more closely at all aspects of the music you've recorded.*

## DELAYS AND ECHOES

You can easily re-create the effect of an echo or delay box in a sequencer, by editing the velocity values. For example, play a snare drum on every beat of one bar – that is four equal hits. Now go to the editor and give the first beat a velocity of 128, the second 64, the third 32 and the last 16. The effect is of a loud snare hit with gradually diminishing echo following it. This can be very effectively integrated into your drum arrangement by simply copying the bar you've created and pasting it over the other drum parts.

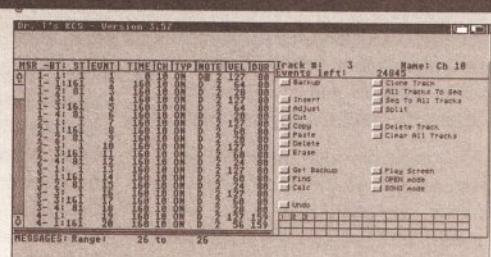
For more exotic effects, make the distance between the hits shorter. A good way to create a dub style echo is to play the part in quarter note triplets, and do the same trick of reducing the velocities for notes 2 and 3. This works very well against a sixteenth note backing.

You can create delay effects in a similar way.



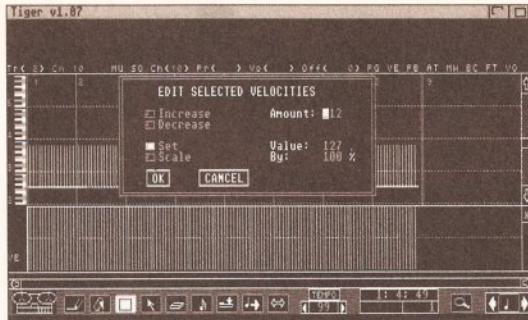
*Here's an example of a dub style echo, created by editing the velocities of the individual notes. They are grouped in threes in this case.*

This technique works ideally with a lead synth or guitar part. Increase all the velocities of the original part to their highest value, 128. Then make a copy of the track. Paste the copy a sixteenth or eighth note ahead of the original, and



*Here's the same example in the event list editor. You can see the velocity values diminishing in groups of three in the VEL column.*

decrease the copy's velocities to 64. The result is the original part playing at full volume, with an exact copy of it playing a sixteenth note later at half volume, and this gives a very U2-type feel to the lead line.



**It's often a lot easier to edit hi-hat parts if all the notes are at the same velocity. Here, they're all set to their highest possible value, velocity 127.**

far more clear.

One of the best ways to make quantised music more natural is to shift the timing of different tracks against each other. The shifts should be very small, using the highest resolution you can get away with. For example, if you're using a sequencer that has a resolution of 240 pulses per quarter note (such as Dr T's KCS), try moving the entire hi-hat part forward a couple of pulses. This is not enough to make it sound out of time, but just gives a slightly different feel to the rhythmic relationship between the parts. It's best to record the drum parts first, and if you have any musical parts already recorded, mute them while you experiment with different time shifts. Hi-hats and snare ahead of the beat sound slightly rushed and "up", giving an urgent feel to the rhythm, very useful for choruses or main sections. On the other hand, dropping them back in time makes the track sound more laid back and

relaxed, which could work well for the verses. The bass instrument can be manipulated in this way too, for even more rhythmic interaction. Most sequencers don't enable you to push events back before the first beat of bar one, so if you want a part to drag behind by a couple

of clock beats you have to move all the other tracks forward in time instead. This is no great hassle, and once it's done you can just treat them as normal tracks.

Try experimenting by moving individual notes within a track very slightly forward or backward in time. If you want a bassline to have a bit more swing, leave the notes which play at the beginning of bars dead on the beat, and shift the notes in between around by a pulse or two. Again, don't make the changes too obvious, or they'll just sound like mistakes, but keep them just subtle enough to create a groove. If your sequencer can record tempo changes, try increasing the tempo very slightly in the choruses, by about a fifth of a beat per minute if possible, again to give it a bit more life and distinguish it from the feel of the verse.

A good way of breaking the monotony of sections is to record them twice over. For example, if you

have a very regular four-bar chord pattern, instead of recording four bars and looping it, record two lots of the pattern, making an eight-bar track, and loop that. Then use the editor to make minor variations in the second four-bar section. Again, they don't have to be major changes – perhaps just deleting a note or two, or adding in a linking note. Moving notes forward or backwards by one sixteenth note can produce very effective syncopations to complement the initial idea. The effect is subtle, but gives more of an impression that someone is actually playing the part. It's also useful for percussive devices, such as drum fills followed by a crash cymbal. Every four bars would probably be too often, but on every eight it really punctuates the track.

If you're writing a standard verse/chorus/verse/chorus arrangement, try to vary the sections. Keep the first verse fairly sparse, and perhaps add a cowbell or tambourine in the second verse.

Percussion is a great way to lift a track, and subtly gives the impression that the song is progressing, even though it does consist of repeating sections. Do you really need both the piano and the guitar part in the first chorus? Perhaps string harmonies or brass stabs can pick

up the song at the end. These are things you can experiment with easily in a sequencer, by simply muting out parts during certain sections and bringing them back in later.

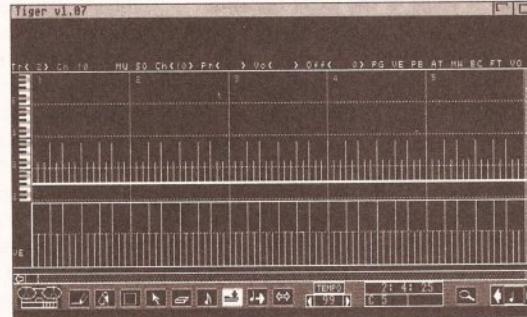
If the ideas sound good, edit the tracks and make the changes permanent. Too many options can be confusing, and you'll find that when it comes to recording to tape, you're not sure what you're supposed to be muting and when. The flexibility of a sequencer is a great thing, but if you don't make decisions you'll find your music ends up going nowhere. If you're really not sure which way to go, save the different arrangements to separate files. This way you can easily hear which works best, by comparing the different versions.

If you find ideas drying up while you're writing a song, try manipulating the music you already have to create new sections. Some sequencers have a reverse function, which takes a track and places all the events in the reverse order. Try this with bass lines, or even drum parts. Even if it doesn't sound right, it may well give you some new ideas to work on.

The velocities of notes are very

important in governing the feel of a track. If you try recording a drum part and leaving the velocities as you recorded them, you'll find that the result is a bit wishy-washy and not very solid. It's certainly not natural, since hitting drum heads with sticks is far more likely to produce steady rhythms than tapping a key on a keyboard. If you want strict, dancey drum parts, you should generally make sure that the kick drum notes are all playing with equal velocities, ideally velocity value 128, to really pound out the beat. Snare back beats, on 2 and 4, should also have equal prominence, whereas any snare hits played between the beats can afford to be a little less strict in velocity terms.

Hi-hats often benefit from careful editing of the velocities. At first, record them all at a velocity of 64 if possible, or edit them all to that value. Then try making certain notes of the hi-hat part jump out, by increasing velocities on certain notes

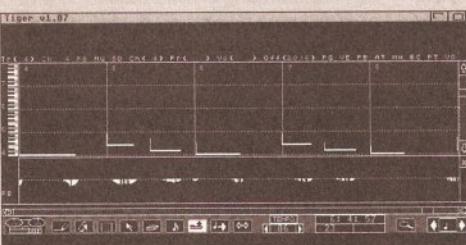


**Once the velocities are all equal, you can experiment by dropping some values down to 64. This way you can come up with some excellent rhythmic effects.**

only to 128. In a group of eight hi-hat notes of equal length, try accenting the first and third notes and leaving the others at 64. You can create some very interesting rhythmic punctuation this way, and it's easy to come up with things you would never have thought of actually playing.

As you can see, with a good sequencer there are a wealth of options which enable you to create more interesting and varied effects. Don't feel that you're not being musical if you're using certain parts of the program to edit and modify what you're doing – what can be more musical than manipulating and composing entire musical arrangements? A sequencer is not the place to get precious about music you've played, but rather somewhere where you can really get to the guts of the matter and determine exactly what's right for the piece. Also, check out the sequencer's manual, for any features particular to the program which might come in handy. A feature quite often doesn't sound beneficial until you actually use it in context, and it's always worth experimenting with new ideas to see how they come out. **AS**

## PITCH BENDING



**Dr T's excellent TIGER graphic editor enables you to edit pitch bend information using the mouse.**

Pitch bend provides an excellent way to improve the nuances of your music, and being able to edit them means that you can fine-tune them to suit. Obviously, guitar lines can benefit from a bit of string bend emulation, but there are other more subtle ways that instruments can benefit from pitch bend. Brass and woodwind instruments, such as trumpets and saxophones, can be made to sound a lot more realistic if you record them with a

very small amount of pitch bend at either the beginning or the end of the note. At the beginning of the note, hold the pitch bend wheel slightly below the centre, and bend it up to its natural pitch quickly after hitting the note. The end of the notes should be bent down slightly. This emulates the player's natural *embouchure*, which brings the note to its correct pitch and dips out of it at the end. Experiment by editing the pitch bend – it's very difficult to get it perfect when playing it live. Whatever you do, don't quantise the pitch bend information – this makes the bend sound less smooth. Once you've got it right, save the pitch bend information to disk under its own file, called say **Brass\_Bend**, so you can load it in and apply it to other notes later on.

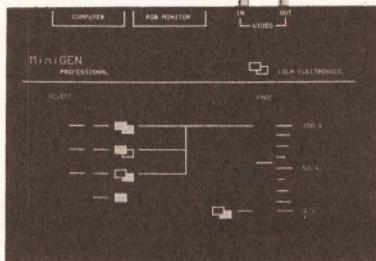
# AMIGA VIDEO

from LOLA

## MINIGEN PROFESSIONAL GENLOCK

**NEW** combined GENLOCK, PAL ENCODER and SYNCHRONIZED OVERLAY KEYER CONTROLS **IN ONE UNIT**

**MiniPRO L1000 only £149.95**



### Features:

- Crossfade slider
- RGB through port
- BNC Connectors
- Cable connection to Amiga - allows professional video desk layout
- Push button mode switching - allows live programming changes

### Also available:

CDTV GENLOCK	- plug in card	£79.00
miniGEN genlock	- the original and now even better value	£49.95
L520 TV ADAPTER	- modulator for A500 etc (includes Amiga/ TV Leads)	£29.95
Accessories	- L520 extension lead plus plus other video lead kits available	

For information on all the above please write or phone

LOLA ELECTRONICS LTD.  
FREE POST  
MARKET HARBOROUGH  
LEICESTERSHIRE LE16 7BR

**0858 880182**

All prices include  
VAT & P.P.



12 month guarantee, 14 day full refund. Designed and manufactured in the U.K.

## Nexus Pro™ Background Picture Sets

High Quality AGA Colour IFF Pictures, perfect for videotitling! Work in all Amiga Paint and Presentation Packages (DPaint, Scala, etc.)  
(Also available for Pre-AGA Amigas on request)

### Set One : Papers

Various paper types, including parchments, marbled, embossed.

### Set Two : Fabrics

Varied fabric backgrounds including silks, cottons, leather, etc.

### Set Three : Textures

Various textures including woods, stonework, etc.

### Set Four : Travel

Including famous landmarks from around the world, perfect for use as chromakeyed backgrounds or for holiday video title backgrounds.

### Set Five : Weddings and First Communions

Including parchment, scrolls, flowers, romantic backgrounds, etc.

### Set Six : Introduction Pack

A compilation from the previous sets, ideal for new users.

**Each 10 disk set is available at a cost of only £29.99 inc.  
P & P. or buy the whole range for only £130.00.**

Send cheque or postal order made payable to :  
**VIDEOWORLD, 8 Ardoch Gardens, Glasgow, G72 8HB.**  
**Telephone 041 641 1142 for more information.**



## EMERALD CreativeTechnology Ltd

Rapid House, 54 Wandle Bank, London SW19 1DW  
Tel : 081-715 8866  
Fax : 081-715 8877

*If you need music software you need Blue Ribbon. We have everything you need from Sequencers to Midi Interfaces.*

### SuperJAM! V1.1 £79.95 Amiga

or IBM Windows compatible, please state which when ordering.

The easy way to make music! You won't believe your ears!

SuperJAM! music for the tone-deaf and the talented. You can create your own chords, rhythms and melodies all without having to read music.

SuperJAM! comes complete with everything that you need to write music including an interactive on screen keyboard and the EAS-O-Matic Music Maker for instant melodies and chord progressions. So go ahead, select the band, pick the style, press a key and listen with your Amiga or Windows PC, you'll be amazed at how quickly you sound like a Pro with SuperJAM!

### Bars&Pipes Professional V2.0 £199.95

You've read the reviews and now you know how great this product is. This is your chance to buy it at a great price. Designed by musicians for musicians, Bars&Pipes Pro 2.0 will quickly become an invaluable part of your Amiga Studio set up. To ensure that it does there is also a UK Technical Support line.

### One-Stop Music Shop £499.95

Once you hear this State Of The Art Sound card you'll wonder how you ever lived without it. With dozens of professionally recorded and designed digital samples the One-Stop Music Shop is the perfect accompaniment to your desktop video or professional MIDI set-up. Call us now and we will fax you the details.

### SyncPro £151.96

Using SyncPro you can synchronise MIDI with Multimedia, video and audio hardware. Supports all major synchronisation formats including SMPTE, MIDI Time Code and Song Pointer.

### Triple Play Plus £169.95

Designed for the modern MIDI musician, it works with Bars&Pipes to provide 48 simultaneous MIDI channels through 3 separately addressable MIDI outs.

### The PatchMeister £79.95

Midi Librarian easy to use and versatile, designed for owners of synthesisers, drum machines and sound modules of all kinds. Includes 50 custom drivers and 160 SysEx templates. Can be fully integrated into Bars&Pipes.

To order these and other products, call our Credit Card Hotline for immediate despatch on 081 715 8866

**Orders by Post:** Please make cheques payable to Emerald Creative Technology Ltd, (please allow 7 days for clearance)

**Delivery:** Add £4.95 for next day delivery by courier.

£3.50 for recorded delivery.

Goods are sold subject to our standard terms and conditions of sale and are available on request.

Specifications and prices are subject to change without notice. All prices include VAT.



# CRAZY CHRISTMAS OFFERS FROM BCS

## DISKS! DISKS! DISKS!

100% CERTIFIED ERROR FREE  
PLUS FREE DISK LABELS

50	3.5" DS/DD	£21.99
100	3.5" DS/DD	£35.99
150	3.5" DS/DD	£55.99
200	3.5" DS/DD	£66.99
300	3.5" DS/DD	£99.99
400	3.5" DS/DD	£132.99
500	3.5" DS/DD	£159.99

All prices include VAT/free labels  
REMEMBER, THESE PRICES INCLUDE FREE DELIVERY

## DISKS + 100 CAP BOXES

100% CERTIFIED ERROR FREE  
PLUS FREE DISK LABELS

50	3.5" DS/DD + 100 cap box	£25.99
100	3.5" DS/DD + 100 cap box	£39.99
150	3.5" DS/DD + 100 cap box	£58.99
200	3.5" DS/DD + 2 x 100 cap boxes	£75.99
300	3.5" DS/DD + 3 x 100 cap boxes	£110.99
400	3.5" DS/DD + 4 x 100 cap boxes	£147.99
500	3.5" DS/DD + 5 x 100 cap boxes	£179.99

All prices include VAT/free labels  
REMEMBER, THESE PRICES INCLUDE  
FREE DELIVERY

## DISKS + 80 CAP BANX BOXES

100% CERTIFIED ERROR FREE  
PLUS FREE LABELS

50	3.5" DS/DD + 80 Cap Banx Box	£32.99
100	3.5" DS/DD + 80 Cap Banx Box	£45.99
150	3.5" DS/DD + 2 x 80 Cap Banx Boxes	£74.99
200	3.5" DS/DD + 2 x 80 Cap Banx Boxes	£89.99
300	3.5" DS/DD + 4 x 80 Cap Banx Boxes	£110.99
400	3.5" DS/DD + 5 x 80 Cap Banx Boxes	£145.49
500	3.5" DS/DD + 6 x 80 Cap Banx Boxes	£235.99

All prices include VAT/free labels  
REMEMBER, THESE PRICES INCLUDE  
FREE DELIVERY

## ★ PACK 1 ★ NEW Amiga CD32 Oscar & Diggers ONLY £278.99

## CITIZEN 240C COLOUR PRINTER + LEAD & DUSTCOVER £249.99

## PHILIPS CM8383 MKII MONITOR ONLY £199.99 Includes Dust cover

## PANASONIC 2123 COLOUR PRINTER £219.99

Includes dust cover and leads

## PRINTER RIBBONS

PRINTER	BLACK	COLOUR	
BRANDED	COMP	BRANDED	
Citizen 120D	£3.40	£2.70	N/A
Citizen Swift 9	£3.40	£2.70	£15.30
Citizen Swift 24/24E/924	£4.70	£2.70	£15.30
Panasonic 1124	£8.50	£3.58	N/A
Star LC-10	£4.47	£3.06	£6.70
Star LC-20	£4.47	£3.06	N/A
Star LC200	£6.11	£4.70	£12.30
Star LC24 10/15	£5.58	£3.53	N/A
Star LC24-200	£5.58	£3.53	£13.25

Call for prices on any ribbon

## DUST COVERS

A500	£3.50
A600	£3.50
STAR LC200	£3.50
STAR LC-24 200	£3.50
CITIZEN 9	£3.50
CITIZEN 24	£3.50
PHILIPS MKI/II	£3.50
ATARI	£3.50

## DISKS + 100 CAP BOXES

100% CERTIFIED ERROR FREE  
PLUS FREE DISK LABELS

50	3.5" DS/DD + 100 cap box	£25.99
100	3.5" DS/DD + 100 cap box	£39.99
150	3.5" DS/DD + 100 cap box	£58.99
200	3.5" DS/DD + 2 x 100 cap boxes	£75.99
300	3.5" DS/DD + 3 x 100 cap boxes	£110.99
400	3.5" DS/DD + 4 x 100 cap boxes	£147.99
500	3.5" DS/DD + 5 x 100 cap boxes	£179.99

All prices include VAT/free labels  
REMEMBER, THESE PRICES INCLUDE  
FREE DELIVERY

## DISKS + 80 CAP BANX BOXES

100% CERTIFIED ERROR FREE  
PLUS FREE LABELS

50	3.5" DS/DD + 80 Cap Banx Box	£32.99
100	3.5" DS/DD + 80 Cap Banx Box	£45.99
150	3.5" DS/DD + 2 x 80 Cap Banx Boxes	£74.99
200	3.5" DS/DD + 2 x 80 Cap Banx Boxes	£89.99
300	3.5" DS/DD + 4 x 80 Cap Banx Boxes	£110.99
400	3.5" DS/DD + 5 x 80 Cap Banx Boxes	£145.49
500	3.5" DS/DD + 6 x 80 Cap Banx Boxes	£235.99

All prices include VAT/free labels  
REMEMBER, THESE PRICES INCLUDE  
FREE DELIVERY

## ★ PACK 2 ★ NEW A1200 Desktop Dynamite Pack. Includes A1200, Deluxe Paint IV AGA, Dennis, Wordworth AGA, Oscar, Digita Print Manager

## ★ PACK 2 ★

NEW A1200 Desktop Dynamite Pack.  
Includes A1200, Deluxe Paint IV AGA,  
Dennis, Wordworth AGA, Oscar,  
Digita Print Manager

**£329.99**

## ★ PACK 3 ★

NEW A1200 BCS PACK  
Includes A1200 + Nigel Mansell's Grand  
Prix AGA + Trolls AGA

**£279.99**

## CITIZEN 240C COLOUR PRINTER + LEAD & DUSTCOVER £249.99

A1200 4Mb Blizzard Board	<b>£179.95</b>
Blizzard 1230 Turbo Board	<b>£244.95</b>
68030 40 Mhz	
4Mb RAM for 1230 Turbo	<b>£179.95</b>

## MICROVITEC 14"

Colour Multisync monitor.  
**ONLY £399.99**

## WORD PROCESSING SOFTWARE

**PENPAL £29.95**  
**FINAL COPY II £57.95**  
**NEW FINAL WRITER £94.95**

## BCS EXTRAS PACK

Includes Microswitched joystick, dust  
cover, mouse mat, 10 3.5" DS/DD Disks,  
Disk Box, Cleaning Kit.

**ONLY £20.00**

Available only when purchasing Amiga  
machines

## LIMITED OFFER

Nigel Mansell's Grand Prix AGA version +  
Trolls AGA version

**ONLY £29.99**

## ACCESSORIES/JOYSTICKS

1000 Coloured Labels	£8.00
1000 Tractor Labels (White)	£10.00
Mouse Mat	£2.75
Mouse Holder	£2.50
14" Monitor Stand	£10.00
Printer Stand	£6.00
3.5" Cleaning Kit	£2.75
Printer Ribbons	£CALL
Parallel Lead	£8.00
Zipstick	£11.50
QS Python IIIM	£9.50
Amiga Mouse	£15.95
Joystick Extension Lead	£6.95

## DISK BOXES

3.5"	10 Cap	£1.00
3.5"	40 Cap	£4.10
3.5"	100 Cap	£4.50
3.5"	150 Cap Posso Box	£16.50
3.5"	80 Cap Banx Box	£10.99
5.25"	10 Cap Box	£1.10
5.25"	50 Cap Box	£5.10
5.25"	100 Cap Box	£5.90
5.25"	70 Cap Posso Box	£16.50

Established now for over 4 years BCS has thousands of satisfied customers throughout the UK.  
Come and see our new showroom in Brighton. We also stock Amiga, Atari, PC, Sega & Nintendo  
hardware and software. We also operate a Sega game rental scheme. Don't delay, Call BCS today

**ORDER HOTLINE: Tel: 0273 506269 Fax: 0273 551477**  
*Send cheques / postal orders to:*

**BCS Ltd., 295 Ditchling Road, Brighton, East Sussex BN1 6JH**

Add £4 p&p unless stated. Add £10 next day. All prices include VAT.

All offers subject to availability. E&OE. Cheques will be held for clearance.

Licensed credit brokers for Lombard Tricity Finance Ltd.



# Stacks of fun

Most Amiga programs, as you doubtless know, need to obtain various types of system resources in order to run. It might be Chip memory for graphics images, hardware like the serial or parallel port, or access to things like the timer or gameport devices. No matter what facilities are involved there is always one snag – programs need to keep track of any system facilities being used because, before they terminate, it is their responsibility to hand them back. Memory must be returned to the system, devices must be closed and so on.

Let's take a simple example. A program opening a window in a custom Intuition screen must open the Intuition library, open a screen and then open the window. Operations like these can quite easily fail – a program will not, for instance, be able to open a custom screen if some other program has already grabbed all available Chip memory. Programs must therefore not only ask for the resources they need but must check that such requests were successful. It's pretty obvious that the order in which various closedown steps are carried out is also important. In the case of the above example the program must close the window, then close the custom screen, and finally close the Intuition Library.

Coding these sort of operations in small programs rarely presents any difficulties, but as programs get to more realistic sizes many more things need to be done. Raster allocation, setting up reply ports, device access... sometimes a program may need to perform dozens of jobs before it is even up and running, and unfortunately this is just the beginning of the story. Often resources need to be allocated dynamically – that is, during the time the program is running. Consider, for example, a program which uses a number of separate windows (each with different menus). A user might activate one window and, from the associated menu, select an option which causes the printer device to be opened. Having done that the user might then have second thoughts about what they were doing, switch back to the main window, and quit the program. When terminating, the program will need some way of knowing that the printer device was open in order to close it.

Needless to say these types of considerations can obviously make

**Looking for more advanced C programming tricks? Look no further! Paul Overaa offers something for you to get your teeth into this month – dynamic resource handling.**



## LISTING 1

```
Listing 1 - Timer opening and closing routines with
stack based resource tracking.

/* ----- */
UBYTE OpenTimer()
{
    UBYTE error_number=NO_ERROR;
    if((OpenDevice(TIMERNAME,UNIT_MICROHZ,(struct ▶
    IORequest *)g_timer_request_p,0))!=NULL)
        error_number=STARTUP_ERROR;
    else {
        g_function=CloseTimer;
        PushStack(g_resource_stack_p,g_function);
        printf("timer open\n");
    }
}

/* ----- */
void CloseTimer()
{
    CloseDevice((struct IORequest *)g_timer_request_p);
    printf("timer closed\n");
}

/* ----- */
```

life for the Amiga programmer both messy and complicated. What we really need is a scheme which can handle not only those initial program setting-up operations, but which allows additional resources to be allocated while the program is running.

### DYNAMIC RESOURCE HANDLING

Dynamic what? Sounds tricky, I know, but the basic ideas and

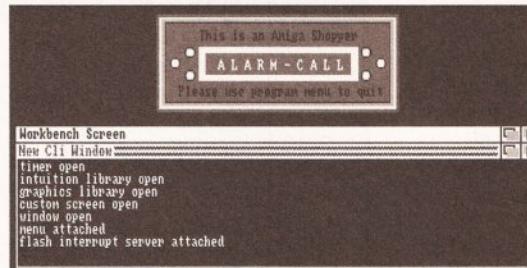
or opens some returnable or closeable system resource pushes the address of a corresponding de-allocation or closedown routine onto this stack.

Routines also need to return error numbers which indicate whether they've succeeded or not.

Providing these conventions are followed the program can perform its closedown operations extremely

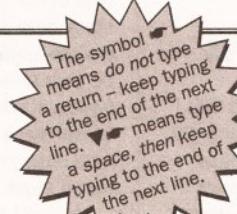
easily. How? Just by pulling those de-allocation routine pointers from the stack and executing the corresponding routines. By the time the stack is empty all acquired system resources will have been handed back.

How do we set up the allocation / de-allocation code and get the right pieces of code executed at the right times? Let's work through a skeleton example, showing how to set up the code for a number of routine operations. Listing 1 on this page shows two routines which open and close the Timer device, while Listing 2 (on page 86) provides another example pair that create and delete a reply port. Don't worry too much



**The CLI/Shell window will let you know what the example program is doing. Try it on the cover disk!**

conventions of one of the schemes I've adopted are easy enough to understand. It's based on the assumption that a stack data structure is available to store pointers to any number of de-allocation routines. Stacks of course store things on a "last in, first out" basis and what my scheme effectively does is ensure that any routine which successfully allocates



about the specific details here – it is the overall layout that's important, not the actual code...

Notice that the first of each of the two pairs of routines shown in Listings 1 and 2 is using a **PushStack()**

function and in each case the value being pushed – that is, stored – is the address of the corresponding de-allocation routine (the second routine in each listing). The net result is that, providing both of these allocation routines are successful, both de-allocation routine pointers will have been placed on the stack. Further allocation routines will similarly add the addresses of their closedown routines and so the stack ends up holding pointers to all of the de-allocation / closedown routines that will need to be performed when the program terminates.

The good news now is that, irrespective of the number of routines present on the resource stack, the complete de-allocation / closedown procedure can always be carried out with a single line of code:

```
while(!PopStack▶
      (g_resource_stack_p, ▶
      g_function)) g_function();
```

This loop removes a pointer to a de-allocation routine and then executes

that function. It does this continually until the stack is empty. (I'll discuss my stack conventions in a moment.)

To handle the execution of the initial allocation routines used by a program, of which there are possibly a large number, another function pointer trick can be used – an array can be set up which contains pointers to the allocation routines to be executed. For example:

```
#define INITIAL_RESOURCE_COUNT 7

UBYTE (*initial_resource_list[])() = {
    CreateSerialReplyPort,
    CreateSerialRequestBlock,
    OpenSerialDevice,
    SetHighSpeedSerial,
    CreateTimerReplyPort,
    CreateTimerRequestBlock,
    OpenTimer
};
```

This identifies the set of routines that need to be executed at startup and of course similar types of arrays can be used at any point within a program where a number of successive allocations need to be made. All that is needed now is some loop code which will read through the pointer list and execute the corresponding routines. Listing 3 (below) shows a function which does the trick.

### ABSTRACT DATA TYPES – THE EASY WAY OUT

So far I've taken it for granted that **Push/Pull** type stack operations are available to the program. The bad news of course is that if you want such stack facilities in C you must either create them yourself or borrow someone else's code. I spent no time at all on writing stack code for

Listing 2 – Another set of allocation/de-allocation routines which push a de-allocation pointer onto the stack.

```
/* _____ */
UBYTE CreateTimerReplyPort()
{
    UBYTE error_number=NO_ERROR;
    if((g_timer_reply_port_p=(struct MsgPort *)CreatePort(TIMERNAME, 0))==NULL)
        error_number=STARTUP_ERROR;
    else {
        g_function=DeleteTimerReplyPort;
        PushStack(g_resource_stack_p,g_function);
    }
}

/* _____ */
void DeleteTimerReplyPort()
{
    DeletePort(g_timer_reply_port_p);
    printf("timer reply port deleted\n");
}
```

these experiments because an existing already compiled abstract data type (ADT) module was available to provide the stack handling facilities.

ADTs involve some interesting concepts but the basic idea is that by carefully defining the important properties of the data structure, and identifying the operations allowed, program building blocks can be created that are easily re-used. The type of operations needed with a stack data structure are of course well documented. It is necessary to be able to add and remove items from a stack and be able to kill (that is, delete) any stacks created. It is also often convenient to be able to test a stack to see if it is empty!

When I wrote my stack ADT code I had a number of specific requirements in mind. It was to be possible to use any number of

different stacks handling any number of different object types, have different types of stacks in existence at different times, use the module in any number of programs without having to re-compile it and not be limited to working within a fixed memory space, save the limit of the system itself. Last but not least I wanted a module which could easily be ported to different machines. ANSI C was the obvious choice.

I opted for a linked-list dynamic memory allocation approach using

**calloc()**/**free()** calls to provide space for the items being stored on the stack. Within the stack module the routines are based on two types of structures which represent first the list headers (stack descriptors) and second the stack items themselves. The descriptor structure for instance contains a pointer to the first item on a linked list of stack items and a value representing the size of the objects being placed on the stack:

```
struct StackDescriptor {
    struct StackItem *FirstItem;
    UBYTE ItemSize;
};
```

Stack item structures are again relatively simple and contain just two fields: a "next item" pointer and a reference to the first byte of some

unspecified data item:

```
struct StackItem {
    struct StackItem *NextItem;
    UBYTE Data[1]; /* actually user
defined amount of data */
};
```

The underlying routines use these structures to manipulate dynamically allocated stack space. None of the code is particularly complicated but the good news is that these internal characteristics are of no consequence to the applications programs wishing to use the ADT. All that a program needs to concern itself with is the set of allowable ADT operations that have been defined. Here are interface definitions used in my ADT stack module...

**s=CreateStack(t)** This initialises a

## LISTING 3

Listing 3: The auto-allocator function.

```
/* _____ */
UBYTE AllocateResource(UBYTE count, UBYTE (*list[])())
{
    UBYTE i, error_number;
    for (i=0;i<count;i++)
    {
        if(error_number=list[i]())
            i=count; /* force exit from loop */
    }
    return(error_number);
}
```

## THE VALUE OF ADTs

Abstract data types are generally considered by computing professionals and academics to be A Good Thing.

The listings here and on the cover disk clearly demonstrate the value of abstract data types. Just as you can create functions that can be re-used in several of your programs – for instance, a Sort function – so you can create complex data types, along with associated functions to manipulate them, which can also be re-used.

The module containing these definitions can be compiled on its own, and once it is working it never needs to be compiled again. Whenever one of your own programs needs to make use of it, you just include its header file and link in its object code after the

compile stage.

The beauty is you have a code module which carries out complex tasks and which you *know* will work. Also, once it's written, you need not concern yourself again with the mechanics of how it performs its tasks. You can easily make use of the stack functions given here without having the slightest inkling of how they are doing what they are doing. All you need to know are the names of the functions that manipulate the abstract data type, and the type of parameters they require.

Using stacks for resource handling is just one possibility – once you've got the hang of them you'll find them useful for all sorts of applications in your own programs.

# LISTING 4

Listing 4: The stack ADT header file.

```

=====
/* Source: Stack ADT header */
/* _____ */

typedef void STACK;

/* These macros are used to create a slightly more
friendly interface to the user. They just remove
the need for explicit sizeof(), casting and address
taking operations in the applications code... */

#define CreateStack(t) CreateStk(sizeof(t))

#define PushStack(s,x) PushStk(s, (UBYTE *)&(x))

#define PopStack(s,x) PopStk(s, (UBYTE *)&(x))
#define KillStack(s) KillStk(s)

#define StackEmpty(s) StkEmpty(s)

/* These are the prototypes for the underlying
stack access routines which do the real work... */

STACK *CreateStk(ULONG unit_size);

void KillStk(STACK *descriptor_p);

BOOL PushStk(STACK *descriptor_p, UBYTE *data_item);

BOOL PopStk(STACK *descriptor_p, UBYTE *data_item);

BOOL StackEmpty(STACK *descriptor_p);
/* _____ */

```

8: Menu added to window.

9: Flashing colour interrupt server installed.

When the user selects Quit from the menu the program then...

10: Removes the interrupt server.  
11: Removes the menu.  
12: Closes the window.  
13: Closes the custom screen.  
14: Closes the graphics library.  
15: Closes the Intuition library.  
16: Closes the timer device.  
17: Deletes the timer request block, and finally...  
18: Deletes the timer reply port.

All of these operations have been performed using the techniques we've discussed this month. And all of the relative source code, object code, header files etc., plus a runnable version of the test program, have been provided on the cover disk. Here are some brief details of the files you'll find. For general details about the disk, see page 12.

**general.h** A general header file required for both the **alarm.c** and **display.c** modules.

**alarm.h** A header file which contains includes and defines, function prototypes, and globals related to the **alarm.c** module.

**alarm.c** This is the main core of the program. It sets up a stack and performs a series of timer-device-related allocations before issuing the appropriate **DOL()** time delay call. When the time interval is up a **Display()** routine is called, after which the program deallocates its resources and terminates.

**alarm.o** Compiled object code form of the **alarm.c** file

**alarm.lnk** Link file for the **alarm.o**, **display.o** and **stack\_adt.o** code modules.

**alarm** The CLI/Shell runnable form of the example.

**display.h** A header file which contains includes and defines, function prototypes, and globals related to the **display.c** module.

**display.c** This contains the **Display()** function which opens the Intuition and graphics libraries, opens a custom screen, opens a window, installs a menu and puts up the "time up" display.

**display.o** Compiled object code form of the **display.c** file.

**stack\_adt.h** The header needed by **test.c** and **display.c** in order to use ADT stack operations.

**stack\_adt.o** Object code for the stack ADT module.

**alarmimage.c** Source code for the alarm message image structure.

**alarmimage.o** Object code for the above file.

**interrupt.o** An object code module that contains a couple of routines, written in 68000 assembler, which

alternate the contents of colour register 4 in order to create a flashing effect.

The program, which was compiled using SAS C, should be run from a CLI/Shell window. The reason for this is that **printf()** statements have been included in all of the allocation / de-allocation routines in order to provide some visible indication of the routines being executed.

To run the example just open a CLI/Shell window, copy the program to the RAM disk and make **RAM:** the current directory (using the **CD RAM:** command), and then type this:

1> alarm x

Or, if you want to kick off the program as a separate process (so that you can continue to use the CLI/Shell window for other things), type this instead:

1> run alarm x

where x is some integer time delay expressed in minutes. After x minutes you'll get an alarm call message displayed and at this point the program can be cancelled from the menu.

AS

## JARGON BUSTING

**Function Pointer** – C Pointers usually hold the addresses of other variables but they can also be used to store the addresses of executable C routines. In this latter case they are called "function pointers".

**Interrupt Server** – One of any number of routines that are linked to a particular hardware interrupt. In the case of this month's example program the Amiga's

vertical blanking interrupt chain is being used.

**Linked-list** – A series of items in memory that are logically chained together by including within each item a pointer to the next item.

**Pull or Pop** – Common terms for removing an item from a stack.

**Push** – A common term for placing an item on a stack.

# Find your local group

**This issue: user groups in the North and overseas.**

## NORTHEAST

**Amiga Network International** 2 monthly club disk, reviews, advice. For info contact Phil or Steve: 434 Denby Dale Rd East, Wakefield, W Yorks WF4 3AE. (AS33)

**Amiga Utd** Disk based, reviews, competitions, help service, BBS, games and utils. Contact D Collingwood, 14 Linden Close, Hutton Rudby, Yarm, Cleveland TS15 OHX. £10 a year. (AS33)

**Artman** News, views, reviews, free PD for your articles. Free membership. Send blank disk plus SAE for free disk mag and two free games to A Greenwood, 40 Northwell Gate, Otley, West Yorks LS21 2DN. (AS33)

**Champion PD Club** PD at 30p, newsletters, advice, help and more. Membership £10. Contact Steve Pickett, 31 Somerset Close, Catterick, N Yorkshire DL9 3HE. (AS33)

**Chester-le-Street 16-Bit Computer Club** Exchange advice and swap tips. Meets Mondays from 7.30-9.30pm, Ground floor function suite, The Civic Centre, Newcastle Rd, Chester-le-Street. Contact Peter Mears. (AS33)

**Club 68000** Comp's, progg'ing, music. Meets Harrogate Leisure Centre, Mondays 6.15pm-10pm. SAE to Chris Hughes, 59 Walton Park, Pannal, Harrogate, N Yorks HG3 1EJ. (AS33)

**Club Amiga** £10 a year for PD and a 24-hr helpline (091 385 2627). For more info send SAE to Chris Longley, 5 Bowes Lea, Shirey Row, Houghton Le Spring, Tyne and Wear. (AS33)

**Club Futura** Advice to programmers and beginners. Send SAE for info to G Holland, 16 Hermitage, Monkseaton, Whitley Bay, Tyne & Wear NE25 9AN. (AS33)

**Darlington Commodore Users Club** Bi-monthly newsletter with coverdisk, cheap PD (60p per disk), advice, etc. Send SAE for more details. Annual membership £7.50. Contact Steve Wheatley, 1 Ruby St, Darlington, Co Durham DL3 0EN. (AS38)

**Harley's PD Swaporama** PD swapping by

mail. Contact G Varney, 140 Weston Drive, Otley, West Yorks LS21 2DJ. (AS38)

**Mainly Amiga** Programming, AmigaOS, music, games. Meet Harraton School, £1, non-members £1.50. Contact Ray Scott, Vigo Lane, Harraton, Washington, Tyne & Wear. (AS38)

**Nothing But AMOS** Monthly disk magazine - £2.50 - news, reviews, previews, tips & cheats. Contact Neil Wright 39, Riding Dene, Mickley, Northumberland, NEA3 7DL. (AS35)

**Pennine Amiga Club** Free membership, free advice and a newsletter. Contact Neville Armstrong, 26 Spencer Street, Keighley, West Yorkshire BD21 2BU. (AS35)

**Software City Swapping**, competitions, club magazine. Membership £8. Contact N Richards, 9 Hollie Close, Manor Estate Farm, Rawmarsh, Rotherham, South Yorkshire S62 7LX. (AS33)

**Steel PD**, cheats, ideas, music, art, programming, hardware mods. Free membership (postal only). Contact James Whitehead, 33 Middle Cliffe, Drive Crowedge, Sheffield S30 5HB. (AS33)

**The Amiga Club** Monthly newsletter, competitions, software exchange, huge PD library, cheats, tips, reviews. Contact G Starling, 31 Pine Lea, Brandon, Durham DH7 8SR. Membership £10 life plus two free games and DCopy. (AS33)

**The Amiga Studio** Friendly, helpful advice for serious Amiga users. Monthly newsletter, PD library, free loan of equipment to members, bar. Meets 7pm Tuesdays, Mitchells Club, Scotia Road, Tunstall. Contact Dave Rose. (AS33)

**Wardray Hern Consortium** User group for Amiga and possibly others. Membership fees to be discussed and incurred. PD library to be set up. Also Hern connection - worldwide contacts wanted. SAE and disk to WardCon info, (AS) Warren Hardy, 21 Stockfield Ave, Fenham, Newcastle upon Tyne NE5 2DX. (AS33)

**Warpdrive** Help-line, PD library, bi-monthly disk mag, free drinks, competitions and info-sheet. £15 per year. Contact B Scales, 110 Burton Ave, Balby, Doncaster DN4 8BB. (AS33)

## NORTHWEST

**Allbit Computer Club** General hints and tips, advice, competitions, draws, shop. Meet at The Earle of Crewe, 7.15-10.30pm. Contact Glyn or Mick, 0270 666277. Membership £2. (AS33)

**Amiga Users Group Part 2** Advice, technical support, BBS, PD library, tuition, etc. Contact Andy Wilkinson, 25 Glen Eldon Road, Lytham St Annes, Lancashire FY8 2AX. (AS33)

### Blackburn Amiga Users Group

Software/hardware help, public domain, exchange of information. Meets 7.15pm every Thursday, Room 3, Audley Sports Centre. Contact Eric Hayes, 9 Observatory Road, Blackburn, Lancashire BB2 3HE. (AS33)

**Computeque** From beginner to advanced user. Meets 7.45pm-10.30 pm every Tuesday at Inskip Meeting Hall, Ashurst, Skelmersdale, Lancs. Contact Steve Lalley. (AS33)

**Fylde Computer Club** All aspects of computing. Meets 7pm, Lostock Gardens Community Centre, 2nd and 4th Wednesday of month. £15 per year, 50p on door. Contact Colin Biss, 90 The Esplanade, Fleetwood, Lancs FY7 7BQ. (AS33)

**Hyndburn Amiga Users Club** Tuition, advice, PD, and more. Meets Mondays 7pm, at the Canine Club, Accrington (£1 on the door). Contact Nigel Rigby, 7 Brecon Avenue, Oswaldtwistle, Lancashire BB5 4QS. (AS33)

**New Hall Amiga Users Club** Games, graphics, music, Workbench programming. Meets 7pm every Tuesday, New Hall Social Club, 104 Bay Rd, Dawtenstall. Membership £5 per year, under 16s not allowed. Contact Bill Grundy, 115 Stanley St, Accrington, Lancs. (AS33)

**N Ireland Amiga User** Free PD, disk-based mag £2.50 per issue. SAE to Stephen Hamer, 98 Cribilly Rd, Ballymena, Co Antrim BT42 4DS. (AS33)

**Northside Amiga Group** Lectures by professionals on different Amigas and associated hardware. Member demonstrations on serious software and games. Meets 8pm alternate Mondays, Donadea House, Dublin 13. Contact William Kelling, 10/A Rainford Avenue, Dublin 8, Ireland. (AS33)

**Royal Air Force Amiga Club** Loads of new PD. Meets 1900-2000 hours, Thursdays, Blk 35, Room 40. Send 10 of your PD disks plus 2 x 24p stamps to Stan Young, HMF RAF Laarbruch, BFPO 43. (AS33)

**Singapore Sling** Promotes Amiga in Singapore. Meet Eugenia Court, every Sunday 1pm. Contact Eric Chai ML, Block 4 #14-413, Pandan Valley, Singapore 2159. (AS33)

**Software Exchange Club** Free help and advice. Contact Michael Lacey, Fern's Post Office, Enniscorthy, Co. Wexford, Republic of Ireland. (AS38)

**Worldwide PD Club** Over 4,100 disks - send 2 formatted disks and stamped, addressed jiffy bag for catalogue. Membership DM60 a year or DM6 a month. Contact Dave White, Berliner Strasse 39, 40880 Ratingen, Germany. (AS38)

**Next month in AS33: Scotland, Wales, special interests, BBSs**

**Note:** this list is provided as a free service for amateur, non-profit-making user groups. *Amiga Shopper* does not endorse or recommend any particular group and cannot be held responsible for any losses or problems you might suffer.

## GETTING YOURSELF LISTED - AN IMPORTANT NOTE

Your user group will be listed here free of charge for six months, then deleted to prevent defunct groups being listed indefinitely. The number at the end of each entry is the last issue in which that entry will be included. If you want your group's entry left in, just send in this coupon again a couple of issues in advance. PD libraries are now listed at the end of the PD section - this issue, page 120.

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.

AS32

**Group name** .....

**Type of activities** .....

**Place of meetings** .....

**Time of meetings** .....

**Contact name** .....

**Contact telephone number** .....

**Contact address** .....

**Membership fee** .....

**This is a new entry**  **an updated entry**

# imagine a magazine...

...that's devoted entirely to PC games. No spreadsheets, no utilities, no printer reviews. Just 100% PC games. And more of them than any other magazine.

...that covers everything that's happening in the world of PC games - and covers it first. That reviews every new game, every month, with the most scrupulous and definitive marking system ever devised.

...that reports exclusively from the USA on the latest developments stateside. Every month. Not by cribbing from American magazines, but by relying on dedicated columnists based in Silicon Valley.

...that carries not just reviews, news, tips and the rest, but features, articles and interviews from a completely different perspective, the likes of which you've never seen in any games magazine before.

...that would ask a genuine Royal Navy submarine captain to test the latest underwater combat simulations for accuracy.

...that's produced by a team of the most experienced and respected games journalists ever assembled.

...that carries a cover-mounted disk which gives more value for money than most full-price games.

...that treats its readers like adults, not kids, because they are adults, not kids.

# PC GAMER

Hang On. If You Can.

Thursday November 11  
future publishing

# BACK

Here's your chance to complete your collection and catch up on all the



ISSUE 2

2D Paint packages reviewed and rated; which programming language is the one for you; PageStream 2, Scala, Broadcast Titler and the KCS Powerboard PC emulator reviewed...£3



ISSUE 3

Accelerator cards put head-to-head; the versions of BASIC compared; first installment of C programming tutorial; Bars & Pipes Professional and AT-Once PC emulator reviewed .....£3



ISSUE 4

Ten of the most popular printers checked out; creating a structured drawing package with C; Wordworth, Real3D, Imagine, Superbase 4, T<sub>E</sub>X and Pro 24 reviewed .....£3



ISSUE 8

A complete guide to buying Amigas and related hardware; the HAM-E graphics system, RocGen genlock, KCS sequencer reviews PLUS tips on DTP, MIDI and spreadsheets.....£3



ISSUE 14

Hand scanners reviewed and rated; 15 memory expansions compared; incorporating sound effects and soundtracks into your animations; and artificial intelligence .....£3



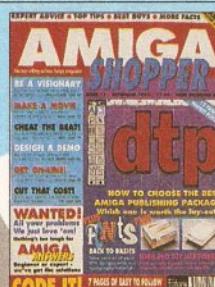
ISSUE 15

The best in PD software - how to set up a complete software system for nothing; the PostScript interpreter Post, ImageMaster and SaxonScript Professional reviewed.....£3



ISSUE 16

200 top tips - advice on everything from accelerators to Workbench, BASIC to WPs, C to video; Hit Kit, Professional Calc and HAMA's 290 genlock reviewed .....£3



ISSUE 17

The top desktop publishing packages reviewed and rated; understanding typography; write adventure games with Visionary; tips on writing your own arcade game.....£3



ISSUE 21

Amiga Shopper Awards. Cover disk: CG fonts, DirWork, screen blanker, ICalc, LhA, PowerSnap 2, RDES, ReOrg, Safe Delete, SPClock, SysInfo and Virus Checker .....£4



ISSUE 22

20 printers - dot matrix, inkjet and laser - reviewed and rated; beginner's Amiga guide; spreadsheet tutorial; guide to AmigaDOS 3; code clinic; sample storage techniques .....£3



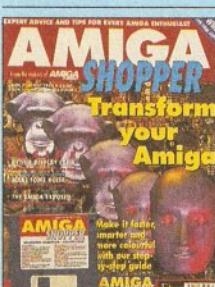
ISSUE 23

How to fit a hard drive to an A600 or A1200. Cover disk: Alert, Cycle To Menu, KwikBackup, LhA, ReqTools, SnoopDOS, Virus Checker, assembler and linker package .....£4



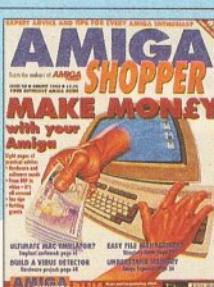
ISSUE 24

RAM - what it is and what to buy in our in-depth round-up and tutorial; DIY hardware repairs; eliminating MIDI faults; Art Expression and G-Lock genlock reviewed .....£3



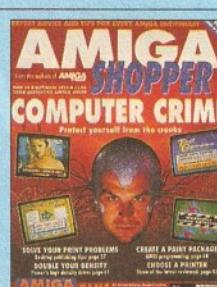
ISSUE 27

Upgrade your A500 to A1200 level; accelerator round-up. Cover Disk: OctaMED, XOper, Move file mover, JuliaMove, appointment scheduler, source code and Virus Checker.....£4



ISSUE 28

How to make money with your Amiga; Amiga animations on TV; legal advice; chords with OctaMED; Directory Opus, Emplant and Art Department Professional reviewed.....£4



ISSUE 29

Computer crime and how to protect yourself from it; Power XL high-density floppy, Ami-Back back-up system, VLab YC digitiser and MBX1230 accelerator reviewed .....£4

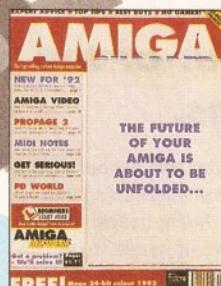


ISSUE 30

Video on the cheap - the techniques and low-cost software you need; how to use fonts; Proper Grammar, TechnoSound Turbo 2 and Powerbase reviewed .....£4

# ISSUES

advice, reviews, tutorials and features you might have missed out on!



ISSUE 9

The complete Amiga software guide; how to receive satellite and radio transmissions; designing Christmas cards with Professional Page; reviews of Scala and the A500 Plus .....£3



ISSUE 10

How best to draw with Deluxe Paint; the guide to the best sound samplers available; budget business packages; GB Route Plus 2, Showmaker and Rendale Super 8802 reviewed .....£3



ISSUE 11

CDTV and its software get a good going over; how to perfect your printing; Harlequin graphics board, Stereo Master sampler and KCS Power Board PC emulator reviewed .....£3



ISSUE 13

FREE Tracy covermount and how to use it in our animation special; the unforgettable guide to Amiga memory; Miracle Piano Teaching System and RocTec hard drive reviewed .....£3



ISSUE 18

Amiga Answers special – 32 pages of solutions to problems on everything from AmigaDOS to video; using lighting to enhance your 3D graphics creations; Maxiplan 4 reviewed .....£3



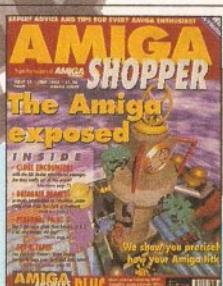
ISSUE 20

Step-by-step guide to ray-tracing; accelerator board round-up' multitasking tutorial; build a ROM switcher; AMOS Professional and Opalvision reviewed .....£3



ISSUE 25

Nine top word processors reviewed and rated. Cover Disk: EdWord text editor/WP, AZSpell spelling checker, CompuGraphic fonts and Virus Checker .....£4



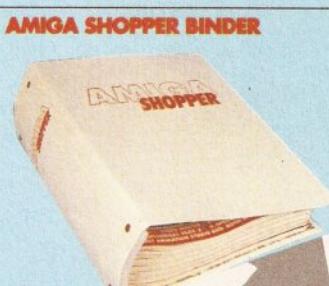
ISSUE 26

Find out how your Amiga works with The Amiga Exposed; get the best from your samples; fractal landscapes; VHS back-up system, Personal Paint and TypeSmith reviewed .....£3



ISSUE 31

Amiga Answers special – 26 pages of advice. Cover disk: debugging utilities, Flexer, EasyCalc, PayAdvice, ASPaint source code, Address book source code, Virus Checker £6.30 .....£4



Keep your copies of *Amiga Shopper* safe and in order – it's ideal for building up a valuable and useful reference set.....ONLY £4.95

AS32

## BACK ISSUES ORDER FORM

SEND THIS FORM (no stamp required) TO:  
**Amiga Shopper, Future Publishing Ltd, FREEPOST, Somerton,  
 Somerset, TA11 7BR**

Do not send cash through the post with your mail orders  
 Please make all cheques payable to Future Publishing Limited

### BACK ISSUES

Please tick the issues you require:

Prices listed are per copy and include postage and packing. \*Asterisk denotes issues with cover disk included

<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 8	<input type="checkbox"/> 9
<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 13	<input type="checkbox"/> 14	<input type="checkbox"/> 15
<input type="checkbox"/> 16	<input type="checkbox"/> 17	<input type="checkbox"/> 18	<input type="checkbox"/> 20	<input type="checkbox"/> 21*
<input type="checkbox"/> 22	<input type="checkbox"/> 23*	<input type="checkbox"/> 24	<input type="checkbox"/> 25*	<input type="checkbox"/> 26
<input type="checkbox"/> 27*	<input type="checkbox"/> 28	<input type="checkbox"/> 29	<input type="checkbox"/> 29	<input type="checkbox"/> 30

Issue numbers not listed are sold out

31

BINDER £4.95

Total amount payable: £  . . .

Name .....

Address .....

Post code .....

Telephone No .....

Method of payment (please circle) Access • Visa • Cheque • PO •

Credit Card No..... Expiry Date .....

Signature .....

# ATTENTION! COMMODORE & AMIGA END USERS & DEALERS

## TOP SELLER ADVANCED AMIGA ANALYSER

### AN INEXPENSIVE DIAGNOSTIC ANALYSER THAT WORKS ON ALL AMIGAS

Amiga Shopper magazine says "Without doubt, this is the finest diagnostic equipment I have ever seen, and I address all Amiga repairers and practical-minded users when I say this is really something worth having." A complete diagnostic hardware and software analyser (uses point and click software interface). The analyser plugs into all Amiga ports simultaneously and through sophisticated software displays 8 screens to work from. Shows status of data transmission/signals: tests game port function, parallel port, serial port, disk drive, video ports, memory (buffer) checker, system configuration and auto test. Reads diagnostic status of any read/write errors from track 0 to track 79. Software automatically tells what errors are found and chips responsible. 85% to 90% of the problems presented to service centres are found with this analyser. Saves you lots of money on repairs and no end user or repair shop can afford to be without one. Don't be fooled by its low cost. Simply plug in cables from the analyser box. This sophisticated tool is used by end users and Amiga repair centres worldwide.....(shipping extra).....£47.00

**WE CARRY ALL COMMODORE CUSTOM CHIPS AND ACCESSORIES AT LOW DISCOUNTED PRICES.**

**WRITE FOR FULL LISTING OF ALL**

**COMMODORE/AMIGA SURPLUS PRODUCTS.**

**DEALERS: WRITE TO US ON YOUR LETTERHEAD**

**THE GRAPEVINE GROUP INC.  
3 CHESTNUT STREET, SUFFERN,  
NY 10901 U.S.A.**

**INTERNATIONAL ORDER LINE: (914)357-2424**



**FAX LINE: (914) 357-6243**



## Railway Simulations for the Amiga



These are realistic railway simulations, acclaimed by customers in 23 countries, many of them working railway staff; now almost the whole range is available for the Amiga. They do not offer arcade-style graphics, simply realistic displays based on those used in modern signalling centres. Compatible with Workbench 1 and 2; 1Mb required.

**Traffic Control: Doncaster 1992** - Deal with frequent electric services on the East Coast main line and Inter-City cross-country services on the North-East / South-West route, also cross-country Sprinter services between Humberside and Sheffield/Manchester that must cross the main lines. Add to this terminating local services, mainly on the Lincoln and Leeds lines, and a fair amount of freight traffic, and your task is not easy. Price £15.95

**Traffic Control: Crewe 1992** - Perhaps the best known station in the country, and still busy, with cross-country services to Stoke, Shrewsbury and Chester and local services to Manchester and Liverpool, as well as through passenger and some freight services on the West Coast main line. Your task includes engine changing on some parcels workings, and sometimes on local and Holyhead services due to shortage of HSTs or multiple units. Price £15.95

**Traffic Control: Doncaster 1985** - A similar volume of traffic to 1992, but very different motive power: "Heritage" DMUs, HSTs, loco-hauled cross-country services. Price £15.95

**Special offer: Both Doncaster 1985 and Doncaster 1992 for only £23.95.**

Prices shown above include VAT, postage & packing (UK or overseas). Please send payment with order, or quote full credit card details (including expiry date), and remember to state your computer type.

Over 50 other railway simulations available now for the Amiga - SAE for complete list.



SIAM Ltd. (Dept. AS12), 1 St. David's Close, Leverstock Green, Hemel Hempstead, Herts. HP3 8LU

# Getting

**This month, for those who aren't wired up yet, Dave Winder takes you on an introductory tour of the wonderful world of comms.**

**C**omms, or, to give it its full title, "telecommunications", is simply a matter of computer-to-computer communication using the phone.

Many people who have no experience of comms often mistakenly think that it is all about hacking, breaking into secret defence systems or stealing vast quantities of cash from an unsuspecting bank. Sorry, folks, but that ain't it! Comms is about the transfer of information. That

information can be simple chat, electronic mail, public domain programs, in-depth conferencing and so on. There are free-access databases which hold an amazing amount of information, on every subject under the sun, which you can tap into - it's all much

easier than going to the library, and possibly just as much fun.

To get started in this fascinating field you will need a certain amount of equipment (I'll hazard a guess that you will probably have sorted out an Amiga by now). First you need something to allow your Amiga to communicate via the telephone line, and a modem is just the ticket. A modem, or MODulator/DEModulator,

plugs into the serial port of your Amiga and converts digital information into an analog signal that is usable over the telephone line. (It needs to be converted because computers talk in binary - 0's and 1's - digital information which a telephone line cannot handle.) The modem is attached to the telephone socket and sends this digital information over the line to another modem attached to another computer. The modem at the other end converts the analog signal back into a digital one that the receiving computer deals with.

Always try to buy the fastest modem you can afford - it can be a false economy to do otherwise. The faster you can transfer the information, the

less time you will spend on-line, and so the less money you will be giving British Telecom. These days you can pick up a very fast modem for a lot less than I once paid for a snail which had been painted black with a few flashing red lights stuck up its nose.

## TERM TIME

So you have your computer and you have a modem. Next you need to

```
Term 3.2 (8.64 C9.3.93) screen 10 TERM
Checking for new newsgroups...
Newsgroup bit.listserv.wx-talk not in .newsrec--subscribe? [ynYN]
Newsgroup alt.engr.explorers not in .newsrec--subscribe? [ynYN]
Newsgroup alt.soc.ethics not in .newsrec--subscribe? [ynYN]
Newsgroup comp.protocols.dicom not in .newsrec--subscribe? [ynYN]
Newsgroup comp.publish.cdrom.hardware not in .newsrec--subscribe? [ynYN]
Newsgroup comp.publish.cdrom.multimedia not in .newsrec--subscribe? [ynYN]
Newsgroup comp.publish.cdrom.software not in .newsrec--subscribe? [ynYN]
Newsgroup rec.sport.football.canadian not in .newsrec--subscribe? [ynYN]
Newsgroup sci.med.pharmacy not in .newsrec--subscribe? [ynYN]
Newsgroup alt.activism.death-penalty not in .newsrec--subscribe? [ynYN]
Newsgroup alt.tasteless.johan.wevers not in .newsrec--subscribe? [ynYN]
Newsgroup alt.fun.karla-homolka not in .newsrec--subscribe? [ynYN]
Newsgroup comp.soft-sys.sas not in .newsrec--subscribe? [ynYN]
Newsgroup comp.soft-sys.spss not in .newsrec--subscribe? [ynYN]
Newsgroup sci.stat.consult not in .newsrec--subscribe? [ynYN]
Newsgroup sci.stat.edu not in .newsrec--subscribe? [ynYN]
Newsgroup sci.stat.math not in .newsrec--subscribe? [ynYN]
Newsgroup soc.culture.peru not in .newsrec--subscribe? [ynYN]
Newsgroup bit.listserv.hp3000-i not in .newsrec--subscribe? [ynYN]
Newsgroup alt.devilbunnies not in .newsrec--subscribe? [ynYN]
Newsgroup alt.tv.tiny-toon.fandom not in .newsrec--subscribe? [ynYN]
Newsgroup alt.religion.ekrankas not in .newsrec--subscribe? [ynYN]
Newsgroup biomed.metabolic-reg not in .newsrec--subscribe? [ynYN]
```

Interested in statistics, explosives, Peru or Karla Homolka (whoever she may be)? With a modem, these are just a few of the discussion groups you can join.

# connected

provide an easy method of getting the two talking to each other. This is accomplished by what is called terminal software. This software enables your Amiga to communicate with your modem in the correct way, and is customisable to make life as easy as possible. We in the Amiga community are fortunate that, without exception, all the best terminal software is in the public domain – that is, virtually free. A number of commercial programs have appeared over the years but they have never really cut the mustard. (I'm not surprised – have you ever tried cutting mustard? It's bloody difficult you know.) This can be put down to the fact that the comms world is populated by an incredible bunch of enthusiasts. The people who write the best comms programs are doing it out of love of the hobby, not to make a fortune. This means that they also tend to offer genuine support and update programs whenever they have to.

The terminal software aspect has long been an area that has put people off trying comms, mistakenly thinking it is going to be a nightmare of configuration and anorak-speak. Wrong! Nowadays terminal programs are as easy to use as something that is very easy to use indeed.

My personal choice, and the choice of many enthusiasts, is *Term*. This program is in the public domain and can be got from any decent Bulletin Board (BBS). If you don't know anyone who has access to a BBS, you can purchase the latest version from any of the better PD Libraries (see the directory on page 120 of this issue). *Term* requires Workbench 2.04 or above, but you really shouldn't still be using Wb 1.3, you know. Providing you read *Term's* extensive documentation before just getting stuck in there, you should have no trouble in setting up the software to take best advantage of your equipment and needs. *Term* is one of the most flexible of these terminal programs – that's the reason I use it – and this flexibility is really required because of the vast number of modems and protocols and systems out there.

The phonebook feature of *Term* particularly deserves a mention because it is so comprehensive. Each entry has its own configuration so that you don't have to change system defaults when dialling different systems. *Term* implements

the ZModem protocol better than any other program I have tried, and this can be very important. *Term* will even speak to you using its speech facility, which may sound like a gimmick but I like to be able to hear the computer telling me a download is completed so I can hop out of the bath and save a large phone bill. (Just don't ask what I'm doing in the bath while on-line....)

## ALL ABOARD

All we need now is somewhere to call to try it all out. The place to call is known as a Bulletin Board System or BBS for short. A BBS is quite simply an electronic version of the noticeboards you find in all sorts of places. People can leave a note pinned to the board, and anyone who wanders past can read it, and leave a reply. That's how it works, simply, but of course there is much more to it than that. Access to your message can be restricted, depending on the area to which you are posting it. You can send electronic mail (or EMail for short), which is totally confidential and can only be read by the person you are sending to.

As well as messages, most BBSs have large file areas. This is where a pool of public domain software sits for the benefit of members of the BBS. To gain access to this vast quantity of software you will need to let the System Operator or SysOp know you are new to comms and he will usually adjust your upload to download ratio accordingly. These ratios restrict the amount of software you can download according to how much you have uploaded to the system – nobody likes a freeloader, after all. Many BBSs will abolish these ratios for you if you subscribe to the system – that is, pay a small annual fee which helps them offset the costs of actually running the Bulletin Board. SysOps usually operate out of love, not for financial reasons, and it can end up being an expensive affair – believe me, I know.

Watch out in these very pages (and, of course on other Bulletin Boards) for recommendations of BBSs to call – a couple of good ones are 01 For Amiga (01 071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Once you've got your number, you are probably a bit apprehensive about how you go about calling for the first time. Worry not, for Wavy is here.

Type the command **AT** to make sure that your terminal software, modem and computer are all talking to each other. This should get a reply of OK if everything is fabby doo. If it doesn't work, try making sure that your modem is switched on....

using their system, so be honest about your answers.

The BBS will want your real name, address, telephone number and also some information about the computer and equipment you are using so as to enable you get the best out of the system. If some of the questions are of a technical nature which means that you don't understand them fully, just press <Return> – this will give you the system default, which will work nine times out of ten anyway.

Once accepted as a new member of the BBS, drop the SysOp a line to

```

to previous search pattern
***** End of newsgroups---what next? [npqhl]
newsgroup Selection commands:
  at      Catch up (mark this newsgroup all read)
  b       Brandon read/unread changes to this newsgroup since you started crn.
  Go     Go to the next newsgroup with unread news.
  Go     Go to the previous newsgroup with unread news.
  Go     Go to the previous newsgroup.
  Go     Go to the previously displayed newsgroup.
  Go     Go to the first newsgroup.
  Go     Go to the last newsgroup with unread news.
  name  Go to the named newsgroup. Subscribe to new newsgroups this way too.
  pat   Search forward for newsgroup matching pattern.
  pat   Search backward for newsgroup matching pattern.
  use   Use * and ? style patterns. Append r to include read newsgroups.
  list  List unsubscribed newsgroups containing pattern.
  name  More newsgroups matching pattern (no limit to number of current newsgroup).
  pat   Only display newsgroups matching pattern. Omit pat to unrestrict.
  like  Like pat, but also scans for unsubscribed newsgroups matching pattern.
  like  Like pat, but also scans for unsubscribed newsgroups matching pattern.
  print Print current command-line switch settings.
  switch Switches (set or unset) more command-line switches.
  w     Print current macro definitions.
  wdef  Define a new Macro.
  wdel  Delete a macro.
  quit  quit, restoring newsgc to its state at startup of crn.
  k     Edit the global KILL file. Use commands like ?pattern/j to suppress
        certain keyword newsgroup.
  v     Print version.
  to   Macros defined.

***** End of newsgroups---what next? [npqhl] ■

```

**Looks complicated? Well, don't worry – with Amiga Shopper here to help, you'll soon be browsing like a native through gigabytes of on-line data.**

Now select the serial preferences menu and ensure that you have the following options set – they will get you connected okay to most BBSs out there:

Bits = Eight  
Parity = None  
Stop Bits = One  
Handshaking = RTS/CTS

Make sure you have entered the number of the BBS you want to call into the phonebook section of your software, and then hit the **Dial** button. When the modem at the other end answers you'll hear a few odd bleeps and whistles, and then you should get a message on screen saying something along the lines of "connected". At this point press the <Return> key to get things moving, and then press the <Escape> key a couple of times to start the software off at the other end (this will usually start anyway after 20 seconds or so, but why waste time?). Providing all is well, you should be greeted by a welcome message which will prompt you to enter your name. Do this and it will tell you it doesn't know you and ask if you are a new user. Respond in the positive (say yes, bozo) and you will then be asked to complete a questionnaire. The BBS needs to know these things in order to protect itself – it is only fair they know who is

say hello, and also to thank him for allowing you to use his system. After all, it is only polite. Oh, and don't worry about SysOps: they might be God on their BBSs but they are usually pretty nice people....

## CIX KICKS

Once you have tried a few BBSs you may well find that you become hooked on the social side of the hobby, the talking to people, making friends, gaining knowledge, etc. etc. If so, you may well want to try the UK's largest conferencing system, CIX. The Compulink Information eXchange differs from the standard BBSs in that it is a commercial system which costs money to use, but there are many benefits to be gained. The emphasis on CIX is on conferencing – talking about specific subjects in open or closed conferences, to many thousands of subscribers. There is a real wealth of knowledge on CIX, not least from the many *Amiga Shopper* writers who inhabit the system – there is even an *amigashopper* conference where you can talk directly to us, and about us.

And don't forget the **amiga** conference, which is one of the busiest on the system. For more information about CIX just check out *Amiga Shopper* 24 (back issues are available – see page 90) or call them on 081 390 8446. **AS**

# Is anybody there?

**What can you do if you need to transfer data between your Amiga and some other machine? Wilf Rees can tell you the secret – he spends hours talking to other computers, which occasionally even answer back...**

**A**miga users know that their computer is capable of very sophisticated tasks and can out-perform most machines in many areas. In some fields however a particular application on a different machine might have the edge and, vanity aside, it would be nice if we could capitalise on such facilities. And then of course there are times when you might need to swap information between different machines.

Since the birth of the home computer, different developers have taken different paths and tried different new ideas, with the result that there is a cacophony of incompatible designs, operating systems and file formats out there. Even the so-called "standard" PC format is a myth, as you'll know if you bought a "PC-compatible" Tandy or Sony machine in the '80s. But fear not – help is at hand.

## FILE FORMATS

The initial barrier to break down between computers is to make sure that the recipient machine understands the information fed to it. Different computers often require different file formats for information. Amigas generally use the IFF format for pictures, as detailed in *Amiga Shopper 29* (and if you missed that issue, you can order a copy on page 58), but PCs have a multitude of picture formats – more than can be counted on fingers and toes

together! Here are some of the common ones, listed by extension or abbreviation:

**BMP:** OS/2 Bitmap file (also used for Windows paintbrush)  
**GIF:** Graphics Interchange Format  
**LBM:** Deluxe Paint II and DPLI-enhanced on the PC  
**MSP:** Microsoft Paint  
**PCX:** PC PaintBrush file  
**TGA:** TARGA  
**TIFF:** Widely-used picture format on most computers.

There are also many other file formats, but nearly all others are application-dependent. And that's not the end of it either. For example, a TIFF file has to specify whether LZW compression is in operation and if Motorola or Intel specification is selected, depending on what computer is reading the file. Considering there are hundreds of different formats for text or word processor documents and many more for sound samples, life can turn out to be very confusing.

Because of the multitude of formats, transporting data from one computer to another requires translation. There are a few ways that this can be done. First, you have more than one world of software to explore, because the data does not necessarily have to be converted at source. There are quite a few programs on the PC that will convert the files listed above from Amiga recognised formats.

On the Amiga side there are numerous programs for converting files from one format to another. *Art Department* and *Art Department Professional* are extremely useful for converting picture files because the list of formats is modular – that is, new formats to convert from can be added as needed, providing they are available.

If your budget is not so large, then 17-bit Software (0924 366982)

supply a pack of file converters. The pack includes picture converters for converting from IFF to formats such as GIF, TIFF, TARGA, *Degas* (all resolutions), *Neochrome*, *MacPaint*, PostScript and a few others. One program included on the disk will convert Amiga Anim files to *Animagic*, *Animation Station*, *Director/Movie2.0* and *Animation Editor*. One of the most useful features on the disk is the inclusion of *Graphics Workshop 4.6*, which runs on a PC. This program features conversion between *MacPaint*, GEM/IMG, PCX, GIF, TIFF, PostScript, WPG (*WordPerfect*), MSP, IFF, BMP and PIC (*PC Paint*). Facilities are included for scaling, viewing, dithering, reversing, flipping, rotating and printing. *Graphics Workshop* is a first-rate program with excellent features. The disk, entitled "Converters Pack", is in effect a fully working workstation for converting files and transporting them to a PC. The *MessyDOS* utility is included with this disk – it enables Amigas to read 720K PC disks so that any transferring can take place.

A second disk in the set is a program called *Grinder*, which claims to convert between Atari ST, PCX, TIFF, Targa, JPEG, GIF and HAM-E but fails to do any of this – most often it just crashes. It looks suspiciously as if it is just a *CanDo* program addressing external software rather poorly.

Converting DTP files can be quite simple because there are only a few standards for text files. Perhaps the most common for structured drawing is Encapsulated PostScript (EPS). *Pro Page*, *PageStream* and *Saxon Publisher* all support this output format, along with structured drawing programs including *Pro Draw*, *Art Expression* and *Expert Draw*. Unfortunately EPS is not a rigid standard, so make sure that each program's version of it is compatible.

## WP FILE CONVERSION

Virtually every word processor can import or at least read plain vanilla text in ASCII format, once you've managed to get your Amiga to read another machine's disk. The problem with ASCII however is that it doesn't

include formatting or command characters – italics, large display text, and so on. But conversion between word processors is also possible. This facility is usually incorporated into higher-priced packages. Conversions are available for "giant" word processors on the PC, such as *WordPerfect*, *Microsoft Word* and *WordStar*. Details of the common Amiga word processors which support conversion between documents are shown below.

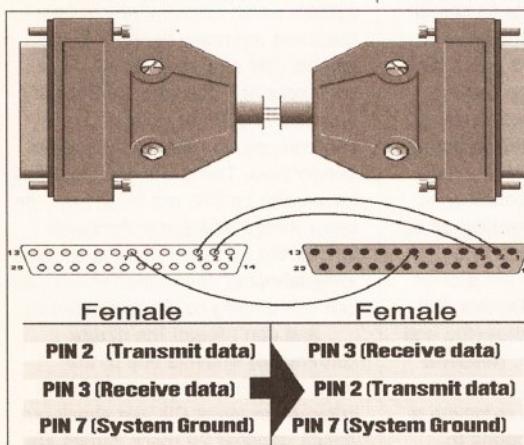
- **WordWorth v2** – ASCII (Amiga/PC), ProWrite, WordPerfect (Amiga), RTF (Rich Text Format), WordPerfect 5.1 (MS-DOS), IFF Text (Kindwords), Microsoft Word (MS-DOS), ProText, Microsoft Windows Write (MS-DOS).
- **Final Copy IIb** – ASCII (Amiga/PC) + others when available – *Final Copy IIb* supports file converters in a modular format, so you can add new converters as they are needed.
- **Excellence v3** – ASCII
- **Pen Pal** – ASCII

Unfortunately, document conversion is not always a reliable feature because PC word processors are constantly being updated, leaving previous formats incompatible.

## DOS EMULATORS

Software has, for a long time, been available for emulating another computer's filing system. One that many people have encountered is *CrossDOS* – it is being supplied with Workbench 2.1 and 3.0. This enables your Amiga to read and write 720K PC-formatted disks as if they were any old Amiga disk. This feature is very useful, because it enables you to use your favourite directory utility, such as *SID* or *Directory Opus*, to handle the files being transferred. *CrossDOS* only has one minor fault: it will not successfully format disks containing slight media defects. PCs map out faulty areas of any disk during the formatting process, defining them as "Bad Blocks", and avoid using them.

If you are transferring very big files, a set of two programs supplied with ADSG's *Art Department Professional* called *Splitz* and *Joinz* will help. *Splitz* can spread a file over as many disks as it will take, and *Joinz* then re-assembles the file on



For a lead, use two 25-way, D-type female connectors and three-core shielded cabling (not over 3 metres).

The symbol ↗ means do not type a return – keep typing to the end of the next line. ↘ means type a space, then keep typing to the end of the next line.

# LISTING 1: AREXX TRANSMIT SCRIPT

The first of our two ARexx programs deals with transmitting files.

```
/* transmit file script*/
say "Input Name of file to be transmitted"
pull Tran_file
address Command
/* Check size of file for transfer */
list >t:file.data' tran_file
lformat="%1*n%8"
address rexx
open('filespec','t:file.data','R')
/* This section creates a protocol for
transmitting. All file details are needed for
inclusion into the header block */
```

```
file_data=readln('filespec')
file_name=readln('filespec')
say "length="file_data
/* The "+" character is used for padding out
the blank areas. The filenames and file
lengths are overlaid onto the pad. */
protocol1=overlay(file_name,+
'+++++++'+
protocol2=overlay(file_data,+
'+++++++'+
protocol=insert(protocol2,protocol1,16)
/* The source file is now opened, with the
"R" option, meaning to read data from it. */
err1=open('input',tran_file,R)
```

```
/* The ser: device is also opened this time,
for writing. The ser: device communicates
with the serial port. */
err1=open('output','ser:',w)
if err1>1 then exit
say "transmitting..."
/* The protocol "header" is written at this
point */
writech('output',protocol)
character=readch('input',file_data)
/* And now, the entire file is read character
by character and written to the "output"
file, which in this case is the Aux: device */
writech('output',character)
```

the destination computer's hard disk. PC, Apple Macintosh and Amiga versions of these programs all come in the same bundle.

A shareware alternative to *CrossDOS* is *MessyDOS*; it includes most of the basic functions of *CrossDOS*, such as formatting disks, but unlike *CrossDOS* it is compatible with earlier versions of Workbench. Otherwise, which you choose to use is down to which name you prefer.

Reading Apple Mac disks can be far more difficult than PC disks. 800K Mac disks work by changing the revolution speed of the drive towards the centre, resulting in the information being spaced apart equally over the disk. Amiga disk drives revolve at the same speed all the time. You can buy the appropriate hardware, but it is extremely expensive. If you need to transfer data between Mac and Amiga, just use PC disks – Macs can read these using a program called *Apple File Exchange*, which now comes as standard with new Macs.

Software is available to read Atari ST disks. A PD program called *AtariRead* will copy files to and from Atari ST disks. This is available from most PD houses. And all but the oldest STs can also read PC disks.

If you are lucky enough to own an emulator, then swapping of files is usually facilitated via a transfer program included with the package. With the Commodore PC bridgeboards, two programs called *AWRITE* and *AREAD* will enable AmigaDOS drives to be read or written to. This means of transfer is usually the fastest.

## DIRECT TRANSFER

If you find transferring by disk to another computer tedious and cumbersome, the alternative is to transfer files directly. Enter the world

of comms!

Communicating with another computer requires you to buy or make a special cable (see the diagram on page 94). Alternatively, a modem could be used if the distance between the two computers is too great for a cable. If you decide to construct a cable, remember, the higher quality cable you use, the greater rates of transfer you will be able to achieve, error-free. Proper interference shielding is also helpful for prevention of errors.

On the Amiga side, there are quite a few different software comms packages to choose from, most of them being PD or shareware. Perhaps one of the best ones around is *NComm*. *NComm* supports most types of file transfer methods, up to the highest Baud Rates the Amiga will support. Although *NComm* is normally used for accessing Bulletin Boards and the like it is an effective means for file transfer.

On the PC side, *Terminal*, supplied with Windows, will happily talk to the Amiga and transfer files successfully (see the picture above).

## WHAT TO DO

First connect the two computers together, via their serial ports. Load the appropriate communications software into both machines. You will need to specify identical communications setups on both machines – for example, 19200 Baud, 8 Data Bits, Parity:none, Flow control/Hand Shaking: Xon/Xoff and 1 Stop bit.

Once you have established a link between the two computers, try typing something into one comms program. What you type should appear on the other computer's screen. Test out the <Return> and <Backspace> keys. If the <Return> key on the PC seems to send the

cursor on the Amiga back to the start of the current line and not to the start of a new line, then you will need to set the PC software to translate Carriage Returns to Carriage Returns + line feeds (CR -> CR/LF option, inbound and outbound on Windows terminal).

On the Amiga, you

will need to select an appropriate protocol for transfer of files.

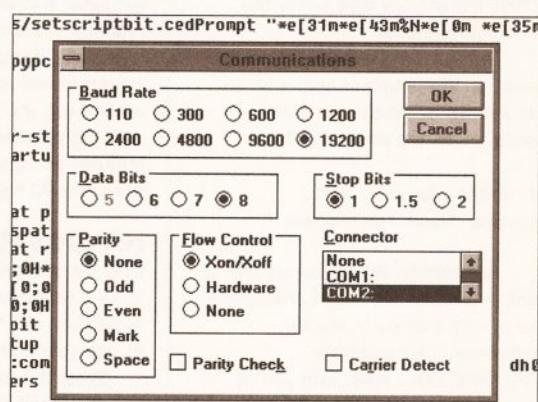
*Terminal* on the PC

gives you a choice of Xmodem or Kermit. Either can be used as long as both computers use the same. The protocol type can be set from the **Transfer** menu on *NComm* and from the **Communications** menu on *Windows Terminal*. Once all this is set up, your computers are ready to exchange files.

To transfer a file from the Amiga to the PC, select "**receive file**" from the **transfer** menu of *Windows Terminal*. A requester should appear for you to give the transferred file a name. Enter a suitable name, and the PC will await the transfer process. On *NComm*, choose "**Upload**" from the **Transfer** menu. A file requester will appear asking you which file to send. Once you have selected a file, the transfer will commence. The time taken will depend on the size of the file and the Baud rate selected.

## ARCHIVE EFFICIENCY

Throughout all bulletin boards, programs (or groups of files) are stored and transferred in an archived format – compressed to minimise on space. When transferring groups of



**The Communications Setup window on Windows Terminal** enables you to set interfacing attributes such as Baud Rate, flow control, stop bits and so on.

files from one computer to another, perhaps the most convenient method is to archive them on the source computer and de-archive them on the destination computer, so that in effect you are only copying one file. Take note, the archiver you use on the Amiga side has to have a counterpart on the PC side and vice versa. Use a popular archiver, such as *LhArc* or *LhA*. Both of these are available on the PC and Amiga. I used *LhA* version 1.38 and *LhArc* version 1.30 and they were both compatible with *LhA* version 2.13 and *LhArc* version 1.00 on the PC.

To build an archive, you will have to have some background knowledge of AmigaDOS's Shell or MS-DOS on the PC. Creating an archive is identical on either computer. For simplicity, I'll assume you're using *LhArc*. This example shows how to archive a set of files in the **dh0:graphics/** drawer that all contain the word "demo" as part of their filename. The archive name will be **Ram:demos.lzh**.

```
1> lharc a dh0:graphics/#
#?demo? ram:demos.lzh
```

# JARGON BUSTING

**ANSI** – American National Standards Institute. A file format identical to ASCII except that it can include command characters.

**Archiver** – A program which groups together a number of files and usually compresses them to reduce the space they take to store and the time taken when transferring via modem.

**ASCII** – American Standard Code for Information Interchange. This is a file format for plain text that is universally accepted as a means of communication.

**Baud rate** – The rate at which data is sent by a bitstream method, measured in bits per second.

**Modem** – Modulator/De-modulator. A device that plugs into a computer's serial port and enables it to send information across a telephone line.

**Null modem** – A type of cable that can link two computers in close proximity via serial ports. It is as if they were connected via modem, except the data transfer rates (baud rates) can be far higher.

**Protocol** – The method used by a comms program

to communicate with the remote computer. This will include information such as the size and name of the file. Protocols often implement error-checking algorithms to ensure data integrity is not lost. Common protocol types include XModem, YModem, ZModem and Kermit.

**Serial Port** – This port on the back of your Amiga sends information out by a bitstream method (a constant on/off signal flow), but one bit after another, rather than several at a time as the parallel port does when you are printing, for example, so this method is slower.

The "a" option tells *LhArc* to archive the files given by the **#?demo#** wildcards. Similarly you could replace the "a" option with an "x", making *LhArc* extract any files under the wildcard **bigdemo.\***

The following example would be used on the recipient computer to de-archive or extract the files archived on the donor machine.

```
C:\UTILS> lharc x ▶
c:\temp\demos.1zh bigdemo.*
```

*Remember:* PC filenames are only a maximum of eight characters long, with a three character extension – for example DATAFILE.DOC. Whenever you're sending files over to the PC, the filenames will be truncated at the 11 character point, so an Amiga file called **Loads\_of\_pictures\_1** would become **LOADS\_OF\_PI** on the PC. You can imagine what would happen if this file was being transferred alongside an Amiga file called

## Loads\_of\_pictures\_2.

If you own a PC emulator which supports use of the serial port, then *LapLink* will swap files between your emulator and another desktop PC. Transfer rates can be exceptionally high if you decide to use the parallel transfer method, or up to 115,200 baud if you are using serial. On test with the parallel option, it took 40 minutes to transfer 150Mb of data from one PC hard disk to another.

## HAVING FUN

Ever fancied another computer linked in as a terminal on your Amiga? Would you like two people to be able to use your computer at one time?

Enter the following commands into the Shell window of the host computer.

**Newshell aux:**

The other computer's comms software then needs setting up to be in terminal mode, preferably in ANSI

format. Now you can use any Shell or CLI command from the remote computer as if you were typing into the host computer! It is even possible to have two-way communications with this method, as long as both computers are Amigas. Simply type **Newshell aux:** into the other computer's Shell window and hey presto! You've got two machines doubling up as four!

## DOING IT YOURSELF

For getting the job done, comms programs can be very useful, but you can also do it yourself. Here's how to use ARexx to help communicate with a remote computer. For simplicity, I'll assume that the remote computer is an Amiga or PC with OS/2 running Rexx, since Rexx is not available for MS-DOS. If you are running Rexx on OS/2 then you will need to change certain parts of the program to fit the OS/2 environment – for example, when addressing the host environment, the list command would

not be available; its equivalent would be needed. The programs in Listings 1 and 2 demonstrate the use of protocols for transferring information. Protocols determine the way in which the information is to be transferred. The method used here is a very simple one. Normally, protocols will deal with things such as error correction, but the ones here just send a header of information about the file that is being sent.

The header protocol block that was generated should appear as a file name and file size overlaying a pad of "+" signs. The data being sent as part of the file continues after the 32nd character. Here is an example:

```
Filename.txt++++23502+++++++
+++(data continues from here...)
```

Protocols used in comms programs are a great deal more complex than this, but the theory remains the same. Often, error checking is used, whereby the data received is sent back to the donor computer for comparison. If it does not match perfectly, it is sent again until an error timeout signal occurs and the data flow is stopped. Data streams are usually sent in blocks of eight characters, with one or two stop bits in-between. Each block usually alternates between error-checking (sendback) and transfer.

Many more projects could emerge from the basic programs shown here. For example, you could write a two-way chat line between two computers or make it the foundation of a head-to-head game. The sky is the limit! The future of inter-communication between computers does seem more hopeful now than it did. Commodore are talking about new machines which will have Pentium compatibility and read PC disks as standard. It does seem sensible to follow this route, especially if our favourite machine is going to continue to exist in any form into the 21st century.

AS

## LISTING 2: RECEIVING

Our second short program deals with receiving files via the **Aux:** port. Note the method used: the protocol is initially read and decoded to produce information about the transporting of the file.

```
/* receive file script */
Say "files will automatically be copied to RAM:"

/* the aux: device is opened, this time to receive
information */

open('input','ser:',R)

/* the entire protocol block is read from ser:, it
is 32 characters long */

protocol=readch('input',32)

file_name=substr(protocol,1,pos('+',protocol)-1)

file_data=substr(substr(protocol,17),▶
1,pos('+',file_data)-1)

/* the previous three lines extract the necessary
information from the protocol block */
```

```
say " name:" file_name
say "length:" file_data
err1=open('output','ram:'file_name,w)

if err1>1 then exit

/* The characters are read from the input source in
a block the size of the file being transferred.
Note: If you intend to send blocks of information
that are very large, then you may wish to send
chunks at a time, depending on the serial buffer
available */

character=readch('input',file_data)

/* The block read from the input source is now fed
out as a similar character block. */

writech('output',character)

say 'copied.'

close ('input')

/* Finally, the file is closed. The transfer is
complete */
```



WORLD CLASS  
PERIPHERALS  
FOR THE

# AMIGA

NOW AT NEW  
LOW PRICES!

## ACCELERATORS FOR AMIGA 1500 AND 2000

If you use your Amiga for DTP, ray tracing, graphics or any other serious application, you'll appreciate the power that an accelerator brings. Accelerators replace the main processor with a faster version dramatically improving the Amiga's speed.

GVP offer a range of A1500/A2000 accelerators that simply outstrip the competition for speed and specifications. Their G-Force range includes the fastest Amiga accelerator available (the 68040 33MHz version) whilst offering a range of functions, such as 32-bit RAM upgrades, SCSI interfaces and maths coprocessors. For boosting the power of your Amiga you can't beat the GVP G-Force range!

**SPECIAL OFFER**  
SAVE £135!

42Mb QUANTUM HARD DRIVE £99  
+ MOUNT KIT  
INC VAT  
ONLY WHEN PURCHASED WITH G-FORCE ACCELERATORS SHOWN BELOW

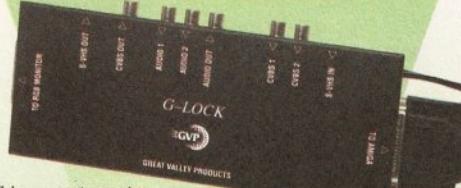
FAST!  
32-bit  
TECHNOLOGY



G-FORCE ACCELERATORS		030 40MHz	030 33MHz
Speed MIPS*		12.1	30
Processor	68030EC	68040	
Maths Co-Pro.	68882 included	In 68040 processor	
Std 32-bit RAM	4Mb	4Mb	
Max 32-bit RAM	16Mb	64Mb	
Extras	SCSI	SCSI Ser/Par	
PRICE	£699 INC VAT UPG 0430	£1299 INC VAT UPG 0740	

\*MIPS: Millions of instructions / second; a normal Amiga runs at 87 MIPS

## VIDEO GENLOCK FOR ALL AMIGAS



This extremely high quality Amiga genlock, from GVP, has an intuition-based software control panel with full AREXX and command line interfaces. Easy to use the G-Lock genlock features many sophisticated attributes among which are:

- Two Composite Video Inputs or S-Video (Y/C) Input
- Simultaneous Composite & S-Video and RGB Output
- Video Processor - Real Time Software Control of Video Attributes (Sharpness, Gain, Brightness etc)
- AREXX Compatible
- Works with Flicker Fixers
- Multiple Keyer Modes
- Full Audio Support



**G-LOCK**  
£349  
£299  
INC VAT - VID 2500



## HARD DRIVE CARD FOR A1500/A2000/A3000/A4000



**NEW LOW  
PRICES!**

The HC8+ is a high speed hard drive RAM upgrade card which can also be used to increase your Amiga's RAM by up to 8Mb RAM.

- High Speed DMA SCSI Controller Can Handle upto 7 Devices
- Ultra Fast Access SCSI Hard Drive Option - See Below
- Supplied Unpopulated the HC8+ can be Upgrade to Give You up to 8Mb of FAST RAM - See Below for Details
- Direct Memory Access Style Design for Top Speed Transfer

### HC8+ HARD DRIVE CARD

0Mb HD	42Mb HD	80Mb HD	120Mb HD
—	£129 INC VAT - HAR 1300	£199 INC VAT - HAR 1340	£299 INC VAT - HAR 1398

INC VAT - HAR 1422

### RAM UPGRADE CARDS

GVP HC8+ INCLUDES 8 SIMM SOCKETS FOR EASY INSTALLATION OF FAST RAM. THE HC8+ WILL ACCEPT 2, 4, 6 OR 8MB USING 2, 4, 6 OR 8 SIMMS

1Mb SIMM £35 PER SIMM  
INC VAT - MEG 3628

## 8-BIT SOUND SAMPLER FOR ALL AMIGAS

**NEW!**



Capture sound from an external source and play it back in stereo or mono on your Amiga. The latest version of GVP's Digital Sound Studio (DSS8+) enables you to create audio effects for use in games or jingles.

- New Style High Impact, Clear Polycarbonate Casing
- Simultaneously Holds up to 31 Sound Samples in Memory
- Real-time Oscilloscope, Spectrum Analysis, Echo & Reverberation
- AREXX Compatible
- Microphone Input
- .MOD File & MIDI Compatible
- FREE Samples Disk

**DSS8+**  
£69  
INC VAT - MUG 2510

## SCSI/RAM EXPANSION FOR THE AMIGA 1200

**OPTIONAL  
68882 FPU**



Adding RAM or a hard drive to your Amiga 1200 will have a considerable impact on its speed. The GVP SCSI/RAM allows you to enhance your Amiga 1200 with both. Its SCSI hard drive interface is one of the fastest, whilst its 32-bit RAM upgrade is based on the same technology featured in the best-selling A1230.

- Built-in, SCSI Hard Drive Interface - Enables 2.5" SCSI Hard Drives to be Connected Inside the A1200 Casing
- Optional 8Mb of 32-bit RAM
- Optional 68882 Maths Co-processor

### SCSI / RAM BOARD

NOW INCLUDES SCSI KIT FREE OF CHARGE

0Mb RAM	4Mb RAM - NO FPU	4Mb RAM + 33MHz 68882 FPU
<b>NEW!</b> £149 INC VAT - HAR 1200	<b>NEW!</b> £349 INC VAT - HAR 1204	<b>NEW!</b> £399 INC VAT - HAR 1233

## 24-BIT GRAPHICS CARD FOR A1500/A2000/A3000/A4000

EGS Spectrum is the answer to all your 24-bit graphics card requirements. It is a high performance, high resolution, 24-bit board that will take any Amiga 1500, 2000, 3000 or 4000 beyond AGA! But the hardware is only half of the picture. Without quality software, your investment will be wasted. Not only does GVP's own award winning graphics application ImageFX fully support EGS Spectrum, but also, using a Workbench driver, nearly all existing Amiga Workbench compatible applications will also work on and support the EGS Spectrum system.

- 1Mb or 2Mb of On-board Memory
- On-board Hardware BLITTER
- Future Re-targetable Graphics Support
- Zorro II or Zorro III Autosensing
- Scan Rates up to 80KHz
- 80,000,000 Pixels/sec Pixel Display Speed (8-bit)
- Programmable Display Resolution 320x200 to 1600x1280
- Supports Data Transfer Rates up to 12Mb/sec on Zorro III Systems

### EGS SPECTRUM

1Mb RAM	2Mb RAM
<b>NEW!</b> £349 INC VAT - VID 7310	<b>NEW!</b> £399 INC VAT - VID 7320

ALL PRICES INCLUDE VAT - DELIVERY IS FREE OF CHARGE IN THE UK MAINLAND

08/10/93 - 09.50



## SILICA OFFER YOU

- SHOWROOMS:** We have demonstration and training facilities at all our stores.
- THE FULL STOCK RANGE:** All of your requirements are available from one supplier.
- FREE CATALOGUES:** Will be mailed to you with special offers and full details of hardware, peripherals and software.
- PAYMENT:** We accept most major credit cards, cash, cheque or monthly terms (APR 29.8% - written quotes on request).

**Silica**  
HOT LINE 081-309 1111

- FREE OVERNIGHT DELIVERY:** On all hardware orders shipped in the UK mainland.
- TECHNICAL SUPPORT HELPLINE:** A team of technical experts will be at your service.
- PRICE MATCH:** We match competitors on a "Same product - Same price" basis.
- ESTABLISHED 15 YEARS:** We have a proven track record in professional computer sales.
- PART OF A £50M COMPANY** (with over 200 staff): We are solid, reliable and profitable.

- BUSINESS + EDUCATION + GOVERNMENT:** Volume discounts are available. Tel: 081-308 0888.

**MAIL ORDER:** Order Lines Open: Mon-Sat 9.00am-6.00pm  
**LONDON SHOP:** 52 Tottenham Court Road, London, W1P 0BA  
Opening Hours: Mon-Sat 9.00am-6.00pm  
No Late Night Opening

**LONDON SHOP:** Selfridges (Basement Arena), Oxford Street, London, W1A 1AB  
Opening Hours: Mon-Sat 9.30am-7.00pm  
Late Night: Thursday - 8pm

**SIDCUP SHOP:** 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX  
Opening Hours: Mon-Sat 9.00am-5.30pm  
Late Night: Friday - 7pm

**ESSEX SHOP:** Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS11 1LA  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm)  
Late Night: Thursday - 7pm

**IPSWICH SHOP:** Debenhams (2nd Floor), Waterloo House, Westgate St, Ipswich, IP1 3EH  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm)  
Late Night: Thursday - 9pm

**Tel:** 081-302 8811  
**Fax:** 081-309 0017  
**Tel:** 0702 468039  
**Fax:** 0702 468039

**Tel:** 0473 221313  
**Fax:** 0473 287762

To: Silica Systems, AMSHP-1293-68, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

**PLEASE SEND ME A 64 PAGE AMIGA COLOUR CATALOGUE**

Mr/Mrs/Miss/Ms: ..... Initials: ..... Surname: .....

Company Name (if applicable): .....

Address: .....

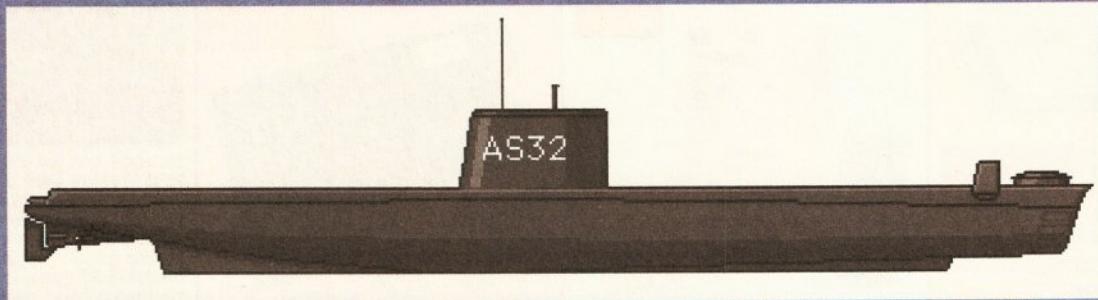
..... Postcode: .....

Tel (Home): ..... Tel (Work): .....

Which computer(s), if any, do you own? .....

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information

# THE AMIGA SHOPPER SUB



**YOU KNOW IT  
MAKES SERIOUS  
SENSE...**

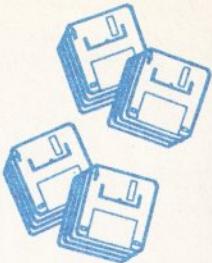
## EIGHT GOOD REASONS WHY YOU SHOULD SUBSCRIBE TO AMIGA SHOPPER

1. You make sure of your copy each and every month – guaranteed!
2. Your copy is delivered direct to your door – no more queuing at the newsagent's.
3. You receive an exclusive subscribers' newsletter every month into the bargain, full of fascinating behind-the-scenes information, at no extra cost.
4. You are guaranteed no price increases for a full 12 months, even if the price goes up or VAT is imposed on periodicals.
5. You pay no more for any higher-priced issues with special cover-mounted promotions.
6. If you use the handy direct debit form, you save a whopping £5 off the news-stand price.
7. With direct debit, there are no more forms to fill in when your subscription runs out – we do all the work for you.
8. And of course, you'll receive a specially-designed *Amiga Shopper* binder, worth £4.95, absolutely free.



PREMIUM BULK 3.5" DS/DD DISKS

25	10.49
50	18.49
100	32.99
200	64.49
250	79.99
500	158.99



ALL DISKS ARE FULLY GUARANTEED  
AND ARE COMPLETE WITH LABELS

3.5" SUPERIOR LOCKABLE DISK BOXES

Qty	100 Cap.	140Cap.	200 Cap Drawer.
1	4.49ea	6.49ea	11.95ea
2	4.39ea	6.39ea	11.75ea
4	4.19ea	6.19ea	11.50ea

3.5" PREMIUM DISKS WITH OUR BOXES

100 Cap box + 50 3.5" DS/DD	22.49
100 Cap box + 100 3.5" DS/DD	36.49
140 Cap box + 100 3.5" DS/DD	37.99
200 Cap drawer + 100 3.5 DS/DD	42.99



**SNAP  
COMPUTER  
SUPPLIES LTD**  
**HOTLINE**  
**0703**   
**457111**

RIBBONS-POST FREE

Full Mark Brand

	2 off	4 off
Citizen 120D/124D Swift 24	2.75	2.55
Citizen Swift 24 Colour	11.95*	
Panasonic KXP 1080/1123/1124	3.25	3.05
Star LC10/LC20	2.60	2.40
Star LC10-4 Colour	5.90	5.70
Star LC24-10/24-200	2.95	2.75
Star LC24-10 Colour		9.95*
Star LC200	3.00	2.80
Star LC200 Colour		9.95*
Star LC24-200 Colour		9.95*

HP Deskjet 500 Double Refill	9.95*
Canon BJ10E Double Refill	9.95*

Minimum order - 2 ribbons, except those marked with an asterisk\*

ACCESSORIES-POST FREE

Quickshot Apache Joystick	6.95
Quickshot Python 1M Joystick	8.95
Quickshot Maverick 1M Joystick	12.95
Mouse Mat	2.99
Mouse Holder	2.99
Roll 1000 3.5 Disk Labels	8.99
Amiga A500/A600/A1200 Cover	3.50
Philips monitor cover	3.99
Star/Citizen/Panasonic	
80 col. Printer cover	3.99

All products are subject to availability - All prices include VAT.  
Please add £3.50 p+p for disks and boxes or £5.99 if goods required overnight. E&OE.



**SNAP COMPUTER SUPPLIES LTD** Fax: 0703 457222  
Unit 16, The Sidings, Hound Rd, Netley Abbey, Southampton S03 5QA



# AMIGA REPAIRS

Repairs undertaken to Amiga 500 computers at £44.95 inclusive  
of parts, labour, VAT and return postage/packing

Commodore registered for full technical support

Computers repaired in the quickest possible time

All machines will be overhauled with a full soak-test to ensure optimum reliability

Entrust your machine to the experts, full 90 day warranty

Repairs to disk drive and keyboard also included  
(extra charge possible if found to need complete replacement)

Repairs to other Commodore systems undertaken - phone for details

Upgrades and expansions supplied and fitted - phone for details  
collection service available

**£44.95**

To take advantage of this exceptional offer, simply send or hand deliver your computer to our workshop complex,  
address details below, enclosing this advertisement voucher, payment, fault description, return address,  
along with your daytime and evening telephone number and we will do the rest.  
Should you require Group 4 Security return delivery, simply add £5.00 to the repair charge.



WTS Electronics Ltd Chaul End Lane Luton Bedfordshire LU4 8EZ Tel 0582 491949 (6 lines)

(We reserve the right to reject machines which, in our opinion, are beyond repair- Normal charge applies)

# AMOS action

Jason Holborn extends our AMOS paint program with the addition of the Freehand Draw, Fill and Undo functions.



**A**MOS is not just for creating games – it offers a selection of powerful yet easy-to-use facilities for writing all kinds of applications, as you've been seeing as we've built up our own paint program over the last few months. However, if you tried using the compiled version of *AS Paint* on last month's *Amiga Shopper* cover disk, then you've probably already discovered that it doesn't, as such, do a great deal yet. It looks very pretty and it demonstrates the beginnings of a very usable interface, but it certainly wouldn't win any prizes for painting power. This month we take *AS Paint* one step further with the addition of the Freehand Draw, Fill and Undo functions. With these functions in place, you should finally be able to draw pretty pictures on your screen.

Before we go any further, however, let's consider exactly what is involved. We could simply sit down and code away, but – as any professional programmer will tell you – this sort of practice creates nothing but problems as the program matures and you have to figure out how to make all the new bits work happily with the old. It's also worth keeping an eye out for routines that you feel you may perhaps need to use again in another feature of the program – the Undo function, for example, is coded in the form of a procedure that is called by each and every drawing function. For any

routine that may need to be used again, you can save yourself a lot of time by coding this as a procedure.

The Freehand Draw function cheats a little too. In order to give the impression of a continuous line of pixels, the freehand code plots lines instead of individual dots (like most art packages). This is exactly the same procedure used by *Deluxe Paint* – if you move the mouse pointer at a very rapid speed, you'll notice that *DPaint* draws straight lines instead of smooth curves.

The Freehand Draw function also needs to be able to cope with a variety of different brush styles and sizes (just like *DPaint*). Unfortunately we can no longer use the line drawing technique employed by the standard Freehand function because it would simply be too slow to plot every dot required to form the shape of the brush. The Freehand Draw function therefore checks what type of brush it should use and then draws on to the screen either by using lines or by plotting individual dots. To see how it works, let's get stuck into this month's source code.

1. Before we can start work on the new procedures to handle the Freehand Draw tool, we need to extend the main program to cope with the new brush drawing routines. Just like *DPaint*, *AS Paint* will offer the user a selection of different brush sizes ranging from a single pixel dot to a variety of filled circles, boxes and airbrush-like patterns. All

the brush pattern definitions are held inside a two-dimensional array called 'Brush()'. This is defined as nine lots (giving a total of nine different brush types) of eight data items.

2. Not only does the 'Brush()' array need to be made global (enabling other procedures to access the data held within it), but we also need to create an additional global variable called 'BrushSize' that is used to keep track of the currently selected brush pattern. This variable simply contains a value between 0 and 9 that defines which brush the various drawing functions should use.

3. Before the main program starts, the Undo buffer is initialised by calling the procedure '\_INITUNDOBUFFER'. We'll be covering this procedure later.

4. The contents of the 'Brush()' array are then initialised too by calling the '\_INITBRUSHES' procedure. This procedure writes the brush definitions into the 'Brush()' array.

5. Right, now let's move on to the first new procedure this month. The '\_PROCESSTOOLS' procedure is responsible for taking the number of the selected gadget (which is passed to the procedure in the 'SELECTED' parameter) and then calling the appropriate drawing function.

6. Obviously not every drawing function has been added yet, so the '\_PROCESSTOOLS' procedure only works on a minimal number of tools. In order to establish which drawing function the user has currently selected, the contents of the variable 'SELECTED' are checked. The 'SELECTED' variable can contain any value between 0 and 20, each of which points to a particular tool icon on the toolbar screen.

7. If the variable 'SELECTED' contains a value of '1', the program jumps to the procedure that handles freehand drawing. This procedure is called '\_FREEHANDDRAW'. We'll be looking at this function real soon.

8. If the 'SELECTED' variable contains a value of '12', the program jumps to the procedure that handles the Fill tool. As you might expect, this procedure is called '\_FILLAREA'.

9. If the 'SELECTED' variable contains a value of '18', the program jumps to the procedure that handles the Undo function. This procedure is called (not surprisingly) '\_UNDO'.

10. Now we move on to the '\_FREEHANDDRAW' procedure. This is a very intelligent little routine that not only allows the user to draw directly on to the screen, but works in such a way that if the left mouse button isn't being pressed or the mouse pointer is still over either the colour selector or toolbox screen, the user is free to select different colours and change tools without having to break out of a loop first.

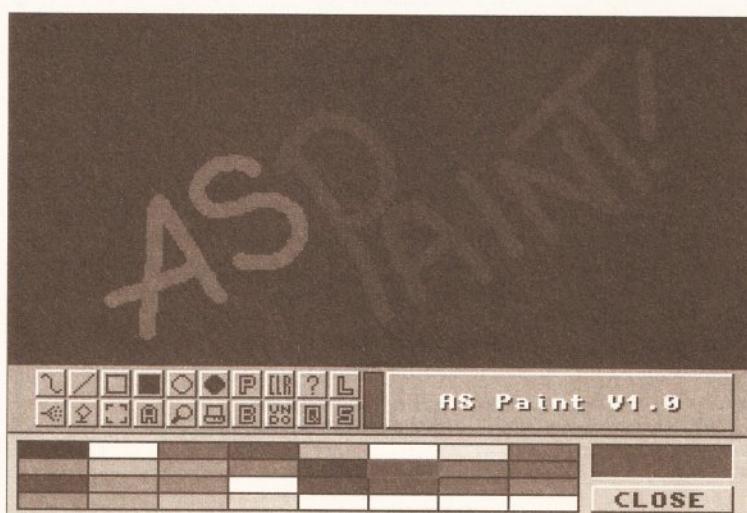
11. Just to make sure that all drawing operations are performed on the "page" screen, the current screen is changed to screen zero.

12. Just to make sure that the program doesn't go executing a whole lot of code unnecessarily, the procedure starts by checking that both the left mouse button is pressed and the mouse pointer is over screen 0 (our "page" screen).

13. If both of these checks are true, the procedure knows that the user wants to draw on to the screen, so the first thing that must be done is to update the Undo buffer so that if the user makes a mistake, they can easily remove the last change. This is carried out by a procedure called '\_UPDATEUNDOBUFFER'.

14. With up to 32 colours on tap, all the drawing functions must be able to take advantage of them. The current colour is therefore changed to the ink colour held within the variable 'CURCOLOR'. Note that this variable is updated by both the colour selector and the colour selection gadget on the toolbox screen. If the user selects a different colour while the Freehand Draw gadget is still selected, the ink colour will be updated automatically when they start drawing again.

15. If the user is using a single dot brush, the Freehand Draw function works by drawing lines between a set of successive coordinates. By default, the first set of coordinates will be set to '0,0', so we need to read the position of the mouse



At last *AS Paint* can actually be used to draw pretty pictures! Type in this month's code – or just copy it off this month's cover disk – and you'll be able to use the Freehand Draw, Fill and Undo functions to your heart's content.

pointer by reading the values returned by the 'X Mouse' and 'Y Mouse' functions. Note that these two functions return coordinates in the form of "hardware coordinates" – that is, the coordinates system used by the Amiga's display hardware rather than the simple coordinates used by screens.

16. The Freehand Draw procedure then enters a simple 'Repeat...Until' loop which carries out the actual drawing operations.

17. Once it's inside the loop, the second set of coordinates is read into the variables 'X1' and 'Y1', ready to be used for the first drawing operation. Once again, these are

held in the form of hardware coordinates, not screen ones.

18. As mentioned, the Freehand Draw function works in two ways – line drawing and dot plotting – which are selected according to the current brush size. We therefore start by checking whether the global variable 'BRUSHSIZE' contains a value of zero (indicating a single dot drawing pattern).

19. If it does, the procedure enters line drawing mode. After much experimentation, I found it necessary to actually slow AMOS down when drawing lines whose coordinates were obtained from the mouse pointer. Without this simple one

vertical blank wait, AMOS tends to forget to read the mouse coordinates, producing some rather strange results. If you don't believe me, try removing this line!

20. A line is then automatically drawn from the set of coordinates held in 'X1' and 'Y1' to the coordinates held in 'X2' and 'Y2'.

21. If the variable 'BRUSHSIZE' holds a value greater than zero (indicating a brush size larger than just a single dot), the Freehand Draw procedure jumps to a general-purpose procedure called '\_DRAWBRUSHPOINT' that plots the brush pattern on to the screen. This procedure has been written in such a

way that it can be used by all the other drawing functions that need to be able to use the variety of different brush patterns on offer. More on this procedure later.

22. To ensure that any extra lines drawn when in brush mode 0 are linked, the last set of co-ordinates held in 'X1' and 'Y1' is copied into 'X2' and 'Y2' respectively.

23. Next, we move onto the '\_DRAWBRUSHPOINT' procedure that is used to plot the shape of the selected brush on to the screen. It requires two parameters to be passed – 'X1' and 'Y1' – that contain (not surprisingly) the position on the screen where the brush

## LISTING 1

```

/ ****
/ **
/ ** AS Paint V 0.35
/ **
/ **
/ ** Written by Jason Holborn
/ ** For Amiga Shopper
/ **
/ ** Part : 4
/ **
/ ****
/ SCRMOD=1
/ CLOURS=9
/ CURCOLOR=1
/ Dim GADG(20,4),PALTT(32)
/ Dim CGADG(34,2)
1. Dim BRUSH(9,8)
/ Global SCRMOD,CLOURS,GADG(),PALTT()
/ Global CURCOLOR
/ Global SELECTCOL,REDRAWCBLOCK,SCRYPOS
/ Global XRATIO,YRATIO
/ Global CGADG(),REDRAWCBORDER,NEWCOLOR
2. Global BRUSHSIZE,BRUSH()
/
MAIN:
SCREENFORMAT
OPENSCREEN
TOOLBOX
/
3. _INITUNDOBUFFER
4. _INITBRUSHES
/
Repeat
TOOLDRAG
COLORSELECTOR
_CHECKICONS[SELECTED]
SELECTED=Param
Until SELECTED=19
/
End
/
5. Procedure _PROCESSTOOLS[SELECTED]
6. If SELECTED=1
7. _FREEHANDDRAW
End If
Rem *** Rest of paint tool code goes here
8. If SELECTED=12
_FILLAREA
End If
9. If SELECTED=18
_UNDO
End If
End Proc
/
10. Procedure _FREEHANDDRAW

```

```

11. Screen 0
12. If Mouse Key=1 and Mouse Screen=0
13. _UPDATEUNDOBUFFER
14. Ink CURCOLOR
Gr Writing 1
15. X2=X Screen(X Mouse)
Y2=Y Screen(Y Mouse)
16. Repeat
17. X1=X Screen(X Mouse)
Y1=Y Screen(Y Mouse)
18. If BRUSHSIZE=0
19. Wait 1
20. Draw X1,Y1 To X2,Y2
Else
21. _DRAWBRUSHPOINT[X1,Y1]
End If
22. X2=X1 : Y2=Y1
Until Mouse Key=0
End If
End Proc
/
23. Procedure _DRAWBRUSHPOINT[X1,Y1]
24. For A=0 To 7
25. BITMAP$=Bin$(BRUSH(BRUSHSIZE-1,A),8)
26. For B=1 To 9
27. XOFF=-3+B
YOFF=-3+A
28. If Mid$(BITMAP$,B,1)="1"
Plot X1+XOFF,Y1+YOFF
End If
Next B
End A
End Proc
/
29. Procedure _INITBRUSHES
30. Restore BRUSHDATA
31. For A=0 To 8
For B=0 To 7
32. Read BRUSH(A,B)
Next B
Next A
/
33. BRUSHDATA:
Data 0,0,16,56,16,0,0,0
Data 0,0,24,60,60,24,0,0
Data 56,124,254,254,254,124,56,0
Data 0,124,124,124,124,124,0,0
Data 0,0,60,60,60,60,0,0
Data 0,0,56,56,56,0,0,0
Data 0,0,24,24,0,0,0
Data 128,0,8,0,64,0,0,0
Data 8,0,0,1,136,0,0,16
End Proc
/
34. Procedure _INITUNDOBUFFER
35. Change Mouse 2
Screen 0

```

```

36. SCRX=Screen Width
SCRY=Screen Height
37. SDEPTH=Screen Colour
SCRMOD=Screen Mode
38. Screen Open 5,SCRX,SCRY,SDEPTH,SCRMOD
Flash Off : Curs Off : Cls 0
Screen Open 6,SCRX,SCRY,SDEPTH,SCRMOD
Flash Off : Curs Off : Cls 0
Screen Hide 5
Screen Hide 6
End Proc
/
39. Procedure _UPDATEUNDOBUFFER
40. Screen Copy 0 To 5
End Proc
/
41. Procedure _UNDO
42. Screen Copy 0 To 6
43. Screen Copy 5 To 0
44. Screen Copy 6 To 5
45. Wait 5
End Proc
/
46. Procedure _CHECKICONS[SELECTED]
Screen 7
If Mouse Key=1 Then ICON=Mouse Zone
If ICON<>0
_HIGHLIGHTICON[ICON,SELECTED]
If ICON<21
SELECTED=ICON
End If
End If
47. If SELECTED<>0
48. _PROCESSTOOLS[SELECTED]
/
49. If SELECTED=18 or SELECTED=8
50. _HIGHLIGHTICON[1,SELECTED]
51. SELECTED=1
End If
End If
Screen 0
End Proc[SELECTED]
/
52. Procedure _FILLAREA
Screen 0
53. If Mouse Key=1 and Mouse Screen=0
54. _UPDATEUNDOBUFFER
55. Ink CURCOLOR
Gr Writing 1
56. X=X Screen(X Mouse)
Y=Y Screen(Y Mouse)
57. Paint X,Y,1
End If
End Proc

```

pattern is to be drawn. We could simply have read the mouse pointer coordinates from directly within this procedure, but passing them as parameters means that the procedure can be used to draw a variety of different shapes, including circles and boxes.

24. The brush pattern definitions are held in a two-dimensional array containing eight different values for each brush. These values are extracted by using a loop that counts from zero to seven.

25. Each of the eight values assigned to each brush definition is transferred into a string variable called **'BITMAP\$'** in binary notation. In many ways, this technique is exactly the same as the technique we used to draw the toolbox gadgets. A zero in the binary pattern turns the pen off and a value of 1 turns it on.

26. Each bit in the binary pattern is extracted in turn by entering a second loop that counts from 1 to 9.

27. By default, each and every brush will be drawn on the screen using the **'X1'** and **'Y1'** coordinates as the origin at the top left hand corner of the brush. In order to centralise the brush so that it is drawn immediately below the mouse pointer, a set of offsets is calculated.

28. Finally, a quick **'If...Then'** decision is made to check whether a point should be plotted. Using the counter that is updated by the second loop, each bit in the binary number is checked to see whether it is a 1 or a zero. If it is a 1, a dot is plotted on to the screen using the AMOS **'Plot'** command.

29. In order for any of *AS Paint*'s drawing functions to work, a set of nine brushes is defined using the **'\_INITBRUSHES'** procedure.

30. First, we start by pointing AMOS to the brush data statements using the **'Restore'** command.

31. The entire brush data consists of nine sets of eight data statements. In order to make absolutely sure that these data statements get read correctly, a nested set of **'For...Next'** loops is used.

32. The data items are then read from the data statements, an item at a time, and placed directly into the **'Brush()'** array.

33. Finally, here's our brush data in all its glory.

34. Next, we move on to the **'\_INITUNDOBUFFER'** procedure that

sets up the **'Undo'** buffer. This is used to allow the user to revert to the image as it was before the last painting operation. Our Undo function is somewhat wasteful of memory, but it works very well indeed. All it does is keep two screens of exactly the same resolution and depth hidden away from the user, and whenever a change is made to the **"page"** screen (Screen 0), the old version of the image is transferred to one of these two hidden screens. The second hidden screen is needed to act as a temporary storage area when the two screens are exchanged when the user clicks on the **'Undo'** gadget.

35. Before we start the real work of setting up the Undo buffers, let's change the mouse pointer to a crosshair shape. Most paint programs use a crosshair shape for the mouse pointer because it allows for much better positioning of individual pixels.

36/37. Before we can open the two Undo buffers, we need to find the exact resolution, depth and screen mode of the **"page"** screen. This is done using four very handy (and self-explanatory) functions offered by AMOS - **'Screen Width'**, **'Screen Height'**, **'Screen Colour'** (returns the depth of a screen) and **'Screen Mode'** (returns the mode of a screen - hi-res, lo-res, laced, or whatever it may be). The values returned by these functions are then stored into variables ready for use.

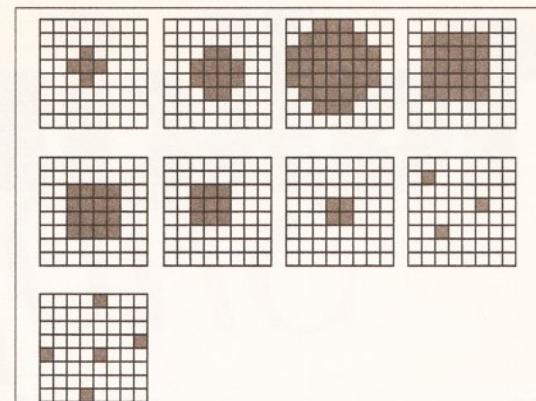
38. With these details extracted from the **"page"** screen, we then open up our two Undo buffers in exactly the same resolution, depth and mode. Once this is done, AMOS's automatic colour flashing and text cursor are turned off and then cleared using colour 0. Both screens are then hidden from view using the AMOS **'Screen Hide'** command.

39. Each time a new drawing operation is initiated, the current contents of the **"page"** screen are transferred to the Undo buffer so that AMOS has a copy of the **"page"** screen as it was before it was modified. This is done using the **'\_UPDATEUNDOBUFFER'** procedure.

40. The procedure contains just a single line that transfers the entire contents of screen 0 (the **"page"** screen) to screen 5 (the first of our Undo buffers). The **'Screen Copy'** command is used here because it can shift screen memory around very fast indeed with the help of the Amiga's blitter chip.

41. Even the **'Undo'** procedure itself is not that complicated. All it does is to swap the contents of the Undo

buffer and the **"page"** screen so that the screen reverts to the original. The good thing about this function is that even if the user then decides that they'd like the modified version back again, all they have to do is to click the **'Undo'** gadget again and voila - the screens are simply swapped again and it's back!



All of the nine standard brush patterns that *AS Paint* can use are simply defined using an 8x8 grid.

42. First, the contents of the **"page"** screen are transferred to the temporary Undo buffer using the **'Screen Copy'** command.

43. The unmodified version of the **"page"** screen held in the Undo buffer is then transferred back to the **"page"** screen.

44. Finally, the modified **"page"** screen that we transferred to the temporary Undo buffer is transferred to the first Undo buffer (screen 5).

45. To stop **Undo** from flicking backwards and forwards between the modified and unmodified images, the user is given time to release the mouse pointer by halting the program for a tenth of a second.

46. Remember the **'\_CHECKICON'** procedure we covered last month? Well, the time has come to extend it to handle the new drawing functions. You don't need to type in the whole procedure - just the extra lines that have been added from lines 47 to the end of the procedure.

47. If the variable **'SELECTED'** contains a value greater than zero, the section of code inside this **'If...Then'** construct is performed.

48. The value held in **'SELECTED'** is then passed to the **'\_PROCESSTOOLS'** procedure that we covered earlier, allowing *AS Paint* to act upon the currently selected toolbox icon.

49. Whenever an icon is selected from the array of gadgets in the toolbox screen, the icon remains selected until the user clicks on another. Obviously this isn't a lot of use if the user clicks on either the **'Undo'** or **'Clear screen'** gadgets - if we were to allow **Undo** to remain selected, *AS Paint* would continuously swap the Undo buffers until the user selected a different gadget. To stop this from happening, we use a simple **'If...Then'** construct that starts by checking if the variable

**'SELECTED'** contains the numbers of the **'Clear'** and **'Undo'** functions.

50. If either function was selected, the gadget for that particular function is deselected by calling the **'\_HIGHLIGHTICON'** procedure we covered last month.

51. And, to make sure that the function is no longer processed by the **'\_PROCESSTOOLS'** procedure, the value of the **'SELECTED'** variable is reset to a value of one, in effect defaulting to selecting the Freehand Draw function.

52. Finally, let's take a look at the **'\_FILLAREA'** procedure that handles *AS Paint*'s Fill tool.

53. Just like the Freehand Draw function, the Fill function starts by checking that the mouse pointer is over screen 0 and that the left mouse button is being pressed. If either of these conditions is false, the Fill operation won't go ahead.

54. Once again, before the area of the screen that the user wishes to fill is even touched, the Undo buffer is updated, allowing the user to revert to an unmodified copy of the image should something go terribly wrong. (How many times have you filled an area of the screen only to have the **"paint"** leak out because there's a break in the boundary that should contain the fill operation?)

55. The colour which is to be used for the fill operation is then set by reading the contents of the **'CURCOLOR'** variable.

56. The coordinates of the mouse pointer are then read to establish where on the screen the Fill operation is to be performed.

57. Finally, the screen area is filled using the AMOS **'Paint'** command. Note how paint mode one is used - this restricts the Fill operation to an area of the screen that is sealed by pixels of a different colour. **AS**

# Talking Shop

**Have your say, and perhaps win £25 into the bargain! Send your missives to: "Talking Shop", Amiga Shopper, 30 Monmouth Street, Bath, Avon BA1 2BW.**

## "JUICY, USEFUL STUFF"

When *Amiga Shopper* first came out it was a cheap source of Amiga advice and information. It didn't have a cover disk, which at the time was a refreshing change.

I'm glad to say, however, that the magazine has matured by including full colour photos and a really, really useful cover disk.

[There followed a chastisement of a certain other Amiga magazine which I've decided to cut - Ed.]

Your cover disk is a real enthusiast's disk, heightening your readers' productivity with their machines: fonts for those who use their machines for DTP; source code for programmers; databases; hard disk utilities; music programs for musicians and virus checkers for everybody.

But what about us graphic

artists? Sure, there have been fractal generators, but what about the really juicy, useful stuff like objects and textures for *Imagine* and *Real3D*? Now that the cover disk is here to stay, please keep it a mixed bag for everyone every month, rather than bias it towards one particular type of user.

Jonathan McBrien

Enniskillen  
Fermanagh

Glad you like the disk, Jonathan. You can rest assured we intend to keep it as well-balanced as possible.

On the graphics front, we intend to include a few high-quality backgrounds from VideoWorld as soon as we've got some space. And if anyone out there has some *Imagine* or *Real 3D* files we could use, we'd love to hear from you.

## KEYLESS MONDEO



I recently bought an A4000/030 from a mail order company. When I came to set it up I found that the factory-sealed pack of six disks had two copies of the Fonts disk and no Workbench disk. I rang the mail order company, who not unreasonably said that since the disks were in a sealed package it was really up to Commodore. A friendly and sympathetic lady at Commodore offered to send the missing disk within 28 to 30 days.

So there I was, unable to use my thousand quids' worth of brand-new gear for a month or so. The lady at Commodore suggested that I should ask the supplier for a naughty copy. My mail order

company had a good laugh at this, but then managed to unearth a legitimate copy, which they sent off to me.

Commodore's replacement disk arrived 32 days after my phone call. If Ford supplied a Mondeo with no ignition key, would it take them a month to find one?

D B Beames  
Macclesfield  
Cheshire

Well, strictly speaking it was the mail order company's duty to sort you out, not Commodore's - your contract is with the seller, not the manufacturer. Having said that, Commodore's response doesn't exactly inspire confidence, does it?

## "TELL ME WHY"

Can you tell me why, when I come to run the de-archived version of *Virus Checker* that you supplied on last month's cover disk, it crashes my machine?

John Millfield  
Sunderland  
Tyne and Wear

Ah, yes... oops. The program will work once installed, but we didn't include an installation program, and we didn't include a document reader so that you could read the documents to find out how to install it manually. Don't worry, the person responsible is hanging from the roof of Future Publishing by his chained wrist, where he will remain until the end of time.

Now, the solution. You must first dearchive *Virus Checker* on to a blank disk, as normal. Then, if you have Workbench 2 or higher you can drop the *Virus Checker* icon into your **WBStartup** drawer. Otherwise you'll need to copy the file on to the **c:** directory of your Workbench disk. Assuming the disk you've de-archived everything on to is called **Empty**, you can do this from the Shell as follows:

`copy Empty:virus_checker c:`

You'll also need to modify your **startup-sequence**. From the Shell type this line:

`ed s:startup-sequence`

Then, just before the line that reads **loadWB**, add the following line:

`c:virus_checker`

Then press **<Esc>-X** to save the modified version.

Whichever version of Workbench you are using, there are a further three files that must be copied. Open a Shell and type the following lines (I'm still assuming you've de-archived to a disk called **Empty**). If not, replace the word "Empty" in the following lines with the name that you have given it:

`copy Empty:bootblock.brainfile 1:  
copy Empty:bootblock.library libs:  
copy Empty:decrunch.library libs:`

And once you re-boot, *Virus Checker* will be running.

## "MORALITY"

My immediate impression upon reading the Computer Crime feature in *Amiga Shopper* 29 was of a rather one-sided article in a generally accurate magazine. Dave Winder did an excellent job of covering the broad spectrum of computer crime, but his article was devoid of any consideration of the morality of the

topics raised.

Mr Winder's discussion of computer hacking was decent, but he failed to consider the most prevalent danger to world-wide computer networks: not hobbyists, who penetrate systems to gratify their unbalanced egos, but professional dealers in confidential information.

My true objection, however, lies in his discussion of piracy. Admittedly, this is a major problem, especially for the Amiga, but it is also frequently misrepresented. Although it is a cause of loss of sales to software distributors, the numbers are nowhere near as high supposed. In actual fact, software theft only represents loss to the distributor if the thief would otherwise have bought the software in the first place, which is rarely the case. Most of the pirates I've met have collections of software which they never ever use. They keep this software in order to increase the size of their collections. This also seemed to be the case with "Harold", the pirate interviewed by Dave Winder.

Dave also wrote, "Have you ever thought that when you purchase one of these types of [music] demos, someone, somewhere, is losing money?" With reference to the public domain demos that clutter shelves everywhere, this comment is patently absurd. I challenge you to find me a single person who buys a demo because it contains a badly re-hashed version of the latest techno hit, rather than buying the legitimate CD or tape.

Jesse Sanford  
Phillips Exeter Academy  
Exeter, NH 03833  
USA

(Jesse asked that his full address be printed, so by all means write to him if you want to continue the debate.)

The article intentionally concentrated on the facts rather than their morality, but I think we made our position reasonably clear by using the word "crime" in the title.

I'm sure you're right that most people who pirate software wouldn't pay for originals if they had no other way of obtaining them; likewise that no one gets a PD demo as a substitute for properly-recorded music. Nevertheless, the law is the law, and these are both in contravention of it.

We're always on the look-out for interesting letters, but please keep them short and bear in mind that we reserve the right to edit them. We're particularly interested to learn about any unusual uses you put your Amiga to, and software that you'd like to see on the Amiga.

AS

From the makers of

**AMIGA  
SHOPPER** comes...

# Ultimate AMOS

The ultimate games creator just got the ultimate guide

If you've got AMOS, then get this book! It explains what AMOS can do, and how to make it do it.

There are sections on program planning, producing 'readable' code, and screen handling.

AMOS is built to handle scrolling, animation, sound and music – everything you'll find in a commercial game. And this book, from the makers of Amiga Shopper, shows you how it's done.

If you've got AMOS you're half way to creating your own gaming worlds. Don't stop half way – order 'Ultimate AMOS' today!



† Includes a disk containing all the code printed in the book, plus four complete AMOS games!

## FUTURE LEISURE BOOKS

These Amiga Format books are available in all good bookshops right now, but you can also order them direct from Future Publishing – and sending this order form off won't even cost you a stamp!

Please send me: (tick as appropriate)

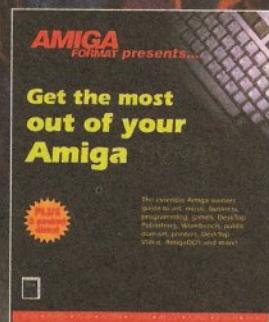
.....copy/copies of 'Ultimate AMOS' at £19.95 each  
[ORDER CODE: FLB025A]

.....copy/copies of 'Ultimate AMOS'/'Get the Most out of your Amiga 1993' double offer at £29.90 per set  
[ORDER CODE: FLB025B]

**AMIGA  
SHOPPER** comes...

**SAVE £10!**

'Ultimate AMOS' is available on its own at £19.95 but, for a limited period only, you can order 'Ultimate AMOS' and 'Get the Most out of your Amiga 1993' for an all-in price of £29.90. That's a saving of £10 on the combined RRP. See the form at the bottom of this page for ordering details.



'Get the Most out of your Amiga 1993' – yours for only £9.95 when you buy 'Ultimate AMOS'

## PRIORITY ORDER FORM

Amount enclosed £ .....

Your name .....

Method of payment (please tick one):

Your address .....

Visa  Access  Cheque  P/O

.....

CARD NUMBER

.....

Expiry date: .....

Your signature .....

Now send this form and your payment to:

Future Leisure Books Offer, Future Publishing Ltd, Freepost, Somerton, Somerset TA11 7BR

Please tick here if you do not wish to receive direct mail from other companies:

For office use only:

SCRATCH CODE: AS32

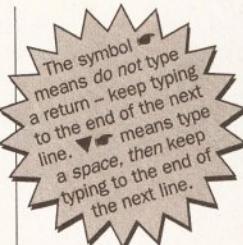


# AREXX FOR ALL

By popular demand, Jason Holborn takes a look at automating Virus Checker through AReXX control.

**H**ere at Amiga Shopper, we're always keen to hear your suggestions. Since this AReXX column started last year, we've been deluged with letters suggesting programs that we could cover in the AReXX column – not all of them AReXX compatible, I might add! By far the most popular suggestion has been John Veldthuis' *Virus Checker*, an indispensable program that has featured on our cover disk on a number of occasions as successive revisions have appeared. So this issue we're bowing to your wishes.

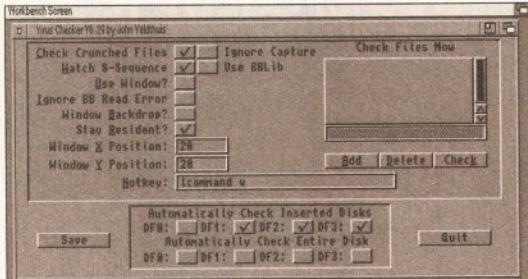
*Virus Checker* has come a long way since its original release. The latest version (6.31) boasts a full Workbench 2.0-like user interface and can even be run as a commodity. *Virus Checker* can trap a whole host of viruses, including the age-old boot block *SCA* and *Byte-Bandit* viruses, *Revenge*, *North Star*,



HCS, *Disk Doktors* and many others. It also smites non-bootblock-based

viruses including *IRQ* (which copies itself from file to file by attaching itself to the first executable file in your startup-sequence), *BSG9*, *Revenge Lamer Exterminator* (which creates a blank executable program which it inserts into your startup-sequence) and the dreaded *Saddam* virus (which hides itself as the AmigaDOS disk validator).

What makes *Virus Checker* so special, however, is not the wide



Trap those deadly viruses before they wreak havoc on your data by automating John Veldthuis' *Virus Checker* under AReXX control – it's as easy as one, two, nine!

range of viruses that it can kill, but the fact that it is the first public domain virus checker to feature an AReXX port. What this means is that you can write your own AReXX scripts to instruct *Virus Checker* to carry out a whole range of tasks whenever you want it to. Although there are only nine AReXX commands offered by *Virus Checker*, these cover just about every feature of the program.

## PORT AND LEMON

First, as always, your scripts need to open up a communications channel with *Virus Checker* via its AReXX port using the AReXX 'Address' command. *Virus Checker*'s AReXX port is called – not surprisingly – '**Virus\_Checker**'. Once again, upper and lower case are very important, so you must enter the port name exactly as it is printed here. If you enter the port name in any other format, AReXX will be unable to find *Virus Checker* even if you've spelled the port name correctly. This is in total contrast to AmigaDOS's "couldn't care less" attitude towards case sensitivity.

Anyway, let's start by opening up the port to *Virus Checker* with the following line.

```
Address ▶
'Virus_Checker'
```

With the port now open, we're free to pass commands to

**Virus Checker**. Let's look in turn at each of the nine commands.

**1 CheckDrive\[drive]** – This command instructs *Virus Checker* to check a named drive for file viruses. The drive ('[drive]') parameter can be entered either as a disk name ('**MyFiles:**') or as a device name ('**dfo:**'). If, for example, you wanted *Virus Checker* to scan a disk in drive **dfo:**, you would therefore enter the line '**CheckDrive\DF0:**'. It's worth noting that the entire command line must be entered as a single word with the backslash symbol ('\') being used to separate the command from its parameters. Take a look at this quick demonstration listing.

```
/* Virus Checker Demonstration */
address 'Virus_Checker'
parse arg drive
'checkdrive\'drive
exit
```

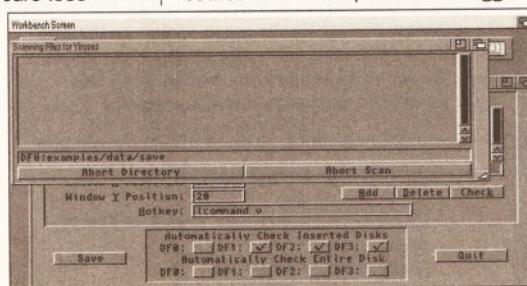
This listing is fairly straightforward. After it opens a link with *Virus Checker* with the 'Address' command, the name of the drive to be checked is extracted from the command line and placed into the AReXX variable 'drive', which in turn is passed to the 'checkdrive\' command. If *Virus Checker* is running, you should see a requester pop up on the screen and *Virus Checker* will start to check each and every file on the named disk for any file link viruses.

**2 ScanForSaddam\[drive]** – This command instructs *Virus Checker* to check a named drive or disk for the dreaded Saddam virus.

**3 Quit** – Instructs *Virus Checker* to shut down.

**4 SaveConfig** – Instructs *Virus Checker* to save the current *Virus Checker* '.config' file to disk.

**5 Window\[on or off]** – The 'Window' command instructs *Virus Checker* to open or close its window under AReXX control. The command does not toggle, however, so you must either pass 'on' (open the *Virus Checker* window) or 'off' (to close the window). If the window is already open and you pass the 'on' parameter, the 'Window' command will simply be ignored. This means of course that it's impossible to toggle



The entire contents of a disk can be checked for file viruses with a single *Virus Checker* command.

FREE 64 PAGE AMIGA CATALOGUE  
RETURN THE COUPON BELOW FOR YOUR COPY

Silica are the UK's leading Amiga specialist. We have the largest range of Amiga products in the UK and support Amiga owners with free literature and a free technical helpline.

Return the coupon below for a FREE copy of our latest colour Amiga catalogue featuring the full Silica Amiga product range.

# QUALITY PERIPHERALS FOR YOUR AMIGA 1200

FROM SILICA - THE UK's No1 AMIGA SPECIALIST

## UPGRADES



### Commodore APPROVED UPGRADES

Silica are a fully Authorised Amiga Dealer. This means that we can upgrade Amiga 1200s for new and existing owners without affecting Commodore's Official 1 Year On-Site Warranty.

When you want to upgrade your Amiga 1200, eg. with an internal hard disk drive for extra speed and storage, choose the Official Silica Service, which includes:

- FAST, 48 Hour Service
- 20 Trained Technicians
- Latest Test Equipment
- 1,000s of Parts In Stock
- We Can Collect (£5+VAT)
- FREE Return Courier

Return the coupon below for full details of hard drive sizes, pricing and upgrade services

## MUSIC



### MIDI INTERFACE | MUSIC X SOFTWARE

If you are interested in making music with a MIDI instrument, you will require a MIDI Interface and music software. MIDI is the standard protocol that is used when connecting electronic instruments, eg a MIDI compatible keyboard or drums, to your Amiga.

- MIDI INTERFACE
- 1x MIDI In, 3x MIDI Out, 1x MIDI Thru
- Includes Cables

**MUSIC X SOFTWARE** is a high quality, easy to use 250 track sequencer, which allows you to edit your recorded sound tracks on screen and save them onto disk for reloading as necessary. It contains all the features you need to compose first class music on your Amiga 1200.

- 250 Track Sequencer with 20 Track Simultaneous Play
- On-Screen Sequencer Editing

**MIDI INTERFACE** £19  
INC VAT MUS 4220  
**MUSIC X** £24.95  
INC VAT ASM 9002

## SPECIAL EFFECTS



### CINEMORPH MORPHING SOFTWARE

The Amiga 1200, with its new AGA Chipset, has graphics abilities that are second to none. Cinemorph software from GVP, manufacturers of premier Amiga peripherals, allows you to take full advantage of this ability with the special effect of morphing. Morphing is the transformation of one image or just a part of an image into another through a series of stages, creating dazzling special effects. These intermediate images can be saved for use in documents and presentations and manipulated using D. Paint. With a video genlock you can overlay your 'morphs' onto your favourite video. (Requires 4MB RAM).

- Supports the AGA Chipset
- Static or Full Motion Morphing
- Fast Operation and Render Times
- Single Image Warping
- Sophisticated Morphing Technology

**CINEMORPH** £24.95  
INC VAT ASC 4422

## SOUND SAMPLER



### GVP DSS8+ 8-BIT SOUND SAMPLER

A sound sampler allows you to capture sounds from an external source, eg, a CD player, tape recorder or microphone, and then play the sounds back on your Amiga. GVP's DSS8+ is the ultimate professional 8-bit sound sampler, which features a 4 track sequence and full editing features. Create your own audio effects from sampled sounds and use them with games, in your presentations or just for fun.

- Attractively Styled in High Impact, Non-Yellowing, Clear Polycarbonate
- Holds Up to 31 Samples in Memory
- MOD File & MIDI Compatible
- Real-Time Oscilloscope, Spectrum Analysis, Echo and Reverberation
- Graphic Editing of Wave Forms
- Stereo or Mono Operation
- 4 Track Sequencer
- Playback via 4 Audio Channels

**DSS8+ SOUND SAMPLER** £69  
INC VAT MUS 2510

## DISK DRIVE



### 3½" EXTERNAL FLOPPY DISK DRIVE

Your Amiga 1200 has 1 internal floppy disk drive as standard. A second external floppy drive will speed up the use of your computer, especially when running any serious applications or the latest games. A single drive, means constant swapping of disks and considerable waiting time. A second drive, improves software loading times and programs run more quickly, not having to wait for disk insertions. Compatible with all Amigas, the CUMANA CAX354 Floppy Disk Drive is manufactured to the very highest standards, with a 3½" double sided drive mechanism that performs efficiently and quietly.

- 1Mb Unformatted Capacity
- Fast 75ms Access Time
- Allows Additional Drives to be Attached (Daisychainable)
- Enable/Disable Switch for Software Compatibility
- Ultra Quiet Operation
- Low Power Usage

**CUMANA CAX354** £65  
INC VAT DRI 2215

## DIGITISER



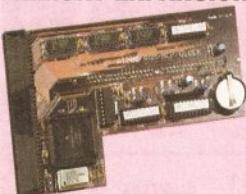
### VIDI-12 DIGITISER

Using a state-of-the-art VIDI-12 digitiser, just connect your Amiga 1200 to a video recorder or camcorder and capture a 'real world' image into your computer. Your captured images can then be manipulated using Amiga software such as D. Paint or Cinemorph. Your final graphics can be used in hundreds of applications.

- Supports the AGA Chipset
- Cut and Paste with Masking
- Capture into User Definable Window
- Load and Save IFF, ILBM and ANIMATION Files
- Load Flipped on an X or Y Axis
- Multi Frame Store
- Animated Playback
- SVHS and Composite Phone Video Inputs

**VIDI-12 DIGITISER** £79  
INC VAT VID 3212

## MEMORY EXPANSION



### AMITEK HAWK RAM BOARD

Adding memory (RAM) to your Amiga 1200 computer, will produce a massive improvement in its speed and power. Amitek are one of the leading Amiga peripheral developers and their A1200 RAM upgrade board is one of the best available. It uses 72-pin 32-bit fast RAM, which allows the Amiga 1200 to run twice as fast as a standard machine. The board can be populated in 1Mb, 2Mb, 4Mb and 8Mb configurations and an optional Floating Point Unit (FPU) is available, to greatly speed up software programs that involve mathematical calculations.

- 8Mb 32-bit RAM Board (0Mb populated) - Can be Populated to 1Mb, 2Mb, 4Mb or 8Mb RAM
- Battery Backed Clock
- 2 Year Warranty UK Support
- Socket for Optional FPU

**HAWK RAM BOARD**  
1Mb RAM - No FPU  
£99  
INC VAT RAM 1210

## COLOUR PRINTER



### SEIKOSHA SL-95 24-PIN 240cpi

A printer allows you to print out your creations from screen, giving you a permanent record. The Seikosha SL-95 is a high quality, 80 column dot matrix printer which allows you to print out your pictures and text in full colour from the Amiga 1200. Fast print speeds up to 240 cps and 9 resident fonts, make the SL-95 is the colour printer of choice for your Amiga system.

- 24 Pin - 80 Column
- 240CPS Draft, 192CPS Draft, 64CPS LQ
- 24K Printer Buffer + 9 Fonts
- Parallel Interface
- Graphics Resolution: 360 x 360dpi
- Epson LQ800/850/2500/2550 Printer Emulation
- Colour Printing as Standard
- Semi Automatic Single Sheet Feeder
- Optional Automatic Cut Sheet Feeder
- Headphone Socket
- FREE Silica Printer Starter Kit

**SL-95 PRINTER** £210.33  
INC VAT PRI 8305

## COLOUR MONITOR



### COMMODORE 1084S MONITOR

The Amiga 1200 will plug straight into a television set, but using a computer monitor with your system will give you a dramatic improvement in the display. Commodore's 1084S 14" colour stereo monitor gives you crisper graphics and greater colour fidelity for both your text and computer graphics. Games especially benefit from the high quality stereo sound. The 1084S monitor is of robust construction and colour styled to perfectly match the Amiga.

- 240mm Dot Pitch Resolution
- 24K Printer Buffer - 3 Built-in Fonts
- 2 IC Card Slots for Buffer Expansion Cards and Font Cards
- Parallel Interface - Graphics Resolution 300 x 300 dpi
- HP Desktop Emulation (PCL3)
- Built-in Automatic Sheet Feeder for (100 Sheets)
- Economical to Run - only 1.3p per page
- Ultra Quiet - 46dB(A) Maximum

**1084S MONITOR** £179  
INC VAT MON 4184

## QUALITY PRINTER



### SEIKOSHA SPEEDJET INKJET PRINTER

For laser-like quality printing, at letter quality speeds twice as fast as most other inkjet printers, (300cps), the Speedjet 300 inkjet printer will produce the highest quality mono output from your Amiga 1200.

- Speedjet 300 - Inkjet Printer
- High Capacity 128 Nozzles
- 300cps LQ Printing
- Large Ink Tank - up to 4.2 Million Characters
- 300 CPS Draft Speed at 10cps - 300 CPS LQ Speed at 10cps
- 24K Printer Buffer - 3 Built-in Fonts
- 2 IC Card Slots for Buffer Expansion Cards and Font Cards
- Parallel Interface - Graphics Resolution 300 x 300 dpi
- HP Desktop Emulation (PCL3)
- Built-in Automatic Sheet Feeder for (100 Sheets)
- Economical to Run - only 1.3p per page
- Ultra Quiet - 46dB(A) Maximum

**SPEEDJET 300 PRINTER** £327.83  
INC VAT PRI 8030

## COLOUR MONITOR



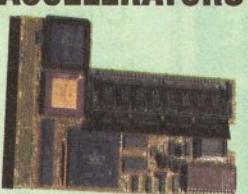
### COMMODORE 1940 & 1942 MONITORS

For a monitor will have a dramatic effect on your Amiga display. The 1940 and 1942 14" Commodore monitors take full advantage of the most advanced features of the Amiga 1200's AGA Chipset. A normal television display at a frequency of 15kHz. The advanced graphics features of the Amiga 1200 give outputs of frequencies up to 31kHz. Both the 1940 and 1942 monitors are dual sync, 15.8kHz - 15.8kHz/27.3kHz - 31.5kHz, for the highest resolution colour display. Both colour monitors also include stereo sound and a tilt and swivel stand. The 1940 has a dot pitch of .39mm and the 1942 a dot pitch of .28mm.

- Compatible with the enhanced A1200 Advanced Graphic Architecture chipset
- Stereo Speakers + Tilt & Swivel Stand
- Dot pitch of .39mm (for the 1940 as pictured above) or .28mm (for the 1942)

**1940 MONITOR** £299  
INC VAT MON 5840  
**1942 MONITOR** £399  
INC VAT MON 5942

## ACCELERATORS



### A1230 40MHz ACCELERATOR

For running both games and application software, the Amiga 1200 is fast! The addition of a GVP A1230 Accelerator will make it nearly 7x faster than a standard model. The 40MHz accelerator processor replaces the normal Amiga 1200 processor, increasing its speed to almost that of an Amiga 4000 '040'. It is also possible to add up to 32Mb of 32-bit fast RAM to the accelerator board to provide all the extra memory you need.

- The First True A1200 Accelerator
- 68030E Processor Running at 40MHz
- Inc 32-bit RAM Board, 0Mb Populated
- Easy Fitting Trapdoor Expansion - Does Not Void Your Warranty
- Optional 68882 Co-processor (FPU) - Faster than a 68881

### A1230 ACCELERATOR

0Mb RAM £249  
4Mb RAM £379  
4Mb RAM + FPU £499  
INC VAT UPG 1230  
INC VAT UPG 1232  
INC VAT UPG 1234

ALL PRICES INCLUDE VAT - DELIVERY IS FREE OF CHARGE IN THE UK MAINLAND



## SILICA - THE AMIGA SPECIALISTS

- SHOWROOMS: We have demonstration and training facilities at all our stores.
- THE FULL STOCK RANGE: All of your Amiga requirements are available from one supplier.
- FREE CATALOGUES: Will be mailed to you, with special reduced price Amiga offers, as well as details on all Amiga software and peripherals.
- PAYMENT: We accept most major credit cards, cash, cheque or monthly terms (APR 29.9% - written quotes on request).

• COMMODORE APPROVED UPGRADES: Official Hard Drive upgrades with ICL on-site warranty.

• FREE OVERNIGHT DELIVERY: On all hardware orders shipped in the UK mainland.

• TECHNICAL SUPPORT HELPLINE: A team of Amiga technical experts will be at your service.

• PRICE MATCH: We match competitors on a "Same product - Same price" basis.

• ESTABLISHED 15 YEARS: We have a proven track record in professional computer sales.

• PART OF A £50M A YEAR COMPANY: With over 200 staff - We are solid, reliable and profitable.

• BUSINESS + EDUCATION + GOVERNMENT: Volume discounts are available. Tel: 081-308 0888.

**HOT LINE** 081-309 1111  
SILICA IS A DIVISION OF PROSPEX PLC

MAIL ORDER: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX  
Order Lines Open: Mon-Sat 9.00am-6.00pm  
No Late Night Opening  
Tel: 081-309 1111  
Fax No: 081-309 0608

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA  
Opening Hours: Mon-Sat 9.30am-6.00pm  
No Late Night Opening  
Tel: 071-580 4000  
Fax No: 071-323 4737

LONDON SHOP: Selfridges (Basement Arena), Oxford Street, London, W1A 1AB  
Opening Hours: Mon-Sat 9.30am-7.00pm  
Late Night Thursday - 8pm  
Tel: 071-629 1234  
Extension: 3914

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX  
Opening Hours: Mon-Sa 9.00am-5.30pm  
Late Night: Friday - 7pm  
Tel: 081-302 8811  
Fax No: 081-309 0017

ESSEX SHOP: Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm)  
Late Night: Thursday - 7pm  
Tel: 0702 468039  
Fax No: 0702 468039

IPSWICH SHOP: Debenhams (2nd Floor), Waterloo House, Westgate St, Ipswich, IP1 3EH  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm)  
Late Night: Thursday - 9pm  
Tel: 0473 221313  
Fax No: 0473 287767

To: Silica, AMSHP-1293-119, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX  
PLEASE SEND A 64 PAGE AMIGA COLOUR CATALOGUE

Mr/Mrs/Miss/Ms: ..... Initials: ..... Surname: .....

Company Name (if applicable): .....

Address: .....

..... Postcode: .....

Tel (Home): .....

Tel (Work): .....

Which computer(s), if any, do you own? .....

E&OE - Advertised prices and specifications may change. Please return the coupon for the latest information.



## JARGON BUSTING

**Commodity** – A commodity is a special program that runs in the background under the control of the *Exchange* program on all Workbench disks since 2.04. Commodities run in the background and remain completely hidden until they are brought into view by clicking on the **'Show Interface'** gadget in the *Exchange* program.

**Virus** – A small program written by a demented programmer that copies itself from disk to disk, causing damage as it goes.

the window closed accidentally!

⑥ **Drive\[/drive] [on or off]** – The **'Drive'** command instructs *Virus Checker* to turn on or off its automatic checking of bootblocks for disks placed into any floppy drives attached to the Amiga. You may want to use this command when launching a PC-emulator like *PC-Task* that uses MS-DOS-format disks. Because MS-DOS format disks do not have an AmigaOS bootblock, *Virus Checker* will throw up a "Non-standard boot code" error every time an MS-DOS disk is inserted, forcing you to close the *Virus Checker* requester manually.

⑦ **Resident\[/on or off]** – Issuing this command instructs *Virus Checker* to turn off its **'resident'** flag so that the program is removed whenever the *Virus Checker* window is closed.

⑧ **CheckFile\[/filename]** – The **'CheckFile'** command instructs *Virus Checker* to check a named file (complete with full path information if the file is not in the current directory)

for "link" viruses like *BSG9* and *IRQ*. It's worth noting that the **'CheckFile'** command turns off the *Virus Checker* requesters while it's doing its stuff. If the command **'Options Results'** is used, *Virus Checker* will return a value to **'Result'** if a virus is not found. If a virus was found, however, then **'Result'** will contain the string "VIRUSNAME virus was/is present in the file". This doesn't necessarily mean that the virus has been removed, however, so don't automatically assume that it has been. If *Virus Checker* encountered problems while it was trying to remove the virus, it may have simply thrown in the towel.

This option could be of particular use to anyone who runs a Bulletin Board System (BBS). If you're feeling adventurous, you could easily write an AREXX script that instructs *Virus Checker* to automatically "file check" any new files that are uploaded onto the board. Obviously it makes sense to make sure that files really are clear from all viruses yourself before placing them into your board's file area, so you may want to add a facility to your script that automatically creates a "log file" containing details of all the files that were uploaded and then checked by *Virus Checker*.

⑨ **CheckBootBlock\[/drive DFn:]** – This command instructs *Virus Checker* to check a named floppy drive ("df0:" through "df3:") for bootblock viruses. Just like the **'CheckFile'** command, the **'CheckBootBlock'** command returns various results when used in conjunction with the **'Options Results'** command. If the disk was found to be clear of boot block viruses (that is, it has a standard AmigaOS bootblock) or you give it a

## LISTING 2

```
/* Complete Virus Checker script */

address 'Virus_Checker'
parse arg drive
Options Results

/* First, let's check the bootblock */
'checkbootblock\drive

select
when result = 'Okay' then
  say 'The disk is virus free!!!'

when result = 'ERROR reading BOOTBLOCK' then
  say 'Unable to read bootblock!!!'

when result = 'NON-STANDARD BOOT CODE' then
  say 'The boot block is rather suspect!!!'

otherwise
  say 'Your disk is infected with the "result" virus!!!'
  end
/* And now let's check for file viruses */

'checkdrive\drive

/* And finally, let's check for any Saddam virus damage */

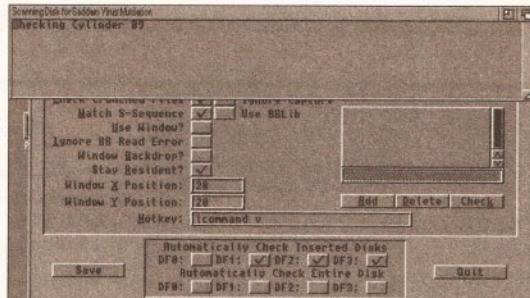
'scanforsaddam\drive
```

drive number greater than 3 (don't forget that AmigaOS only supports a total of four disk drives numbered from 0 to 3!), then the string "Okay" will be placed into the **'Result'** variable. If, on the other hand, *Virus Checker* had trouble reading the disk's boot block, then the string "ERROR reading BOOTBLOCK" will be returned. If a virus was found on the disk or the bootblock was non-standard (that is, a *CrossDOS*-compatible MS-DOS disk), the string "NON-STANDARD BOOT CODE" is returned. If a recognised virus is found on the disk, however, the name of the virus will be returned.

Unfortunately, although *Virus Checker* will let you search for boot block viruses under AREXX control, the current release doesn't allow you to actually remove them automatically, so don't assume that *Virus Checker* will have fixed everything for you. Instead, you'll have to use the standard technique of clicking on *Virus Checker*'s requesters when they appear on the screen. Try the demonstration listing in Listing 1 for size.

The name of the drive to be checked is fed to the script in exactly the same way as the listing that we covered earlier. Using the **'Parse'** command, the name of the drive is extracted from the command line and then placed into an AREXX variable called **'drive'**. We then turn on the **'Checkbootblock'** command's ability

to return values using the **'Options Results'** command and, after checking the disk's bootblock by calling the **'Checkbootblock'** command itself, we use the **'Select...When...Otherwise'**



You don't need the combined might of the US and British armies to kick the Saddam virus off of your disks – just a copy of *Virus Checker* and AREXX.

construct to act upon the results written into the AREXX **'Result'** variable. Simple, eh?

Let's take what we've learned one step further with a script that carries out just about every virus-checking task that *Virus Checker* has to offer. Enter the script in Listing 2 and pass it the name of the drive that you'd like *Virus Checker*'s to check out for you.

When you run this script, a message should appear on the screen informing you whether the bootblock of the disk in the selected drive is clear of any viruses. Once this is done, *Virus Checker*'s file scan requester will pop up on the screen and the entire contents of the selected disk will be checked for file/link viruses. Finally, the structure of the disk will be checked for any damage caused by the Saddam virus. All completely automated, all by a simple AREXX script! **AS**

## LISTING 1

```
/*
 Boot Block Checker
 Feed this script the name of the drive to check!
 */

address 'Virus_Checker'

parse arg drive
Options Results

'checkbootblock\drive

select
when result = 'Okay' then
  say 'The disk is virus free!!!'

when result = 'ERROR reading BOOTBLOCK' then
  say 'Unable to read bootblock!!!'

when result = 'NON-STANDARD BOOT CODE' then
  say 'The boot block is rather suspect!!!'

otherwise
  say 'Your disk is infected with the "result" virus!!!'
  end
exit
```





# SOFTWARE for free

**The end of Fred Fish's millennium may be closer than you think. Ian Wrigley sorts the wheat from the chaff in the public domain.**

## HDCLICK

### Fish disk 891

HDClick is a rather nice £10 shareware Workbench program selector. To put it simply, you configure the program with the names of the commands and programs that you often use, and set it to start up whenever you start your Amiga by putting it in the **WBStartup** drawer. When running, it displays the names of all those programs and commands as buttons; clicking the button launches the program or performs the command.

HDClick has a number of nice features which make it one of the best program selectors I've come across; the main one is the fact

that when the display is reduced to its "small" version, it acts as an AppIcon. In other words, if you drag a file to one of the buttons, the filename is passed as argument to whatever program's name is in that button. So, for example, if you have set up one of the buttons to launch the *LhA* file compressor/decompressor and extract files from an archive, then dragging an archive to the button will automatically decompress it.

#### Can I pass other people copies?

Yes – that's the way that PD reaches a wider audience. Just make sure that you have followed the author's requirements for distribution. These are normally things like not charging more than a certain amount for the disk, not altering the program, or making sure that all the original documentation is included on the disk.

You can also pass on shareware – but not any registered copies of programs. If, when you pay your shareware fee, the author sends you an improved version of the program, then be careful not to give that out. Only pass on unregistered shareware.

You should not, of course, pass on licenseware – it should be treated in the same way as registered shareware.

drive, of course, but what about the rest of us? Well, I doubt that PD houses will be keen on having the Fish moneyspinner dry up, so I'd expect most places to subscribe to the CD and then re-package the software themselves. We'll have to see, but it won't be too long now before this happens – we're on disk 910 now, so the collection will probably hit the magic thousand by around the end of the year.

Okay, eyes down for a full house!

In the past month or two, Fred Fish has announced that he will stop releasing PD on floppy disks at some time in the future – after disk 1,000, to be precise. At that point, he'll release stuff in CD-ROM format instead. Fine if you have a CD-ROM

**BEGINNERS** **BEGINNERS** **START HERE** **BEGINNERS**

#### What is PD?

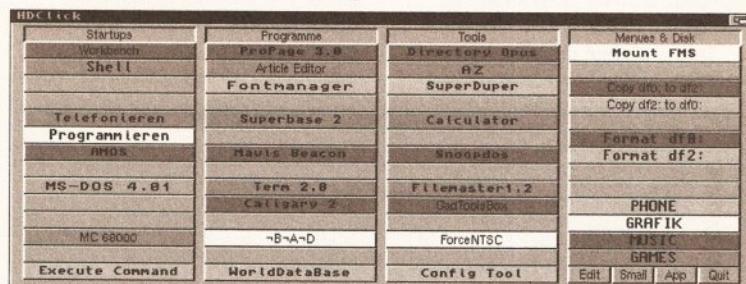
PD is a general term which many people incorrectly use to refer to all freely-distributable software. In fact, PD (which stands for Public Domain) software or "freeware" is only one branch of this area; the other main one is shareware.

Essentially, freeware may be copied and used by anyone, although some authors place restrictions such as not allowing a PD library to charge more than a certain amount for the disk.

Shareware, on the other hand, should be treated more like commercial software. Although you are allowed to copy and pass around shareware programs, if you like one then you should pay the requested fee to the author – it's normally around £15 or less, and often entitles you to an upgraded version or a printed manual.

Paying your shareware fees encourages software authors to write more programs – and if they don't, the Amiga scene will be a poorer place. Don't think that you're paying money for nothing, either – often hundreds or even thousands of hours of work have gone into creating a program, and it's only right that the programmer receives some reward for his or her hard work.

The third branch of software that we cover here is called



**HDClick: a rather super, fully-configurable program selector. As well as clicking to trigger commands, you can drag files to specify arguments.**

that when the display is reduced to its "small" version, it acts as an AppIcon. In other words, if you drag a file to one of the buttons, the filename is passed as argument to whatever program's name is in that button. So, for example, if you have set up one of the buttons to launch the *LhA* file compressor/decompressor and extract files from an archive, then dragging an archive to the button will automatically decompress it.

The author of this program, Claude Müller, has obviously spent a lot of time on this program, and it's well worth checking out if you have loads of different programs hidden away on your hard disk and you want an easy way of accessing them all. Program rating: 8/10

## AMIGAWORLD

### Fish disk 893

I looked at *AmigaWorld* some time ago, but this is a reasonably major

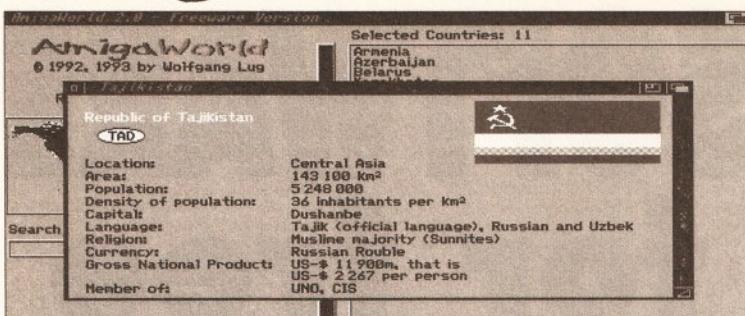
upgrade to the program, so it's worth checking out again. In essence, the program displays information about any country in the world, including its size, population, languages used and currencies. The new version, 2.0, also includes information on the predominant religions of the country, and displays of the flags. The slightly limited version distributed on the Fish disk only has the flags for the Commonwealth of Independent States (the former Soviet Union), but your \$20 shareware fee will get you a new data file with the representative pennants of all countries. It also allows you to save configurations, and has one or two other minor tweaks to encourage registration.

Another feature of the new version is that various international organisations are listed, and countries belonging to those organisations can be viewed – along with a short description of exactly what the organisation is, when it was

## RATING THE PROGRAMS

Just to be awkward, I rate the software that I review in two different ways, depending on what it is. Disk magazines, collections of clip art and the like are given a "value for money" rating, since you're essentially paying for one thing, or group of things, on the disk.

Single programs which appear in a collection of others, or programs which I've downloaded from bulletin boards, are given a "program rating", which reflects how good I think they are, taking into account usability, bug-proofness, my own particular (or should that be peculiar?) tastes and so on. Both ratings are out of a maximum possible 10.



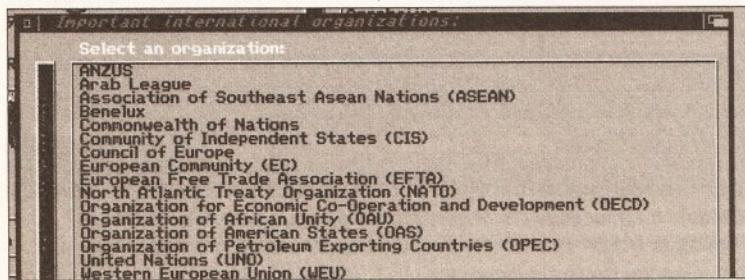
### Put away that dog-eared old geopolitical Atlas – AmigaWorld has everything you might conceivably want to know about every country under the sun.

founded and so on. As well as the Commonwealth of Independent States mentioned above, these organisations include NATO, OPEC, the United Nations, and countries which are members of the World Economic Summit (also known as the "G7 countries").

This is a great program for students, and is interesting in its

to the correct place in the document.

Until *BadLinks* came along, the only way to check that everything was okay was to click on every single button to make sure that you were magically transported to the right place. The problem is that if the Guide document is at all large, then it's easy to miss a button or two – and the law of Sod states that those



### AmigaWorld enables you to view the members of various international organisations. Strangely, the AA and RAC don't appear to be listed.

own right – although the data will, of course, soon be out of date, considering how the situation in places like Bosnia-Herzegovina changes almost daily. Still, the fact that the author, Wolfgang Lug, has produced this updated version suggests that registered users will get new data files when they become available. All in all, this is certainly worth checking out.

**Program rating: 8/10**

### BADLINKS

#### Fish disk 893

If you use *AmigaGuide* to produce any kind of documentation, then you'll welcome *BadLinks*.

*AmigaGuide* files contain buttons which move the reader to other areas of the guide – or, indeed, other guide files on a disk. This is great, but when you're creating the file you have to include information for the Guide program to make those links – and it's easy to mis-type something, which means that if the button is clicked on, the program won't jump

will be exactly the buttons whose data has been mis-typed. *BadLinks* does away with this problem by checking that every link has a matching "node" – that is, a place to jump to. It creates two files on the RAM disk: one lists all the nodes in your document, the other lists any "bad" links there may be.

That's it, really: short and sweet, but it could save you hours of testing. Of course, it doesn't check that your buttons go to the correct part of the document – only that they go somewhere. But even so, if you write *AmigaGuide* documents then you should certainly have a copy of *BadLinks* available.

**Program rating: 8/10**

### MUCHMORE 3.3

#### Fish disk 895

Just a quickie, this: the latest version of *MuchMore*, which includes things like the ability to use any (non-proportional) font to display text, allows text encrypted with the XPK utility to be displayed, gives the user

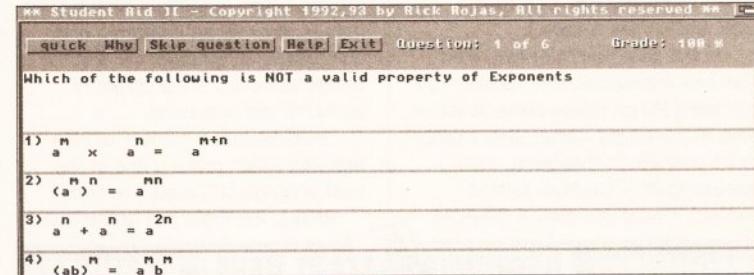
the choice of the colours that text is displayed in, and so on. *MuchMore* is the text viewer of choice for many people (it's so superior to *More*, the utility supplied on the Workbench disks that come with your Amiga, that the two don't bear comparison) and it's probably worth getting hold of version 3.3 just to make sure that you're not using an old version with any bugs in it.

**Program rating: 10/10**

### STUDENT AID II

#### Fish disk 895

This is a "revision aid" program, which enables you to create and take a range of different tests: multiple choice, true/false and "fill in the blank". The freely-distributable version on this disk works totally except that you can't save a new test that you create; to do that, you need to send off your \$34.95 registration



**It's time to go back to school with Student Aid II, the shareware package that enables you to create and take all kinds of tests on your Amiga.**

fee, in return for which you'll receive the full program.

There are a few programs of this type around, but *Student Aid II* is probably the best that I've seen. The display is clear and tidy, the test creation is easy to use, and all in all it's been written very much with the end-user in mind – which is not always the case... It comes with a range of sample tests – useful since you can't make your own until you've registered – and creates graphs of your performance, since it saves the results to disk each time you take a test. The author suggests that the best thing to do is create quizzes (or type in ones handed out by teachers or lecturers) during the course, and then use the program when you come to revise. When creating tests, you can put in an explanation of the

correct answer, and while taking the test you choose whether to have this (hopefully lucid) account displayed until you click to move on to the next question, just briefly, or not at all.

If you're at school or college and find that taking such tests is helpful to your revision,

*Student Aid II* is an

excellent way to computerise them. Whether you want to pay \$35, though, when you could just use good old paper and pen for nothing, is another matter...

**Program rating: 8/10**

### SCRIPTTOOL

#### Fish disk 896

This is a neat little utility to enable you to add commands and programs to your **Tools** menu (in Workbench 2.0 or above). All you do is create a text file which gives the menu entries and actual commands that you want, then install this file and *ScriptTool* itself into the correct directories. The documentation is clear about the format of the text file, which means that you should have no trouble creating your own scripts.

There are a number of programs that do this sort of thing for you; some do everything automatically by

having you simply drag icons on to the program, others require complex configuration files to be created by the user. *ScriptTool* is very small, very easy to use and doesn't seem to have any compatibility problems with anything else (at least, not that I've found so far). And you'll soon find that having applications and common commands (launching a new Shell, changing screen mode and so on) in the **Tools** menu makes using the Amiga far easier. Well worth getting hold of.

**Program rating: 9/10**

### SCI-FI TYPE DEMO

#### Fish disk 898

If you use *Imagine* to create 3D images (or, indeed, any other 3D editing program that can read 3D

continued on page 117



**The final typographic frontier? Here are several of the fonts in the Sci-Fi Type package, available for \$40.**

## GET IN CONTACT!

If you've written – or discovered – any PD, shareware or licenseware that you think should be reviewed in these pages, or if you've got any other comments or suggestions, write to Ian Wrigley c/o Amiga Shopper, 30 Monmouth Street, Bath BA1 2BW. Alternatively, you can contact Ian on cix as 'iwigley', or on the internet as 'ian@vampire.demon.co.uk'.

Alternative Book  
Alternative Demi  
Dot Matrix  
Martian  
Mild Palms  
Mild Series  
Monitor  
Phantastic  
Sci-Fi Bold  
Sci-Fi Heavy  
Series  
Sulu  
Sun Rise  
Ultra

# SEASOFT

The Logical Choice

## OctaMED Pro V5 - £30.00

Brilliant new version of this famous 8 channel music editor with a totally new look - PULL DOWN MENUS, ON-LINE HELP, FULL MIDI SUPPORT WITH UP TO 64 TRACKS, SAMPLER EDITOR, DISPLAYS STANDARD TRACKER OR TRADITIONAL STAVE NOTATION etc., etc. (Requires Kickstart 2.04 or later)

**AM/FM**  
disk based  
magazine for  
Amiga Musicians  
Issue 15 now out  
**£2.50**  
(1-14 also available)

### CATALOGUE DISK £1.00

#### SUPERSONG 4 - £4.99

(comprehensive manual - £10.99)  
feature packed sample editor with many effects

**ACC**  
HARDWARE PROGRAMMING MANUAL  
Easy to follow tutorial with loads of examples

Disk 1 (PD) - £1.50

Disk 2, 3 & 4 £5.00 each (£12.50 for all 3)

#### OVER 3000 DISKS OF QUALITY P.D./SHAREWARE INCLUDING -

V-MORPH (1) - create smooth morphs and warps  
KICKSTART 2 (1) - run Dos 2 progs on your 1.3 Amiga  
NUMPAD (1) - adds numeric keypad to an A600  
KICK 1.3 (1) - run old A500 progs on A600 and A1200  
HOG AGA DEMO (1) - brilliant A1200 only demo  
PC TASK V2 (1) - latest PC emulator  
AGA TETRIS (1) - classic game & AGA utilities  
UCHESS (1) - ultimate AGA chess prog. (needs 4 Meg)  
A-BASE (1) - best shareware database around  
SID 2 (1) - latest version of this classic directory utility  
AMIGA FOX (1) - desk top publishing on a budget  
D-COPY 3 (1) - disk copying prog with many features  
TEXT ENGINE V4.1 (1) latest & best word processor  
M-CAD (1) - simple CAD package  
OctaMED V5 (1) - non save demo (not V1.3 machines)  
NORTH C V2 (2) - Classic C compiler  
C MANUAL (12) - essential reading for C programmers  
ACC 1-4 (1) - issues 1-4 of Amiga Coders Club  
NCOMM V3 (1) - powerful comms package  
AGA Klondike (3) excellent graphics (AGA only)  
X-Beat PRO (1) - drum sample sequencer  
NIGHTBREED (2) - brilliant AGA slideshow for your A1200  
ANDYS UTILITES (1) - collection of A1200 utilities  
P.D. PRICES (per disk) 1-4 £1.50, 5-9 £1.25, 10-24 £1.00  
(No. of disks shown in brackets)  
Unless otherwise stated all titles work on  
A500, A500+, A600 & A1200  
Please add 50p to all orders for P&P

**SEASOFT COMPUTING**  
(Dept AS), The Business Centre  
First Floor, 80 Woodlands Avenue  
Rustington, West Sussex BN16 3EY  
**Tel - (0903) 850378**

**AM/FM**  
high quality samples  
ideal for OctaMED etc.  
disk 15 now out  
**£2.50**  
(1-14 also available)

**AMFC PRO**  
Converts many standard  
music files to OctaMED  
& Music-X format  
**£10.00**

**ACC**  
AMIGA CODERS CLUB  
hints, tips & tutorials for all  
assembly language  
programmers  
**£3.50 per issue**  
(issues 5 - 31 available)

**CD ROMS**  
(£1.00 p&p)  
CDPD 1 - £19.95  
CDPD 2 - £19.95  
CDPD 3 - £19.95  
FF71-890, AGA PICS,  
classic books, clip art etc  
**17BIT - £39.95**  
an instant P.D. library on  
this brilliant 2 disk  
collection

**T-BAG**  
**1 TO 77**



# KT'S P.D. (SOFTWARE)

THE FAST AND FRIENDLY LIBRARY

FOR THE AMIGA USER

500 • 500+ • 600 • 1200

GAMES	DEMOS	MUSIC	UTILITIES	UTILITIES
18 HOLE GOLF [2] +	TROJAN TECKNO +	OCETAMED 2 +	D-COPY 3.1 +	TEXT ENGINE 4 +
FRUIT SALAD +Y	I 200 INTROS AGA	MED V3.2 +Y	LOCK PICK 2 +	V-MORPH 2 +Y
NEIGHBOURS [2] +Y	S.O.T.A. SPACEBALLS +Y	MED MODS 1+Y	ENGINEERS KIT +Y	PC TASK 2 +Y
AMOS FRUIT II +Y	PHOENIX DEMO +Y	MED MODS 2+Y	FREECOPY 1.8 +Y	LITTLE OFFICE +Y
TETRIS AGA 1.200	HOY DEMO AGA 1.200	DRUMLOOP SAMPLES +	AMIGA BEGINNER +Y	24 BIT UTILITIES +Y
ROAD TO HELL +Y	HOY MIND WARP 1.200	PRO SAMPLES 1+Y	KICK 1.3 +Y	PRINT STUDIO +Y
DELLUX PACMAN +Y	DEMON D LOAD [2] +	MEGA SAMPLES [5] +Y	500+ EMULATOR	SID 2 +Y
BOMMACKY +Y	KEFRENS D.A.N.E. +Y	MEGA MODULES [4] +Y	MAVRICK COPY +Y	BUSINESS LETTERS +Y
POPEYE (Needs F/RAM)	3D DEMO 2 [2] +	OCETAMED 4 DEMO +Y	VIRUS ALERT +Y	EASY CALC +Y
EXIT +Y	MAYDAY RES +Y	PROTRACKER 3.18+Y	SKICK WB3 +Y	INCOMM 3 +Y
DIZZY DIAMONDS +Y	ODYSSEY [5] +	CHIP MAN SAMPLES +Y	MEMUMASTER 3 +Y	POLYED +Y
PACMAN RETURNS +Y	JESUS ON E's [2] +	MUSIK MADNESS +Y	ANDY'S WBS UTILS Y	VIEW TEK v.1.5 +Y
G.PRIX MANAGER +Y	ALCHEMY [2] +	CYBERNEK MCD +Y	TETRA COPY +Y	HIGH FLYING +Y
INTENSE +Y	WICKED SENS [2] +Y	BEAT BOX [2] +Y	CRACK & COPY UTIL +Y	DAMBBLERS (2MEG) +Y
STARBASE 1.3 [2] +Y	BRAINSNAZZER +Y	RHYTHMIC ORGY +Y	FAKEMEM +Y	ROAD-LOG (2) (2MEG) +Y
TEXAS CHAINSAW +Y	THE WALL [6] +Y	GHOSTBUSTERS +Y	PRINTER DRIVERS +Y	SNOKEZ (2) (2MEG) +Y
EGG BLASTERS +Y	RETINA EURO +Y	SHAMEN MIX +Y	EMULATORS IBM ETC +Y	DOLPHIN DREAMS +Y
VEKTOR +Y	OH NO MORE VECTS +Y	CHURCH MUSIC +Y	HARD DRIVE UTILS +Y	WEATHERMAN +Y
STAR TREK [2] +Y	PIGMY EXTEM +Y	TKS LITTLE MODS +Y	WB3 BACKDROPS Y	JUGGLER +Y
21 GAMES +Y	ANOTHER BOR YEAR +Y	XMAS SONGS +Y	NUMPAD (600 ONLY)	REVELATIONS S/S +Y
MR & MRS +Y	MADE IN CROATIA +	DISK DRIVE SOUND +Y	SPECTRUM 1.7 +Y	
MEGABALL +Y	KEFRENS D/DRMS [2] +Y	HIRE RES ICONS [3] +Y		

All Disks Postage  
80p UK orders 60p  
Europe +20p per disk  
World +40p per disk

HOW TO ORDER: Please make cheques payable  
with bankers card no., or postal orders to KT'S P.D.  
80p (Software). All orders sent First class the same day.  
+ = Plus compatible Y = 1200 compatible  
(\*) = No. of Disks

We stock Fred Fish 1-910  
CLR Licenseware all titles  
Assassins Collection up to 130.  
Also Scope Disks

Catalogue disk at 50p, or FREE with your first order  
DEPT AS, 75 THE DRIVE, ROCHFORD, ESSEX SS4 1QQ  
Telephone: 0702 542536 anytime

100 TOP PD GAMES  
£10

**A-GENE**  
The latest version (V4.38)  
of this excellent  
genealogical database  
**£15.00**

**CLR  
LICENCEWARE**  
Latest titles always  
in stock send s.a.e.  
for complete list.

**TOTAL  
IRRELEVANCE**  
MED User Group (MUG)  
disk magazine issue 4  
(2 DISKS)  
**£3.00**  
(ISS 1-3 £1.50 each)

**FRED FISH**  
**1 TO 910**

EST 1990

P S

D  
MEMBER OF THE PROFESSIONAL  
STANDARDS OF DISTRIBUTION

U0131 Engineers Toolbox (P)  
U0140 Harddrive util (2) (P)  
U0126 Opticom V2.2 (P)  
U0755 How to code in C (2) (P)  
U1029 Ram Rod (P)  
U1028 First Alert (P)  
U1030 A1200 Program Selector  
U1027 Canon Disk (P)  
U1026 Music Engine V1.34 (P)  
U1024 A1200 WB Hacks  
U1011 Abnormal Mcdg (P)  
U1006 A1200 Agu Software 1  
U1000 Supervisor V2.4 (P)  
U1001 Grapevine Issue 16 (3) (P)  
U0177 A64 V2 Emulator (2) (P)  
U0333 A64 Games Disk (2)  
U0989 Assassin A1200 Fix Disk  
U0990 A1200 HD Prep Program  
U0984 Pool Wizard Junior (P)  
U0982 HD Click v2.53 (wb2+)  
U0979 Action Replay Mk4 A1200 Only  
U0311 PC Task V2.03 (P)  
U0974 The Design Factory (3) (P)  
U0681 Spectrum Emulator V1.7 (P)  
U0696 Spectrum Data Disk (6)  
U1032 NFA Snes Cheat Disk (P)  
U1033 Smilers Jokebook (P)  
U1034 Inventory 2.2 (P)  
U1035 Starview (P)  
U1036 Forecaster V2 0ib (P)  
U0703 Virus Checker V6.30 (P)  
U0076 Messys v2 (P)  
U0097 Sid V2 (P)  
U0166 C Manuals V3 (12) (P)  
U0094 North C V1.2 (P)  
U0143 The Science Collection (4) (P)  
U0147 Astronomy Pack (4) (P)  
U0405 Space Invasions (P)  
U0403 Desert Defender (P)  
U0402 Super Tron (P)  
U0400 Fruit Salad (P)  
U0399 Premier Picks (P)  
U0397 Tallyman (2) 2meg  
U0395 Hotseat Football Management (P)  
U0390 Relayer (P)  
U0414 Klondike Deluxe A1200 only (3)  
U0415 A1200 Motorola Invaders 2 (2)  
U0416 Major League (P)  
U0417 Pacman Returns (P)  
U0418 Top 100 PD Games (7)  
U0419 Strikeball (P)  
U0033 Battle Cars 2 (P)  
U0045 Kids Education (3) (P)  
U0049 Learn & Play (2) (P)  
U0000 Asi games 1-99 in stock

U0220 Neighbours Game (2) (P)  
U0224 A1200 Tetris Game (P)  
U0225 Bomb Jacky (P)  
U0209 Classic Games Pack (5) (P)  
U0130 Delux Pacman v1.1a (P)  
U0010 Super Skoda Challenge (P)  
U0057 Tennis Game 1 meg (P)  
U0007 A500 + 21 Games  
U0420 18th Hole Golf (2)  
U0361 Scopplex Plays 2 Unlimited (2) (P)  
U0040 Lsd Total Kicks (2) (P)  
U0042 Lsd Jesus on E's (2) (P) #2  
U0346 A-Z of 64 tunes (4) (P)  
U0083 Gastric Ulcer Rape (2) (P)  
U0134 Kefrens Megamix 3  
U0147 Episole 2 (P)  
U0379 Dirty Dancing Sample (P)  
U0545 Fairlight 242 (P)  
U0548 Trojan Demo A1200 only  
U0505 Alchemy Rage (2) (P)  
U0504 Sanity World of Commodore (P)  
U0503 Kefrens Dame (P)  
U0501 Wicked Sensation (2) (P)  
U0500 Mindwarp A1200 only  
U0495 How to skin a cat (P)  
U0481 Team Hoy A1200 only  
U0276 Kefrens Desert Dream (2) (P)  
U0154 Spaceballs S.O.A. (P)  
U0525 Spaceballs Unknown Destination (P)  
U0549 James Bond 30th Anniversary (3)  
U0136 TV Picys (2) A1200 only  
U0121 Agu Landscapes A1200 only  
U0115 W/S AGA Slides (6) A1200 only  
U0143 Nightbreed slides (2) A1200 only  
U0142 Revelation Slideshow (P)  
U0144 Jurassic Park Slideshow A1200 only  
U0145 Nihondreamer Manga Slides  
U0146 Giger Alien Art Slideshow  
U0147 Ghost Slideshow (2)  
U0148 Ham8 Pics 1 A1200 only  
U0149 Ham8 Pics 2 A1200 only  
U0106 Jungle City 1  
U0101 Font City (P)  
U0088 Agu Software Vol.3 A1200 only  
U0998 Tiny Tiger Hard Drive Utila (P)  
U0991 Amos Pro Updater v1.12 (P)  
U0992 Zuma Fonds (3) (P)  
U0988 Icon Magic (P)  
U0980 Heavy Metal Modules  
U0978 Watchman Utils (P)  
U0976 Hackers Ethic Util (P)  
U0971 Digital Iusu 1 (P)  
U0970 Agu wb screens A1200 only  
U0966 NFA A1200 util  
U0258 The Simpsons Game (P)

## Express Pd

**EXPRESS P.D., Dept AS7,  
47 ABERDALE ROAD,  
WEST KNIGHTON,  
LEICESTER LE2 6GD.**  
**Tel: (0533) 887061**

All P.D. is £1.05p per disk.  
Buy 12+ get 2 disks free and  
receive free Catalogue Disk  
(2). Includes 3 Games, 3 Virus  
Killers, Charly Music Demo and  
complete listing of Graphics, Music,  
Demo, Business, Utilities, DIY,  
T-Bag (1-63), Fred-Fish (1-890),  
Amos (1-22), Scope (1-  
220).  
Please add 60p to order from U.K.,  
rest of Europe £2.50, rest of the  
world £3.00 for P&P.

**ALL OUR DISKS:**  
 Guaranteed  
error free!  
 Complete with own  
labels!  
 Virus free!  
 24 hours despatch!!

**CDTV/A570**  
NEW AMINEX  
CD software, over 4000  
files, contains database  
programs, BBS and  
applications, GNV  
Compiler, Prolog,  
Debugger, language  
monitors, source code,  
sampled sound,  
educational, action,  
puzzle, adventure  
games, demos,  
magazines, AB20, and  
much much more!  
**Only £14.99**  
+ 75p P&P

**Serious Solitaire**  
1&2 £10 each  
**Serious**  
**Backgammon**  
£19.99

## Access

## PUBLIC DOMAIN LIBRARY TELEPHONE (0602) 444501

All Public Domain is copied onto Branded Disks which are certified 100% error free. For a free disk catalogue, please send an SAE plus 2 1st Class stamps. Telephone orders: Mon-Sat 9am-5.30pm. Key: ( )=No. of Disks.

This is only a small selection from our library, we currently have over 2,500 disks in stock.

### UTILITIES

Protracker V3  
Virus Checker V6.3  
Winblender (KS3)  
Diskswal V11.27 (KS2)  
Supertracker V3.0+ (KS2)  
Toggleglick (KS2)  
Biorhythm V2.2  
Resource Demo V5.12  
Pools Predictor V1.1  
C Manual (12)  
Tsmorph (KS2)  
Lyapunova V1.5  
BBase III V1.3  
ABackup V4.01  
Genealogist V3.04  
Directory Works V1.62  
Octamed V2.0  
Fractality Demo  
Agenie V4.0  
Spectrum Emulator V1.7  
Rom Monitor V2.7  
Sys Info V3.22

### UTILITIES

North C (2)  
AmiBase V3.76  
ReloKick 1.3  
Golf Recorder  
PC Task V2.03  
Text Engine  
R.S.I. Demo Creator V2  
DCOPY 3.1  
600 Business Letters  
Alcatraz Legal Tools  
Spectraption V3.0  
F.R.A.C. Adventure Creator  
Magnum V1.4 (Disk Mag Creator)  
Messysid V2.0  
Video Utilities (3)  
Kickstart V2 Emulator  
Fake Fast Memory  
Vmorph V2 Beta

### PLEASE NOTE:

WE ALSO HAVE ALL THE

LATEST DEMOS.

### HOW TO ORDER

By Credit Card or By Post  
Please make cheques, with  
bankers card number or  
postal orders payable to:

### 'VISAGE COMPUTERS'

Clipart Pack 1 (3)  
Clipart Pack 2 (3)  
Bodyshop 2 AGA (2)  
Beyond Force Slide Show (2)  
Cryptoburners "Revelations"  
3 Ways to Stop Smoking 1.5Mb  
Compugraphic Fonts (3)  
AGA Slideshow

### LSD

LSD Legal Tools. The best  
utility packs on the Amiga, we  
have 1-150.  
LSD - Simply the best demo  
packs. As the name suggests,  
these contain all the best intros  
from all the top groups.  
We have 1-65.

### GRAPEVINE

Disk Magazine by LSD  
Out now Issue #17 (3 Disks)

### FRED FISH

We currently have in stock Fish  
numbers 1 - 910

**VISAGE COMPUTERS (DEPT AS)**  
18 STATION ROAD, ILKESTON, DERBYSHIRE DE7 5LD  
TELEPHONE (0602) 444501

From the makers of

**AMIGA  
SHOPPER**

come...

...two top titles to help you get the most out of your machine

## GET THE MOST OUT OF YOUR AMIGA 1993

We got 10 independent Amiga experts to write today's guide to the Amiga. 'Get the Most... 1993' covers every Amiga application, from desktop video to programming, from games to music, explaining the jargon, the techniques and the best software and hardware to buy.

There are chapters too on the Amiga's history, setting up your new Amiga and getting to grips with Workbench.

Thinking of getting a printer? A hard disk? More RAM, an extra floppy disk drive or an accelerator? We give you tips on what to look for and what to buy.

Add a complete AmigaDOS 2 & 3 command reference plus two disks (included in the price) of top Amiga utilities, and we think you'll agree that this is one book that no serious Amiga user should be without!

**DIMENSIONS:** 185mm (W) x 223mm (H)

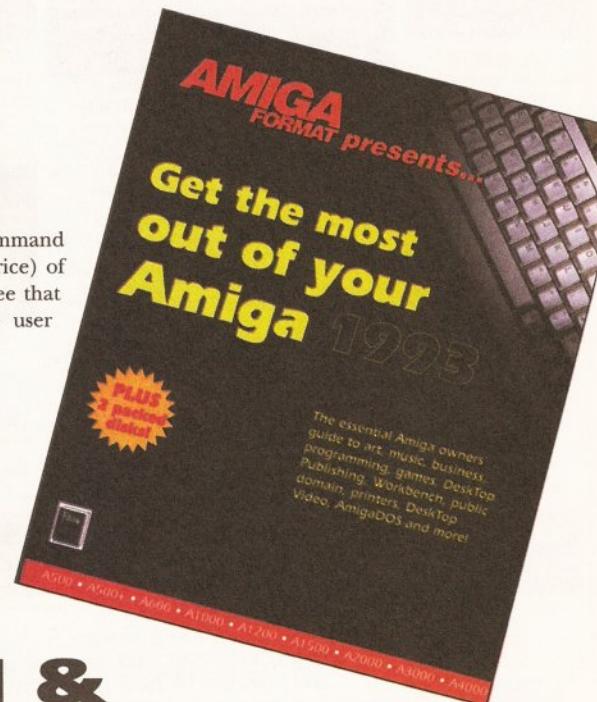
**PAGES:** 336

**DISKS:** 2

**PRICE:** £19.95

**ISBN:** 1 898275 00 9

**ORDER CODE:** FLB009A



## POCKET WORKBENCH & AMIGADOS REFERENCE

How do you use Workbench to copy files? How do you format floppy disks? How do you move things from one folder to another? If you've just got your Amiga, Workbench can be confusing – unless you've got expert help on hand.

This reference book has been made small enough to slip into a pocket, yet big enough to incorporate everything you need to know about Workbench and AmigaDOS. It's also been wire-bound so that you don't have to hold it open while you work – not everyone wants to type one-handed.

As well as help for beginners, there are sections on Workbench menus, preferences and the supplied Tools and Utilities.

While for advanced users, there's a full AmigaDOS 2 & 3 command references, listing all

commands in alphabetical order and quoting their function, syntax and some example uses.

We wanted to design the single most useful reference guide possible for serious Amiga owners. We think we've done it.

\* Contains some material also published in 'Get the Most out of your Amiga 1993.'

**DIMENSIONS:** 100mm (W) x 190mm (H)

**PAGES:** 168

**DISKS:** None

**PRICE:** £9.95

**ISBN:** 1 898275 01 7

**ORDER CODE:** FLB017A



### FUTURE LEISURE BOOKS

These books are available in all good bookshops right now, but you can also order them direct from Future Publishing – and sending this order form off won't even cost you a stamp!

Please send me: (tick as appropriate)

.....copy/copies of *Get the Most out of your Amiga 1993* at £19.95 each  
[ORDER CODE: FLB009A]

.....copy/copies of *Pocket Workbench & AmigaDOS Reference* at £9.95 each  
[ORDER CODE: FLB017A]

### PRIORITY ORDER FORM

Amount enclosed £ .....

Your name .....

Method of payment (please tick one):

Your address .....

Visa  Access  Cheque  P/O

.....

CARD NUMBER

.....

Expiry date:

Your signature .....

Please tick here if you do not wish to receive direct mail from other companies:

Now send this form and your payment to:

Future Leisure Books Offer, Future Publishing Ltd, Freepost, Somerton, Somerset TA11 7BR

For office use only:

SCRATCH CODE: AS32



CUT, TICK &amp; POST

TELEPHONE 0702 466933 FAX 0702 617123  
PD Soft 1 BRYANT Ave, SOUTHEND-ON-SEA, ESSEX, SS1 2YD

## □ PD-Soft Font Disk 01

**AachenBold** **AchenLight** **AARCOVER**  
Adjutant Agate Albatross Alexandria  
Alison americancancial *Alison* *Alison*  
Andromeda *Andromeda* *Andromeda* Architect  
andesiteplain AlexAntiqua

## □ PD-Soft Font Disk 04

Caligula Comberic Corinth CascadeLight  
CarawayBold *Caraway* ChilliPepper  
CarawayBold *Caraway* CaslonLight  
CaslonOpenface ChitTown *ChitTown* *ChitTown*  
Cartoon CAVEMAN Chancery *Chancery* *Chancery*  
Chicago

## □ PD-Soft Font Disk 07

Delegate DIGITALROMAN *Dubiel* *Ratice*  
DNERFAT DNEROBEEZ *Dubiel* *DUBEX*  
Dover DoverScript DoverScript  
Dragonwick *Dragonwick* DoverScript DoverScript  
DUPUYHEAVY DUPUYLIGHT DUPUYREGULAR  
\*\*\*\*\* *Vincent*

## □ PD-Soft Font Disk 10

Finnmark FinnmarkLight FusionBold  
Fusion *Futura* *Futura* *Futura* *Futura*  
FutureThe *Futura* *Futura* *Futura* *Futura*  
Garton *Garton* *Garton* *Garton* *Garton*  
GOTHICBOLD *GOTHICBOLD* *GOTHICBOLD* *GOTHICBOLD*  
GothicShadow

## □ PD-Soft Font Disk 13

IRONWOOD ISADORN *CAPS* Jacksonville  
JADEJADE *JADEJADE* *JADEJADE* *JADEJADE*  
JUNIPERTHIN *JUNIPERTHIN* *Kaufmann* *Thin*  
KASTELLAROPENFACE Kathlita

## □ PD-Soft Font Disk 16

MacHumaine *MacHumaine* *MacHumaine* *MacHumaine*  
MarkerFeltThin *MarkerFeltThin* *MarkerFeltThin*  
MathMajor *MathMajor* McGarey MEDIC  
Medusa *MESOZOICGOTHIC* *MESOZOICGOTHIC*  
MicroTiempo *MicroTiempo* *MicroTiempo* *MicroTiempo*  
MiamiNights *MiamiNights* *MiamiNights*

## □ PD-Soft Font Disk 19

OswaldBlack *Oswald* *Grey* PalatinoBold  
Palitno *Palitno* *Light* *Parison* *PARISMETRO*  
ParisHaven PeignotLight Phoenix *Prinose*  
PixelScreen *Pixie* *Polo* *SemiScript*

## □ PD-Soft Font Disk 22

SHOWBOAT *SHOWBOAT* *SHOWBOAT* *SHOWBOAT*  
SHREBTEL *SILICON* *SILICON* *SILICON* *SILICON*  
Surface *Surfis* *Slogans* *Slogans* *Slogans*  
SHOKNEITALIC *SHOKNEITALIC* *SHOKNEITALIC* *SHOKNEITALIC*  
SNYDERSPEED *SNYDERSPEED* *SNYDERSPEED* *SNYDERSPEED*

## □ PD-Soft Font Disk 25

UNICOS *University* *Queen* *UtopiaBold* *Utopia*  
UtopiaBold *Utopia* *Utopia* *Utopia* *Utopia*  
Upsilon *Upsilon* *Upsilon* *Upsilon* *Upsilon*  
Victorians *Victorians* *Victorians* *Victorians*  
WEEDWE *Weiss* *Weiss* *Weiss*

## □ PD-Soft Font Disk 26

Western *WHATAREWE* *WHARMBY*  
WILLHARRIS *Windsor* *Demi* *Yamato*  
WOODCUT *ZALESKI* *ZALESKI*  
ZephyrScript *ZephyrScript* *ZephyrScript* *ZephyrScript*

## □ PD-Soft Font Disk 02

Arctic2 *christian* *Ashley* *Author* Avlon  
AvantGarde *Baskerville* *BauhausBold*  
BauhausLight *BauhausThin* *Becker* *Medium*  
BEDROCKLIGHT *SEEWAX* *BEFFLE*  
BenguiatBold *BenguiatLight* *Bellbottom*  
Benjamin *JENAMINCAPS*

## □ PD-Soft Font Disk 05

Cloister *Cloister* *Cochi* *Columbus* *Crillee*  
COMATO CRACKLINGFIRE *CSJERSEY*  
CooperHighLight *COTTONWOOD*  
DaysScrappity *CSBlock* *CuneiForm* *CSGChalk*  
Dawn

## □ PD-Soft Font Disk 08

EDACAPS *EDACAPS* *EDITION* *EIRE*  
ElsjorgScript *Elsjorg* *ELIZABETHANN*  
ENGRAVERLIGHT *ENGRAVERLIGHT*  
ErasBlack *EstroFont* *Eurostile* *Faktos*  
PARQUETSONFREE

## □ PD-Soft Font Disk 11

Goudy *Goudy* *Hundred* *Goudy* *Medieval*  
GOUDYTWENTY *Graphi* *Light* *GREENHAT*  
GREGORIAN *GROENING* *Handwriting* *Harlowe*  
Marqul *Harrington*

## □ PD-Soft Font Disk 14

Arctic2 *christian* *Ashley* *Author* Avlon  
AvantGarde *Baskerville* *BauhausBold*  
BauhausLight *BauhausThin* *Becker* *Medium*  
BEDROCKLIGHT *SEEWAX* *BEFFLE*  
BenguiatBold *BenguiatLight* *Bellbottom*  
Benjamin *JENAMINCAPS*

## □ PD-Soft Font Disk 17

Middleton *Mira* *Misral* *Monotony* *Book*  
Nordic *Nordic* *Nordic* *Nordic* *Nordic*  
NovareseBK *Novarese* *BK* *Olympia*  
NovareseBKItalic *Nuptial* *Script* *OldEnglish*  
OldBawlfab *Orbit* *Orbit* *Orbit* *Orbit*  
NewBaskerville *NewBold* *NewGarrett*

## □ PD-Soft Font Disk 20

PlayBill *PostAntigal* *PostAntiqua* *Roman*  
POSTCRYPT *PresentScript* *PresentScript* *PresentScript*  
Postscript *Postscript* *Postscript* *Postscript*  
Rens1 *Note* *Rockaway* *Script* *Rockaway*  
RELIEFED *RELIEFED* *RELIEFED* *RELIEFED*  
Revive *Revive* *Revive* *Revive*

## □ PD-Soft Font Disk 23

Souvenir Squire *STARBURST* *Style*  
STEELPLATE *STENCIL* *Styptic* *Tooths*  
STRONGMAN *Strongman* *Sydney* *Sydney*  
STRONGMAN *BOLD* *Tooths* *Tempus*  
TEJARATCH *Tekton* *Tempo* *Tempo*  
UMBRATHIN *ULTRALINE* *UltraBlack*

## □ PD-Soft Font Disk 25

The NEW Font collection. There are 26 disks within this set in two formats Adobe Type 1 or Scalable. Adobe Fonts have been tested on Final Copy IIb, Page Stream V2.1+ and the Scalable Fonts have been tested on Pro Page v3.0, Scala, Page Setter v3.0, Workbench v2.0 and Workbench v3.0. Both types will work with loads of other Amiga packages that can take the font formats. Please State AD<sup>1</sup> for Adobe Type 1 and SC<sup>1</sup> for Scalable Fonts. Prices are £3.00 Per Disk or £49.99 for a complete 26 disk set (ie 26 Adobe Type 1 font or all 26 Scalable fonts. Ring, Fax or SAE for a Full sized Font Update.

## □ Adobe Type 1 Fonts

## ORDERING BY POST

Please tick the boxes to the left of the disk numbers with a pen or just outline/ highlight the address above. Hand written orders are accepted. Cheques & Postal orders make payable to: PD-SOFT. If you have ordered before please tick the Account box or fill in your number from the delivery notes!

CUT OUT this advert and post to the address above. Hand written orders are accepted. Cheques & Postal orders make payable to: PD-SOFT. If you have ordered before please tick the Account box or fill in your number from the delivery notes!

When ordering there is a min order of 5 disks please add £2.00 for Airmail postage. Eurocheques are accepted. Cheques must be drawn on U.K. Banks. No postal orders. UPS Service for 2 day delivery please fax or ring for details.

Just Released! CD4: Aminet CDROM (£24.99 + £1.00 P&P)

The Aminet CDROM contains thousands of Amiga programs from the Aminet Internet Archive. This disc contains nearly 600 megalbytes of software. The thousands of applications include GNU programs such as the GNU ANSI C/C++ compiler, the GDB symbolic debugger, GNU Emacs, the Ghostscript previewer, and GNU Chess. There is a huge selection of sound files, and utilities to play them, including NoiseTracker and MED modules. This disc contains hundreds of games, including educational games, video and arcade games, strategy games, war games, card games, and word games. The disk contains many modern communication programs and BBS software.

The Aminet CDROM is in ISO-9660 format, so you can read this disc from nearly any system, including Amiga and IBM PC, BBS index files are included for Workbench 2 and Workbench 3.0 sections. Full of software & shareware.

Prices are Per Disk

3-5 ..... Disks ..... £2.75 EACH

6-10 ..... Disks ..... £2.50 EACH

11-20 ..... Disks ..... £2.00 EACH

21-50 ..... Disks ..... £1.75 EACH

51+ ..... Disks ..... £1.50 EACH

Font Disks (Adobe / Scalable)

£3.00 ..... PER DISK

£49.99 ..... 26 DISK PACK AD OR SC

POSTAGE & PACKING 50p

## □ PD-Soft Font Disk 03

BILLBOARD BINNER *BIZARRO* *Blackwell*  
BlackForest *BLADES* *BlipHeaven*  
Bodacious *Bodily* *Bold*  
BorzoireaderBold *Borzoireader* *italic*  
BorzoireaderPlain *Bubble* *Bubble*  
BorzoireaderPlain *Bubble* *Bubble* *Bubble*  
BorzoireaderPlain *Bubble* *Bubble* *Bubble*

## □ PD-Soft Font Disk 06

DAYTONA *Daytona*  
Debussy *Devandra* *Dickens* *Bold*  
Dickens *Deigolight*

## □ PD-Soft Font Disk 09

Fliegerfraktur *Flemish* *Flemish* *Flora* *Bold*  
FLINTSTONE *FLAMM* *Flame* *Flame* *Light*  
Flora *Franklin* *Gothic* *bold*  
FranklinGothicLight *Franklin* *Gothic* *Light*  
FritzQuadrata *Fritz* *Quadrata* *Thin*

## □ PD-Soft Font Disk 12

Barting2 *HEADHUNTER* *HEADHUNTER*  
HEADHUNTER *HEADHUNTER* *HEADHUNTER*

## □ PD-Soft Font Disk 15

BILLBOARD BINNER *BIZARRO* *Blackwell*  
BlackForest *BLADES* *BlipHeaven*  
Bodacious *Bodily* *Bold*  
BorzoireaderBold *Borzoireader* *italic*  
BorzoireaderPlain *Bubble* *Bubble* *Bubble*  
BorzoireaderPlain *Bubble* *Bubble* *Bubble*

## □ PD-Soft Font Disk 18

NewCentury *NewCentury* *NewsGothic* *NewsGothic* *Bold*  
Nordic *Nordic* *Nordic* *Nordic* *Nordic*  
NovareseBK *Novarese* *BK* *Olympia*  
NovareseBKItalic *Nuptial* *Script* *OldEnglish*  
OldBawlfab *Orbit* *Orbit* *Orbit* *Orbit*  
Oregon *Oregon* *Oregon* *Oregon* *Oregon*  
OregonWet *OregonWet* *OregonWet* *OregonWet*

## □ PD-Soft Font Disk 21

REDFIRE *REDFIRE* *REDFIRE* *REDFIRE*  
RICKSMAKER *Roissy* *Rotim* *Rotim*  
RoissyBold *RoostHeavy* *RoundBones*  
Rudelsberg *Sailor* *Elfin* *Friends* *Yester*  
SansSerif *Santa* *CAPS* *Schwartwald*  
SERAGHICHT *Schanska* *Segment* *Sharktooth*  
SERAGHICHT *Schanska* *Segment* *Sharktooth*

## □ PD-Soft Font Disk 24

Tiffany *Tiffany* *Tiffany* *Tiffany* *Tiffany*  
TiffandHeavy *TiffandHeavy* *TiffandHeavy*  
TNGMONITORS *TNGMONITORS* *TNGMONITORS*  
TNGMONITORS *TNGMONITORS* *TNGMONITORS*  
TNGMONITORS *TNGMONITORS* *TNGMONITORS*  
TNGMONITORS *TNGMONITORS* *TNGMONITORS*  
TNGMONITORS *TNGMONITORS* *TNGMONITORS*

## □ Scalable Fonts

## COLLECTING DISKS

You can now collect any disks of our office

address 6-8 Durham Road, Southend-

On-Sea, Essex, SS1 2YD

## OVERSEAS'S ORDERS

When ordering there is a min order of 5

disks please add £2.00 for Airmail postage.

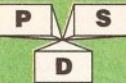
Eurocheques are accepted. Cheques must

be drawn on U.K. Banks. No postal orders.

UPS Service for 2 day delivery please fax or

ring for details.

Just Released!



THE PROFESSIONAL STANDARDS  
FOR DISTRIBUTION  
ENDORSED BY COMMODORE UK

# DISKOVERY P.D.

## TEL 0274 880066

(No.) = HOW MANY DISKS TO ORDER, EG (2) = 2 DISK PACK

### DEMOS

D1...Mental Hangover  
D2...Interceptor Demo  
D4...Wild Copper  
D10...17B Music Demos  
D11...World Demos 21  
D13...Total Remix Demo  
D14/15...Predators (2)  
D20/21...Red Sector (2)  
D24/25...New Tek Reel 3 (2)  
D26...Total Remix 2 Demo  
D27...T.V Theme  
D30...Epic Demo  
D34...PD Collection  
D36...Virtual Worlds  
D37...Vectra Sinking Demo  
D38...T.F.F Demo Voyage  
D40...Safy Demo  
D59...Video Effects 3D  
D64...Cult Vector Demo 2  
D68...Phenomena Demo  
D70...Amos 3D Demo  
D74...A Trip to Mars  
D76...A2000 Genlock Demo  
D81/82...Budbrain 1 (2)  
D83...Budbrain 2  
D85...Chronics Neverwhere  
D87...Piranha Demo  
D101...Alcatraz M/Demo 3  
D102...A.Chepin Demo  
D103...Total Destruction  
D105...Mr B Demo Comp 4  
D106...Walter S.T Demos  
D111...Defcon 1  
D117...Aurora M/Demo  
D118...Cult M/Demo 2  
D125...Precise Demo  
D133...Fascination  
D136...Goldfire Megademo  
D137/138...So What (2)  
D139...Devs "Reality"  
D144...The Silents "Fox"  
D145...Crystal Symphonies  
D148...Ray Of Hope 2  
D149...No Brain No Pain  
D158/159...Cyborg Demo (2)  
D195...Coaxial Comp  
D197...MC Disk 1 Demo  
D199...End Of Century 1999  
D206...Dreamers 3  
D208...Avengers M/Demo  
D219/217...Bass o Mat (2)  
D218...Disorder Demo  
D219...Tuff Enuff  
D225...Cool Fridge Demo  
D228...Hardrock M/Demo  
D233...Hypnautic Hammer  
D235...Six Of One Demo  
D238...Planetside  
D239...Lemmings Revenge  
D240...Total Respray  
D243...Budbrain 3  
D244...Phenomena Inerspace  
D245...Total Retrieval  
D247...Pulling the Trigger  
D253...CES Demos  
D256...Total Recount  
D257...Total Rebate  
D262...Spasmyotic  
D264...D-Mob M/Demo  
D267...Sun Connection 2  
D270...Kefrons The Wall  
D271...Timex Hydra  
D272...Electric Demos 1  
D274...Defpackers Demo  
D276...Cave La Weird  
D279...Iraqui Demo  
D280/281...Delirious (2)  
D290...Popeye Demo  
D292...Excubitor Demo  
D298...Silents + Anarchy  
D301...Subway Demo  
D302...Tarot Demo  
D303...Despair Demo  
D307...L.S.D Demo  
D312...Devils Colours  
D314...Trakmo  
D315...The Grove Ramjam  
D322/323...Star Wars (2)  
D325/326...Real Empathy (2)  
D328/329...Red Dwarf (2)  
D330...Darkness M/Demo  
D332...Melted Experience  
D333-337...Odyssey (5)  
D338...Beasties Boys Demo  
D340...Watchman Demo  
D341...Anarchy Smoker Co  
D342...End 209 The Revenge  
D343/344...Hardwired (2)  
D346...Wildfire M/Demo  
D347...Mindwrap M/Demo  
D348/349...Skizzio Demo (2)  
D350-352...Teach Team (3)  
D358...Mr Men Stories  
D359...Seeing is Believing  
D360...State of the Art  
D361...Mayday Resistance  
D362/363...Jesus on E's (2)  
D364...Fish Tank  
D365...Optimum Pressure  
D366...Mind Riot  
D367...In the Can Demo  
D368...Dynamic Illusions  
D369...Piece of Mind  
D370...3D Demo 2  
D371...Lethal Exit

### UTILITIES

U1...Games Music Creator  
U21...The Comms Disk  
U32...Modem Utils  
U34...Rei Devils Utils 1  
U36...Soundtracker Special  
U38...Paint, Music, Media  
U39...Cart Designer  
U40...Spectrum Emulator  
U41...Red Devils Utils 4  
U43...Future Composer  
U44...Kefrons Makeboot  
U45...P.E. Giant Utils 168  
U47...Label Designer  
U49...Ultimate Icon Disk  
U50...Power Comp Utils  
U51...Jazz Bench  
U55...Visical  
U57...Quickbench  
U59...Font Designer  
U60...D-Paint Fonts 1  
U61...D-Paint Fonts 2  
U62...Med 3.20  
U63...Crest Anim Creator  
U64...Crossword Designer  
U66...CLI Help + Others  
U67...S/Tracker Mega  
U68...Ultimate Boots 1  
U69...Ultimate Boots 2  
U73...Powerlogo  
U74...M-Cad  
U75...Journal Home Acc's  
U76...Home Utilities  
U77...Electrocad  
U78...Ami Basic  
U81...Boothbench V2.0  
U82...SlideShow Maker  
U83...Catalog Workshop 1  
U84...Catalog Workshop 2  
U87...Hart Disk Utils  
U89/94...Amateur Radio (6)  
U95...C-Light + Others  
U96...GFX Utils 1  
U100...Ham Lab  
U101...Sid V2.0  
U108...A-Gene  
U113...Midi Utilities  
U119...Video Utils (2)  
U122...GFX Utils 2  
U133/14...North C (2)  
U136...CrossDose (demo)  
U138...Squid Squad Utils  
U139...Terminallies V1.0  
U140...Squash 2 (2.04 only)  
U141...Squash 2 (2.04 only)  
U142...Text Plus 3  
U144...Demans Samples 1  
U145...Digital Intro Design  
U146...Viz Clip Art  
U147...Spectrum Emulator  
U151...Slipstream VKillers  
U152...Red Devils Utils 6  
U154...Ariagfox W/P  
U155...PD Utils Disk  
U163...Quickbench + (2.04)  
U164...Rim Database  
U166...Dennis's Hack Disk  
U167...Demolisher Utils  
U168...Home Business 3  
U172...Squelch (1.3 only)  
U176...GFX Utils 3  
U177...Star Charts  
U179...180...Dice (2)  
U181...Celtic Demo Maker  
U186...206...Track Ins 10-30  
U207...Icon Collection 1  
U208...Dave Jones Fonts 1  
U210...Ultrapaint 3  
U211...Chemesthetics  
U212...Animated Pointers  
U213...Desk Top Publisher  
U214...Desktop Icons  
U215...Messy Sid 2  
U216...Master V/Killer 2.2  
U218...Data Base Wizard  
U223...Ten Pin Database  
U224...Q-Base Database  
U226...Super Games Solutions 1  
U231...D-Paint Fonts 3  
U232...Games Cheats 2  
U234...Flexi Base  
U235...Ami Cash VI  
U238...Iconmania  
U240...Icon Editor  
U252...Opitmons 2.0  
U254...New Superkillers 2  
U255...Protracker v2.0  
U256...Atari ST Emulator  
U258...D-Copy 3  
U262...PC Emulator  
U263...Med 3.21  
U273...Vid Fonts 1  
U274...Jillol Labels  
U275...600 Business Letters  
U279...Invoice Printer  
U280...Woman V.202D  
U283...Headline Fonts  
U289...Amos Update  
U290...Kickstart 2.04  
U292...Black Tiger Utils 1  
U293...Black Tiger Utils 2  
U294...Text Engine V4.0  
U295...Game Turner  
U296...Ultimate Disk Cre  
U297...10 PD Copiers  
U298...Protracker V3.0

### GAMES

G1...Return to Earth  
G2...Games Comp 5  
G3...Dizzy Lizzy  
G4...Scum Haters  
G5...Parachute Joust  
G6...Frantic Freddie  
G8...Twintris  
G9...Pseudo Cop  
G10...Drip  
G11...Bug Bash  
G12...Asteroids  
G13...Laramon  
G14...Escape From Jovi  
G15...Moria Adventure  
G16...Ground Attack  
G17...Megaball  
G18...Insiders Club  
G19...Various Adventures  
G20...Battleforce  
G22...Dragon Cave  
G24...Rings of Zon  
G25...Mayhem  
G26...Mechflight  
G27...The Tennis Game  
G28...Flaschier  
G29...Buck Rogers  
G30...Greylayer  
G31...7-Tiles  
G32...Mega Comp 1  
G33-44...Star Trek 1 (2)  
G35-37...Star Trek 2 (3)  
G38-39...Mechforce (2)  
G40...Klondyke  
G42...Car  
G43...Games Comp 2  
G44...S.E.U.C.K Games  
G45...Sacc Games Comp  
G46...Games Comp 3  
G48...Rays Game Disk  
G49...Games Comp 4  
G50...Games Comp 6  
G51-52...Trucking (2)  
G53...Jetpac  
G55...Quick and Silva  
G56...Miniblast  
G57...Lamer Game  
G58...Games Comp 7  
G59...Games Comp 8  
G60...Pom Pom Gunner  
G61...Caverunner  
G62...Crystal Caverns  
G63...Intact  
G64...Eternal Rome  
G65...Lemmingoids  
G66...Downhill Challenge  
G67...Lame ST Ports  
G68...Paranoid  
G69...Puzzles  
G70...Chainsaw Death  
G71...Pirate Pete's Treasure  
G72...Serene 2  
G73...Castles  
G74...Dynamite Dick  
G75...Card Games 1  
G76...Wizzy's Quest  
G77...Growth  
G78...Skate  
G79...Atic Atac  
G80...Napoleonic Slim  
G81...Project 1  
G82...Lazer Zone  
G83...Lemmings Pack  
G84...Star Trek S.E.U.P  
G85...Lettrix  
G87...Matched Pairs  
G88...Rapheal's Revenge  
G89...Snake Pit  
G90...Zeus  
G91...Merv The Merciless  
G92...Blitzard  
G93...The Maze Game  
G94...Subculture  
G95...Hollywood Trivia  
G96...Holy Grail Adventure  
G100...Amos Colindrop  
G101...Classic Comp 1  
G102...Card Games 2  
G103...Super Camelot Chall  
G104...Grand Prix Sim  
G105...Games Comp 9  
G106...Computer Conflict 2  
G107...Mission X Raid 2  
G108...NU Game  
G109...Antep + Slot Cars  
G110...Tricky + The Turn  
G111...Marble Slide  
G112...Games Comp 10  
G113...Black Jack Lab  
G114...Dungeon of Madroj  
G115...Amiga Columns  
G116...Robocop In Iraq  
G117...Mutant Camel  
G118...Games Comp 11  
G119...Number Fumbler  
G120-122...Warlock (3)  
G123...Card Sharp 1  
G124...Bart Simpson  
G125...CC Games Comp  
G126...Air Ace 2  
G127...Breakout Con Kit  
G128...Pipeline  
G129...Dung of Doridian  
G125...Amos Games 1  
G121-214...Timelords 6-8

### SLIDES

S1...Ham Pics Show 1  
S4...Madonna Slides  
S5...Moviestar Slides  
S6...Party Disaster  
S8...Immaculate Collection  
S9...Simpsons Slides  
S10-11...Channel 42 (2)  
S12...Bruce Lee Slides  
S14...Adams Family  
S15...Viz Mag Slides  
S16...Boris 13  
S17...Docklands Jerre  
S18...Dr Who Demo  
S19...Napalm Death  
S20...Nasa Slides  
S21...Exodus 3D Slides  
S22-24...WWF Slides (3)  
S26...Cascade Demo  
S27...Demons Slides  
S28...Total Recall  
S29...Joe's Slides  
S30...Ham Pics Show 2  
S31...D-Paint Slides  
S32...Neighbours Slides  
S33...Roger Dean Slides  
S34...Iron Maiden Slides  
S35-36...Tobias Richter (2)  
S37...Joe Trsi Slides  
S38...Basket Case 2  
S39...Eces Slides  
S40...Fraxion Devine 2  
S41...Fraxion Devine 1  
S42...Golems Gate Slides  
S43...Chainsaw Slippers  
S44...Cry For Dawn  
S45...Forgotten Realms (2)  
S47...Kick Off 3 Slides  
S48...PD Slideshow  
S49-52...Terminator (4)  
S53...Robocop 2 Slides  
S54...Trackmaster Slides  
S55...Forgotten Realms 2  
S56...Garfield Slides  
S57...Pawnbroker Slides  
S58...Hellraiser Slides  
S59...Night Breed Slides  
S60...Raytracing  
S61...Horror Slides  
S63...Tate Gallery 2  
S64...Rock Star Manager  
S65...Images Slides  
S70...Muscle Mania  
S71...Creature Comforts

### CLR LICENCEWARE

CLE01...DISSAURS (LEARN ALL ABOUT CERTAIN TYPES OF DINOSAURS I.E. JURASSIC, TRIASIC AND CRETACEOUS, ON 2 DISKS £4.50)  
CLE02...GEOLOGY (WANT TO KNOW ALL ABOUT THE VOLCANOS AND THEIR SUBSTANCES THEN TRY THIS 2 DISKS £4.50)  
CLE03...SOLAR SYSTEM (GET TO KNOW MORE ABOUT THE SOLAR SYSTEM WITH INFORMATION ON PLANETS ETC AND WITH PICTURES TO LOOK AT 3 DISKS £4.99)  
CLE04...COLOURING PAD (A UNIQUE COLOURING BOOK TO KEEP THE KIDS AMUSED FOR HOURS 1 DISK £3.50)  
CLE05...A CHORD (LEARN TO PLAY THE GUITAR BY LISTENING TO NEARLY 50 SINGLE CHORD AVAILABLE ON THE INSTRUMENT 1 DISK £3.50)  
CLE06...MATHS INSTRUCTOR (HELP YOURSELF GET THROUGH THE GSSE'S WITH THIS SUPERB MATHS INSTRUCTOR TRIG, QUADRATIC, SIMULTANEOUS, VOLUMES, AREA ETC ETC 1 DISK £3.50)  
CLE07...FRESHWATER FISHING (THINK YOU KNOW ALL ABOUT FISHING ? TRY THIS 2 DISKS £4.50)  
CLE08...NIGHT SKY (LOOK AT THE STARS PLANETS ETC FROM ANYWHERE ON THE FACE OF THE EARTH AND CLICK ON A DISPLAYED OBJECT FOR INFO 2 DISKS £4.50)  
CLE09...WORDS + LADDERS (A WORD SPELLING GAME FOR 1 OR 2 PLAYERS 1 DISK £3.50)  
CLE10...BASICALLY AMIGA (GET TO KNOW YOUR AMIGA TO THE FULL 3 DISKS £3.50)  
CLE11...LETS LEARN V.1 (LEARN SUMS, TUNES, CODES ETC ON THIS EXCELLENT LEARNING AID AGE RANGE FROM 5 - 12 DISKS £3.50)  
CLE12...ALPHABET TEACH (TRY TO SPELL WHAT YOU SEE ON THE SCREEN 1 DISK £3.50)  
CLE13...HOME BREW (WITH RECIPES TO INSTRUCTIONS ON FERMENTING ETC LEARN HOW TO MAKE HOME MADE WINE 1 DISK £3.50)  
CLE14...ECOLOGY (LEARN MORE ABOUT ECOLOGY WITH THIS BRILL PROGRAM 3 DISKS £4.99)  
CLU01...VIDEO TITLER (MAKE YOUR VIDEOS LOOK PROFESSIONAL SCROLLERS ETC 1 DISK £3.50)  
CLU02...FISH INDEXER (MAKE PYE CHARTS GRAPHS ETC WITH FIGURES 1 DISK £3.50)  
CLU03...SAS MENU MAKER (MAKE MENUS TO SUIT YOU 1 DISK £3.50)  
CLU06...SUPER SOUND 3 (CREATE YOUR OWN TUNES WITH THIS MUSIC UTILITY 2 DISKS £4.50)  
CLU10...POWER ACCOUNTS (KEEP ACCOUNTS OF YOUR EXPENDITURE WITH PASSWORD FUNCTION 1 DISK £3.50)  
CLU11...CALC V1.3 (AN EXCELLENT SPREADSHEET FOR THOSE CROSS CALCULATIONS 1 DISK £3.50)  
CLU12...VIRTUAL WINDOWS 1 (A COLLECTION OF USEFUL UTILITIES LIKE ADDRESS BOOK, NOTE PAD, SOFTWARE CATALOGUE ETC 1 DISK £3.50)  
CLU13...DATOS (EASY TO USE YET VERY POWERFUL DATABASE 1 DISK £3.50)  
CLG01...NORRIS (A VERY ADDICTIVE GAME SET IN THE MEDIEVAL ERA 1 DISK £3.50)  
CLG02...DARK THINGS (A BRILL PLATFORM SCROLLY GAME 1 DISK £3.50)  
CLG06...DRAGON TILES (OLD JAPANESE TYPE MAJ JONG STYLE GAME 1 DISK £3.50)  
CLG09...MOTOR DUEL (DRIVE A 30 CAR SHOOTING AND RACING WITH OPPONENTS 1 DISK £3.50)  
CLG10...TRUCKING ON (TRY AND MANAGE YOUR OWN TRUCK FLEET EXCELLENT 2 DISKS £4.50)  
CLG11...ALL GUNS BLAZING (CAR GAME FOR 2 PLAYERS WITH THE OVERHEAD VIEW THEME 1 DISK £3.50)  
CLG12...BULLDOZER BOB (WIPE OUT THE SCREEN OF COLOURED BLOCKS 1 DISK £3.50)  
CLG13...PARADOX (A PUZZLE GAME TO TEST THOSE POWERS OF SOLVING 1 DISK £3.50)  
CLG14...SONIC SMARTHEAD (ANOTHER PLATFORM STYLE GAME 1 DISK £3.50)  
CLG15...SPLODGE THE REVENGE (ANOTHER PLATFORM GAME WITH PUZZLES TO SOLVE 1 DISK £3.50)  
CLG17...IMBRID DAY OF RECKONING (ONE OF THOSE GRAPHIC ADVENTURE TYPE GAMES EXCELLENT! 1 DISK £3.50)

### ANIMS

A1...Probe Sequence  
A2...Ghost Pool  
A3...Jogger + Magician 1  
A4...Gymnast Demo  
A5...Fractal Flight  
A6...Basketball Demo  
A7...Motorcycle Demo  
A9...Magician 2  
A10...Pugs in Space  
A11...Luxor Tuxer  
A13...Juggler Demo  
A16...Cool Cougar  
A17...Mono Cycle Anim  
A18...Robocon Anim  
A20...Mayhem on Wheels  
A21...Jugette 2  
A22...Shuttlecock Anim  
A23...T-Pot Anim  
A27...Fleet Manouvre  
A28...Billiard Anim  
A29...E/Prise Leaves Dock  
A30...Star Wars 2 Anim  
A31...Star Trek Anim  
A32...Fraxion Revenge  
A33...Madonna Anim  
A34...Monna Anim  
A35...Stealthy Anim 2  
A36...Raiders Of The Lost Ark  
A37...Bugs Bunny Show  
A38...Iraqi V's UK Anim  
A39...Mike Tyson Anim  
A40...Knight Anim  
A42...Walker 2  
A43...Walker 3  
A45-46...Light Cycle (2)  
A47...Exploding Head  
A48...Police Car Chase  
A49...Top Gun Demo  
A50...Animators Demo  
A51...5 Ways to Kill a Mole  
A52...Another 5 Ways  
A53...Batman The Movie  
A54...Knight Anim  
A55...Walker 2  
A56...Camouflage  
A58...VGA Anim 4  
A59...Low Level Flight  
A63...Amy V's Walker  
A64...Real Pinball Anim  
A65...Franklin The Fly  
A66...Porky Pig Anim  
A67...Adventures of Chuck  
A69...Bunsen Burner  
A70-71...Max Overdrive (2)  
A73...Space Shuttle Anim  
A74...Ghosts + Busters + Horse  
A76...Alarm Anim  
A77...Flight Anim  
A78...Piano Anim  
A79...Dart Anim  
A80...Bad Bird Anim  
A81...Holiday Anim  
A82...Fillet The Fish  
A83...The Boings  
A84...Clothes Peg  
A85...Miners Anim  
A86...Pocket Watch Anim  
A90-93...The Movies 2 (4)  
A95...My Tin Toy  
A96...T-Pot 2 Anim  
A99...Terminator 3  
A100...Dolphin Dreams  
A101/102...Thunderbirds (2)  
A103...Histor Of Amy  
A104...Pogo Anim (2 Meg)

### ACCESSORIES

ASSASSINS PACK £1.50 EACH  
10 DISKS £10.50+p+p  
30 DISKS £28.50+p+p  
40 DISKS £34.50+p+p  
54 DISKS £43.00+p+p  
ALL 70 £60.00+p+p

### RAVE & TECHNO PACK

ORDER NO P.01  
DANCE IN STYLE WITH ALL THE LATEST RAVE AND TECHNO SOUNDS. AVAILABLE ON THE AMIGA. THIS PACK IS A MUST FOR ALL YOU RAVERS.  
10 DISKS FOR ONLY £9.50 + P+P

### BUSINESS PACK

ORDER NO P.04  
WHETHER IT'S JUST TYPING A LETTER OR KEEPING A RECORD OF YOUR FINANCES, THIS PACK IS A DEFINITE MUST!  
10 DISKS FOR ONLY £9.50 + P+P

### EDUCATIONAL PACK

ORDER NO P.02  
THIS PACK CONTAINS EVERYTHING FROM LEARNING LANGUAGES TO PLAYING GAMES, AND AGES RANGE FROM 4 TO ADULT.  
15 DISKS FOR ONLY £14.50 + P+P

### ROCKFORD PACK

ORDER NO P.06  
A COLLECTION OF GAMES WHICH ALL INCLUDE THE BOULDERBASH GAMES THEME. IT ALSO HAS AN EDITOR SO YOU CAN MAKE YOUR OWN CAVES.  
10 DISKS FOR ONLY £9.50 + P+P

### C64 EMULATOR PACK

ORDER NO P.05  
THIS PACK EMULATES THE AMIGA INTO A C64 WITH OVER 50 GAMES TO CHOOSE FROM. COMES WITH FULL INSTRUCTIONS.  
3 DISKS FOR ONLY £3.75 + P+P

### CLIP ART PACK

ORDER NO P.03  
WITH 100'S OF DIFFERENT PICTURES TO CHOOSE FROM THIS PACK IS AN ABSOLUTE MUST FOR ALL YOU DTP AND D.PAINT ENTHUSIASTS.  
15 DISKS FOR ONLY £14.50 + P+P

### WE OFFER A FAST AND VERY FRIENDLY SERVICE TO ALL OUR CUSTOMERS WITH THOUSANDS OF TITLES TO CHOOSE FROM. PLEASE SEND A S.A.E FOR A FREE CATALOGUE.

### HOW TO ORDER

ALL YOU NEED TO DO IS PUT THE NUMBERS OF THE DISKS REQUIRED AND SEND IT TO THE ADDRESS BELOW ALONG WITH A CHEQUE OR P.O MADE PAYABLE TO DISKOVERY. PLEASE DON'T FORGET TO INCLUDE THE CORRECT POSTAGE TO ENSURE SPEEDY DELIVERY.

### KICK 1.3

NOW ALL P.D DISKS WILL WORK ON YOUR A500+/A600 & A1200 WITH THIS AMAZING DISK ONLY £1.50

ASSASSIN'S GAMES PACKS 1-54 NOW IN STOCK

WE ACCEPT ACCESS, VISA AND MASTERCARD



SEND YOUR ORDER TO:

DISKOVERY DEPT (AS), 108 THE AVENUE, CLAYTON, BRADFORD, W. YORKS, BD14 6SJ



continued from page 112

objects), then you'll be interested in *Sci-Fi Type*, a set of 14 high-quality 3D fonts. The demo on this disk includes one of the fonts (Ultra) and IFF files with samples of all the others. The fonts are stored as separate objects, so you just load and place them wherever you want in your image. The full set costs \$39.99, which seems like pretty good value to me, considering their apparent quality. And even if you don't want them all, you've got Ultra here to play with.

**Program rating: 7/10**

## AROACH

### Fish disk 899

This is one of those little "novelty" programs that you have running for... oh, about ten seconds before you trash it. Some odd people, though, may like it enough to keep it for longer than that. It's based on the Unix X-Windows *Xroach* program, and displays pictures of cockroaches on your Workbench screen.

These loathsome insects scuttle around until they can find a window to hide under – although you can normally see a leg or two sticking out from one edge or another. If you close, move or resize the window the roaches will scuttle around again until they find somewhere else to hide. You can select the number of roaches to display, and whether or not they can be "squished" by clicking the mouse on them, then let the program run in the background.

I don't know about you, but just the thought of cockroaches makes me shudder, so this program lasted on my Amiga long enough to write this review, and then went straight into the wastebasket. Now if only they were fluffy bunnies instead of scuttly cockroaches...

**Program rating: 5/10**

**Shudder factor: 10/10**

## POPPER

### Fish disk 899

*Popper* is a combination library and command which enables you to have menus that pop up under the cursor, wherever it is on the screen, when you press the right mouse button. This is useful if you find yourself cursing every time you have to move the mouse up to the top of the screen to access a menu –



*This clever little utility, Popper, enables you to pop up menus wherever your cursor is, and "tear" them off to display them permanently somewhere else.*

especially if you've set the mouse speed very slow to draw accurately or whatever. The program also lets you "tear off" menus, so that they are permanently available. If you do this, they appear as little windows, with the standard close box in the top left hand corner. When whatever program you're running quits, the windows will automatically disappear. (To tear off a menu, hold down the right mouse button to make the pop-up menu bar appear, select the menu and then hold down the left mouse button as well while you drag the menu to its new position. This isn't something that's explained in the documentation, and it took me a while to work it out.)

The only problem with the tear-off menus is that they don't update if a program enables or disables a particular menu command – which could lead to problems if you select a command which wasn't meant to be selectable at that moment. Perhaps a future version of *Popper* will cure that. Regardless, though, this is a clever little utility, and one that I'm sure will find favour with a large number of users.

**Program rating: 8/10**

## TOUCH

### Fish disk 900

*Touch* is an Amiga version of the Unix *Touch* utility. It changes the date-stamp and time-stamp of a specified file to the current date and time – in other words, it makes a file look as if it were created more recently than it actually was. It supports wildcards, so you can "touch" more than one file at a time.

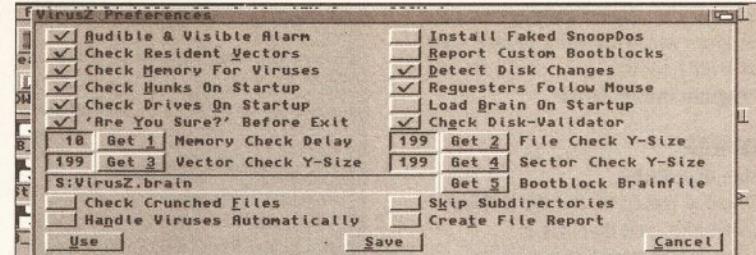
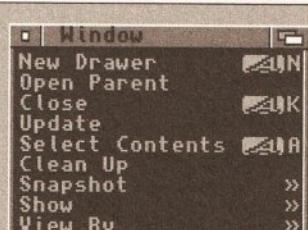
But... why? Can anyone explain why on Earth you'd want to do this? Certainly, I've never spent sleepless nights wishing for such a utility. If anything, it would surely be counter-productive not to be able to rely on your vital date-stamps when you need to find, say, the earliest version of a particular file. For that reason, I'm giving it a...

**Program rating: 3/10**

## VIRUSZ

### Fish disk 902

I know I keep doing this, but it really is important to have a decent virus killer loaded on your Amiga all the time if you're playing with new shareware and PD software. Most PD



**VirusZ: protect and survive! A proper virus checker really is vital in this day and age, especially if you use disks from a wide variety of different sources.**

houses do check all their disks before they send them out, but it's always possible that something will slip through the net. And with so many Amiga viruses now around, it's getting more and more difficult to guarantee that a disk is virus-free. *VirusZ* is constantly being updated, so do make sure that you get the most recent version; the one on Fish disk 902 is 3.07, and is dated 2 July 1993, so there may well be a more up-to-date version available by the time you read this. Bulletin boards are the best sources of the most recent incarnation, but PD houses shouldn't be too far behind.

*VirusZ* checks bootblocks of drives, keeps an eye on your Amiga's memory to make sure that a program doesn't place anything there that it shouldn't, and generally looks after your welfare in the background, without you being aware that anything's happening – unless it does find a problem, in which case it cures most troubles automatically.

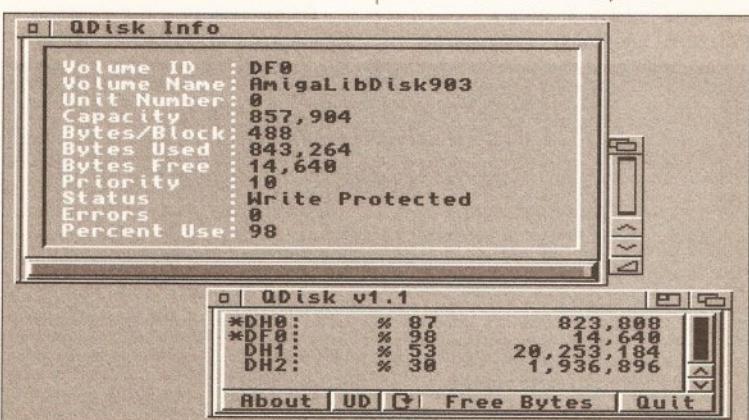
*VirusZ*. Get it now!

**Program rating: 10/10**

## QDISK

### Fish disk 903

*QDisk* is an improved, Workbench version of the *Info* command, which lists all the mounted devices (disks), along with their sizes and details of how much free space is available. Clicking on one of the devices listed brings up a window with more detailed information about the selected disk, and the program can be shrunk down to just the menu bar so that you can keep it running all the time without taking up too much space on the Workbench screen.



**QDisk: a Workbench version of the Shell's "info" command. If you've got a burning desire to keep track of all the currently mounted devices, it's for you.**

It's certainly a neat idea, but whether you would actually use it that much is debatable.

**Program rating: 7/10**

## TASKE

### Fish disk 903

Moving right along, *TaskE* displays all the tasks running on your Amiga at any given time, together with their priorities, addresses and a couple of other techie details. It's probably of no use to most people, but I'm sure that programmers will find it useful, for sorting out any addressing conflicts or something...

**Program rating: 7/10**

## VIEWTEK

### Fish disk 903

*Viewtek* is one of the most powerful free image display programs around – and there are plenty of others in competition for the title. Its features include:

- Displays most ILBMs, including 24-bit images
- Displays standard CompuServe GIF-format files
- Displays JPEG images, as long as they are in JFIF
- Displays ANIM7 animations
- Supports SHAM, CTBL and PCHG image files
- Supports ECS and AGA display modes – so it will display 256-colour images on these machines

The package on the disk also includes a version of the program written for GVP's Impact Vision 24 card, so that true 24-bit images can be displayed. The author says that he won't write the program to support ANIM8 animations, since the ANIM7 format is so superior.

However, he does helpfully include a program which converts ANIM8 files to ANIM7 format.

**Program rating: 9/10**

## DTREE

### Fish disk 905

DTree is based on the PC's 'Tree' command, and displays a hierarchical "tree" of any given directory or device. The display can include just the sub-directories or any included files, and since it uses standard I/O (it can only be run from the Shell), it supports things like pipes and redirection of output.

DTree isn't the fastest program in the world – expect a lengthy wait if you output the directory structure of a large disk to the screen – but it seems to do its job perfectly well. The only real question is whether anyone will find it particularly useful. I guess that if you need a record of all your files and their locations, then this utility does the job as well as any – and because it supports redirection, you can save the output to a file and then print it out. But with programs like SID II around, the uses for a program like DTREE do seem to be rather limited.

**Program rating: 6/10**

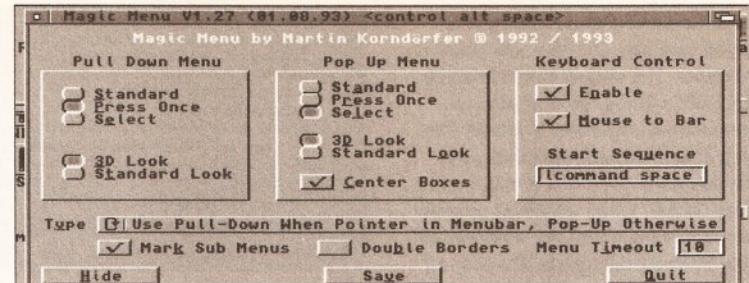
## EXPRESSION EDITOR

### Fish disk 905

Expression Editor is a program which will deal with just about any mathematical expression you throw at it. Want to add a number in hex to a number in base 25, then take its cosine and display the result to four decimal places in scientific notation in base 18? No problem.

The program works in a simple scrolling window, since it's an Amiga port of Free Software Foundation code. If you haven't come across the FSF, it's an organisation dedicated to making as much software freely available as possible.

Authors write programs and then make them, and their code, available under a "GNU" licence, which means that anyone can use or modify the code, but anyone who does so must release their resulting efforts under the same licence. There's a PostScript interpreter, a high-quality



**A worthy rival to Popper? Magic Menu offers such complete keyboard control over on-screen menus, it's possible that you'll never need the mouse again!**

chess game... all sorts of things available under the general FSF banner, and all of it totally free. That's where Expression Editor comes from, and a fine program it is too, if you want such a thing. Since you can assign values to variables, and make the program work from a "script" by using file redirection, you can perform extremely complex calculations using the program.

A must for scientists, students and amateur and professional number-crunchers of all kinds.

**Program rating: 8/10**

## MAGIC MENU

### Fish disk 906

Magic Menu is another pop-up menu utility, similar to Popper. However, it also allows keyboard activation of menus – so there's no need to use the mouse at all, if you prefer. The program also enables you to display the menus in a rather snazzy 3D format, if you're bored with their normal appearance. If you select the correct option, menus will stay selected after you've clicked on them, enabling you to move the mouse down to the option you want without having to hold down the button while you do so – a very useful feature for people who have trouble controlling the mouse.

Running the program is as simple as dropping it in your WBStartup drawer so that it kicks off every time you start your Amiga. Then, if you want to use keyboard commands rather than the mouse to access a menu, just hit <Left Amiga>-<spacebar> and the menu pop-up appears for you.

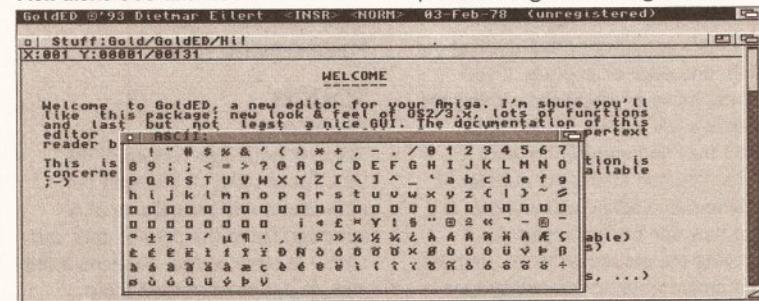
On balance, I'd say that Magic Menu wins' over Popper; its use of

keyboard controls and the attractive 3D menus just give it the edge – although it's perfectly possible that you'll find incompatibilities with standard programs while using either of these programs. Many programmers do rather nasty things to get "better" functionality, and that can quite easily cause utilities like this to fall over. Still, if one or both are compatible with the programs that you normally use, then they can be recommended.

**Program rating: 8/10**

## GOLDED

### Fish disks 908 and 909



**Everything you want from a text editor – and a little bit more. GoldED is a new, very fully-featured program with almost every feature you could need.**

GoldED is a new, very fully-functioned text editor. In look and feel it's very much OS 3.0-like, and the range of features is very impressive indeed. They include:

- Macros
- Customisable menus
- AReX port
- "Automatic phrase completion" – using a dictionary, the program will complete the entry of strings for you, if you wish
- Auto-backup
- Works as a DICE compiler front-end
- "Smart indentation" for

programmers

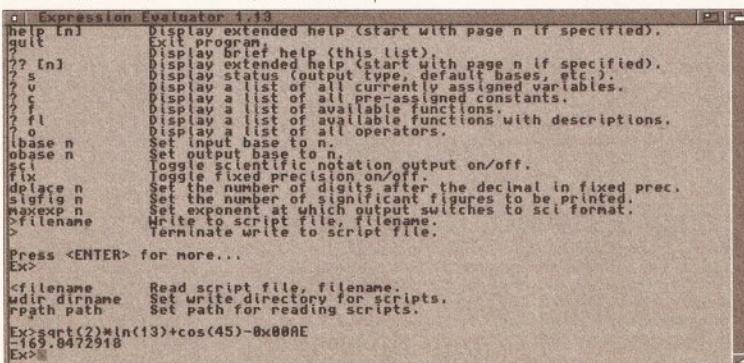
• Automatic checking of parenthesis matching (also for programmers)

- Direct support for XPK compression and decompression
- And on, and on, and on. This program really is exceptionally impressive; just when you thought you'd seen it all, GoldED redefines what text editors should do.

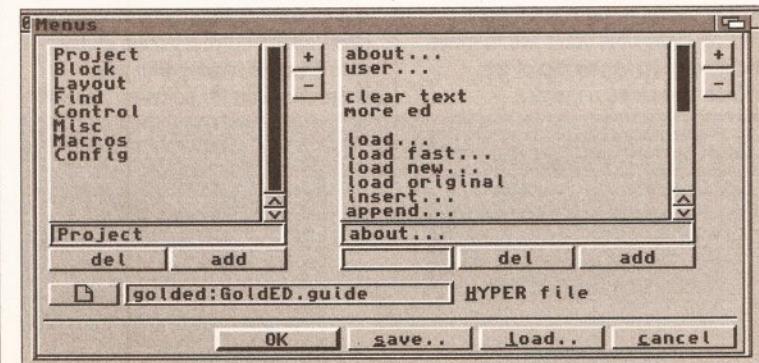
For example, handy luxuries like an ASCII table come built in; select this from the menu and a window appears with all the available characters displayed; click on one and it's automatically inserted into the document at the current text position. Likewise, a calendar and calculator are available from menu options within the program; and the on-line help is, of course, in AmigaGuide format. Or how about the fact that you can move all selected text right by a specified number of spaces, filling those spaces with text if you want? For example, if you're using GoldED to reply to electronic mail, where the ">" character is normally used to quote the original message, it's a

trivial matter to insert that ">" at the beginning of any lines that you wish.

This program comes on Fish disks 908 and 909; it's too big to fit on one disk (in fact, Fish disk 909 only contains part 2 of the GoldED package – there's no room for anything else). It is installed using Commodore's **Install** utility, so you'll need that (Commodore has made this freely distributable, so you shouldn't have any trouble finding it if you don't have Workbench 2.1 or above, in which it is included anyway). You'll also need



**Express yourself (or, to be more precise, calculate some sums) with Expression Evaluator – you name it, the program will work it out for you!**



**Not happy with GoldED's menus for some reason? No problem – the program lets you change them to your own particular personal preference.**



AmigaGuide to use the on-line help, although again this is now freely distributable. Finally, be warned that this is version 0.94 of the program, and the author, Dietmar Eilert, says that it's still a beta demonstration release. Still, it's worth checking out if you need a powerful text editor – they don't come much more powerful than GoldED!

**Program rating: 9/10**

## 8-COLOUR ICONS

### PD Soft disk V1104

This is a disk which is, quite simply, full of colour icons. They have been designed by Ernst Janesch for any Amiga running Workbench 2.0 or above in 8-colour mode, and they are designed to replace the boring old ones that come as standard. They have all been created using *Icon-Edit*, a standard Amiga utility, and *Deluxe Paint IV*; some are icons for specific programs, while others are just plain generic icons for things like disks, drawers and so on.

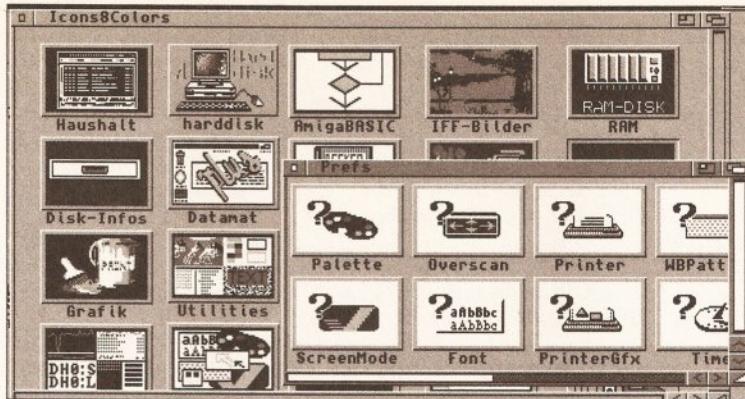
There's not much more to say, really; if you'd like to see some colour on your screen, this disk can certainly provide that.

**Value for money: 7/10**

## HDM 1.1

### Central Licenseware disk CLU 022

This disk is available from any distributor who is in the Central



**Bored with your dreary old icons? Let PDSOFT disk V1104 breath some colour into your Workbench – or maybe you'd prefer just some extra shades of grey.**

from bank to bank, and even if all five are full the program only needs 2.5K to store the data on where to find the programs.

*HDM* is very well behaved; most of the time you'll leave it in its shrunken form, where just the menu bar is displayed. When you want to access a program, click on it and it expands to full size, sitting neatly at the bottom of the screen. Actually, one of my two complaints with the program is that it does take a couple of seconds to redraw its window and then relocate to the bottom of the display; it first draws itself about a quarter of the way up, which I assume is to take into account any NTSC screen users. But surely the program could check for this before it

number of buttons and, like me, boot off one partition while keeping most of your programs on another. Still, once you've set the program up this isn't a problem.

In use, *HDM* seemed to perform well. I couldn't make it fall over, and it's certainly easier than digging through half a dozen drawers to access a utility. There are plenty of programs like *SID* about which do everything in the world to your hard drive, but it's nice to have a neat little program which does one job, and does it well.

**Value for money: 8/10**

## STARVIEW

### PD Soft disk V1109

*StarView* is an astronomy program

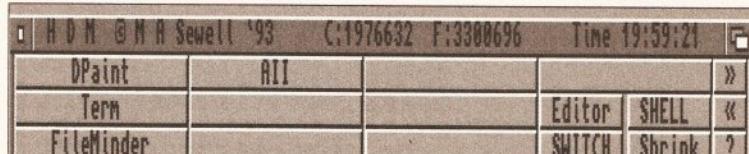
the outlines and names of all 88 constellations, and lets you zoom in on any specific area for a more detailed view. You can find a constellation by name, and the display can be either as a horizon view (that is, you are shown a portion of the sky up to 70 degrees high, from any given direction) or as a "zenith" view, which is a circular view of the sky centred on the point directly above your head. This zenith view can be rather tricky for novices to follow, and the horizon view is much nicer: you get an image of exactly what you should be seeing (except that there are no convenient names and red lines floating around in the real sky).

*StarView* has been programmed in HiSoft Basic, and is an excellent example of that program's power; I can thoroughly recommend it to any budding Patrick Moores.

**Program rating: 9/10**

## PDSOFT FONT DISKS

PDSOFT has released a new 26-disk collection of fonts, available in either Compugraphic or Adobe Type 1 format. Each disk costs £3, or the complete 26-disk set costs £49.99. The fonts are extremely high quality; they range from traditional to... er... odd, and include a number which have been around as PD fonts on the Mac for some time. Because they



**HDM lurks in a corner in menu-bar form – until you click on it. Then it gives you access to all your applications, wherever on your hard drive they may be.**

Licenseware scheme; it costs £3.50. *HDM* is short for Hard Drive Menu, and this is a relatively simple program for launching programs from a "control panel" rather than by burrowing down into the disk itself. Ten buttons are shown at any given time, in what's called a "bank"; each button can be assigned a name and a program to run when it's pressed. A total of five banks can be accessed, via buttons which move

drew its window in the first place?

The second complaint is that, when setting up the buttons to access programs, the program automatically assumes that all your programs are on the same volume that you started up from. Because the file requester is pretty basic, and doesn't include a "Volumes" button, you have to type in the hard drive name by hand – which is a pain if you're going to be setting up a large

**Yes, it's *Architect* – just one of the fonts available on disk 1 of PDSOFT's new budget-priced collection of Compugraphic and Adobe Type 1 typefaces.**

supplied on a self-booting disk (if you want to run it from your hard disk, you'll have to copy across the "hisoftbasic" library first). And it's really rather good.

Like other such programs, it displays what the night sky should look like (if it ever stops raining and the clouds disappear) at any given date, time and location. Over 850 stars are included, with over 100 named. The program also displays

are supplied in either Type 1 or Compugraphic format, you will be able to use them with most page makeup programs – and, in the case of the Compugraphic fonts, in Workbench 2.x or 3.x.

For details of the fonts on each of the disks, write away to PDSOFT for one of their leaflets. These fonts are well worth getting; at £3 per disk, you can't go wrong!

**Value for money: 10/10 **AS****

# 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 (BBS) is that often the latest software is uploaded as soon as it's available. On the downside, you need a modem to connect, and you'll have to pay phone charges (and sometimes a

connection fee to the BBS as well).

There is a growing number of BBSs with a wide range of Amiga software available for download. Check out 01-for Amiga (071 377 1358) and the Cheam Amiga Bulletin Board (081 644 8714). Another good option is joining CIX (the Compulink Information eXchange), which not only has

Amiga software but also contains conference and file areas on a wide range of subjects. Many of the Amiga Shopper writers have accounts on CIX, so you can get first-hand advice on your problems, too. For more details, call CIX on 081 390 8446 (voice) or 081 390 1255 (modem).

If you don't want to use a BBS

or haven't got a modem, the other way to get PD software is from a PD house. Many advertise in *Amiga Shopper*, and there's a full directory overleaf. Expect to pay between 99p and about £2.50 per disk – there's often a discount if you buy in bulk, too. As for the difference between companies which charge 99p and those which charge £2.50 – well, try both types. There are brilliant, totally professional PD houses which charge less than a quid, and total incompetents which charge more than twice that.

# UK PD HOUSES

\*An asterisk by a library's name means see its advert in this issue for further details.

**A1200 Only PD.** Contact B J Cowdall, 27 Pheasant Way, Cirencester, Glos. GL7 1BJ.

**AMOS PD.** 1 Penmynydd Road, Penlan, Swansea, SA5 7EH.

**Amiganuts United.** 1 Daffern Ave, New Arley, Coventry CV7 8GR.

**Amiga Productivity PD Series.** 51 Ennors Road, Newquay, Cornwall TR7 1RB. Contact M J Docking.

**\*Anglia PDL.** 30 Victoria Street, Felixstowe, Suffolk, IP11 7EW,  $\pi$  0394 283494.

**Armchair PD.** 180 Blackton Close, Newton Aycliffe, Co Durham DL5 7EY.

**Artman.** 40 Northwell Gate, Otley, West Yorkshire LS21 2DN. Phone 0943 466476.

**Asgard PD.** 20 Langdale Drive, Flanshaw, Wakefield WF2 9EW. Phone 0924 363059.

**Batty's PD.** Contact Ian or Lynn Battison, 7 Denmark Road, Northampton NN1 5QR,  $\pi$  0604 22456. Life membership £3.99.

**Beats Brothers.** 6 Brownings Close, Pennington, Lymington, Hampshire SO41 8GX.

**Belshaw's PD.** 55 Baldertongate, Newark, Notts. NG24 1EU,  $\pi$  0636 72503.

**BG PD.** 6 Peter Street, Whitehaven, Cumbria CA28 7QB.

**Blitterchips.** Cliffe House, Primrose Street, Keighley, BD21 4NN,  $\pi$  0535 667469.

**BTK.** 7 Callander Road, Catford, London SE6 2QA,  $\pi$  081 473 1650.

**Bus Stop PD.** Contact Lisa or Cheryl, 6 Smiths Avenue, Marsh, Huddersfield HD3 4AN,  $\pi$  0484 516941.

**C and C PD.** Contact Chris Wildman, 3a The Cedars, Tilehurst, Reading, Berks. RG3 6JW,  $\pi$  0734 411131.

**Chris's PD.** 22 Merryfields Avenue, Hockley, Essex SS5 5AL.

**Colwyn PD.** Free, non-profit-making PD, membership £5 per year. Contact Andy Roberts, 17 Gladys Grove, Colwyn Bay, Clwyd LL29 7YB,  $\pi$  0492 533442.

**Computer & Design Services.** 24 Blackmoor Croft, Tile Cross, Birmingham B33 0PE.  $\pi$  021 779 6368

**CP PD.** 3 Dunedin Crescent, Winshill, Burton on Trent, Staffs. DE15 0EJ,  $\pi$  0283 516736.

**Crazy Joe's.** 145 Effingham Street, Rotherham, South Yorks, S65 1BL,  $\pi$  0709 829286.

**Crazy Software PD.** 50 Woodville Court, Portobello, Wakefield, West Yorkshire WF2 7DU.

**Deja Vu.** 7 Hollinbrook, Beech Hill, Wigan WN6 7SG,  $\pi$  0942 495261.

**Diskover PD.** 108 The Avenue, Clayton, Bradford, West Yorkshire BD14 6SJ,  $\pi$  0274 880066.

**Essex Computer Systems.** 118 Middle Crockerford, Basildon, Essex, SS16 4JA,  $\pi$  0268 553963.

**Eurodisk PD.** PO Box 2, Radlett, Herts WD7 8QL.

**\*Express PD.** 47 Aberdale Road, West Knighton, Leicester LE2 6GD,  $\pi$  0533 887061.

**George Thompson Services.** Bridgegate Centre, Martinfield, Welwyn Garden City, Herts. AL7 1JG,  $\pi$  0707 391389.

**GVB PD.** 43 Badger Close, Maidenhead, Berks. SL6 2TE,  $\pi$  0831 649386.

**Highland PD.** Free list contains lots of education, business and games disks. Contact David Paulin, 255 Drumrossie Avenue, Inverness IV2 3SX,  $\pi$  0463 242431.

**Holmes Brothers Compilations.** Contact Craig for monthly compilation disk. 23 Rocester Avenue, Wednesfield, Wolverhampton, West Midlands WV11 3AU,  $\pi$  0902 733418.

**Hornesoft PD.** Contact Chris Horne, 23 Stanwell Close, Wincobank, Sheffield S9 1PZ,  $\pi$  0742 422000.

**ICPUG (Independent Commodore Product Users Group).** PO Box 1309, London, N3 2UT,  $\pi$  081 346 0050.

**Immediate Arts.** 26 Lyndhurst Gardens, Glasgow G20 6QY,  $\pi$  041 946 5798.

**Judge Dredd's PD.** 1 Nottingham Road, South Croydon, Surrey CR2 6LN. Phone: 0924 366982

**Kew-II Collection.** PO Box 672, South Croydon, Surrey CR2 9YS,  $\pi$  081 657 1617.

**\*KT's PD.** 75 The Drive, Rochford, Essex SS4 1QQ,  $\pi$  0702 542536.

**Langham PD.** Contact Richard Payne, 89 Wolverhampton Road, Codsall, Wolverhampton WV8 1PL

**Logic PD.** 8/5 Glenalmond Court, Sighthill, Edinburgh EH11 4BE.

**Magnetic Fields.** PO Box 118, Preston, Lancashire PR2 2AW,  $\pi$  0772 881190

**Mega PD.** 78 Bockingham Green, Basildon, Essex SS13 1PF,  $\pi$  0268 559164 / 0621 828527

**NBS.** 1 Chain Lane, Newport, Isle Of Wight, PO30 5QA,  $\pi$  0983 529594.

**\*Network PD & Shareware Library.** Kenmare, Co. Kerry, Eire,  $\pi$  010 353 64 41603

**NJH Computers.** 12 Meesons Mead, Rochford, Essex SS4 1RN,  $\pi$  0702 546796.

**Numero Uno.** Contact Dillon Eyre, 21 Burstall Hill, Bridlington, N Humberside YO16 5NP,  $\pi$  0262 671125.

**Orbital Software.** Contact A Flowers, 37 The Orchard, Market Deeping, Peterborough, Cambs. PE8 8JR,  $\pi$  0778 342064.

**Pathfinder PD.** 41 Marion Street, Bingley, W Yorks. BD16 4NQ,  $\pi$  0274 565205.

**Penguin Public Domain.** PO Box 179, Reading, Berkshire RG3 3DD.

**\*PD Soft.** 1 Bryant Ave, Southend-on-Sea, Essex, SS1 2YD,  $\pi$  0702 466933.

**Riverdene PDL.** 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN,  $\pi$  0734 452416.

**Roberta Smith DTP.** 190 Falloden Way, Hampstead Garden Suburb, London NW11 6JE,  $\pi$  081 455 1626.

**Scribble PD.** 14 Woolner Close, Barham, Suffolk IP6 0DL

**\*Sector 16.** 160 Hollow Way, Cowley, Oxford,  $\pi$  0865 774472.

**17-Bit Software.** 1st Floor Offices, 2/8 Market Street, Wakefield, West Yorkshire WF1 1DH. Phone: 0924 366982

**Softville.** 35 Market Parade, Havant, Hants PO9 1PY,  $\pi$  0705 498199

**Software Expressions.** Unit 4, 44 Beauley Road, Southville, Bristol BS3 1PY,  $\pi$  0272 639593.

**Startronics.** 4 Arnold Drive, Droylsden, Manchester M35 6RE,  $\pi$  061 370 9115.

**Tazmania PD.** Contact M Hewson, 4 Boultham Avenue, Lincoln LN5 7XZ,  $\pi$  0522 538706 (after 6 pm).

**Telescan Computer Services.** Handsworth Road, Blackpool FY5 1SB,  $\pi$  0253 22296.

**Trevan Designs Ltd.** PO Box 13, Aldershot, Hants. GU12 6YX,  $\pi$  0483 725905 (note: modem line, not voice).

**Vally PD.** PO Box 15, Peterlee, Co Durham SR8 1NZ,  $\pi$  091 587 1195.

**Virus Free PD.** 31 Farringdon Road, Swindon, Wiltshire SN1 5AR,  $\pi$  0793 512321

**\*Visage Computers PDL.** 18 Station Road, Ilkeston, Derbyshire DE7 5LD,  $\pi$  0602 444501.

**Your Choice PD Library.** 39 Lambton Road, Chorlton-cum-Hardy, Manchester M21 1ZJ. Phone 061 881 8994.

**BUYER BEWARE:** The inclusion of a PD library in this directory does not imply that *Amiga Shopper* endorses or recommends any PD library in any way. We can accept no responsibility for any dealings you may enter into or for any difficulties you may encounter.

When you write to any of these libraries for a catalogue, include an SAE for its return. Some libraries ask that you send a blank disk as well.

If a library is named in a review, this means that that library provided us with the disk reviewed. Given that PD can be freely copied, the same program may well be available legitimately from several libraries.

If you run a PD library not listed here and wish to be included, or if you want to amend any information given, send full details and a copy of your latest catalogue to:

**PD Directory, Amiga Shopper, 30 Monmouth Street, Bath, Avon BA1 2BW.**

# RICOH LP1200 PCL5 LASER PRINTER

400 DPI

2Mb RAM

6 PPM

£599

A4 TEXT/A5 GRAPHICS @ 400dpi • A4 GRAPHICS @ 300dpi. A 2Mb RAM UPGRADE IS REQUIRED TO PRINT A FULL A4 PAGE OF GRAPHICS AT 400dpi

HP LASERJET III™ COMPATIBLE • FLASH ROM UPGRADEABLE!

+ VAT

Ricoh, have used their expertise to produce a 'first' in laser printers, the LP1200 with FLASH ROM. HP Laserjet III™ compatible, the LP1200 employs industry proven laser technology which, unlike LED printers, uses a laser light source to produce the most accurate and intense printed images at a range of print resolutions up to 400dpi. A fast efficient processor and engine, plus a straight paper path design allows printing at a full 6 pages per minute. The 2Mb RAM version prints a full A4 page of text or graphics at 300dpi. Using standard resident fonts and the alternate controller firmware supplied, it can also print an A4 page of text or A5 page of graphics at 400dpi and, using the Windows driver supplied, an A4 page of text at 400dpi from Windows 3.1.



SHOWN WITH  
UNIVERSAL FEEDER  
TOP TRAY (OPTIONAL EXTRA)

The 4Mb RAM version can print a full A4 page of graphics at 400 dpi and makes full use of the LP1200's 400 dpi printing capabilities, such as using Microsoft Windows fonts. Unique additional standard features include FLASH ROM 'future proof' technology and LAYOUT - a powerful document description language. The LP1200's unique internal FLASH ROM, which holds the printer controller firmware, can easily be updated as new developments in technology occur. This protects the investment you make in buying a Ricoh LP1200. Other manufacturers would require you to buy a new printer! Internal FLASH ROM and industry standard FLASH ROM PCMCIA cards can also be used to permanently store fonts, macros, graphics and extra emulations. Again, unlike the competition, the LP1200 includes LAYOUT, a powerful and intuitive document description language as standard. This offers unique opportunities to develop custom made printing systems. Forms and document templates can be designed complete with logos and stored electronically in the LP1200's FLASH ROM, alleviating the need for pre-printed forms!

The LP1200 comes with a 100 sheet A4 paper tray as standard. An optional universal feeder automatically feeds up to 150 sheets of paper (up to 169gsm), 15 envelopes, transparencies and labels.

## CONSUMABLES + ACCESSORIES

PRODUCT CODE	PRODUCT DESCRIPTION	PRICE EXC VAT
CAB 7500	Cable for PC/ST/Amiga	£8.47
KIT 5200	Laser Starter Kit inc Cable	£12.50
LAA 5238	Universal Feeder (2nd Tray)	£85.00
LAA 5262	2Mb RAM Module	£85.00
LAA 5210	Developer/Toner Cartridge	£65.00
LAA 5225	OPC Cartridge (Drum)	£89.00
LAA 5312	A4 Paper Tray (100 Sheets)	£35.00
FAX 1200	Ricoh Fax/Modem Software/Firmware	£120.00
MOD 7199	Pace Microlin FX Fax/Data Modem	£180.00
LAA 5272	Ricoh Flash ROM Card (0.5mb)	£49.00
LAA 5282	Ricoh Flash RAM Card (1mb)	£199.00
LAA 5290	Ricoh Flash RAM Card (4mb)	£599.00

All Prices are Exc VAT - CALL FOR A FULL PRICE LIST

\*Note: A4 paper tray is already included in the printer price. More A4 trays can be purchased to feed different coloured stationery.

### FEATURES

IBM	FUJITSU	CANON	STAR	RICOH
4029-020	VM600	4-PLUS	811	LP1200
£929	£699	£659	£999	£699
300 x 300	300 x 300	300 x 300	300 x 300	400 x 400
-	-	-	-	YES
Print Speed	6ppm	6ppm	4ppm	8ppm
Straight Paper Path	-	NO	(ONLY FACE UP)	YES
PCL 5 Printer Command Language	-	YES	-	YES
HP GL/2 Vector Graphics included	YES	YES	-	YES
Resolution Improvement/Enhancement	YES	YES	YES	YES
Standard RAM	1Mb	1Mb	512K	1Mb
Full A4/300 dpi graphics with standard RAM	-	-	-	YES
Warm Up Time	33 secs	25 secs	<60 secs	60 secs
First Page of Text Output	-	15 secs	31 secs	<15 secs
Document Description Language included	-	-	-	YES
Flash ROM	-	-	-	YES
Flash ROM Upgradeable Firmware	-	-	-	YES
PCMCIA Card Slot	-	-	-	YES
Scalable Resident Fonts - in HP LJ III Emulation	0	8	0	8
Resident Bit-Mapped Fonts	10	14	2	14
AGFA Intelligent Scalable Font Technology	-	YES	-	YES
HP LaserJet III Emulation Included	-	YES	-	YES
EPSON FX Emulation Included	-	YES	YES	YES
IBM ProPrinter Emulation Included	-	YES	YES	YES
Standard Tray Capacity	200	150	70	200
Protective cover on standard tray	YES	-	YES	YES
Cost per copy	1.9p	2.0p	2.1p	1.65p
Min-Max Paper Weight in gsm	60-163	60-157	60-105	60-169
Able to print on OHP Film	YES	YES	YES	YES
Able to print on 160gsm card (Manual Feed)	-	-	-	YES
Standby - Noise Level	38dB(A)	35dB(A)	<43dB(A)	<43dB(A)
Printing - Noise Level	50dB(A)	46dB(A)	<53dB(A)	<48dB(A)
PC Independent PLAIN PAPER FAX OPTION	-	-	-	YES

\*As quoted by manufacturers - July '93

**FREE**  
WINDOWS 3.1  
DRIVER  
SUPPORTS 300 & 400dpi  
AMIGA DRIVER  
SUPPORTS 300 & 400dpi

### CORPORATE SALES TEAM

Tel: 081-308 0888  
Fax: 081-308 0608

What to Buy  
for business

A - BEST BUY - DECEMBER 1992

### PLAIN PAPER FAX OPTION

ONLY £120

The LP1200 is the World's First Laser Printer to have the option of being upgraded to a PC independent plain paper fax. Just download the software (£120+VAT) into the LP1200's Flash ROM and connect any fax/modem to the Serial Port (we recommend the Pace Microlin FX - £180+VAT). Using the Windows and DOS software supplied you can send and receive Laser quality faxes all over the world!

#### FAX/MODEM SOFTWARE FEATURES - £120+VAT - FAX 1200

- Combine 2 or 4 faxes onto one page (A4)
- Greyscales, 3 types of images - Photographic, Line Art, Ricoh Scanned
- Phone number directory (using Windows driver)
- Broadcast (using Windows driver)
- Windows and DOS version
- Receive faxes when PC is switched off
- Use printer for printing while receiving faxes in background mode
- Use LaserJet or Layout protocol documents
- Send faxes from any Windows application

#### MODEM/HARDWARE FEATURES - £180+VAT - MOD 7199

- CCITT Group 3 send/receive
- Laser quality output
- Automatic retry on busy (x3)
- Memory useable - 2mb (upgradeable to 4mb)
- Document macros
- PCMCIA/Intel flash card firmware module available
- A4 paper - but can receive A3 pages scaled down to A4 - 300 dpi. Can send A4 pages scaled up to A3 - 300 dpi
- Out of paper receive
- 9600 baud Fax modem
- 2400 baud Data modem
- Hayes compatible - UK manufacture
- 5 year warranty on modem
- Includes: fax/modem, software, mains adaptor, serial cables, PSTN connection lead and manuals

FOR PCs & COMPATIBLES ONLY

### 6 PAGES PER MINUTE

### 2Mb RAM AS STANDARD

Upgrade to 4Mb RAM only £85+VAT - see below

### PCL5 - INC HP-GL/2

With scalable fonts and vector graphics

### SHARP EDGED PRINTING

Ricoh FIAL (Fine Image ALgorithm) enhances resolution

### 400dpi RESOLUTION

(Default res. - 300dpi. Will address 200, 240 & 400dpi)

### UNIQUE FLASH ROM

For controller upgrade and storage

### PCMCIA CARD SLOT

(PCMCIA/JEIDA Compatible)

### EXPANSION BOARD SLOT

For improved connectivity eg. Coax/Twinax, PC-LAN etc

### LAYOUT Document Description Language

### SERIAL + PARALLEL PORTS

### 1 YEAR ON-SITE WARRANTY

Next working day response

FREE DELIVERY

LP1200 WITH  
SINGLE BIN &  
2 Mb  
RAM  
LAS 5200

£599

+ VAT

= £703.83

RAM UPGRADE - 2Mb to 4Mb (LAA 5262) £85 + VAT  
UNIVERSAL FEEDER (LAA 5238) £85 + VAT

FAX OPTION Requires a modem (FAX 1200) £120 + VAT

MODEM Pace Microlin FX for Fax Option (MOD 7199) £180 + VAT

E&OE. All Trademarks are acknowledged



## SILICA OFFER YOU

- SHOWROOMS:** We have demonstration and training facilities at all our stores.
- THE FULL STOCK RANGE:** All of your requirements are available from one supplier.
- FREE CATALOGUES:** Will be mailed to you with special offers and full details of hardware, peripherals and software.
- PAYMENT:** We accept most major credit cards, cash, cheque or monthly terms (APR 29.8% - written quotes on request).

**SILICA**  
HOT LINE 081-309 1111

SILICA IS A DIVISION OF PRICIS PLC

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: 081-308 0606

LONDON SHOP: 52 Tottenham Court Road, London, W1P 0BA Tel: 071-580 4000  
Opening Hours: Mon-Sat 9.30am-6.00pm No Late Night Opening Fax No: 071-323 4737

LONDON SHOP: Selfridges (Basement Arena), Oxford Street, London, W1A 1AB Tel: 071-629 1234  
Opening Hours: Mon-Sat 9.30am-7.00pm Late Night: Thursday - 8pm Extension: 3914

SIDCUP SHOP: 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX Tel: 081-308 8811  
Opening Hours: Mon-Sat 9.00am-5.30pm Late Night: Friday - 7pm Fax No: 081-309 0017

ESSEX SHOP: Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA Tel: 0702 468039  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) Late Night: Thursday - 7pm Fax No: 0702 468039

IPSWICH SHOP: Debenhams (2nd Floor), Waterloo House, Westgate St, Ipswich, IP1 3EH Tel: 0473 221313  
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm) Late Night: Thursday - 8pm Fax No: 0473 287762

To: Silica, AMSHP-1293-75, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

### PLEASE SEND INFORMATION ON RICOH LP1200

Mr/Mrs/Miss/Ms: Initials: Surname:

Company Name (if applicable):

Address:

.....

Postcode:

Tel (Home): Tel (Work):

Which computer(s), if any, do you own?

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.

75W

THE MAKERS OF THE WORLD'S BEST AMIGA MAGAZINE

DON'T  
MISS!

# AMIGA

## FORMAT ANNUAL

SPECIAL ISSUE 8

From the makers of  
**AMIGA  
SHOPPER**

"New '040 4000s, CD  
drives for the A1200,  
news on GVP, and that's  
just in one interview! You  
shouldn't miss this!"  
Cliff Ramshaw  
Editor, Amiga Shopper



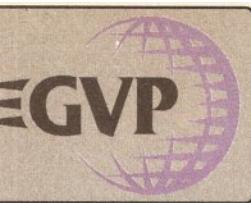
**YOUR INDISPENSABLE GUIDE  
TO THE YEAR AHEAD**

● Expert  
opinions on  
the year to  
come...

● Exclusive  
news on the kit  
you'll be buying  
in '94

● 140 packed  
pages of  
essential  
Amiga analysis!

**ON SALE THURSDAY 11 NOVEMBER**

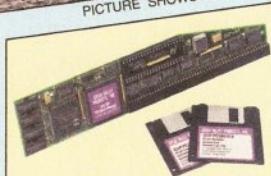


# AMIGA 500 OWNERS POWER UP!



NEW  
LOW  
PRICES  
SAVE  
UP TO  
£100

PICTURE SHOWS GVP HD8+, THE A530 FEATURES SIMILAR DESIGNER STYLING



## PC EMULATOR

FOR USE WITH HD8+ or A530

For extra power and flexibility you can also use GVP's custom expansion slot (mini slot) to fit a GVP PC emulator. This compact circuit board turns your Amiga 500 into a fully featured PC compatible computer, capable of running thousands of PC software titles, including Windows and MS-DOS 6.

- 80286 16MHz processor
- Norton SI index of 15
- Compatible with MS-DOS version 3.2 or later
- Windows 3.x compatible
- Includes 512K of FAST RAM
- Built-in video adaptor emulates VGA/EGA (mono), and Hercules
- Socket for optional 80287 co-processor
- Hard drive compatible
- Emulation support of Parallel and Serial ports, sound, realtime clock, CMOS RAM and extended memory

### PC EMULATOR

**£99**  
INC VAT - EMU 0500



## MORE STORAGE

### HARD DRIVES + RAM EXPANSION

A GVP HD8+ Hard Drive will have an immediate effect on your Amiga. Where you used to constantly swap disks, wait for files and programs to load and sit around waiting for disk accesses, you will now be pushed to keep up with the speed of your Amiga. Hard drives are used for the same storage purposes as floppy disks, but can hold a great deal more information and access this data much more quickly. The A500 HD8+ (pictured above) provides the ultimate in hard drive performance, it can also increase the memory of your Amiga by up to 8Mb, support up to six SCSI devices and provide PC compatible emulation via its custom expansion slot (mini slot) see left.

### COMPARISON CHART

FEATURES/MODEL	GVP HD8+	ICD TRIFECTA LX	COMMODORE A590 20Mb	EVESHAM REFERENCE 100
*TRANSFER RATE: Kb per second	1066	1028	564	400
GVP DESIGNER STYLING	✓	-	-	-
RAM EXPANSION(MAX)	8Mb	8Mb	2Mb	4Mb
MINI SLOT (FOR FUTURE EXPANSION)	✓	✓	-	-
SCSI INTERFACE	✓	✓	✓	✓
GVP PERFORMANCE Faaast ROM	✓	-	-	-
DEDICATED POWER SUPPLY	✓	✓	✓	-
PRICES FROM	£199	£295	£159	£329

\* ... the undisputed fastest Amiga hard drive available in the world."

Computer Mart April '92

"Without doubt the best hard drive available for the A500 ..." Amiga Format April '93

AMIGA GOLD FORMAT 92%  
BLUE CHIP AWARD

HD8+ 42Mb HD 0Mb RAM  
PREVIOUS PRICE £249  
**£199**  
INC VAT - HAR 0840

HD8+ 80Mb HD, 0Mb RAM  
PREVIOUS PRICE £249  
INC VAT - HAR 0888

HD8+ 120Mb HD, 0Mb RAM  
PREVIOUS PRICE £249  
INC VAT - HAR 0922

ALL PRICES INCLUDE VAT - DELIVERY IS FREE OF CHARGE IN THE UK MAINLAND

## SILICA - THE AMIGA SPECIALISTS



Before you decide when to buy your Amiga peripherals, we suggest you think very carefully about WHERE you buy them. Consider what it will be like a few months after buying them, when you may require help and advice with your new purchase. And, will the company you buy from contact you with details of new products?

At Silica, we ensure that you will have nothing to worry about. With our unrivalled experience and expertise, we can now 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 Service".

- COMMODORE APPROVED UPDATES: Official Hard Drive upgrades with ICL on-site warranty.
- FREE OVERNIGHT DELIVERY: On all hardware orders shipped in the UK mainland.
- TECHNICAL SUPPORT HELPLINE: A team of Amiga technical experts will be at your service.
- PRICE MATCH: We match competitors on a "Same product - Same price" basis.
- ESTABLISHED 15 YEARS: We have a proven track record in professional computer sales.
- PART OF A £50M A YEAR COMPANY: With over 200 staff - We are solid, reliable and profitable.
- BUSINESS + EDUCATION + GOVERNMENT: Volume discounts are available. Tel: 081-308 0888.

### SHOWROOMS:

We have demonstration and training facilities at all our stores.

### THE FULL STOCK RANGE:

All of your Amiga requirements are available from one supplier.

### FREE CATALOGUES:

Will be mailed to you, with special reduced price Amiga offers, as well as details on all Amiga software and peripherals.

### PAYMENT:

We accept most major credit cards, cash, cheque or monthly terms (APR 29.8% - written quotes on request).

**Silica**  
Silica is a division of Prosys PLC

HOT LINE 081-309 1111

08/10/93 - 09/40

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	
LONDON SHOP:	52 Tottenham Court Road, London, W1P 0BA	Tel: 071-580 4000
Opening Hours: Mon-Sat 9.30am-6.00pm	No Late Night Opening	Fax No: 081-308 0508
LONDON SHOP:	Selfridges (Basement Arena), Oxford Street, London, W1A 1AB	Tel: 071-629 3737
Opening Hours: Mon-Sat 9.30am-7.00pm	Late Night: Thursday - 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 - 7pm	Fax No: 081-309 0017
ESSEX SHOP:	Keddies (2nd Floor), High Street, Southend-on-Sea, Essex, SS1 1LA	Tel: 0702 468039
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm)	Late Night: Thursday - 7pm	Fax No: 0702 468039
IPSWICH SHOP:	Debenham's (2nd Floor), Waterloo House, Westgate St, Ipswich, IP1 3EH	Tel: 0473 221313
Opening Hours: Mon-Fri 9.30am-5.30pm (Sat 9.00am-6.00pm)	Late Night: Thursday - 8pm	Fax No: 0473 287762

To: Silica Systems, AMSHP-1293-120, 1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX

## PLEASE SEND ME A GVP COLOUR BROCHURE

Mr/Mrs/Miss/Ms: ..... Initials: ..... Surname: .....

Company Name (if applicable): .....

Address: .....

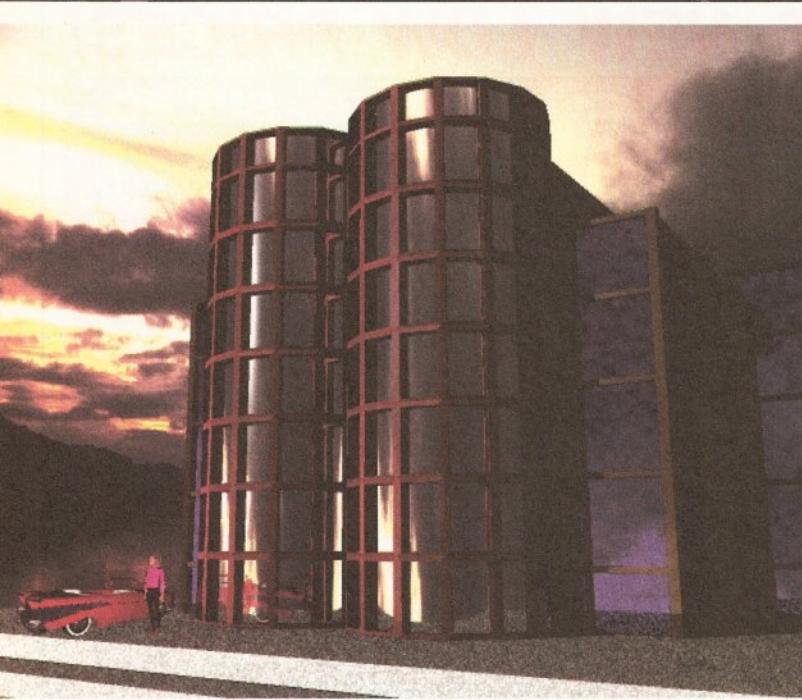
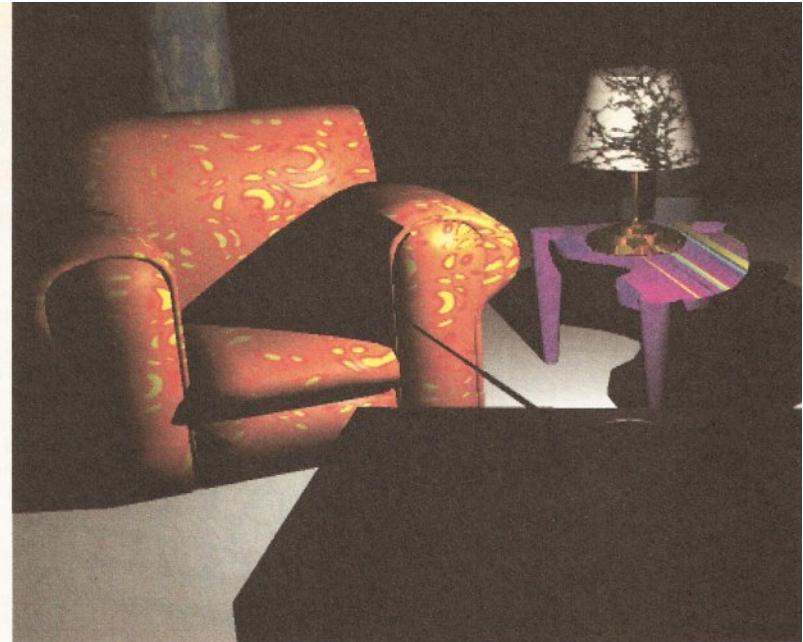
Tel (Home): ..... Tel (Work): .....

Postcode: .....

Which computer(s), if any, do you own? .....

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.

120A



# Now *Imagine* what you could do...

On the front of Amiga Format this month you'll find a complete, working version of *Imagine* 2. Inside you'll find a complete tutorial to help you get started with it, and an incredible upgrade offer to *Imagine* 3.0.

What are you waiting for, get to the newsagents... now!

**AMIGA**  
**FORMAT**  
MORE THAN JUST A MAGAZINE



Amiga Format 53 is on sale from 28 October 1993 until 24 November 1993. Don't miss it!

# PRODUCT LOCATOR

SOFTWARE

## SOFTWARE • SOFTWARE

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 the major brands 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're concentrating on commercial software packages. Next month it's public domain.

### PAINT PROGRAMS

Product	Supplier	Price	Screen Modes	Max Colours	Overscan	Animation	Rating	Issue
Deluxe Paint 4	Electronic Arts	£90	L/LI/M/H	4096	Yes	Yes	*****	10
Deluxe PhotoLab	Electronic Arts	£130	L/LI/M/H	4096	Yes	No	***	2
DigiPaint 3	Silica Systems	£80	L/LI	4096	Yes	No	****	2
The Graphics Studio	Accolade	£50	L/M	32	No	No	***	2
Personal Paint	MicroPACE	£59.95	L/LI/M/H/S/A	262,000	Yes	Yes	****	26
Photon Paint 2	MicroIllusions	£90	L/LI	4096	Yes	Yes	*****	2
SpectraColour	HB Marketing	£60	L/LI	4096	Yes	Yes	***	5

L = Low-Res, LI = Low-Res Interlaced, M = Medium, H = High-Res, S = Super Hi-Res, A = AGA

### ANIMATION SOFTWARE

Product	Supplier	Price	ANIM Compat	Onion Skin	X-Sheet	Sound	Rating	Issue
Disney Animation Studio	Silica	£80	Yes	Yes	Yes	Yes	****	1
MovieSetter	Silica	£80	No	No	No	Yes	****	14,23
Take-2	Rombo	£49	No	No	Yes	Yes	****	14

### SOLID MODELLING / RAY-TRACING

Product	Supplier	Price	Ray Tracing	24-bit	Animation	Bump Maps	Textures	Rating	Issue
Aladdin 4D	MicroPACE	£260	No	Yes	Yes	No	Yes	***	25
Draw 4D	Surface UK	£150	No	No	Yes	No	Yes	***	7
Expert 4D Junior	Genisoft	£39.95	Yes	No	No	No	Yes	****	21
Imagine	Silica	£235	Yes	Yes	Yes	No	Yes	*****	4,7,20
Imagine 2	Computech	£270	Yes	Yes	Yes	Yes	Yes	****	14
RayDance	Radiance	£100	Yes	Yes	No	Yes	Yes	***	14
Real 3D 1.4	Alternative Image	£120	Yes	Yes	Yes	Yes	Yes	*****	4,7,20
Sculpt 4D	Alternative Image	£400	Yes	Yes	Yes	No	Yes	*****	7
3D professional	Marcam	£260	Yes	Yes	Yes	No	Yes	***	7

### MISC. GRAPHICS

Product	Supplier	Price	Type					Rating	Issue
CineMorph	Silica	£99.95	Morphing program					****	23
Clip Art	Artworks	£6.95	Various IFF clip art files					-	29
FlightPaths	Meridian	£49.95	Animation effects for DPaint					****	26
Fractal Pro	MegageM	US\$209.95	Fractal graphics generator					-	29
Genesis	MicroIllusions	£50	Fractal Landscapes					****	11
MakePath	Meridian	£24.99	Animation editor for VistaPro					****	26
Morph Plus	MicroPACE	£180	Morphing program					****	23
Pixel 3D Pro	Micro-PACE	£144.95	Convert bitmaps to solid 3D					***	29
Terraform	Meridian	£34.99	Landscapes editor for VistaPro					****	26
VistaPro	Meridian	£100	Fractal Landscapes					*****	7

### IMAGE PROCESSORS

Product	Supplier	Price	24-bit	Max Colours	File Formats	Composition	Colour Control	Rating	Issue
Art Department	Silica	£100	Yes	16.7 m	Many	No	Yes	N/A	-
Art Department Pro	Silica	£200	Yes	16.7 m	Many	Yes	Yes	*****	10
ImageFX	Silica	£269.95	Yes	16.7 m	Many	Yes	Yes	****	27
ImageMaster	Amiga Ctr Scot.	£175	Yes	16.7m	IFF	Yes	Yes	*****	18

### PAGE LAYOUT PACKAGES

Product	Supplier	Price	Outline Fonts	Pantone	Postscript	24-bit Col	Colour Sep	Rating	Issue
CityDesk	Precision	£130	No	No	Yes	No	No	N/A	-
PageSetter 2	Silica	£100	Yes	No	No	No	No	N/A	-
PageStream 2.2	Meridian	£69.95	Yes	No	Yes	Yes	Yes	***	2,3
ProPage 4	Silica	£199.95	Yes	Yes	Yes	Yes	Yes	*****	27
Saxon Publisher	Surface UK	£250	Yes	No	Yes	Yes	Yes	***	17

### STRUCTURED DRAWING PROGRAMS

Product	Supplier	Price	Bezier Curves	Postscript	Outline Fonts		EPS compat	Rating	Issue
Art Expression	Silica	£150	Yes	Yes	Yes		Yes	****	24
DesignWorks	Silica	£100	Yes	Yes	Yes		No	N/A	-
ProDraw 3.0	Silica	£132	Yes	Yes	Yes		Yes	****	20

### CAD PACKAGES

Product	Supplier	Price	DXF Compat	No. of layers	Vector Fonts	PostScript		Rating	Issue
DynaCADD	Teleware	£650	Yes	256	Yes	Yes		****	3
UltraDesign	Marcam	£200	Yes	128	Yes	Yes		N/A	-
X-CAD 2000	Digital Multimedia	£129	Yes	255	Yes	With util included		N/A	-
X-CAD 3000	Digital MultiMedia	£300	Yes	255	Yes	With util included		N/A	-

### UTILITIES

Product	Supplier	Price	Type					Rating	Issue
Ami-Back	Micro-PACE	£69.99	Hard Disk Backup					****	29
Director 2	Alternative Image	£100	Video Presentation scripting language					***	19
Directory Opus 4	Silica	£64.95	Directory utility					*****	28
DOS Lab	GTS	£19.99	AmigaDOS help disk					***	26
Essence	Apex Software	£80	Algorithmic textures for Imagine 2					****	20
Flow 3.0	Silica	£80	Ideas Processor					***	10
GB Route Plus	Complex Computers	£80	Journey Planner					*****	10
GB Route Plus Edit	Complex Computers	£30	Editor For GBRoute					***	10
Hit Kit!	Gajits	£25	Sequences for Sequencer One					***	16
Home Office 2	Gold Disk	£99	Integrated applications software					*****	20
HotLinks	Silica	£70	Add on for PageStream 2.2					**	16
Maple V	Chapman & Hall	CAN\$530	Algebra solving utility					****	29
MapMaster	Alternative Image	£54	Image Mapping package					***	14
PowerWaves 3.1	Database	£17.95	Create wave-based 3D objects					****	21
Proper Grammar II	Gordon Harwood	£39.95	Grammar checker					*	30
Real Things	Living Data	£29.95	Animated animal brushes for DPaint					****	20

# PRODUCT LOCATOR

# PRODUCT LOCATOR

Product	Supplier	Price	Type	Rating	Issue
Reverser	Alternative Image	£10	Animation Utility	****	17
SaxonScript	Surface UK	£100	Postscript Interpreter	***	15
Shades	Meridian Software	£60	Gradient fills for PageStream	**	16
Smooth Talker	Zen Computers	£140	Video Prompting package	****	16
SurfaceMaster	Alternative Image	£28	Add on for Imagine	****	14
Touch Typist	Sector Software	£14	Teach yourself touch typing	****	15
Turbo Print Pro	Meridian	£49.95	Enhanced printing	****	11, 12
TypeSmith	Soft Logic	£135	Outline font editor	****	26
Word Power	Steve Rennocks	£9.95	Crossword solver	-	30

## WORD PROCESSORS

Product	Supplier	Price	Spell Checker	Thesaurus	Picture Import	Rating	Issue
Excellence 3	HB Marketing	£79.95	Yes	Yes	Yes	****	25
Final Copy 2	Gordon Harwood	£100	Yes	Yes	Yes	****	25
KindWords 3.0	Silica	£80	Yes	Yes	Yes	**	25
Mini Office 2	Europress	£69	Yes	No	No	****	17
Pen Pal	Harwoods	£80	Yes	No	Yes	****	6, 9, 25
Personal Write	MicroPace	£30	No	No	No	*	25
ProWrite 3.2	Silica	£143	Yes	Yes	Yes	***	12
Protex 5.5	Arnor	£150	Yes	Yes	No	****	6, 9, 25
Word Perfect	Sentinel	£230	Yes	Yes	No	N/A	-
Wordworth 2	Digita	£129.95	Yes	Yes	Yes	****	21, 25

## DATABASES

Product	Supplier	Price	Type	Programmable	dBASE Compatible?	Rating	Issue
InterBase	InterActivision	£29.95	Card Index	No	Yes	****	26
PowerBase 3.34	Steve Rennocks	£14.95	Card Index	No	No	****	30
ProData 1.2	Arnor	£100	Card Index	No	Yes	****	9
Mini Office 2	Europress	£69	Card Index	No	No	***	17
SuperBase	Precision	£30	Relational	No	Yes	****	9
SuperBase 2	Precision	£100	Relational	No	Yes	****	9, 12
SuperBase Pro 4	Precision	£400	Relational	Yes	Yes	****	4, 9

## SPREADSHEETS

Product	Supplier	Price	Lotus Compatibility	Graphs	Rating	Issue
Advantage	Silica	£100	Yes	Yes	****	1, 9
DGCalc	Digita	£40	No	No	N/A	-
K-Spread 3	Kuma	£70	Yes	Yes	***	9
K-Spread 4	Kuma	£100	Yes	Yes	****	9
Maxiplan 4	Meridian	£49.95	Yes	Yes	***	18
Mini Office 2	Europress	£69	No	Yes	***	17
ProCalc	Silica	£150	Yes	Yes	N/A	-

## MULTIMEDIA

Product	Supplier	Price	Interactive	External Drivers	ARexx	Rating	Issue
AmigaVision	Commodore	£80	Yes	Yes	Yes	N/A	-
CanDo 1.5	Checkmate Digital	£130	Yes	No	Yes	N/A	-
HyperBook	Silica	£100	Yes	No	Yes	****	6
Viva!	MicroDeal	£200	Yes	Yes	No	N/A	-

## VIDEO TITLERS

Product	Supplier	Price	Overscan	Transitions	Amiga Fonts	Horiz Crawl	Rating	Issue
Alternative Scroller	Alternative Image	£50	Yes	No	Yes	Yes	N/A	-
Broadcast Titler	Meridian	£327.27	Yes	Yes	No	Yes	****	2
Scala 1.1	Silica	£250	Yes	Yes	Yes	No	****	2
Scala 500	Silica	£100	Yes	Yes	Yes	No	N/A	-
Scala MM200	Scala UK	£395	Yes	Yes	Yes	Yes	****	21
Video Caption Designer	Maze	£200	Yes	No	Yes	Yes	***	3
Video Ease	Interactive Tchnlgy	£40	Yes	Yes	Yes	Yes	**	11

## DESKTOP VIDEO UTILITIES

Product	Supplier	Price	Type	Rating	Issue
Adorage	MicroPace	£79.95	Video Effects System	****	24
AntiA	Zen	£40	Font Enhancer	****	8
Deluxe Video 3	Electronic Arts	£100	Presentation System	N/A	-
Elan Performer 2	Silica	£180	Presentation System	****	11
ShowMaker	Silica	£250	Presentation System	***	10

## MIDI SEQUENCERS

Product	Supplier	Price	No. of Tracks	Amiga Smpls	Song Arrange	Rating	Issue
Bars&Pipes Pro	Zone	£200	Unlimited	Yes	Yes	****	3
KCS 3.5	Zone	£280	48	Yes	Yes	****	8
Master Tracks	MCM	£200	64	No	Yes	***	-
Music-X	Microllusions	£150	256	Yes	No	****	-
Music-X Junior	Microllusions	£50	256	Yes	No	****	-
OctaMED Professional	SeaSoft Computing	£30	16	Yes	Yes	****	29
Pro-24	Evenlode	£300	24	No	Yes	***	4
Sequencer One	Gajits	£90	20	Yes	Yes	****	2
Sequencer One Plus	Gajits	£50	32	Yes	Yes	****	16
Tiger Cub	Zone	£100	12	Yes	Yes	****	-
Trax	MCM	£70	64	No	Yes	****	-

## MISC MIDI SOFTWARE

Product	Supplier	Price	Type	Rating	Issue
Audio Sculpture	SMG	£50	Sample Sequencer	**	12
CMPanion	Gajits	£100	Patch Editor	****	6
Caged Artist	Zone	£100	Patch Editor	***	6
Copyist Apprentice	Zone	£100	Score Notation	****	-
Copyist DTP	Zone	£230	Pro Score Notation	****	-
Dr T Boom Box	Zone	£45	Music for beginners	***	21
Mugician	Thalamus	£30	Sample Sequencer	***	-
Quartet	MicroDeal	£50	Sample Sequencer	***	-
SuperJAM!	Blue Ribbon Sound	£100	Algorithmic Composition	****	15
TechnoSound Turbo 2	New Dimensions	£49.95	Sample editor	****	30
X-Or	Zone	£220	Librarian	****	6

# PRODUCT LOCATOR

SOFTWARE

## EDUCATIONAL SOFTWARE

Product	Supplier	Price	Type	Rating	Issue
Answer Back Quiz	Kosmos	£20	3 'R's	****	3
<b>Better Maths</b>	<b>School Software</b>	<b>£23</b>	<b>Maths</b>	***	4
Better Spelling	School Software	£23	Writing	****	3
<b>Cave Maze</b>	<b>Coombe Valley</b>	<b>£12</b>	<b>Quiz</b>	***	7
Count & Add	Lander Software	£26	Maths	****	10
<b>Donald's Alphabet Case</b>	<b>Entertainments Int.</b>	<b>£25</b>	<b>Reading</b>	***	2
Early Learning Maths	ESP Software	£20	Maths	***	6
<b>First Letters</b>	<b>Rainbow</b>	<b>£8</b>	<b>Reading</b>	***	7
French Mistress	Kosmos	£20	French	****	4
<b>Fun School 3</b>	<b>Europress</b>	<b>£25</b>	<b>3 'R's</b>	*****	2
Fun School 4	Europress	£25	3 'R's	*****	9
<b>Game, Set &amp; Match</b>	<b>GeniSoft</b>	<b>£21</b>	<b>Maths</b>	***	2
Hooray For Henrietta	Sketlander	£25	Maths	***	2
<b>Kids Type</b>	<b>GeniSoft</b>	<b>£25</b>	<b>Writing</b>	***	2
Learn to Read With Prof	Prisma	£25	Reading	***	2
<b>Let's Spell</b>	<b>Softstuff</b>	<b>£20</b>	<b>Writing</b>	***	2
Magic Maths	School Software	£23	Maths	***	2
<b>Maths Adventure</b>	<b>Kosmos</b>	<b>£26</b>	<b>Maths</b>	***	12
Maths Blaster Plus	Ablac Computec	£40	Maths	***	3
<b>Maths Dragons</b>	<b>Coombe Valley</b>	<b>£12</b>	<b>Maths</b>	***	7
Maths Mania	School Software	£23	Maths	***	3
<b>Mickey's Zoo</b>	<b>Entertainments Int.</b>	<b>£25</b>	<b>Maths</b>	***	2
MicroFrench	LCL	£24	Language Tutor	****	17
<b>Money Matters</b>	<b>Triple 'R' Educational</b>	<b>£20</b>	<b>Money</b>	*****	-
Pepe's Garden	Prisma	£26	3 'R's	****	10
<b>Pick A Puzzle</b>	<b>Deja Vu</b>	<b>£2.50</b>	<b>Jigsaw</b>	***	2
Picture Book	Triple 'R' Education	£20	3 'R's	*****	10
<b>Play It Safe</b>	<b>Deja Vu</b>	<b>£3.50</b>	<b>General</b>	***	2
Puzzle Book 1	Softstuff	£20	3 'R's	***	2
<b>Reasoning With Trolls</b>	<b>Coombe Valley</b>	<b>£15</b>	<b>Quiz</b>	***	8
Sesame Street	Merit Software	£16	Painting	***	2
<b>Shapes &amp; Colours</b>	<b>Rainbow</b>	<b>£8</b>	<b>Basic</b>	***	7
Spell Book	SoftStuff	£8	Writing	***	6
<b>Spell!</b>	<b>Europress</b>	<b>£9</b>	<b>Writing</b>	***	3
Spellbound	Lander Software	£26	Writing	***	10
SpellCopter	ESP Software	£20	Writing	***	6
The Three Bears	School Software	£23	Reading	***	2
<b>Things To Do With Words</b>	<b>Softstuff</b>	<b>£20</b>	<b>Writing</b>	***	4
Weather Watcher	GeniSoft	£25	Weather	***	4
What Is It?	GeniSoft	£20	Geography	***	4

## PROGRAMMING LANGUAGES

Product	Supplier	Price	Language	Compiler	Rating	Issue
AMOS	Europress	£50	BASIC	Separate	*****	3,9
<b>AMOS 3D</b>	<b>Europress</b>	<b>£30</b>	<b>BASIC Extension</b>	-	*****	5,7
AMOS Compiler	Europress	£30	Compiler	Yes	***	5,9
<b>AMOS Professional</b>	<b>Europress</b>	<b>£69.95</b>	<b>BASIC</b>	<b>Separate</b>	*****	20
AMOS Pro Compiler	Europress	£34.99	Compiler	-	****	30
<b>AMOS Tome</b>	<b>Deja Vu</b>	<b>£30</b>	<b>BASIC Extension</b>	-	***	11
Aegis Visionary	Precision	£59	Adventure	Yes	***	17
<b>ArgAsm</b>	<b>HB Marketing</b>	<b>£60</b>	<b>Assembly</b>	-	***	9
Aztec C	Precision	£130	C	Yes	***	9
<b>Blitz</b>	<b>Siren Software</b>	<b>£70</b>	<b>BASIC</b>	Yes	***	3,9
Devpac 3	HiSoft	£70	Assembly	-	*****	10,12
<b>Easy AMOS</b>	<b>Europress</b>	<b>£35</b>	<b>BASIC</b>	<b>No</b>	*****	12
GFA BASIC 3.5	GFA Data Media	£50	BASIC	Separate	***	3,9
<b>GFA Compiler</b>	<b>GFA Data Media</b>	<b>£30</b>	<b>Compiler</b>	-	***	3,9
HiSoft BASIC	HiSoft	£50	BASIC	Yes	***	9
<b>HiSpeed Pascal</b>	<b>HiSoft</b>	<b>£100</b>	<b>Pascal</b>	Yes	***	19
Lattice C 5	HiSoft	£230	C	Yes	****	3,9
<b>M2 Amiga</b>	<b>Real Time Associates</b>	<b>£125</b>	<b>Modula-2</b>	Yes	***	7,9

SUPPLIER LIST • SUPPLIER LIST

Ablac Computec	0626 331464	Coombe Valley	0626 779695	GeniSoft	0753 686000	Meridian	081 543 3500	Scotlander	041 357 1659
Accolade	071 738 1391	Deja Vu	0942 495261	GFA Data Media	0734 794941	Merit Software		School Software	
Alternative Image	0533 440041	Digita	0395 270273	Harwoods	0773 836781		0101 214 385 2353		010 353 61 45399
Amiga Centre Scotland		Digital Multimedia	0702 206165	HiSoft	0525 718181	Microllusions	0480 496497	Seasoft	0903 850378
	031 557 4242	Electronic Arts	0753 549442	Interactive Technology		New Dimensions	0291 690 933	Sentinel	0932 231164
Arnor	0733 68909	Entertainments Int	0268 541212		0423 501321	Omega Projects	0942 682206	Silica	081 309 1111
Artworks	0469 588 138	ESP Software	0702 600557	Kosmos	0525 53942	Prisma Software	0244 326244	Siren Software	061 724 7572
Checkmate Digital	0707 664684	Europress	051 357 1275	Kuma	0734 844335	Radiance	0101 408 270 7420	SMG	0274 562999
Cloudhall	0604 231211	Evenlode SoundWorks		Lander Software	041 357 1659	Rainbow	0392 77369	Softstuff	0732 351234
Commodore	0628 770088		0993 898484	Marcam Ltd	071 258 3454	Real Time Associates		Surface UK	081 566 6677
Complex Computers		ExpressWorks	0252 726255	MCM	081 963 0663		081 656 7333	Teleware	0562 882 125
	0706 224531	Gajits Music	061 236 2515	MegageM	0101 865 349 1104	Rombo Productions		Triple 'R' Software	0742 780370
Computech	0702 206165	Software		Micro-PACE	0753 551 888		0506 466601	Zone	081 7666564

# BUYING ADVICE FOR SHOPPERS

**Whether you're buying over the phone or at a local store, here's our advice on getting 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 everything works properly.
- Make sure you have all the necessary leads, manuals or other accessories you should have.
- 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 use to buy, you are entitled to return a product if it fails to meet any one of the following three criteria:

- 1 The goods must be of "merchantable quality".
- 2 They must be "as described".
- 3 They must be fit for the purpose for which they were sold or for the purpose you specified when ordering. 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.
 When returning anything, ensure that you have proof of purchase and that you return the item as soon as possible after receiving it. For this reason it is important that you check as soon as it is delivered to make sure everything you ordered is there and works as it is supposed to.

## 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 your money back 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 sources 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**

## BUYING BY MAIL

• Before you send any money, ring the supplier to confirm that the item you want is in stock and when the delivery is likely to be made. Enquire about returning unwanted goods and the supplier's refund policy. Find out about hidden extras like postage and packing charges, and whether the prices quoted include VAT.

• Beware of companies that do not include an address in their adverts.

• If ordering goods of more than £100 in total value, always try to use a credit card – if anything goes wrong, you will be legally entitled to claim against the credit card company, even if the retailer has gone bust. You may also get extra insurance – check with the credit card company.

• Always buy from the most recent issue of *Amiga Shopper*.

• When your order arrives, check everything carefully. If anything is missing, don't use the product at all – contact the supplier immediately. If something doesn't work, make the obvious checks such as the fuse, but don't try to fix the product.

• If a problem does arise, contact the supplier in the first instance and calmly and politely explain your problem. In most cases these things are merely a mix-up or a misunderstanding that the supplier will happily put right. If you think you have a genuine grievance that has not been resolved, you might consider contacting your local Trading Standards Officer (the number will be in the phone directory – check the local council listing).

• Always keep records of correspondence with any mail order company you deal with and also make a note of where and when you saw the product advertised. False or misleading advertising is an offence, and suppliers must stick to what they've said in adverts.

## ADVERTISERS INDEX

1st Computing Centre (Leeds) .....	42-43
Activa .....	IBC
Alpha .....	71
Amiga Format .....	124
Amiga Format Specials .....	122
Anglia PD .....	110
Arnor .....	69
B & T Fonts .....	52
Brighton Computer Supplies .....	84
Caligraphy .....	77
Coombe Valley .....	65, 110
Cumana .....	60
DTBS .....	77
Dataplex .....	65
Digitas .....	8
Direct Computer Supplies .....	49
Diskoverys .....	116
Exnet .....	110
Express PD .....	113
Fairbrothers .....	65
Fujitsu .....	23
Future Books .....	105, 114
Gasteiner .....	34-35
Grapevine .....	92
Hobbyte .....	58-59
Indi .....	IFC, 4-7
Just Amiga Monthly .....	52
KT's PD .....	113
Kingsway UK .....	52
Kosmos .....	71
Lola .....	83
Meridian Software .....	83
Microcentre .....	77
New Horizon .....	41
PC Gamer .....	89
PD Network .....	110
PD Soft .....	115
Phoenix Computer World .....	30-31
PM Solutions .....	71
Power Computing .....	24-25, OBC
Sea Soft .....	113
Sector 16 .....	110
Selec Software .....	65
Selectafont .....	71
Siam .....	92
Silica .....	57, 73, 97, 107, 121, 123
Snap .....	100
Software Demon .....	18-19
Tec-nol .....	52
Trilogic .....	44
Videoworld .....	83
Visage .....	113
WTS .....	66-67, 100
We Serve .....	108
White Knight Technology .....	50-51
Kew=11 .....	113

# AMIGA SHOPPER

Issue 32 - December 1993

**Editor:** Cliff Ramshaw  
**Art Editor:** Mark Nottley  
**Production Editor:** Alex Soboslay  
**Staff Writer:** Gus Chandler  
**Consultant Editors:** Jeff Walker, Mark Smiddy, Ian Wrigley  
**Contributors:** Jason Holborn, Gary Whiteley, Dave Winder, Toby Simpson, Will Rees, Jolyon Ralph, Paul Overaa  
**Photography:** Stuart Baynes  
**Cover image manipulation:** Simon Windsor  
**Ad Manager:** Margaret Clarke  
**Ad Production Manager:** Tracy O'Donnell  
**Ad Design:** Lisa Withey  
**Production Technicians:** Jon Moore, Mark Gover, Heath Parsons, Simon Windsor, Chris Stocker  
**Group Production Manager:** Judith Middleton  
**Production Controller:** Claire Thomas  
**Production Control Assistant:** Ginette McKeown  
**Paper Controller:** Fiona Deane  
**Admin Assistant:** Suzannah Angelo-Sparling  
**Publisher:** Stuart Anderton  
**Group Publishing Director:** Greg Ingham  
**Writer of the month:** Mario Puzo

Member of the Audit Bureau of Circulations  
 Audited circulation  
 January - June 1993: 45,290

Printed by Southernprint Ltd, Poole, Dorset  
 ISSN 0961-7302 Printed in the UK  
 Circulation Manager: Jon Bickley  
 News Trade Distribution -  
 UK: Future Publishing 0225 442244  
 Worldwide: MMC Ltd 0483 211678

Copyright © 1993 Future Publishing Ltd. No part of this magazine may be reproduced without written permission. We welcome contributions for publication but regret that we cannot return any submissions. Any correspondence will be considered for publication unless you specifically state otherwise, and we reserve the right to edit letters published.

Amiga Shopper recognises all copyrights contained in this issue. Where possible we have acknowledged the copyright holder. Please contact us if we have failed to credit your copyright - we will be happy to correct any oversight.

Editorial: 30 Monmouth Street, Bath, Avon BA1 2BW  
 0225 442244 Fax: 0225 446019  
 E-mail: amshopper@cix.compulink.co.uk

Advertising: Rayner House, 23 Higher Hillgate, Stockport SK1 3ER. 061 474 7333 Fax: 061 476 3002

Subscriptions: Future Publishing, Somerton, Somerset TA11 6TB. 0458 74011

**Future Publishing**  
 Your Guarantee of Value  
 This magazine comes from Future Publishing, a company founded just eight years ago but now selling more computer magazines than any other publisher in Britain. We offer:

**Better advice.** Our titles are packed with tips, suggestions and explanatory features, written by the best in the business.

**Stronger reviews.** We have a cast-iron policy of editorial independence, and our reviews give clear buying recommendations.

**Clearer design.** You need solid information, and you need it fast. So our designers highlight key elements in the articles by using charts, diagrams, summary boxes, annotated photographs and so on.

**Greater relevance.** At Future, editors operate under two golden rules:

- Understand your readers' needs.
- Satisfy them.

**More reader interaction.** We draw strongly on readers' contributions, resulting in the liveliest letters pages and the best reader tips. Buying one of our magazines is like joining a nationwide user group.

**Better value for money.** More pages, better quality: magazines you can trust.

The home of Britain's finest computer magazines: Amiga Shopper, Amiga Format, Amiga Format Specials, Amiga Power, PC Answers, PC Plus, Sega Power, Mega, Commodore Format, PCW Plus, ST Format, GamesMaster, Amstrad Action, PC Format, Total!, Super Play, Edge, MacFormat, Future Music, Sega Zone and Game Zone

# IN NEXT MONTH'S ISSUE

**A**re you in for a treat next month? Well yes, you are, actually. Not only are you going to get an issue of *Amiga Shopper* jam-packed with the sort of information that makes it such a lively, vibrant and, well, informative read, not only will it be sold with a cover disk jam-packed with the sort of thing that makes cover disks so full, but you'll also be getting a cover-mounted booklet thang. We're so good to you.

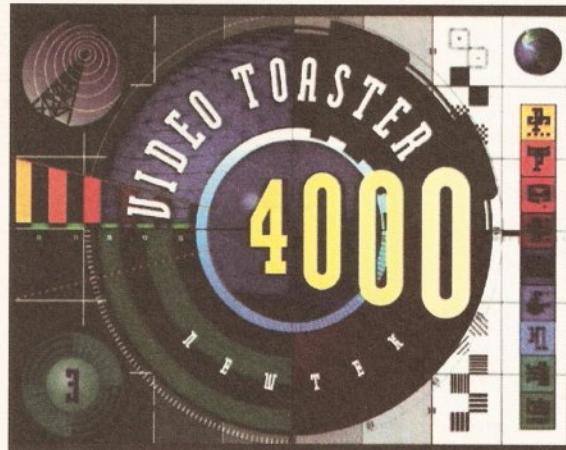
"So what's in the cover-mounted booklet thang?" you're no doubt saying with bated breath and fevered brow. Well, excited ones, it contains excerpts from a forthcoming book on C programming written by your very own me, the editor, Cliff! And on the cover disk there'll be *DICE*, the best shareware Amiga C compiler available. It's a fully-integrated system, and with its help and the tip-top information in the book you'll be writing your own C programs in no time.

But hey, I've been so busy with gross self-publicity that I've yet to tell you what's going to be in the magazine itself. The fact of the matter is, it's going to be pretty damned special, too.

## WIN A YEAR'S FREE SUBSCRIPTION

Who played Dr Richard Kimble in the '60s TV series *The Fugitive*? Send your answers to "Harrison Ford is right out", *Amiga Shopper*, 29 Monmouth Street, Bath BA1 2DL. The closing date is Tuesday 16 October. The first correct answer wins.

Last month's winner was Adam Milner of Brighton. Colonel Korn's first name is Blackie.



*NewTek's Video Toaster, allied with the Prime Image standards converter, is just one of the many, many, many products we'll be giving you the low-down on next month.*

shopping. Maybe you're planning to buy something for an Amiga-owning friend, or perhaps you're looking for that extra-special something to put on that list you'll be sending to Santa Claus yourself - whatever, you can be sure that you'll find plenty of highly desirable hardware and software items reviewed and rated in issue 33 of *Amiga Shopper*, on sale Tuesday 7 December. **AS**

## YOU'VE WON!

There are five lucky and, dare we say it, exceptionally talented winners of October's *Get The Power* competition. They are: E Dickenson of Croydon, Mark Gilmore of Locks Heath, Hants., Jarmo Willman of Finland, Richard Quinney of Colchester in Essex and Graham Anderson of Glasgow.

Each wins a high-density XL floppy drive, courtesy of those ultra-nice people at Power Computing. Congratulations.

## MAG\*SAVE

AMIGA SHOPPER SELLS LIKE 21-INCH FLARES WITH KNEE POCKETS DON'T - SO RESERVE A COPY AT YOUR LOCAL NEWSAGENT NOW!

DEAR NEWSAGENT, Please reserve/deliver me a copy of *Amiga Shopper* every month, beginning with the January issue, which goes on sale on Tuesday 7 December.

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

• NOTE TO NEWSAGENT: *Amiga Shopper* is published by Future Publishing (0225 442244) and is available from your local wholesaler.

• PS Oh, and if you do have any problems getting hold of your favourite Amiga mag, call Kate Elston on 0225 442244 and she'll help you out.

AMIGA  
SHOPPERAT-A-GLANCE  
GUIDE

To help you find what you want quickly and easily, here is a cross-referenced list of all the products and subjects covered in this month's *Amiga Shopper*. You'll find a detailed index to the many subjects dealt with in the problem-solving *Amiga Answers* section given on page 37. The page numbers given are for the first page of the article in which the subject is mentioned.

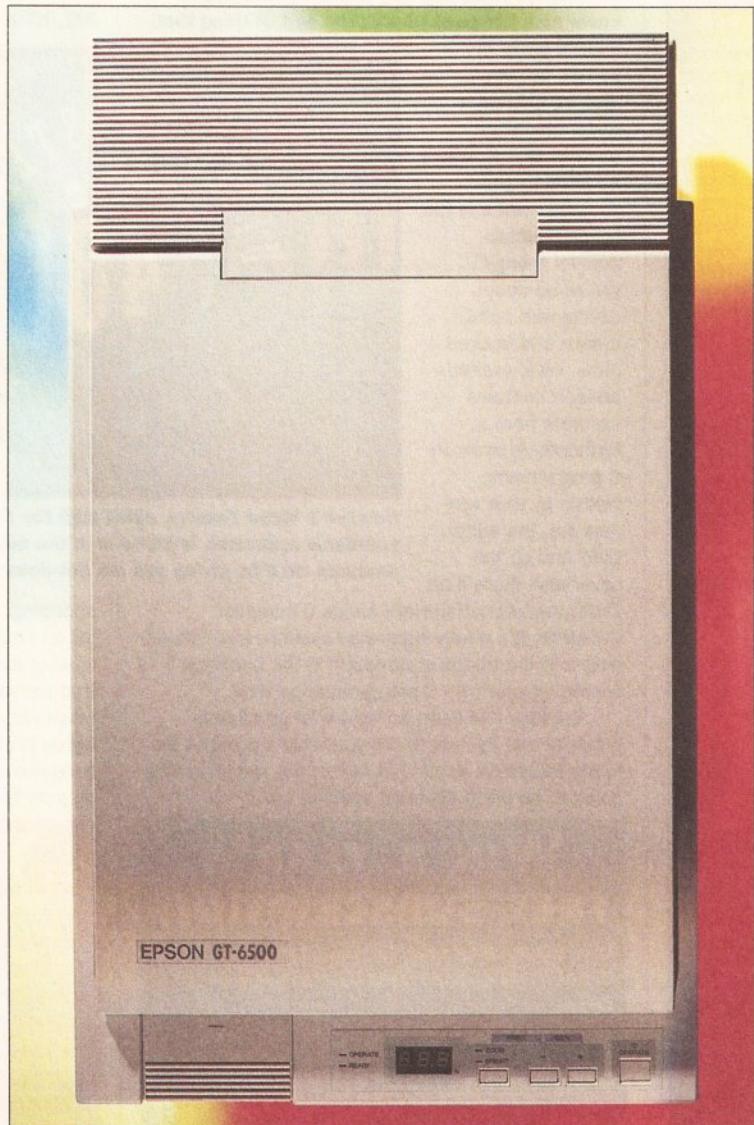
AdPro	14
ADTs	85
AlfaColor	14
Amiga Advocate	62
AmigaDOS	74
AMOS	61, 101
ARexx	106
AS Paint	12, 101
Back issues	90
Brilliance	28
Buying advice	128
C Programming	69
ColourBurst scanner	14
Comms	92
Competition	130
Competition winners	129
Cover disk	12
Epson flatbed scanner	14
File transfers	94
Final Writer	9
Future Entertainment	10
Graphics	28, 61, 101
Image distortion	61
ImageFX	14
ImageMaster	14
Legal advice	62
Letters	104
Listings	61
Music	81
News	9
OCR	14
PageStream	9
PowerColour scanner	14
PowerScan	14
Product locator	125
Public domain	111
Reader ads	64
Resource handling	85
Scanners	14
Sequencing	81
Stacks	85
Subscriptions	98
Talking Shop	104
User groups	88
Video	78
Virus Checker	104, 106

**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, Avon BA1 2BW.

WIN • WIN • WIN • WIN • WIN • WIN

## Scan for free



## Win an Epson GT 6500 P flatbed 24-bit colour scanner, worth £799.

**T**his has got to be one of the best prizes we've ever given away - £800 of scanner that our reviewer reckons is comparable to rival models worth thousands of pounds.

Using hand scanners is all very well, but why bother when you can put your image to be scanned on to a flatbed and let the machine get on with it. Perfect results, in up to 16.8 million colours, every time.

The GT 6500 P, kindly donated by the good folk at Epson, has more features than a scanner with lots of features. It will handle A4 length and

US Letter width pages, and it can even be used as a colour

## THE QUESTIONS

1. Which interface method is used to connect the Epson GT 6500 P to the Amiga?

- (a) parallel
- (b) serial
- (c) SCSI

2. If you're going to scan an image in monochrome mode, how many bits per pixel would you use?

- (a) 1
- (b) 8
- (c) 24

3. Who directed the '80s science fiction film *Scanners* (you know, the one with the exploding head)?

- (a) Peter Greenaway
- (b) Steven Spielberg
- (c) David Cronenberg

WIN • WIN • WIN • WIN • WIN • WIN

photocopier if you connect it up to a 24-pin colour printer or a Hewlett-Packard PaintJet.

It can scan in a variety of resolutions, ranging from 50 to 600 dots per inch. A variable zoom from 50% to 200% enables you to simulate scanning at up to 1,200 dpi. You can also select from seven brightness levels, five sharpness levels, four colour correction settings, six gamma correction settings, three halftoning modes and four built-in dither patterns. The list goes on...

Needless to say, it's a wonderful piece of kit, and using it is simplicity itself. If you are lucky enough to win, please remember that you'll need some software to enable your Amiga to talk to it. The various compatible packages are reviewed and rated in our scanners feature starting on page 14.

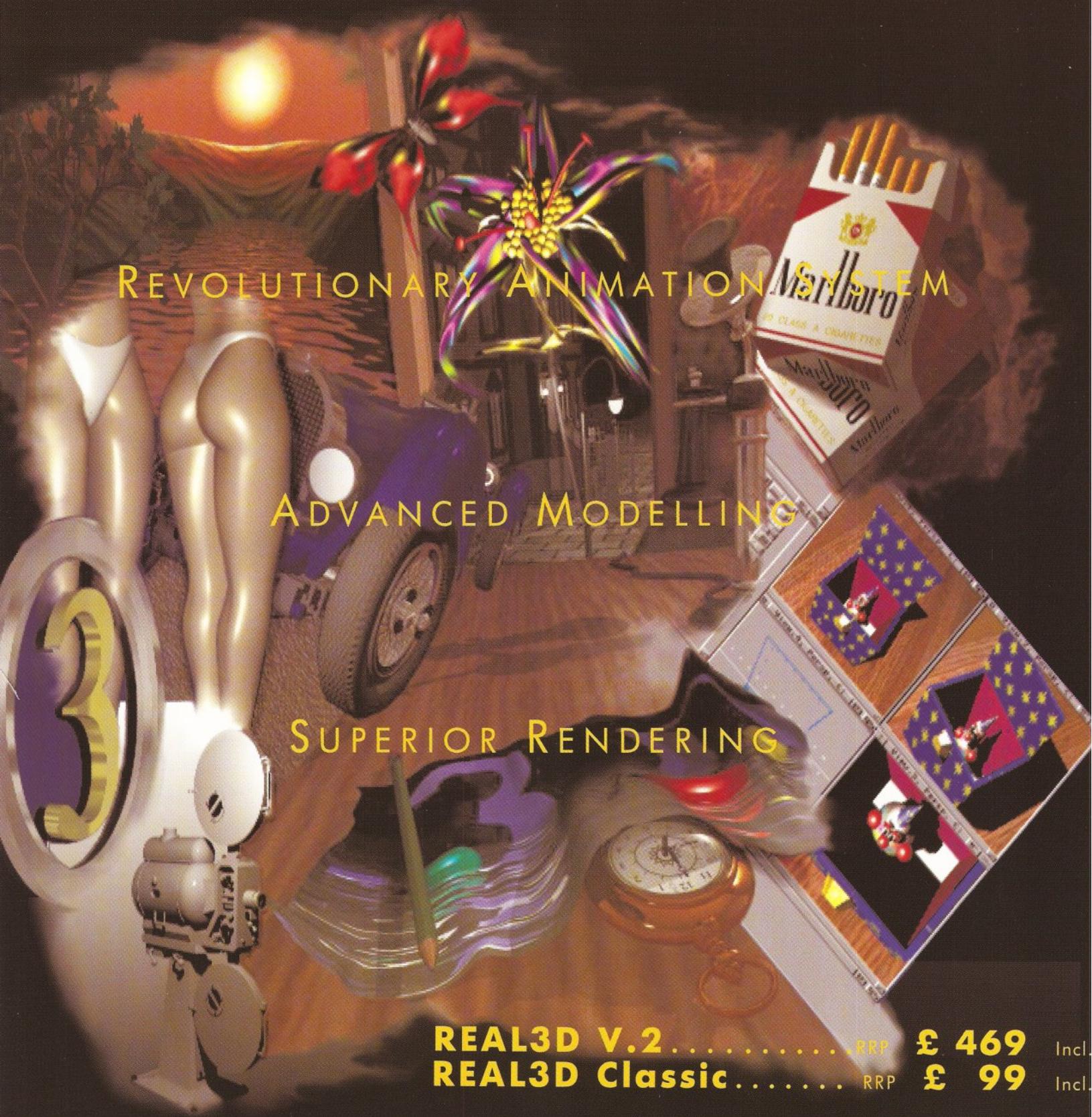
If you want to be a contender, have a go at the three ridiculously easy questions in the box. Send your answers written on the back of a postcard (or a sealed envelope), along of course with your name and address, to:

**What a scan!**  
**Amiga Shopper**  
29 Monmouth Street  
Bath BA1 2DL

The closing date for entries is Friday 3 December. The winner will be the first correct entry drawn from the editor's cardboard box (he still can't afford a hat). Send only one entry per household and please state if you don't want your name included on a mailing list.

The competition is not open to employees of Future Publishing or Epson; the editor's decision is final; and the relationship between matter and energy can be described by the equation  $E=mc^2$ . **AS**

YOU DO NOT HAVE TO IMAGINE TO CREATE  
YOUR OWN REALITY



REVOLUTIONARY ANIMATION SYSTEM

ADVANCED MODELLING

SUPERIOR RENDERING

**REAL3D V.2..... RRP £ 469**  
**REAL3D Classic..... RRP £ 99**

Incl.  
Incl.

REAL3D is a product of Realsoft OY, Finland.  
Marketed by Activa International B.V., P.O. Box 23260, 1100 DT Amsterdam,  
Holland, TEL. # 31 20 691 1914 FAX. # 31 20 691 1428, BBS. # 31 20 697 1880

Power Computing's latest 32-bit memory expansion for the Amiga 1200 is now available. The PC1208 combines exceptional value with incredible features. The original PC1204 4MB 32-bit memory expansion is still available, and is exceptional value.

**SIMM Technology** - The PC1208 uses the latest industry standard 32-bit SIMM technology allowing you to use 1MB, 2MB, 4MB and 8MB modules.

**Zero Wait State** - The PC1208 never leaves the processor waiting around for data, meaning your Amiga 1200 will run at its maximum speed. Simply adding either a PC1204 or PC1208 to your Amiga 1200 will increase its processing speed by 219%.

**Real-Time Battery Backed Clock** - Allows files to be date-stamped with the correct time and date so that you know exactly when they were created.

**Ultra Fast FPU** - With the addition of a maths co-processor intensive maths operations will be accelerated by up to fifty times. The PC1208 is the only memory expansion which offers the capability to take either PGA or PLCC type FPU's.

**Easy To Fit** - Fitted in minutes without the need to remove the computer's case. Does not effect your warranty.

**PCMCIA Friendly** - Unlike other expansion boards the PC1208 does not conflict with your Amiga 1200's card slot, using the PCMCIA friendly jumper even an 8MB SIMM can be used.

#### PC1208 Memory Expansion

PC1208 Bare	£70.00	PC1208 FPU's add:	
PC1208 1MB	£115.00	20Mhz 68881	£35
PC1208 2MB	£170.00	33Mhz 68882	£80
PC1208 4MB	£270.00	40Mhz 68882	£114
PC1208 8MB	£465.00	50Mhz 68882	£154

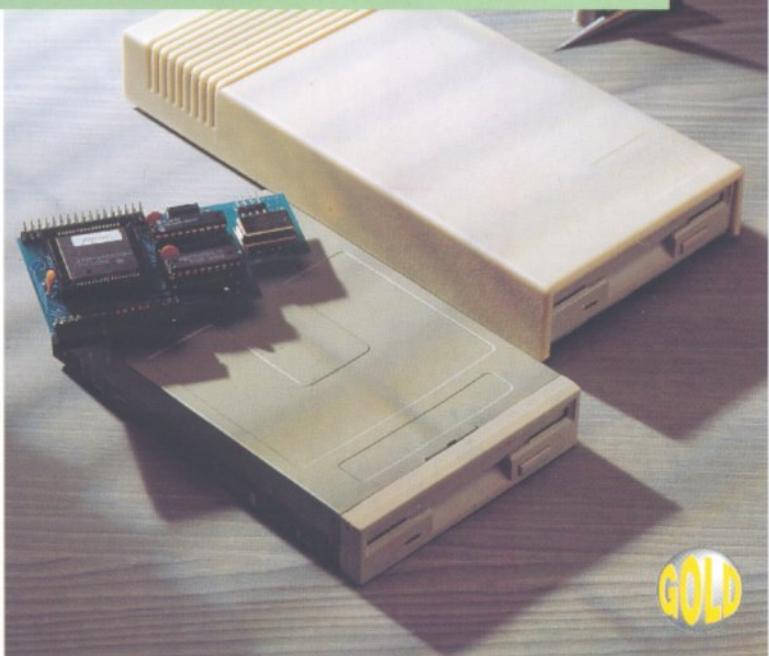
#### PC1204 Memory Expansion

PC1204 4MB no FPU	£185.95
PC1204 20MHz 68881	£219.95
PC1204 25MHz 68882	£279.95
PC1204 33MHz 68882	£289.95
PC1204 40MHz 68882	£299.95
PC1204 50MHz 68882	£339.95

## The PC1204 & PC1208 Memory Expansion for the Commodore Amiga 1200.



## The XL 1.76MB Internal & External Drive for the Commodore Amiga.



Power Computing's XL 1.76MB Drive\* for any Commodore Amiga is now available. The XL Drive includes these many features:

**Formats to 1.76MB** - Using high density disks you can fit a massive 1.76MB on each disk.

**Acts as a standard drive** - Insert an 880K Amiga disk and the drive behaves like any other Amiga drive.

**Fully compatible** - Will read and write disks written on an Amiga 4000 internal high density drive.

**Compatible with PC disks\*\*** - Also read and write high density PC disks using a suitable device driver.

**Compact size** - No larger than a standard 880K floppy disk drive.

**High quality design** - Uses a high quality Sony high density mechanism.

**Easy to Fit** - The external XL Drive simply plugs into the floppy drive port at the rear of your Amiga. The internal XL Drive simply replaces or adds to your existing drive(s). These drives can be installed in minutes and no soldering is required.

**Software compatible** - The XL series is fully compatible with all existing hardware and software.

**External XL Drive £79.95**

**Internal XL Drive £75.00**

**A4000 Internal XL Drive £79.95**

\*Requires Kickstart 2 or above. \*\*Requires Workbench 2.1 or above.

48Hr delivery £2.50, 24Hr delivery £4.50

Parcel Post delivery £1 (Orders under £50 & UK mainland only)

Specifications and prices subject to change without notice

All Trademarks acknowledged. VAT included



Power Computing Ltd  
Unit 8 Railton Road Woburn Road Industrial Estate  
Kempston Bedford MK42 7PN  
Tel 0234 843388 Fax 0234 840234

Goods are sold subject to our standard terms and conditions of sale and are available on request.