

# AMIGA USER

## INTERNATIONAL

DECEMBER 1988

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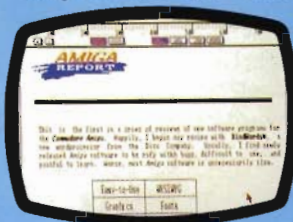




# KINDWORDS

# MORE KINDWORDS

Impressive reviews? They'll be lost for words when they see the new KindWords 2.0. It's still as easy to use as its famous predecessor but now boasts a new 100,000 word English dictionary licensed from Collins, and automatic hyphenation.

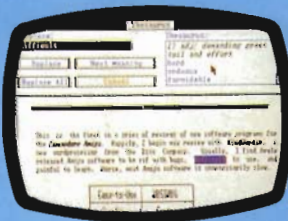


So it knows the difference between 'colors' and 'colours' and how to use them. Because with KindWords you can easily import graphics into your text documents and produce professional documents that really impress.

As it was designed specifically for the Amiga, KindWords works with your computer, not against it. Pull down menus and full help facilities are used to the maximum advantages — so advanced features such as spell checking and mail merging are easily accomplished.



There's a new extensive font library which combines with graphic editing facilities that make KindWords an extraordinary word processor at an unbelievable price.



Which only goes to prove that sometimes you should believe what you read in the press.

Existing KindWords users can upgrade their software for £14.95 inc VAT by calling

010 331 455 310 53 or write to Disc Company Europe, 1 rue du Dôme 75116, Paris, France. Visa, American Express accepted.

Dealers should call Amiga Centre 031-557 4242, GEM 0279-412441, HB Marketing 0895-444433 or Microdealer 0908-74000.



"The excellent KindWords includes everything you'd expect to see in an Amiga word processor with many extras."

ST Amiga Format

"KindWords is considerably cheaper than most Amiga word processors... its documentation is well produced and readable... contains quite a number of advance features... good value for money"

Amiga Computing

"KindWords is stylish and uncluttered... simple and elegant with a lot going for it... KindWords is a program written with care, everything about it shows consideration for the user."

Amiga User International

"I found KindWords both powerful and flexible... I think most users will be delighted with KindWords' logical design and power."

Commodore Magazine

"KindWords Superfonts produce attractive, high-quality printouts even from inexpensive dot-matrix printers."

Amiga World

Price

**£49.95**  
inc VAT.

THE DISC COMPANY



# THE AMIGA DIMENSION

ONLY THE AMIGA MAKES IT POSSIBLE

In the almost three years since this has been an Amiga magazine, many changes have swept across this scene. The Amiga was first launched by Commodore, against its original creators wish, as a high-end expensive computer. Although even CBM would now admit that they had not really worked out at which market it was aimed. It was immediately and perhaps somewhat strangely quite successful in parts of the U.S. but failed to take off strongly elsewhere.

At the AmiEXPO in Los Angeles recently a number of those original, A1000 buyers were still to be seen. Some of

them, and other Californians, had already upgraded to the Amiga 2000. To the surprise of visiting Europeans, there were, however, very few A500 owners at the Show. No-one could come up with a good explanation for that except perhaps that the prosperous Californians would not buy the cheaper machine.

More likely it was because as early buyers of the more expensive Amigas the Commodore machine had already penetrated the 'innovators', the more adventurous computer users.

These "serious" users also seemed a little bewildered by the growing prevalence of games on the Amiga scene. This

issue of **AUI** echoes that change too. We have enlarged the magazine to accommodate the flood of 'entertainment' software that is arriving. Of course, we still include all the 'constant factors' that have made **AUI** the most popular international Amiga magazine. But change too is a constant factor and we must reflect it... especially in a magazine for a technological leading edge computer like the Amiga. After all it is at the leading edge that change keeps on happening...

**Antony Jacobson, Managing Editor and Publisher.**

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Yes Rocket Ranger has arrived at last.

Now available for the Amiga £24.99 and C64 (Disk) £14.99

# ROCKET RANGER



## Disc Company is Image 4D

The Disc Company is launching Image 4D, an innovative 3D graphic program with animation that enables users to create realistic computer animation on their Amiga computer.

"Imagine 4D is the first 3D program to offer an easy-to-use user-interface along with all the features to quickly creating long-play animations on a 512k Amiga", according to Howard Marks, Director of International Operations. The Disc Company.

Imagine 4D lets the user design 3D objects from a list of ready-made ones to use the objects provided with the 3D cli-art disk that includes an alphabet 3D font. "Image 4D is the first What-you-see-is-what-you-get 3D program," says Maths. "We call it Imagine 4D, because it let's your imagination design three dimensional scenes with motion, which is the fourth dimension."

Several features of the program include rendering in three modes, wire-frame in black and white or colour, polygons and ray-tracing. Supported graphic modes are, low-resolution, HAM and high-resolution. In the HAM mode, the user can choose colours from 4096 choices for the objects. Animations support the PAL mode along with the PAL Video overscan resolution.

Imagine 4D also offers a host of powerful features sought by professional video specialists. It supports the 68020 and the math co-processor chip. Imagine 4D outputs standard IFF ANIM files that can be used with programs such as the Director or other video show programs.

Imagine 4D has suggested retail price of £99.95.

Contact: Amiga Centre, Scotland, Tel. 031-557 4242.

## The One Billion Byte Drive

Recently in Paris, Imprimis Technology introduced the computer industry's fastest one gigabyte (one billion bytes) eight-inch disk storage product: the Sabre two-head parallel disc drive. This quarter-rack disk drive has an industry-leading transfer rate of six megabytes per second, and can store 1154 million data bytes.

"The product said James E. Ousley, vice president, is

## The best car racing game?

'The ultimate model racing game for the Amiga', is what Microdeal call Turbo-Trax (what another 'ultimate' game?).

'Choose your car, get those revs going, wait for the green flag — you're off!' Microdeal claim you will feel all the

tension and danger as if you were really in a racing car racing in the Grand Prix.

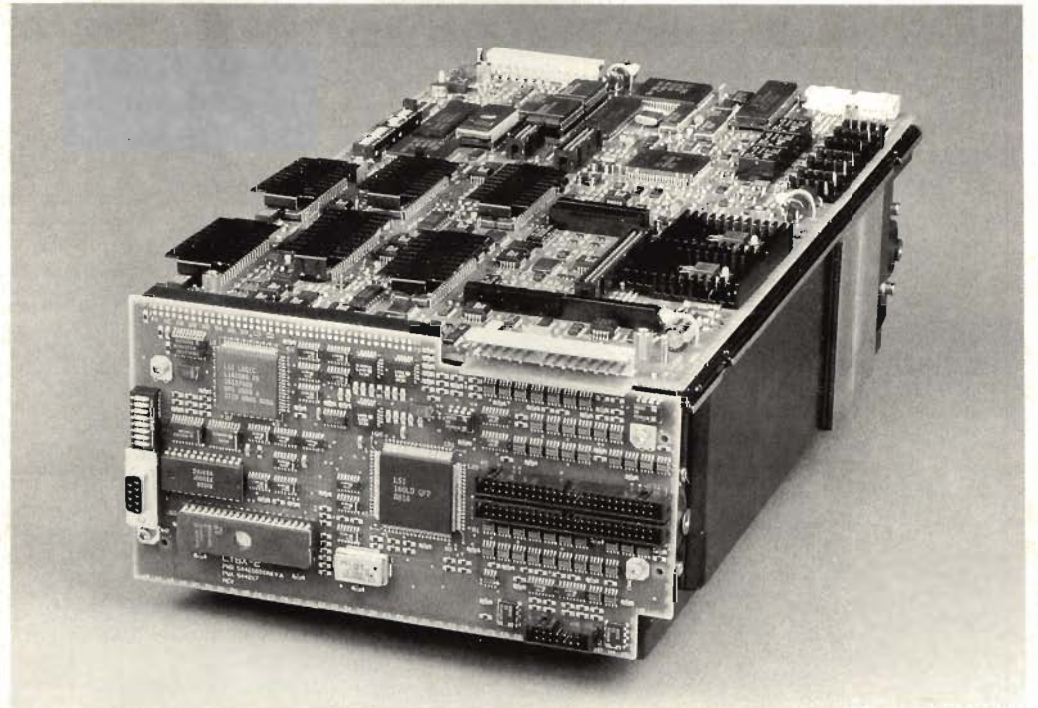
With eight additional track options, four channel stereophonic sound, split screen four-way scrolling, chicanes, cross-overs, and pit stops, three difficulty levels, time trials for up to six players and lap records saved, 'this must be a good contender', boasts Microdeal, 'for the best racing car game ever on the Amiga'. Price £19.95.

little modification to achieve uses both thin film media and thin film heads.

the six megabyte per second transfer rate. It achieves an average seek time of 16 milliseconds and

You can buy a Sabre two head parallel unit at a mere \$7040. Imprimis Technology is a subsidiary of Control Data, a U.S. Minneapolis-based company with \$3.4 billion in revenues in 1987.

*Imprimis' Billion-byte drive*



aimed at high-performance markets such as graphics imaging, seismic analysis and scientific computing where high speed data transfer is essential to success. In terms of space, power and price, the Sabre two-head parallel drive reduces the cost of ownership by a five to one ratio over current parallel drives offering comparable performance," he said.

The Sabre two-head parallel product incorporates a new and faster standard IPI-2 I/O interface which enables simultaneous read/write functions from two heads so there is very

## Come into my PC parlour!

Protect your PC and peripherals with a spider and a fly! They are two touch-sensitive alarms which can be fixed to a PC and cost £72 including batteries.

The Fly is a detector alarm which is triggered by the slightest movement. An adhesive pad sticks it to a PC and it is turned on and off with a security key.

The Spider is an alarm for several items — a VDU, keyboard, printer or modem. It has five 1.4-metre legs which attach to each peripheral.

Both the Fly and the Spider are available separately for £30 and £42 and are supplied by Sussex-based SBS Computer Supplies.

Marketing director Jill Wadman said: "Companies are becoming increasingly aware of the need to protect valuable computer and office equipment against thieves. We believe that these products provide users with a simple and yet cost-effective means of theft prevention."



## Printer Buffers speeding print

A range of printer buffer now available from Action Computer Supplies is designed to speed print throughout by allowing printer files to be downloaded from the micro at high speed, leaving it to carry on with other tasks. The files are held in the buffer, and fed automatically to the printer at the maximum speed it will accept.

Using the buffer is easy. The printer cable is simply unplugged from the micro and plugged into the buffer, and the buffer itself is plugged into the micro using an extension cable. The buffer is controlled by the normal print commands from the micro, so that its operation is completely automatic and there is nothing extra for the operator to do.

Single channel buffers, for

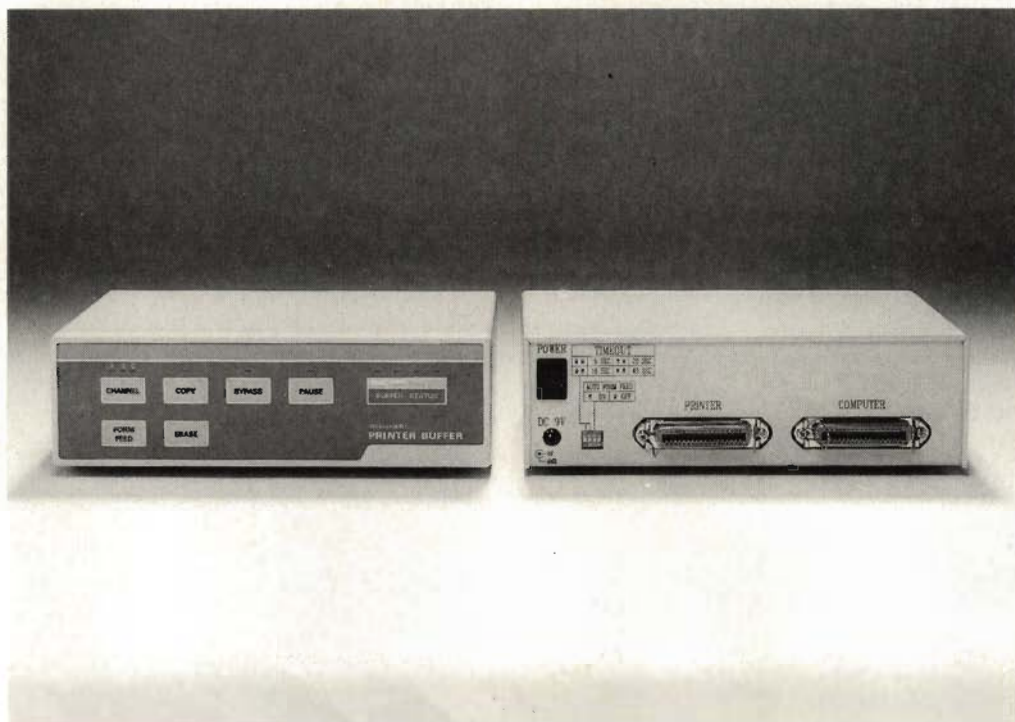
use with a single micro and printer, are made with capacities of 64K and 128K; multi-input buffers, which will handle up to three micros, are made with capacities of 256K and 512K. All types are

available in both 25-pin serial and 36-pin parallel versions.

The buffers are covered by Action's own 24-month warranty, and prices range from £125.00 for the 64K, single-channel parallel buffer, to

£295.00 for the 512K, multi-input serial buffer.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel. 0800 333 333.



## A500 Impact

Great Valley Products of Pennsylvania, USA, are releasing a combination hard disk and memory expansion add-on subsystem from the Amiga A500.

The Impact A500-HD/RAM Controller combines ANSI X3T9.2 compatible SCSI controller, 3.5" hard disk drive and up to 2MB FAST RAM expansion for the A500, in a single compact, snap-on unit. It uses its own power supply, fully meets the Commodore specification for maximum power drain on Amiga A500® expansion connector. It has an internal connector for installing the optional, zero wait-state FAST RAM expansion module, which provides up to 2MB of Fast Ram expansion.

There is also an external SCSI connector for connecting up to 7 external SCSI devices. The 16-bit Direct Memory Access (DMA) data transfers to onboard 4K disk buffer provides high per-

## Amiga Guides the Tourists

The New Forest in the UK plays host to thousands of tourists every year, every one looking to get the most out of the holiday. From now on organising trips and finding places of interest will be easier than ever before thanks to a clever, interactive and computerised tourist guide.

Two of CBM's Amiga 2000s have been installed in the New Forest Museum and Visitor Centre with a state-of-the-art interactive database that includes pic-

formance not affected by any other Amiga DMA activities (e.g. Amiga Blitter, etc).

The Impact A500-HD/RAM Controller is priced at \$795.00.

Contact: GVP, 225 Plank Avenue, Paoli, PA 19301. Tel: 215-889-9411.

tures, sounds and information on the New Forest. The computers hold hundreds of digitised photographs of a local animals, villages, sports facilities, and places of general interest.

When a visitor wants more information regarding any picture a single keystroke will lead to a series of menus and displays on the subject. Visitors can plan their own expedition by using the specially designed keypad. Children can then be shown an animated sequence of what each particular activity involves.

The Amiga 2000s are protected from prying hands by a Perspex screen and in a workstation made from trees felled in the New Forest. Installed by Aspen Interactive, which has done much to pioneer the use of such systems, the interactive Amiga 2000 set-up is similar to that produced for the Guinness Book of World Records which is in constant use at London's Trocadero Centre and New York's Empire State building.

## Mirrorsoft's "Sick Disk" Clinic

Following the success of the File Rescue Plus sick disk clinic event at this year's PC User Show, Mirrorsoft has decided to "go national" for the health of disks.

Dealers in major centres throughout the country have been appointed as sick disk clinic sites, to whom users with corrupted or damaged data can turn in times of crisis. There is, of course, no cast-iron guarantee that the File Rescue Plus treatment will succeed — but if everything else has failed, there's nothing to lose by giving FRP a chance.

The participating dealers have been trained in the art of making an initial "disk diagnosis" over the telephone to ascertain whether the user's data in question is still rescuable, and to demonstrate the rescue process to the customer.

Contact: Mirrorsoft 01-377 4637.



# HI VOLTAGE

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\* inc. 1 yr. on site maintenance

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NEC 3.5" Internal Drive	£69
A1010 3.5" External Drive	£149
A2010 3.5" Internal Drive	£149
A2088D XT Bridgeboard	£435
A2094 20Mb Hard Disk	£499
A2058 2Mb Board	P.O.A.
Impact 20Mb Hard Card	£505
Impact 45Mb Hard Card	£710
Micron 2Mb Board	£500
Flicker Fixer	£330

#### AMIGA 500

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## Hacking not a crime?

The Law Commission has opened up the debate on whether computer hacking should be treated as a criminal offence by publishing a working paper discussing possible changes to the law.

At present, hackers can only be successfully prosecuted if they damage a computer or instigate a fraud.

Points in favour of new laws include standardisation with countries such as the US, Canada and France. Also legitimate users may be deterred from using computers to store information unless they know that unauthorised viewing will result in prosecution.

Arguments against criminalisation include the difficulty of enforcing such a law and the fact that penalties for theft and fraud by computer already exist.

The Scottish Law Commission recommended in June 1987 that a specific offence for computer hacking be introduced with a maximum penalty of five years imprisonment. But no steps have been taken yet to implement the recommendations.

The Law Commission is inviting comments and recommendations by 28 February 1989.

## Disks fail ANSI test

Many brands of 3½" floppy disks fail the quality tests set by the American National Standards Institute (ANSI).

According to Memcon, a major US manufacturer of disk certification and duplication equipment, there is strong reason to doubt that disks are tested to ANSI standards, even though their manufacturers claim 100% certification.

The company carried out a survey of 25 brands of disk by

buying quantities of ten in ten different locations throughout for US.

Only four brands of tested disks — C Itoh, IBM, Sony and TDK — passed. "It is sad to report that while Apple's Macintosh and IBM PS/2s have made 3½-inch diskettes very popular, quality simply hasn't kept up with quantity," said Memcon president Jerry Korth. The survey found there was no link between price and quality. The disks from C Itoh, Sony and TDK were all close to the average price.

## Heroes of the Lance

Heroes of the Lance is the first computer game that recreates the epic battle of good and evil on the world of Krynn — based on the first DRAGONLANCE module, Dragons of Despair. You control eight Companions, one at a time, in *real-time* action and full animation. Guide these brave adventurers, each with different specialized skills, deep into the ruins of the temple Xak Tsaroth to retrieve the precious Disks of Mishakal.

As you descend into the Abyss, the Companions must defend hordes of monstrous Draconians in hand-to-hand combat, deal with powerful magic and survive the vicious attacks from Gully Dwarfs, giant spiders, the undead and countless other terrors. But your final obstacle makes these monster innocuous by comparison: The platinum disks you seek are guarded by Khisanth, an ancient black dragon. There is but one way to vanquish this mighty beast. Find the key to destroy Khisanth and the Companions will take their first steps to earn the noble title, Heroes of the Lance for the 64, Amiga and PC.

## Virus reaches East

The first recorded computer virus in a Japanese bulletin board has been discovered in NEC's PC Van network.

A hacker is suspected of sending what appeared to be a free software program that users could download.

Once the program was activated it transmitted the users' bulletin board identification number and password to a mailbox that the hacker used to gain free connect time and order goods.

## Grandslam Goes In For Espionage

Espionage, already a smash hit on the board game circuit is to be released shortly as computer game by Grandslam. Espionage, with an official 007 James Bond link up is, so Grandslam, tell us likely to be one of the hits of the coming Winter season. Espionage will be released on the 64, Amiga and SC.

## New Mice emerge

A new range of mouse packages from Action Computer Supplies includes two serial mice from Microsoft, two serial mice and one bus mouse from Logitech, an Epson bus mouse and a Genius serial mouse.

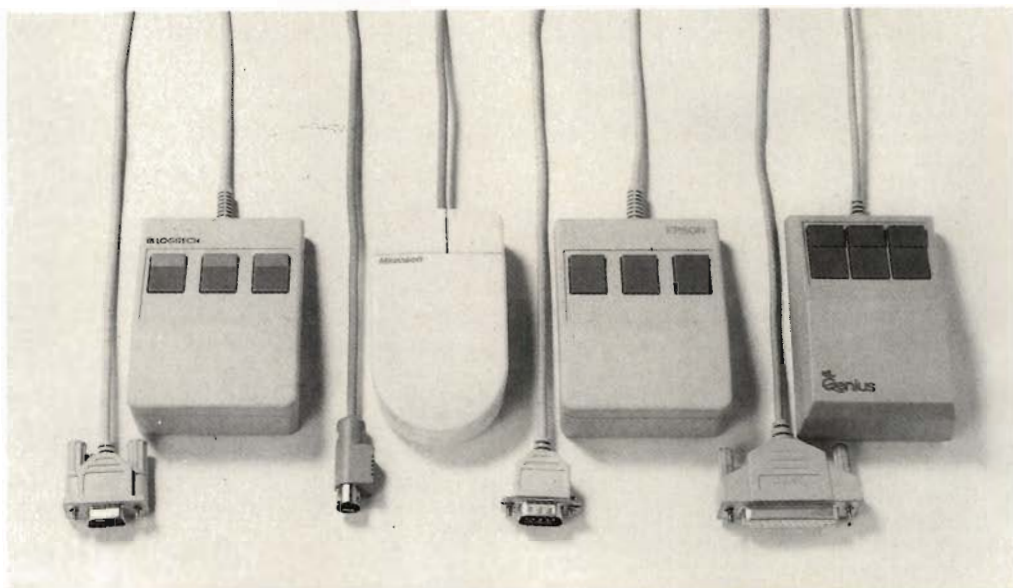
The Microsoft mice are all IBM PC/XT/AT and PS/2 machine compatible; the Logitech and Epson mice are PC/XT/AT compatible; and the Genius mouse is PC/XT compatible.

Price range from £60.00 for the Genius serial mouse, including the Halo drawing package, through £118.50 for the Microsoft serial mouse, with expert menu and PC paintbrush, to £177.00 for the

Logitech serial mouse with Logisad CAD/CAM software. Contact: Action Computer

Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middlesex, HA0 1WL. Tel. 0800 333 333.

(Left to right) Serial mice from Logitech and Microsoft, the Epson bus mouse, and the Genius serial mouse.







**'Mid November and Lou tells your ace reporter that the next assignment's in Scotland. No regrets leaving Chicago at this time of year! It seems that a company called George Thompson Services is going places in the World of the Amiga and Lou thinks an interview with their leading light Tony Thompson could make interesting reading. Oh well Scotland must have something to offer his old Hack!'**  
(Now in the cosy offices of G.T.S. overlooking the rugged Arran coastline)

Q) I was reading some of your recent ads on the way here and I see that you making a strong effort to keep Amiga software prices at a realistic level.

A) It's easier to do this if it's 'homegrown' software. It started with JUMPDISK nearly two years ago. PD followed and then we started to look for titles that we could either act as sole distributors for or package 'in house'. Since the majority of our sales are by mail order there is no 'middle man'. Prices are therefore more competitive.

Q) How is JUMPDISK progressing?

A) In the early days it was not easy. Magazines on disk or cassette have a chequered history world over. Sales improved as users realized the quality was high and that each issue always came out on time. The turning point was when the programmers in California gave it a new look. Take the November issue for example. The game of 'Pool' is of commercial quality and the 'Mouse Pointer Animator' is another first. There are 14 programs in this issue and the Articles section now compares very favourably with the editorials in the glossies.

Q) What are the future plans for JUMPDISK?

A) We included a free disk with the October issue. Actually it was from the Mega Demo Pack Vol I. It proved very popular and we will certainly make this a frequent event. More of the magazines content is being 'Crunched' now and this means we can squeeze that little bit more onto a disk. The news items are very topical as our lead times are so short. These will increase as will the number of tutorials and reviews on new products. We are now receiving some excellent programs from contributors. The 'Save the Boot Block' program in the September issue was a first and the 'Spreadsheet' published in August proved very popular. One of my personal favourites was included in the 'JUMPDISK Autumn Special'. 'AddIcon' attaches an icon automatically to a file that normally has to be run from the CLI. Its very user friendly and a definite advantage to those that want to run programs or read files from workbench. I should add that we rarely include Public Domain programs on JUMPDISK now.

Q) Talking of Public Domain programs I understand you've one of the largest selections of disks in the UK.

A) It could be larger but we see no point in duplicating, several times over, the content of the Fish disks. At present we concentrate on Amicus, FAUG, Amuse and TBAG and of course Fish. The TBAG are very professional and original. Some programs run from the CLI but this presents no problem to the serious user. In fact more and more PD programs are run now by just clicking an icon. The quality of PD for the Amiga is the best I have ever seen and at £3.00 a disk it is very good value.

Q) Have you any more libraries in mind?

A) We are always on the look out but during the next few months we will be concentrating our efforts on putting together a small library of our own. It will be subject categorized as well as including a number of disks with mixed content from User Groups in the USA and Germany.

Q) It is possible to buy PD disks cheaper than £3.00.

A) We use only the best media, Sony DS/DD disks and with a new checking device, returns are practically non-existent. We no 'Optimize' all new PD disks. This substantially speeds up loading times. We also despatch all orders by first class post. We maintain that quality would suffer if prices were reduced.

Q) The Mega Pack idea is new to me.

A) It started in a small way with the 'PD Starter Pack'. This consists of the three Goldfish and four Best of Amicus disks plus of course the two JUMPDISK Library Disks. Not bad for £19.99! I don't take any credit for this. The program disks were put together by the librarians Fred Fish and John Foust. They made a natural for anyone new to PD.

Q) What followed?

A) The Mega Demo Pack Vol I which consisted of seven disks filled with the best music and graphic demos around. Volume II has nearly been completed and will again include seven disks at the same price of £19.99. It will be on sale at the Commodore Show in November.

Q) Is Vol II up to the standard of its predecessor?

A) Some of the demos in the first pack will always be personal favourites. To add a little spice to the second we included programs that allows the user to make up their own 'Intro' screens. They can include their own IFF pics and sounds and add vertical and horizontal scrolling messages. We've included a stock of sounds and pics to get them started. Good results can be obtained very easily.

Q) Have you any other Packs planned?

A) The Mega Games Pack should just be out in time for the show. It includes programs that we have purchased ourselves as well as some rare and very good PD games. There will be seven disks all packed full. So the customer should not be too upset if they have one or two of the games already. Titles include the very latest 3D version of Hack, Return to Jovi, Mercenary Simulator, Revenge of Doom, PacMan '87, Battleship with stereo sound, a very good 'Rockford' clone and much more. The price will be £19.99.

Q) Any chance of seeing the new book you have just launched?

A) You mean 'Professional Results with De-Luxe Paint II'. Its a winner! Hard backed with 400 pages and over 200 illustrations. Anyone who wants to achieve good results with De-Luxe Paint will find this book invaluable. The price is £24.95 or with two disks containing examples, utilities and brushes it's £44.95. We will be officially launching it at the November Show. It adds a new dimension to a very popular Art package.

Q) Didn't Int-Switch and TurboPrint also come from Germany?

A) Yes. Both are very useful programs. Int-Switch is a piece of software that will remain popular for as long as there is a need to 'switch off' additional memory. Believe it or not there are still programs being released that will not run properly on anything above 512K. At £9.99 its a piece of software everyone should have in their collection. Turboprint will be updated and improved frequently. It will always have the edge on Workbench as far as speed and range of printer drivers available. Consider it an ongoing challenge. It's a lot of program for only £25.00!

Q) What comes next?

A) We hope to expand our new department 'Sound & Vision'. This concentrates on software and hardware that is only connected with this particular aspect of the Amiga. We will advertise JUMPDISK more in European countries and the issue of a 'PD News Sheets' will become more frequent — the first will be given away at the Commodore Show. The 'Workshop' series on specialized subjects will be increased. Besides that we are working on several new software projects that include 'Tutorial' disks for programmers and owners new to AmigaDOS. There will always be something innovative and new!

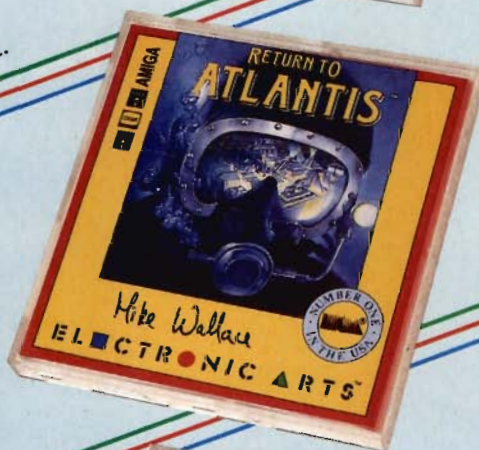
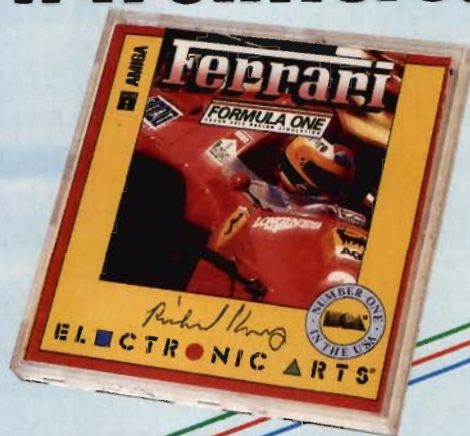
Hack) Well that about wraps it up. Now what did you say Scotland was famous for?



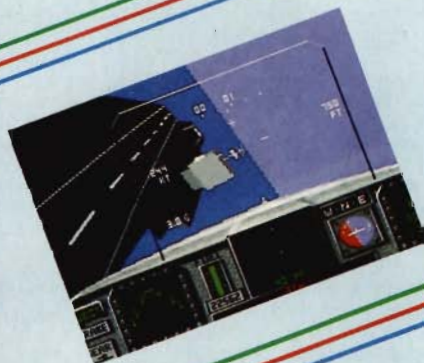
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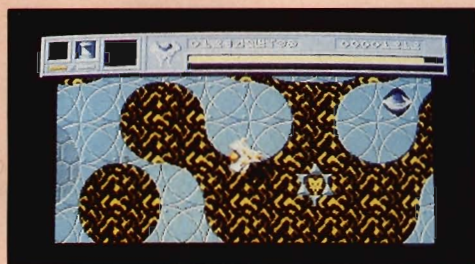
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## Sponds to 3.5" floppies criticism

Following a recent Hemcon study casting doubts on the quality of 3.5" disks, Ivor Norkett, sales manager at RPS — the company's leading magnetic disk manufacturer — hit back with 'conclusive proof' that its 3.5" media outperform 5.25" disks in ANSI requirements. Norkett explained the 3.5" disk is a very different proposition to its 5.25" equivalent, noting that many manufacturers have failed to take account. Obviously, the 3.5" disk is smaller than a 5.25" disk but it is also a more engineered product

than its 5.25" equivalent. As a result, the 3.5" disk coating has to be better than would be acceptable on the 5.25" format.

On a standard 1MB 3.5" disk, the density of information packed on to the surface is 8,000 bits per inch compared with up to 5,000 bits per inch for the conventional 5.25" disk.

This obviously means any surface imperfection is going to have a much more devastating effect. Any imperfections and bad spots that would be acceptable on a 5.25" disk are not acceptable on the 3.5" version.

Testing is therefore vital — RPS tests says Norkett, each floppy disk over its entire surface by writing and reading each track successively. In addition, the areas between tracks are tested to ensure that even a misaligned drive will be operating on a thoroughly tested portion of the disk.

Frequent durability tests are carried out on samples whereby one track is continuously written to and read from for a week. This works out to around five million passes of the read/write head over the whole disk — equivalent to ten years of normal usage. This procedure also checks for dropouts, oxide shedding and wear on the disk drive recording head. If the product survives this test the batch is regarded as acceptable.

Whilst the 3.5" disk is far better protected from dust and other detrimental foreign matter inside a tough, hard casing and automatic shutter, it still needs to be treated with utmost respect. In fact, the manufacturing tolerances of the 3.5" are more critical

than for the 5.25". Whereas on the 5.25", the jacket is highly flexible, the rigid shell of the 3.5" means that the tolerances are much higher because the case will not bend. There is also a shutter which can jam if the product is poorly made.

RPS has also developed a 2MB version of the 3.5" format. This greater storage capability demands a reduced thickness of magnetic recording layer — as surface storage densities are increased, the layer has to be decreased.

The RPS 2MB 3.5" disk has a one micron surface thickness — a reduction of 60% — which has been achieved by laser control and nuclear resonance techniques (NRT) to monitor the recording layer thickness and ensure its surface is smooth and consistent.

## Brown-Wagh Publishing expands into Europe

Brown-Wagh Publishing announced they are expanding their sales operation into Europe with the opening of Brown-Wagh Limited. Headquartered in London, Brown-Wagh Ltd will be managed by Mr Jim Brown, former National Sales Manager for Modore Business Machines (UK). The initial objective of BWL will be to establish a consumer market distribution method in the UK for professional software products.

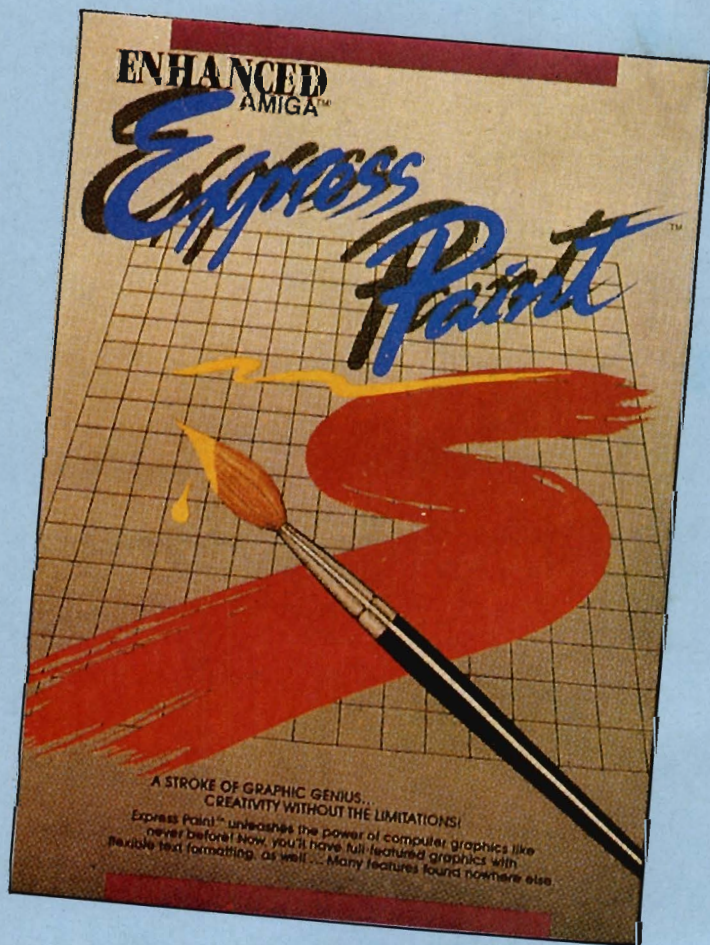
Mr Brown, president of Brown-Wagh Publishing, said: "For two years, we've been selling products in the UK, the same way we do here, through retail distributors. But they keep prices so high, due to dollar-to-pound conversion, that professional products are priced beyond what the end user can afford. Due to low demand, retailers and distributors carry even fewer products, giving the end users a very limited selection. It's a vicious cycle that needs going to correct."

In addition to their own line of Amiga software, BWL will sell professional software and hardware marketed by BWP in the US, and even some top games. "We'll offer great consumer prices for software in video, music, productivity, DTP, animation, graphics products," added Brown. "The games are one way to initially attract customers."

London operation is expected to be the hub for sales into Europe. After concentrating on the UK market, BWL say they will move aggressively into France, Spain and Italy.

Brown-Wagh Publishing is the largest publisher of professional software for the Amiga. It carries out sales and marketing for developers such as Circum

Design, Micro-Systems Software, Northeast Software, Professional Automation Resources, Soft-Wood and Zuma Group. Applications currently on the market include video, music, graphics, DTP and productivity.





## Amiga stars in Liverpool Soap

No not TV melodrama — this soap is manufactured in huge quantities at Lever Brothers' brand new £12 million plant at Port Sunlight, Merseyside in the north of England.

The new site has the capacity to produce a staggering 500 million tablets of soap each year. To help keep everything under control, Lever Brothers has installed an impressive computerised production system.

The system monitors every aspect of soap production. 'Raw' data is first gathered by Programmable Logic Controllers (PLCs) which are attached to hundreds of flow controllers, thermometers etc. This data is then networked to the supervisory systems where it is processed for management reports.

The unusual aspect of the system is that the DEC supervisory system also uses the raw data as input to an array of more than 20 Commodore Amiga. The Amigas are used by plant controllers graphically to display the plant's production processes in real time.

Using Nucleus Software's Dexterity package, the controllers are able to call up representations of the plant's lay-out to pin-point any problems and maximise production efficiency. This new approach is a simple alternative to large panels of flashing lights and dials.

## World Time Clock

A free quartz world-time clock, with traveller's alarm, is offered with every order for ten boxes or more of Sony diskettes from Action Computer Supplies. The clock, which is not much larger than a credit card, shows the time in 19 major cities, plus GMT and UK time. It is supplied complete with battery and plastic carrying case.

Action stocks the full range of 5.25in and 3.5in Sony diskettes for next day delivery at discounted prices. Examples from the range are 5.25in, DS, DD, 48tpi diskettes at £10.25 per single box of ten, reduced to £7.29 when included in orders totalling over £100.00, and 3.5in, 1.44/2MB Micro Floppydisks for models 50, 60 and 80 of the IBM PS/2 at £46.90 per box one-off, reduced to £39.90 for £100+ orders.

Contact: Action Computer

Supplies, Abercorn Commercial Centre, Manor Park Farm Road, Wembley, Middx HA0 1WL. Tel: 0800 333 333.

## Microdeal's International Soccer

Microdeal are releasing an Amiga football game. With wind, weather and nightplay options, you decide whether it's going to be a tough match or not. On screen refereeing, electronic scoreboard, animated supporters, 9 difficulty levels, digitized sound effects and hi-res graphics, all go together. International Soccer for the Amiga is only the third game available that can be played with the four player adaptor; three players V the computer, or two teams of two. So invite the lads round and play soccer in the comfort of your own home. £19.95, available shortly.



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# AMIGA ASSEMBLER

*The public domain is littered with C programming examples that simply print a message on the screen.*

*Susan Maxwell, however, has sent us an interesting assembler version.*

Here is a short program illustrating the use of three macro's DOSNAME, CALLDOS and CALLEXEC which you will find in the header files. The program is quite easy to understand and essentially works by opening the DOS library, identifying the inherited output handle, loading the registers with the data

that AmigaDOS needs, (i.e. file handle in d1, text pointer in d2 and text length in d3) then performing an AmigaDOS 'write' function to print the message; having done its job it then closes the DOS library and quits.

There are lots of comments in the source code to tell you what is going

on, so you should not have too many problems in creating a running version.

**N.B.** Our Technical wizard at AUI tried it out using HiSoft's DevPac package and it ran perfectly first time...

```

* =====
* 68000 Amiga assembly language example      Susan Maxwell (C) 1988
*
* INCLUDE-FILES
*
incdir  "d0:include/"           Include files pathname prefix
include exec/exec.lib.i         Will use both EXEC and DOS
include libraries/dos.lib.i     functions and macro's so must
include libraries/dos.i         include these header files.
*
* EQUATE-DEFINITIONS
*
LINEFEED equ 10
DOS_VERSION equ 0               any DOS version will do
*
* Program starts by jumping over the space reserved for the static variables
*
PROGRAM START: bra MAIN:
*
* STATIC-VARIABLE-DECLARATIONS
*
_DOSBase dc.l 0                 space for DOS library pointer
global_error_flag dc.b 0       space for an 'error' flag
text_p dc.b 'This is THE text to be displayed on',LINEFEED
dc.b 'the screen. Hopefully you will see',LINEFEED
dc.b 'this message first time !!!',LINEFEED
text_length equ *-text_p        calculate string length
DOS_name_p DOSNAME              macro creates library name
*
* MAIN-PROGRAM-BLOCK
*
MAIN: jsr OPEN_DOS:              first open the DOS library
tst.b global_error_flag         then check that open was O.K.?
bne EXIT:
*
* DOS open O.K. so now find output handle and print message *
* Note: Don't close output handle..... CLI would crash *
*
CALLDOS Output                  get file handle (macro in dos.lib.i file)
move.l d0,d1                   file handle needed in d1 for Write()
move.l text_p,d2               address of text line for Write() in d2
moveq text_length,d3           text line length for Write() in d3
CALLDOS Write                  macro used again to display text
jsr CLOSE_DOS:                 must close library before we leave
rts                            logical end of program
EXIT:
*
* UTILITY-SUBROUTINES
*
OPEN_DOS: move.l DOS_name_p,a1   use any library version
moveq DOS_VERSION,d0           macro in exec.lib.i file
CALLEXEC OpenLibrary
tst.l d0

beq OPEN_DOS_1:                MUST save library pointer
move.l d0,_DOSBase
rts

OPEN_DOS_1: move.b #1,global_error_flag set because we couldn't open DOS
rts

CLOSE_DOS: move.l _DOSBase,a1   put DOS library pointer in a1
CALLEXEC CloseLibrary           then use macro for closing code
rts
*

```





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# WHAT'S UNDER THE LID

***As more '68020/30 TURBO' cards appear on the market and with rumours of Amigas with 68020's as standard just round the corner, it is becoming ever more important that code written for the Amiga can sense the presence of 'bigger' processors and make use of the greater power they offer. Bill Donald describes a short routine to discover 'What's Under The Lid?'***

**T**HIS program was written in C and shows the processor type and display hardware specification. In part, it is a demonstration of the sophistication of the system software of the Amiga. This is because the program demonstrates how a programmer can gather information about the machine into which their code is loaded.

The program is made up of two parts and each component is designed to be used separately. The first part makes a call into an offset of the exec library base and reads the information there. One of the relevant lines is: if (a-AttnFlags & AFF-68010 printf("68010 .....");

The information contained in *AttnFlags* determines the type of processor. Quite how the system software determines the processor type from the hardware is hidden deep within the system ROM, never-

theless the information is there for the programmer.

This part of the program is really only an IF-THEN loop of read data — compare — report and you should have little problem in following it.

The second section of this program does much the same sort of thing. A comparison is made of a system variable and the result reported. In this case one of the relevant lines is: if (GfxBase->DisplayFlags & PAL) printf(" It is a PAL machine/n");

In this case we are looking at *DisplayFlags* and the information being held there. On large difference between this section of the program and the previous section lies in the lines: GfxBase = (struct GfxBase \*)openLibrary("graphics.library",0); if (GfxBase == NULL); CloseLibrary(\*GfxBase);

In these lines we have explicitly opened the *graphics* library but we did

not open the *exec* library — why? The answer is that whenever you make the first call to open a library, the *exec library* is automatically opened for you. Note the very important point of checking to see that the open-library call succeeded. A lot of programmers, either through laziness or incompetence, forget about this. The results can be, at the least, fragmented and wasted memory or, at worst, a system crash.

This program will run on version 1.2 and 1.3 of the system software and is specifically written for compilation under the Lattice AmigaDOS C compiler. The code as it stands MUST be compiled with version 4.0 or later of Lattice C. The inclusion of the *proto* libraries necessitates this. However, you can compile the code with version 3.2 of Lattice if you delete the *proto* library lines. The principle result will be a larger executable file.

The usual general purpose compile command line I use for Lattice version 4.0 is: lc-L sourcefile.

Assuming that you assigned everything correctly, this will produce an .o (object) file, a map file and link file as well as the executable file. Some further additions to this code could be opening a small window and displaying the information there. If you want to really demonstrate your C programming prowess, try adding the narrator device to report the information aurally.

**B.D.**

## ★ Program Submission Procedure ★

DO NOT submit any program or routine that you do not either own or have property authority to do so.

ALWAYS include your name, address and the date on all material and any enclosures.

Do not forget to make it clear exactly which computer/s your program or article is applicable to.

Include ROM or DOS versions wherever they are pertinent.

If you have to submit work which is hand-written then you must make sure it is printed clearly.

Number all pages.

Never use staples. Use paperclips if necessary.

If you are saving your program to tape then save it AT LEAST twice on each side.

When you save a program on disk save it twice and call the second file "BACKUP".

Remember to label all tapes and disks with your name and the title of the program. Label tape or disk with your name and the name or title of the program.

Always ensure that disks are well packaged. They should ideally be sent in a commercial disk mailer or at least packed between two pieces of cardboard or rigid plastic.

Please allow at least 8 weeks for acknowledgement as all programs have to be thoroughly tested and made into a suitable format.

Enclose a self-addressed stamped envelope or package if you would like your program to be returned.

### ★ Programming tips ★

If you can, use CHR\$(x) type commands instead of those hard to read graphic symbols.

If necessary renumber your program on completion a many readers use auto number utilities to ease typing in.

Try to keep instructions within the program itself at a sensible level. You can expand on them within the accompany text if necessary.

TEST your programs before submitting them or even better get a friend to test them for you.

If a program contains machine code data please use decimal and not hex as there are fewer digits to be confused. Try and keep the same number of data statements in each line. Please add some form of error checking if your program contains more than five lines of data.



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***With a dash of inspiration and a pint of perspiration, Peter Lee delves into the depths of an exciting three dimensional program.***

**M**AKING sense of the real world is sometimes a bit tough but coming to terms with controlling a simulated 3D environment on the computer has often been a nightmare, which is a pity, because the Amiga's processing power and graphics handling are ideally suited to making headway in the fascinating world of 3D modelling.

With the release of their Forms In Flight 2 program, Californian company Micro Magic show their mastery of this exciting but complex field of creativity, offering it at a level which should be comfortable for any serious user.

The program is a combination 3D graphics and animation suite, which makes it a useful asset in the Amiga's range of video presentation utilities. It is not, however, of the instant results kind; perspiration as well as inspiration are needed.

***"The invaluable manual goes into some detail about surface patches, spline curves, Phong shading and texture mapping; fortunately this jargon does not get in the way of the program's practical applications."***

FIF2 comes on an unprotected disk, together with an accessory disk and requires at least 1 Meg of memory to run. There is a utility on the disk to make hard drive installation easier and although the program comes configured for NTSC display, by removing two files from the disk it can be forced to default to PAL instead.

Control is mainly from a superb menu which is displayed in a window that opens up wherever the mouse pointer is at the time you press the left button. Because there is a lack of any keyboard shortcuts, this simple idea saves a lot of time and the many menu choices themselves are presented in a

coherent hierarchy which, although initially bewildering, is soon learned.

The field of 3D construction has gathered its own vocabulary and luckily the invaluable manual goes into some detail about surface patches, spline curves, Phong shading and texture mapping; fortunately this jargon does not get in the way of the program's practical applications.

Within FIF2, all 3D surfaces are composed of what are called FSURFs (Flat surfaces) or QSURFs (quad surfaces). You can liken these to the building blocks of any 3D object you want to create and they are made simply by positioning control points on screen, bearing in mind that one of these points has, in addition to the

can build up a complicated object by creating a series of small units and attaching them together. To define a simple aeroplane, for instance, you could extrude (or as it is called,

***"Any object you can think of, from the mundane to the extraordinary, can be mimicked with these rudimentary components — from insects to dolphins, though human heads present something of a challenge!"***

Sweep) a circle into a tube, create a wing, duplicate it and fix both to some point on the cylinder. Thereafter the

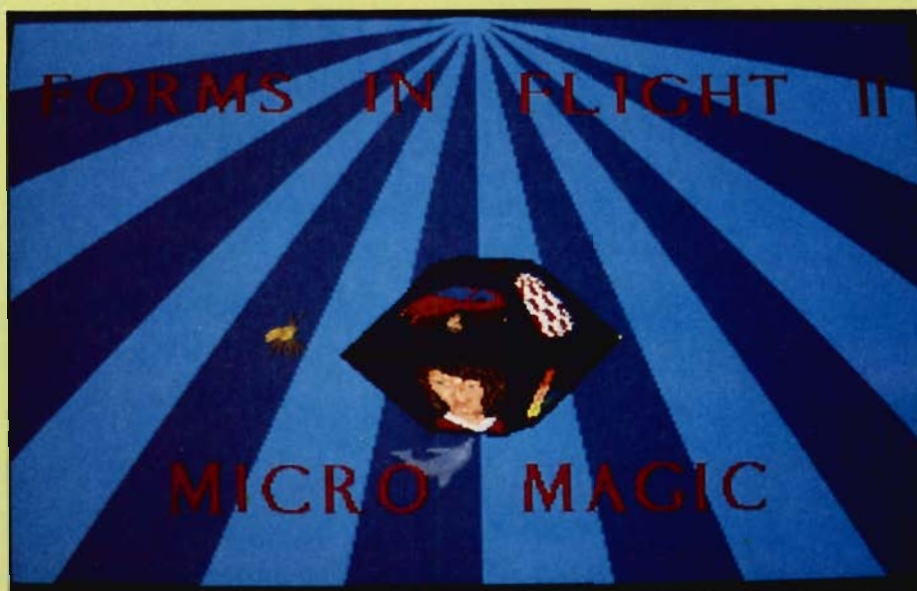
# FORMS IN

standard X and Y co-ordinates (width and height), a depth position labelled Z.

Wide-ranging editing facilities exist for defining the shape of an object, to drag out or bend a point or surface and in this way — given time — you

object is treated as a single unit. Any object you can think of, from the mundane to the extraordinary, can be mimicked with these rudimentary components — from insects to dolphins, though human heads present something of a challenge!

You can switch between 3D and 2D views at any time and, using the camera (or viewpoint) setting, rotate around your object to see it from any





direction or angle; and although it is best to work with wire-frame models as you begin to build up a structure, you can also easily switch to solid 3D view which uses your pre-defined range of colours to give the effect of substance and depth. This is not the only way to render a solid surface though, as FIF2 has the astounding ability to map onto any of your surfaces an IFF (image; you can have up to 15 separate pictures mapped at any one time (memory permitting) and when used in conjunction with rotating objects in the animation program create some marvellous effects.

Once defined an object can be saved to disk for later use, though it is an unfortunate omission of the program that completed animations can only be replayed, not edited. As it can take some time for frames to be rendered and saved in a sequence (though a fraction of the time something like a ray-tracing utility would take) this



is the ability to have multiple view windows at once, showing your object from whichever angle or rendering you like. It is also thoughtful to have an undo option — believe me, you will be glad of it!

The program uses the familiar range of Amiga resolution modes (not HAM though) but I found the advantages in using interlace for high definition display purposes was outweighed by the strain of trying to read menu items on the jittering monitor screen. You can also specify the number of colours to help you with memory management and the palette can be modified at any time. The only constraint is that

their 3D glory, adding the background picture last of all.

The actual motion editing is done mainly by entering numeric data into a series of requestor boxes — roll factors, magnification, details of paths the object should take and so on. Any number of sequences can be programmed by specifying start and stop frames, though this is the most difficult aspect of the whole procedure to understand. Numbers in boxes do not convey the real sense of spatial perspective which you need to get the most out of calculating the movement of things. Fortunately it is not necessary to define as one unit and manipulated as such. Hierarchies can be built up with parent objects and their 'offspring' all linked for purposes of movement. For example two distinct objects — the moon orbiting the Earth — can be treated as one item and the two bodies moved around the sun — and there is a nice demonstration of this among some useful examples on disk.



# FLIGHT II

becomes frustrating if something unexpected happens with an ill-behaved object.

The path an object will take during an animation is drawn on screen as easily as defining any other shape but when it comes to telling the animation editor where to start and stop movement, it is pretty clumsy. This is because the requestor which asks for the beginning and end positions to be clicked on screen actually covers 75% of the low resolution screen — usually covering up the very points you need to select. The only way around this I discovered was to first move the path and object below the requestor box itself can be moved like any Amiga window but I still found on some occasions there was no spot on screen not covering something I needed to select.

On the plus side, the actual editing of objects is one of the main reasons why FIF2 stands out, because they are so comprehensive — and what is more, so comprehensible.

The user actually comes to understand the 3D relationships of objects and after a few hours of tutorials and experimentation the mechanics of the program slot into shape — something I cannot say for other similar programs. I have used. A nice facility

imported IFF images should share the same resolution and a common palette is a good idea, though not compulsory.

Finally to the animation facilities offered by the program: After defining the movement of a particular 'movie' FIF2 will draw the frames one at a time, adding any IFF background you may have specified, then save them to disk. While it is possible from within the Editor to save any screen as a single IFF screen, once the animation cells are being calculated they are saved in a form only accessible by the Player module. This is called from Workbench and will begin playing back the frames at a speed you can regulate from the keyboard. After all the hard work of creating a sequence, this is the pay-off and something which can be very rewarding.

I found it safest to pencil-test my animations before going through the lengthy process of rendering objects in 3D and saving the sequence; it takes very little time to save a series of frames using the wire-frame option. Then if that works out you can go ahead and save them properly in all

## Exclusion

Anyone with any experience of 3D graphics or animation will know it is not the easiest way to get images from a computer. It takes perseverance and a lot of effort but the rewards in terms of quality and impact are unsurpassed — unless you happened to be a ray-tracing enthusiast with time on your hands. Forms in Flight 2 is truly a major advance in 3D control on the Amiga and provided you have both the inclination and time, will be worth the effort you invest in it. It does not give instant results and you have to plan in advance what effects you want to achieve; what it does do is give you the chance to express your creative flair without needing a Degree in Science to understand the ins and outs of 3D computer modelling. Screen updates can be sluggish at times but this is not too big a disadvantage when weighed against the excellent editing facilities. The outstanding manual complements what, for me, is a major advance in 3D imaging.

**Price: £79**

**Contact: Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh EH1 3RN. (031) 557 4242.**

**P.L.**



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# Adventures with a Bridgeboard

*The Amiga 2000, as most of you will now, is also capable of functioning in an IBM compatibility mode. Dennis Gortmans of ICPUG explains his experiences with the Amiga/IBM Bridgeboard.*

## Icpug

**M**Y original reason for getting a Bridgeboard for my Amiga 2000 was to enable IBM PC compatible add-on cards to be used. Cards for the Amiga were either non-existent or were twice the price of those for a PC. The particular card I wanted was a 32MB Hardcard to enable large files and some large packages to be mounted.

A number of questions were sent to me regarding the mounting of a Hardcard on the PC bus and how to enable the Amiga bus to access it via the Bridgeboard. At that time I had not yet obtained my Western Digital Hardcard so I did my best to answer using information contained in the A2088 Manual, which not every one had. It surprises me how a Bridgeboard could be sold without the technical information on how to use it.

As I work with various types of PCs. I also take advantage of the PC emulation the Bridgeboard provides, I am able to take home work, if I am in the mood. I can also benefit from the large number of programs that are available for the PC, of public

domain, shareware and commercial. The contrast in speed between a PC and some of the systems I use, has caused some frustration, so my mind turned to the possibility of speeding up the PC emulation. Some thoughts regarding turbo boards came to mind but as it was my money I was planning to spend, I was quickly brought back to earth.

I bought a 8087 mathematician co-processor as the best for my purpose. My work is mainly mathematical, making use of spreadsheets or compilations of engineering procedures sourced in Fortran or Pascal, so this was the right way to go. Apart from bending a couple of pins when attempting to insert the 8087 the first time, the upgrade worked well. I admit I have also reaped the benefit of improved Fortran and Pascal compilers but some applications are carried out five times faster.

While occupied the thought of turbo boards, I received a letter from Finland asking for information on turbo boards. An attempt had been made to use an Orchid "Tiny Turbo" accelerator

card but this card turned out to be incompatible. I had a conversation with David Pocock of CBM who confirmed that turbo boards that plug into the 8088 cpu socket, are unlikely to work. His suggestion was that the easiest way to improve speed would be a trade-in for an AT Bridgeboard which would be soon available. While I was putting this information together in a letter, to be sent to Finland, I came across a file called "Bridge-1" on the Irish BB, DUBBS. This file was made up of messages taken from 'BYTE Information Exchange (BIX)', all dealing with some aspect of the Bridgeboard. On 'Turbo' it gave an explanation of what was required for them to be compatible. The important considerations are as follows:

'The Bridgeboard uses the Faraday chipset, which means that plug-in cards that don't work with Faraday based PC clones won't work with the Bridgeboard. There is some difference in the way Faraday chips handle DMA that's difference from that used by IBM, and this interferes with the way some speed-up cards grab control of the bus. There has been at least one 386 card tried and although its name is not given, it did manage a number of benchmarks, one taking 0.77 seconds in comparison

cont. on next page



# USER PORT

continued from page 21

to 2.5 seconds on a 4.77 Mhz PC (sans co processor). However this card has not been generally checked out. There was also a rumour that an Orchid 286 card would work as this did not require removal of the 8088.

The Bridgeboard does not have a number of limitations when emulating a PC. The board is unable to produce sound and so, together with the slow CGA, it is not suitable for zapping-type games. It can be given a voice by connecting a small speaker to a socket on the Bridgeboard, when the speaker must be mounted elsewhere as there is no room between the boards. The board is also unable to access the serial port on the Amiga 2000. This lack of a serial port is of some importance to me as there are times when I wish to attach a modern and run communication programmes. I have now obtained a multi function I/O card that plugs into a PC bus and this provides a serial port, a parallel port, a clock and a games port.

Prior to obtaining the I/O card, all communication took place with the modem attached to the Amiga

serial port. The downloaded files were appropriate to a range of computers and use was made of the Bridgeboard to transfer to disks of the correct format. My principle interest is in the Amiga, C64 and PC and I am able to satisfy my needs by using the AREAD and AWRITE on the PC utility disk to transfer PC files across the Bridgeboard and onto the 5.25 inch drive, also by using suitable software it is possible to transfer files for the other machines onto disks in their formats. I have used BEEBOOS on a PC to transfer back and forth to BBC format disks. Similarly, I know of others who have used DOSCOPY on a BBC to transfer back and forth to IBM format 5.25 discs.

Some time ago I obtained from ReadySoft in the USA, a copy of their '64 Emulator', to run on the Amiga. It enabled C64 devices to be diasychained directly to the Amiga by a cable into the parallel port and accessed when the emulator is running. Version 2 provided a better system by means of progress that enabled the Amiga to address the C64 devices without going into the C64

emulation mode. This was the considerable improvement as multi-tasking is lost by going into the C64 emulation mode.

The Bridgeboard has become an essential component in my Amiga enabling me to communicate readily between the two bus systems. I have also the advantage of hardware to incorporate a hardcard and an I/O board. I might add more memory one day and bring the total of 1Mb on board for use by the PC. With the transfer software available, it has not been necessary physically to link different machines together using the RS232 link. It has been much easier producing disks in the correct format for the appropriate machine. At present I have moved files backward and forward between Amiga, PC, C64 and BBC. I have future plans for extending the list to cover CPM formats, including those used by the C64 and C128.

D.G.

*This article is taken from the Independent Commodore Product Users Group Newsletter. Contact Jack Cohen on 01-597 1229 for information on ICPUG.*

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# AMIGA COMMUNICATIONS SOFTWARE

***Buying a modem is only half the battle towards getting 'On-Line'. Stuart Williams gives you a head start with some advice on Comms software.***

**T**he essential connecting link between the keyboard of your Amiga cannot put you in command of remote computers via your modem and telephone line, or allow you to transfer files between it and other micros. Although it is possible to write a simple terminal in Amiga BASIC, it would be difficult to obtain the speed and error correction required by the modern communications user; therefore, most programs or 'Terminal Emulators' are written in a compiled language such as C, or in Assembler. This means that, unless you are an expert programmer, you will need to look elsewhere for the software to do the job. This article is intended to show you what facilities should be available in good communications software and what kind of terminal program you require for your own particular purpose.

Assuming you have already purchased a modem suitable for use with your Amiga and the service you intend to use, you now need to decide the criteria for software required. There are two main decisions needed initially; what type of terminal emulation is required for services you wish to access and what modem control facilities are needed (if any).

In the case of terminal emulation, there are two main kinds of emulation, TTY (straight ASCII text) and Viewdata (ie Prestel Graphics). There are numerous small variations on these standards and specific terminal types required for one service only (ie Compunet, which sells its own terminal software) but on the whole your needs will be covered by one or both of these.

With the next terminal, you will find this used (with minor variations such as number of characters per line,

screen clearing and positioning codes and number of screen lines shown) in the majority of Electronic Mail services, as well as 'bulletin boards'. This type of terminal is easy to implement and a simple ASCII terminal can be produced in Amiga BASIC. All that is required is that the program detect incoming data from the Amiga's RS232 port and print it to the screen and likewise detect keyboard activity and send the characters thus produced out via the RS232 to the modem. This is the basis of all comms software but when we actually come to use it, there are a number of 'bells and whistles', which are often essential to make maximum use of the service you are accessing.

## **VIEWDATA TERMINAL SOFTWARE**

Ruby-Pack 1 Y2 Computing Ltd £99.00  
(Ruby-View/Ruby-Term)  
Ruby-View Plus Y2 Computing Ltd £ T.B.A.

Let us first look at a typical piece of terminal software, intended for accessing the various Email services and bulletin boards. Assuming the connection between Amiga and Modem is made, what else do we require for our convenience? We need to be able to set the speed in bits per second of the RS232 port ('baud rate') to match the modem and the service to be used. Also, we must have the facility to select the composition, or 'protocol' of our data stream. This includes the number of bits of data, whether it has start or stop bits and whether it is parity checked or not. For example, a typical bulletin board would use 8 data bits, 1 stop bit and no start bit or parity checking,

whereas some electronic mail services require 7 data bits, two stop bits and 1 parity checking bit (the latter being set to odd or even).

Another useful feature is being able to capture incoming text to a disk file and send a block of text prepared offline, without having to type it all in online. This can save time (and when you are using the 'phone, time is money!), as you can download text quicker than you read, especially if you have a fast modem and also send text faster than you can type.

In addition, an essential, especially for bulletin board users, is an error-checked file transfer system. With text, it is not usually disastrous if a small amount of data is lost due to line noise; however if you wish to 'download' (receive) or 'upload' (send a program file, then the slightest corruption will crash the program when you come to run it. Commonly systems such as Xmodem or Kermit (there are others ie Zmodem, Ymodem, Telink, etc) are used to transmit or receive the data plus additional checking bits; these bits may be compared with a checksum, or using a 'Cyclic Redundancy Check', to ensure that what was sent is received in its original form. Xmodem, an 8 bit protocol (hence the use of 8 data bits on most bulletin boards), sends and receives in 128 byte blocks, plus check bits and if an error is detected, requests the other computer system to send the block again.

This is a slowish process, hence the development of faster variations of Xmodem; however, since Xmodem has been around since the days of CP/M and is Public Domain, it has become the standard. Likewise, since Kermit is also PD, this more complex system has also become popular, especially with educational users such

*cont. on next page*



## AMIGA COMMUNICATIONS SOFTWARE

*continued from page 23*

as universities. Kermit is much more than a simple error correction protocol. Its extra facilities are beyond the scope of this article. Suffice to say that if you are a University user, or have access to educational systems, Kermit is practically essential. On the other hand, if you are more interested in Bulletin Boards, the Xmodem is the one for you.

One final major feature of the ASCII terminal which you may wish to consider is that of Terminal Emulation. With this facility, more sophisticated programs enable you to match the screen codes of your Amiga to those of other terminals, which can make life easier if you need to link the computer to a mainframe. Common terminals are ASCII/TTY, DEC VT52, VT100 and VT102 and ANSI. There are many more minor variations on terminal emulations but these are the main ones you are likely to encounter. Whether your terminal software can emulate all the features of a particular terminal, such as 132 column text, or obscure screen codes, depends largely on the effort put into it by the programmer; with a micro of the graphic sophistication of the Amiga, there is usually some way of producing the desired result!

***"Programs such as Y2's Ruby-View also enable graphics 'doodling' to be done using the mouse and the pages produced to be uploaded to the remote computer."***

Speaking of screen codes, then, brings us neatly on to the other main type of terminal program, 'Viewdata', as exemplified by the Prestel Terminal program. While the basic features of such terminals follow the principles of the ASCII text terminal, the inherent differences between the processing of text and the block graphics system used by Viewdata, make them very different in operation. In addition, while ASCII services generally use a scrolling text system, services such as Prestel/Micronet use a numbered paged format, whereby the information is displayed on screen in the form of a 'page' of colour block graphics and text, 24 lines by 40 columns. While the

Amiga's graphics have no problem in producing such a display, such software is rather more complex to write and hence tends to be more expensive to purchase. Since Viewdata protocols tend to be standardised, you will not normally need to change data format on such terminals.

Common features include the ability to save 'pages' to disk, to edit message pages offline and to assign page numbers to a catalogue assessed by keyboard or mouse, enabling the user to move from one area of the database to another; in effect allowing you to set up your own personalised 'directory' an bypass the endless menus found on Prestel! In addition, the keyboard may be set up to put commonly used keys (such as asterisk and hash) in more convenient places, ie on the keypad. Programs such as Y2's Ruby-View also enable graphics 'doodling' to be done using the mouse and the pages produced to be uploaded to the remote computer. This is handy for areas such as Micronet's 'Gallery', where you are able to display your own pages in the form of a mini magazine, for a small fee.

Another handy facility (at least, it will be handy when they get around to putting useful Amiga software on Micronet!) is the Telesoftware downloader; like Xmodem, this is an error checked file transfer system, allowing you to receive software from Prestel via your modem. It is rather slower, since the software is sent in pages and cannot upload software to a Viewdata system but since there is nowhere on Prestel to send your software to, this is not a drawback! It is also common to be able to select menu items from the page being viewed by pointing and clicking with the mouse, which gives the effect of typing in the command shown on the page.

One final point with Viewdata software is that you will have to purchase a UK-written package, since there is no demand for Viewdata in the USA!

Once you have decided on terminal emulation and facilities required (many UK commercial packages include both ASCII and Viewdata terminals), you need to discover if the software suits your modem. Essentially, it must be capable of matching the transmission speeds of the modem and service in use. This can be problematical, since USA written software will not have 1200/75 baud (used for Prestel and many bulletin boards) as it is not used there; since the Amiga RS232 (in common with most American computers) does not have 1200/75 baud as standard, a software 'fiddle' is required to simulate this speed. This is normally found only in UK written programs.

If your modem only has 1200/75 baud, then, you will have to obtain a program able to use it on the Amiga. Intelligent modems (such as Hayes compatibles) normally have speed buffering, which enables the Amiga to transmit at 1200/1200 baud to the modem and the modem (if it has 1200/75 baud output) will then translate this to 1200/75 baud, if the service requires it. This allows you to use American software if you wish. If the modem is 'intelligent', ie command driven rather than controlled manually by knobs and switches, then it is useful to be able to autodial the modem from within the software; this normally takes the form of a user-definable 'phone directory, selected by mouse. This is often used with an option to automatically send passwords to the service you are logging onto, enabling calling Prestel or your favourite Email service or bulletin board, with one or two clicks of the mouse! Normally, such facilities are only included for 'Hayes compatible' modems.

## COMMUNICATIONS SOFTWARE BUYERS GUIDE

### TEXT TERMINAL SOFTWARE

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These, then, are the features you need to consider before you decide on your comms software; the final factor, as usual, is price. While there are some excellent terminal programs in the Public Domain, you will find commercial offerings more sophisticated and in the case of Viewdata software, you will currently only be able to acquire a commercial program for use with such services (though there are rumours of a PD Prestel Terminal in the offing). Like most 'serious' Amiga software, commercial comms packages are not cheap. As usual, you pay your money and you make your choice. If possible, buy on recommendation or after reading magazine reviews; who knows, you may even find a dealer who can demonstrate the program for you!

**S.W.**



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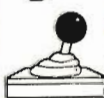
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## At last, a labour-saving device for weary 3D designers — Peter Lee is now a born-again VideoScaper!

It is well over a year since VideoScape 3D was released to general acclaim — and some groaning. The program itself gives stunning results but achieving them can be an uphill struggle. I have to admit that the complex editing facilities together with my short irritability threshold caused it to be relegated to the back of the shelf after several ego thrashing sessions. The launch of Modeler 3D, a new support program from Aegis, has meant I — and probably a lot of other people — can dust off their VideoScape boxes and really get the most out of what really is a 3D animation program with amazing potential.

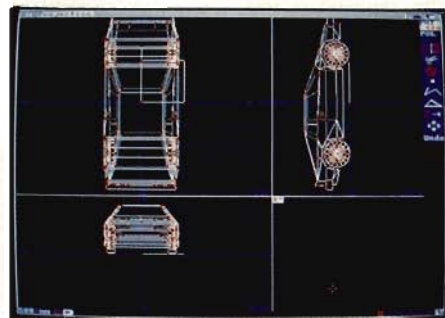
Modeler 3D (M3D) is a super-sophisticated graphics editor which allows you to create three dimensional objects easily and then use them in VideoScape 3D. It is also compatible with data from VideoScape, Sculpt 3D (with some reservations) and two other Aegis titles, Draw 2000 and Draw Plus.

While the modeler works on a bare 512K machine with one drive, at least 1 meg of RAM and a second drive will help you get the best out of the program and prevent you from having to close down one window to open up another. It will also function on any of the Amiga series of computers.

M3D works in PAL display mode and although opening to an interlace screen it can be made to default to the more stable non-interlace mode. The colours used by the program, together

with several more user-definable settings, may also be saved to disk to become the new defaults.

The initial screen layout shows top, side and front displays on a series of grid lines, though you can enlarge any one of the three views to full-screen size if you want. There is also room for the projection window on screen too, allowing you to edit objects in the usual wireframe mode, then see them



projected as a solid. It consists of clicking the mouse to define the outline of the object, then extruding it to give it depth. There is, however, a giant leap from making something simple such as a cube to actually creating some-

# MOD

projected as a solid. Objects can be created from scratch onto a 2 dimensional template or by calling up and modifying a number of primitives — shapes such as spheres and boxes which are already pre-defined and immediately available.

***"Actually making a 3D shape is perhaps the easiest thing about the program."***

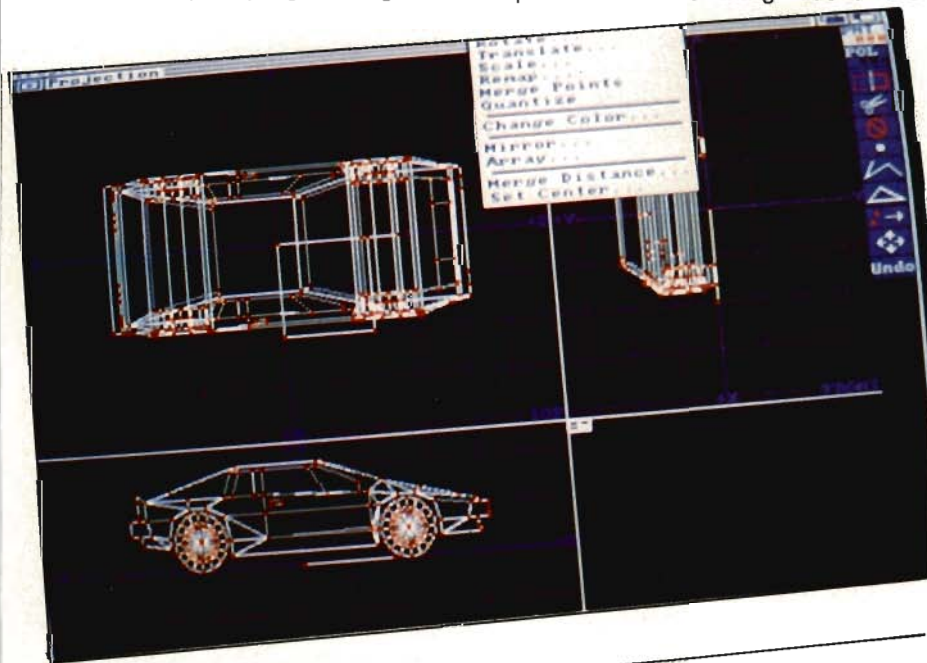
Actually making a 3D shape is perhaps the easiest thing about the

thing useful! To make life easier there are a number of powerful controls which manipulate the object — for instance a mirror command permits you to draw half of a symmetrical object then instantly create the matching half. Equally the Array function can create multiple copies of any active images.

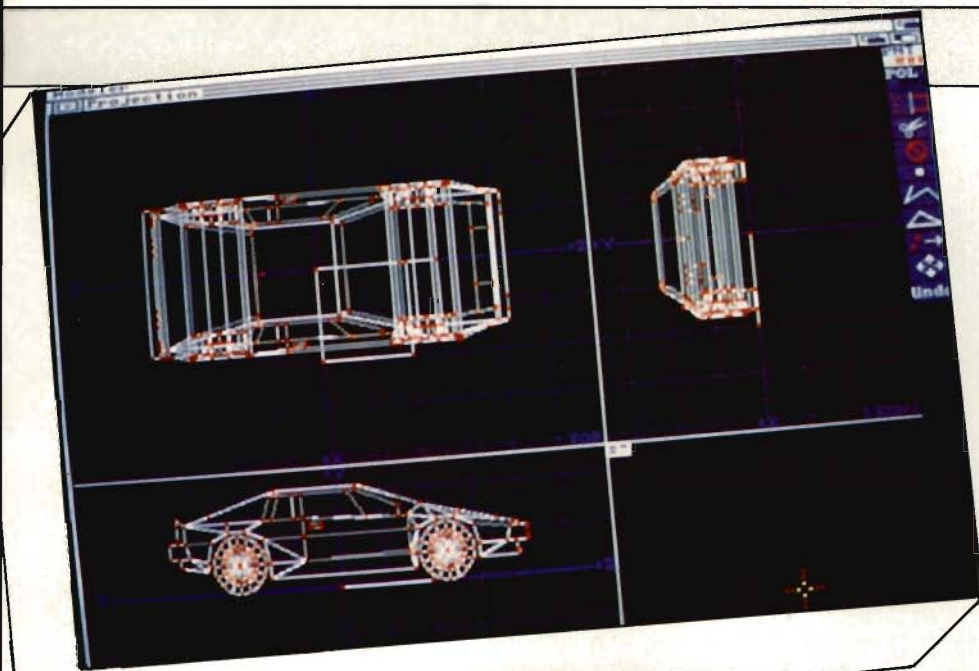
The entire object, or portions of it can be rotated, moved and scaled with only a minimum of keyboard entry, while the Remap function will distort objects to twist and shear them into the kind of weird construction only a computer could generate. Assisting with the precision work is a vital zoom utility which can be controlled from the keyboard, or more impressively by gliding a box around one of your plan views so that the portion to be magnified is enclosed.

The program supports eight separate layers which can be thought of as slices through your objects; cutting and pasting between them is extremely simple and a clever way of isolating a particularly tricky portion to work on before merging it back with the main scene. It is a hard concept to grasp but by coming to terms with it you can create several layers of objects to be combined for the final scene. This means less clutter on the screen and the chance for quick screen updates as alterations to a small number of objects are made.

The programmers have thoughtfully included a kind of function key macro facility, allowing you to define a window's attributes, then assign those







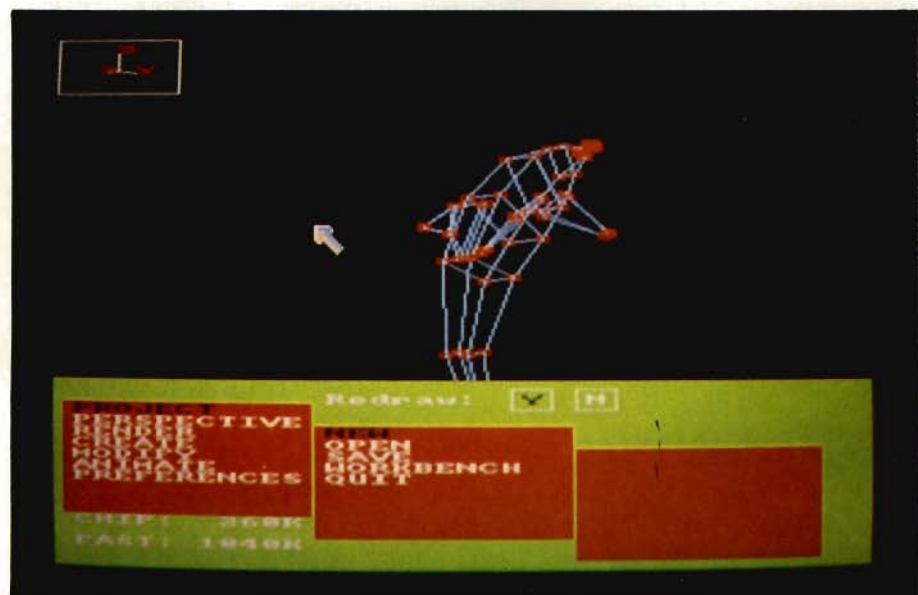
# ELER

# 3D

parameters to a key so next time you switch to a particular window, it is set up in the way you want it.

Using the editing functions is mainly intuitive and a full range of pull-down

menu options is boosted by an on-screen tools menu as well as keyboard shortcuts. This vast diversity is something of a double-edged sword — there is so much control over your 3D universe that the manual has to be at arm's reach constantly for quick reference, at least in the early stages. Another thing to make clear is that this is solely an editor — it exists to serve the powerhouse animation program, not to create graphics which are intrinsically useful. For instance the colouring of your object's polygons is extremely basic, relying on the sophistication of VideoScape 3D to render them in their true glorious highlights and shadows.

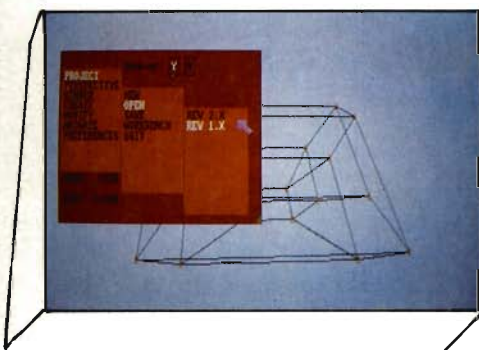


The two programs are so closely tied that you can design a path, or motion, within M3D which can be read by VideoScape; this is a marvellous addition to the program's versatility and allows you to quickly draw on screen the flight path of your camera around your new object. Similarly any VideoScape camera or object motions can be loaded into M3D and edited.

***"The two programs are so closely tied that you can design a path, or motion within M3D which can be read by VideoScape."***

The best configuration is to run both programs simultaneously, provided you have the free memory. This way you can flip from one to the other and see immediately how your current project will look when the real colours and shading will be rendered.

This and other tips are given in the well designed manual, which does have its blind spots and omissions but which nevertheless allows you to tease out the program's attributes.



## CONCLUSION

Since it was released in mid 1987 VideoScape 3D has earned its keep in many professional production applications. This is more a tribute to the endeavours of the computer operators than to the friendliness of the design controls. The arrival of this editor, however, has unlocked the real potential of the program and breathed life into an old but still outstanding 3D animation utility. Anyone who uses VideoScape 3D really cannot afford to be without it in terms of both time-saving and flexibility. And it is great for a battered ego!

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# MIDI

## (An Introduction — Part II)

*More MIDI from our resident music maker Paul Andreas Overraa*

Last month we mentioned that a large class of MIDI messages contain a 'channel number' encoded in the status byte. Such messages will be intended for any units within a system which have been set up to receive messages on the specified channel. There are two distinct types of channel message... voice messages and mode messages.

### VOICE MESSAGES

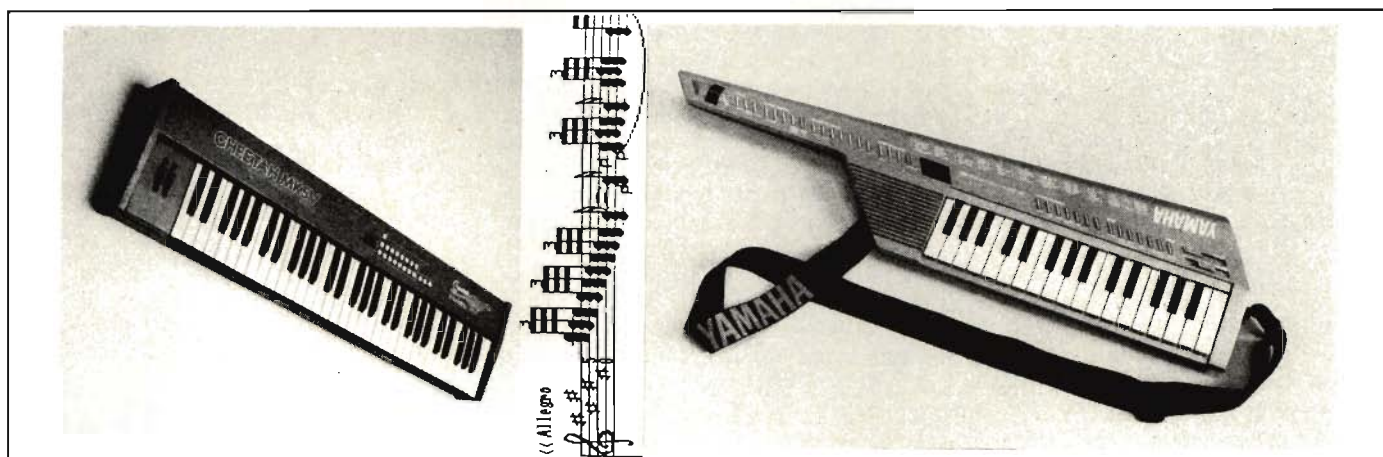
These are used to control an instrument's voice, i.e. the kind of sound it makes. (Synthesizers contain sound generators which enable a wide variety of different sounds to be produced. Each final sound combination is called a 'voice' and 'voice assignment' is the name given to the algorithmic process of making sure the

60. There is nothing magic about the numbers — the assignment is arbitrary but since middle C is near the middle of the piano/synth keyboard it made sense to give it a value near to the middle of the range that the MIDI standard recognizes. The C note that is one octave (12 semitones) above middle C would have a key value of 72 and the note an octave below would have a value of 48. The velocity byte, which in this case is a 'key off' velocity, is a numerical representation of how quickly the key was released. In practice quite a few keyboards are not touch sensitive and these transmit a default value of 64 for this parameter.

status byte	1000nnnn
note pitch	0kkkkkkk
note off velocity	0vvvvvvv

If a 'note on' message with a velocity of zero is transmitted then that note is effectively turned off. This turns out to be particularly useful because channel messages (i.e. voice and mode messages) allow the use of implied status bytes. It is called 'Running status' and works like this... if note on/note off messages are being communicated then units that implement running status will send 'note off' data as 'zero velocity note on' messages. A stream of note on/note off messages can then be sent as a single 'note on' status byte followed by just the relevant data bytes of all the messages involved.

Polyphonic key pressure: some keyboards respond not only to initial and final key dynamics but also to the pressure of the key whilst it is being held down. Such



right notes are played with the right voice.)

Voice data concerns itself primarily with making sounds... selecting voices, turning notes on and off, bending the pitch of notes and performing control functions which affect the sounds the synthesizer will make. There are seven voice messages available:

Note off: when a voice is turned off, e.g. when you release a key on a synthesizer keyboard, three pieces of data are transmitted... a 'note off' status byte, a byte representing the note and a 'velocity' byte. The status byte contains the MIDI channel number in the lowest four bits. A note's pitch is represented by a number from 0-127 with 'middle C' assigned the number

Note on: three pieces of information are transmitted when you press a key on a MIDI keyboard — the note on status byte, the key number which represents the note's pitch and a 'note on' velocity byte. This latter item represents the speed at which the note was struck. As with 'note off' data, keyboards without touch sensitivity will transmit a velocity value of 64 for all notes played. Some synths, without touch sensitivity, do allow you to alter the overall velocity level by using a foot volume pedal.

Note on:	Binary
status byte	1001nnnn
note pitch	0kkkkkkk
note of velocity	0vvvvvvv

keyboards transmit these 'pressure changes' as changes in velocity data using polyphonic key pressure messages (sometimes called 'polyphonic after-touch'). It is not easy to do, so these types of keyboards are invariably expensive.

**Polyphonic Key Pressure:**

status byte	1010nnnn
note pitch	0kkkkkkk
pressure value	0vvvvvvv

Control change: is a problem area that we shall look at later. For the moment all we need mention is that MIDI makes provision for sending and receiving data from 31 continuous controllers, 32 on/off

*cont. on next page*



# MIDI

## (An Introduction – Part II)

*continued from page 29*

switches and 29 undefined controllers. The state of these controllers can be modified by sending control change messages which take the following form:

**Control change:** Binary  
**status byte** 1011nnnn  
**control number** 0ccccccc  
**control value** 0vvvvvvv

**Program change:** enables you to select a particular 'program'. The term is a bit vague ... on a synthesizer this might mean a particular voice or a particular set of voices. On a MIDI digital delay unit it might mean selecting one of the available delay effects. What the MIDI program change commands let you do is make such selections by remote control.

**Program change:** Binary  
**status byte** 1100nnnn  
**program number** 0ppppppp

In practice it has been found useful for manufacturers to incorporate a table look-up approach to program change commands. This enables the user to set up their own correspondence between a particular program change command and what voice or effect is selected. In practice it is a good idea to keep one program change command as a 'null' command because it is then possible to effectively disable a unit under program control.

Let us take a simple example ... the Alesis Midiverb digital reverb unit is a MIDI unit with 99 different preset reverb/delay type effects. Setting '00' is a 'no effects' program setting, so by assigning this setting to program change 1 it becomes possible to make a sequencer turn the unit off at the end of a song simply by transmitting a 'program change 1' command.

**Channel pressure:** this is similar to polyphonic aftertouch but rather than dealing with individual notes it is concerned with a sort of 'average' or overall keyboard pressure.

**Channel pressure:** Binary  
**status byte** 1101nnnn  
**pressure value** 0vvvvvvv

**Pitch bend change:** this is one of the famous commands which can result in 'MIDI stream clogging', i.e. having more MIDI data than your units can comfortably handle. The thing to bear in mind is that pitch bend data is transmitted throughout the time that the control is moving so if you

use the pitch bend control like a space invaders joystick you will come across three problems – firstly you will find the extra data eats into your sequencer memory, secondly editing sequences becomes more difficult because the note on/off events will be mixed with a lot of pitch bend data and thirdly you might find that you end up with too much MIDI data going down the line.

**Pitch bend change:** Binary  
**status byte** 1110nnnn  
**data low byte** 0bbbbbbb  
**data high byte** 0bbbbbbb

Whilst talking of voice data we ought to mention that many units are capable of receiving and using voice data on more than one channel simultaneously. The Yamaha TX81Z synthesizer module is a typical example ... it can, for instance, be set up so that bass notes are played using an 'Analogue Bass' sound on channel 1, string parts received on channel 2 are played with a suitable 'string voice' and perhaps yet a third 'melody part' received on MIDI channel 3 played using a 'solo violin' voice.

In general synthesizers with these facilities can produce excellent results but occasionally you might get a few snags. Perhaps the most common problems arise when you try to make a single unit do too much. It depends very much on what you are actually doing but in general you will find that the more work the unit has to do the poorer the final sound quality. There are two reasons for this: firstly, the sound chips of the actual synthesizer can only comfortably do so much. Secondly, since your audio output is liable to go into a single amplifier you may find that your speaker system finds it hard to cope with producing good quality low frequency sounds (e.g. bass parts) at the same time as having to produce notes in the higher ranges.

### MODE MESSAGES

When MIDI data is being used, the relationship between the 16 available channels and the way the synthesizer uses it must be defined. Several messages are available for this purpose. They are sent over the instrument's basic transmit/receive channel and define the response to the voice messages. You will notice from the value of the status byte that these messages are actually special cases of control change messages.

To start with it is possible to connect/disconnect a synthesizer's keyboard from the sound generator circuits by using two MIDI local control commands ...

**Local control off:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111010  
**3rd byte** 00000000

**Local control on:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111010  
**3rd byte** 01111111

Also available is a channel specific 'panic button' message that will turn off all notes that are currently sounding ...

**All notes off:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111011

Lastly there is a set of four mode messages:

**Omni mode off:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111100  
**3rd byte** 00000000

**Omni mode on:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111101  
**3rd byte** 00000000

**Mono mode on:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111110  
**3rd byte** 0vvvvvvv

**Poly mode on:** Binary  
**status byte** 1011nnnn  
**2nd byte** 01111111  
**3rd byte** 00000000

'Omni on' is a message which tells the instrument that receives it to use voice data coming in on ALL 16 channels. 'Omni off' is the corresponding message which returns the unit to its channel selective state. If a unit is to transmit voice data messages whilst in 'omni' mode then it will do so on its basic channel.

Mono and Poly modes are mutually exclusive, i.e. a unit can only be in one of these states at any one time. Mono mode restricts the assignment of voices to just ONE voice per voice channel, whereas poly mode allows the instrument to play polyphonically using just a single channel. You can still play 'polyphonically' in mono mode but you do it by using a set of channels rather than just one.

The four possible combinations of these mode messages give rise to the following 'MIDI modes':



## MIDI (An Introduction — Part II)

**Mode 1: OMNI ON/POLY ON**  
**Mode 2: OMNI ON/POLY OFF**  
 (i.e. mono on)  
**Mode 3: OMNI OFF/POLY ON**  
**Mode 4: OMNI OFF/POLY OFF**  
 (i.e. mono on)

The first two combinations are based on the 'omni on' condition and, because of the lack of 'channel selectivity', they are not (in my view at least!) that useful. Nowadays synthesizers are polyphonic and can be

set to transmit and receive on a specific MIDI channel so the Mode 3 is very widely used. Mode 4 is being used for all sorts of weird and wonderful things because it allows voice data to be sent and received using a different MIDI channel for each voice.

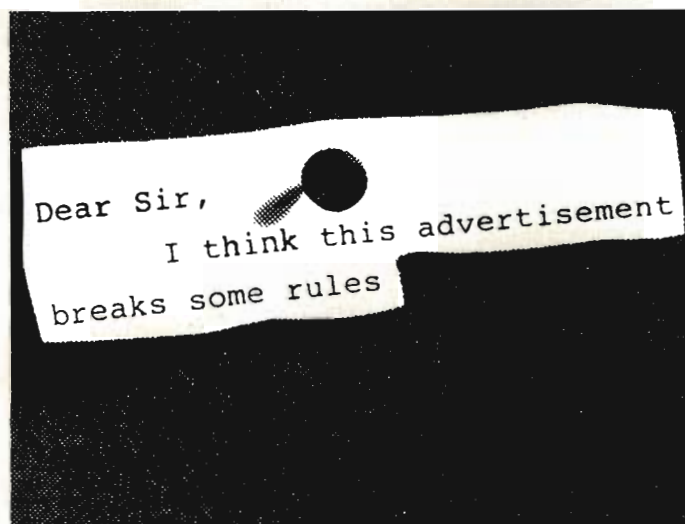
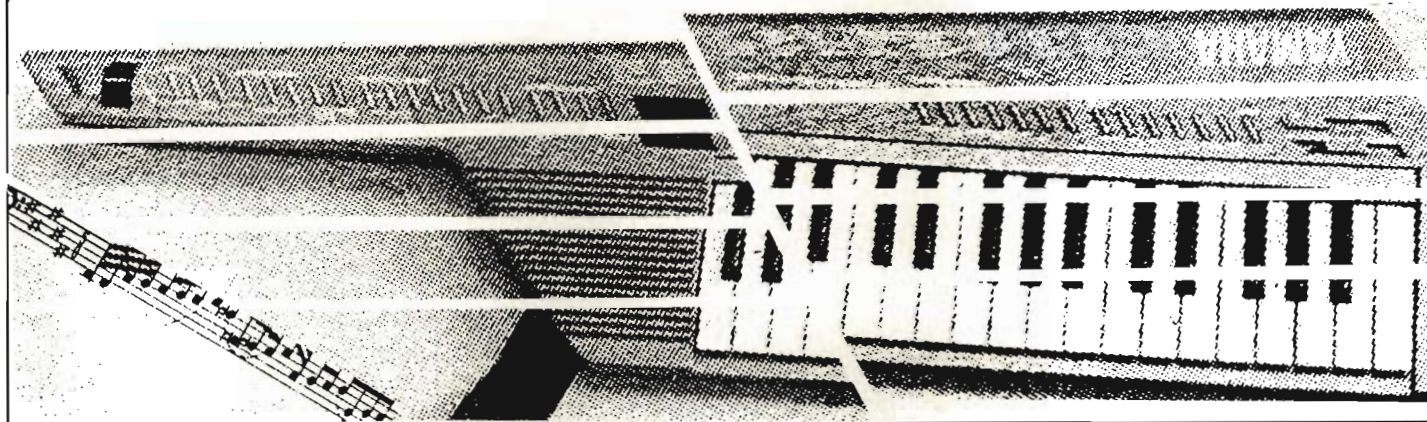
Many of the messages we have looked at over the last couple of months will not make much sense until you see some practical applications, i.e. how they are used. It is important, however, to keep in mind that, whenever you press a key on a keyboard, select a program setting, move controllers, or start and stop MIDI units, etc., then your actions MAY be translated into a suitable MIDI message and transmitted (via the MIDI out terminal) to all other linked units. Whether this information is

used or not will depend on both the individual reception states and the capabilities of the receiving equipment.

I say 'may be translated' because the MIDI standard does not specify exactly what transmission/reception facilities a particular piece of equipment should have. Individual pieces of MIDI equipment vary considerably in what they can or cannot do. This information is usually presented as a 'MIDI implementation sheet' which enables you to tell at a glance exactly what facilities a particular piece of equipment can offer.

*Next month we will look at an example of an implementation sheet and explain how to make the most of the information presented.*

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# INCONTROL JOYSTICK-YOKE

*A new and unique joystick looks set to become a soaraway success with armchair pilots hooked on Flight Simulator II. Peter Lee took it for a spin around the Statue of Liberty.*

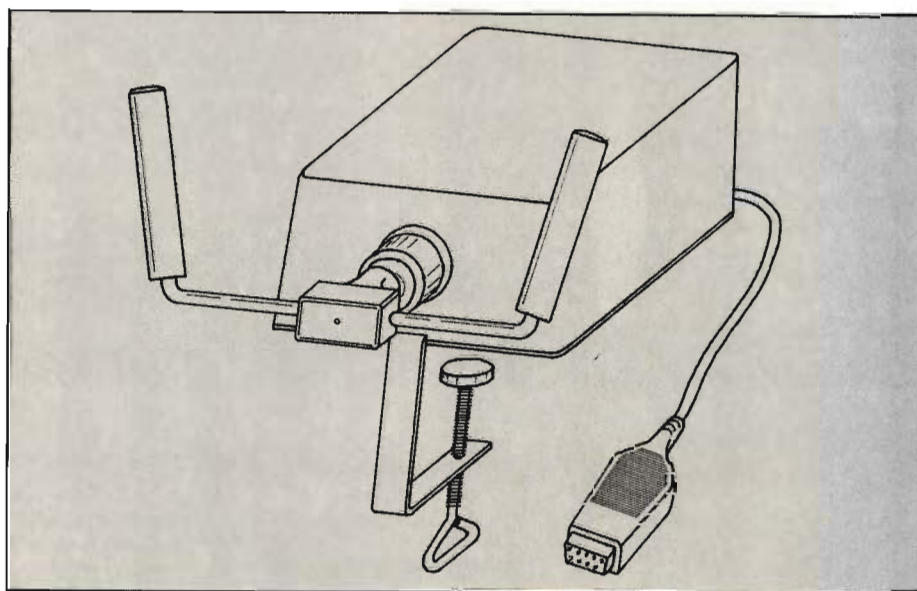
**S**UBLOGIC'S Flight Simulator II brought a new realism to simulation and has risen to even greater heights with the addition of scenery disks which broaden the Amiga enthusiast's horizon and ensure that flying never becomes tedious. However, for all its stunning ingenuity, FS II's control method was far from realistic, relying on the accepted human-computer interfaces — the mouse, joystick or keyboard. All very well but hardly the stuff dreams are made of for aspiring 'Biggles'.

Now onto the scene lands a cheap but effective control device that enabled stay-at-home airmen (and let's be honest, kids at heart) like me to believe they really are at the controls of a plane as it soars and banks.

The device itself comprises of a small black housing (15cm long, 8cm wide and 5cm high) which clamps onto the front of your desk or wherever you have the computer; from the front protrudes the actual control handle which you hold with both hands. The unit plugs directly into the Amiga's port 2.

The stick gives proportional control and this option has to be selected from within Flight Sim II by pressing the J key to give yoke control. Banking left or right is accomplished simply by turning the control handle and pushing in or pulling out the stick controls the elevators, allowing you to climb or descend in a very realistic way. Power settings still have to be controlled from the keyboard but I found it far easier to fly the new stick one-handed while doing this than I ever did with either mouse or normal joystick.

In practical terms the control may look a bit embarrassing clamped to your desk but who cares? It can be



quickly removed when not in use and offers the kind of extra thrill which can revitalise routine flying sessions. It is responsive and easy to get used to; however it is important to note that it will only function with version 1.1 or later of the program, though users with early copies will find the necessary upgrade procedure is available on SubLogic scenery disks when they buy them.

## The Designer

The idea is the brainchild of 41-year-old Alan Coates from Cambridge who designed and manufactures the device himself — something of a one-man band! This is his first business venture, which had its origins earlier this year; "I built my working unit in 5 days in January and realised that it had potential when other Amiga owning friends were impressed," he said. As far computing goes, he started with a Sinclair Spectrum, then onto a C64 "because of FS II" and at

the start of last year bought the A1000. He also flies radio-controlled helicopters.

## Conclusion

Flight Sim II is habit forming; if the bug has bitten you, you will not need me to tell you how absorbing and genuinely compelling the program is. I am not ashamed to say I have taken my wife on many scenic tours — it affects people that way. One fellow flyer I know even wore RAF epaulettes on his pilot's shirt when he 'flew'! With the addition of this little device, the best has been bettered. It is now more fun to take to the skies, with an added sense of realism. Amazingly cheap, it is nevertheless an invaluable addition for any Amiga cockpit and one I can genuinely recommend. If you have the right stuff — get one!

P.L.

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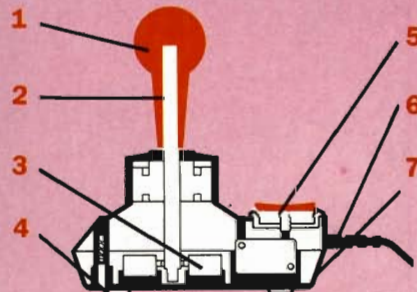
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**P**UZZLES are a rare breed of game, possibly because of the difficulties involved in creating one that is both enjoyably beguiling and visually attractive. The best solution seems to be to combine arcade style presentation and controls with gameplay that follows a few simple rules. Unlike some, Bombuzal manages to take the best of both worlds resulting in one of the best puzzlers for ages.

The centre piece of the game is a chubby character whose job it is to detonate all the bombs on each screen. You are given the choice of two display techniques before you play, either a 2D bird's eye view or an isometric 3D view. It plays identically whichever view you opt for, but the 2D can often make the problems seem clearer, whilst the 3D is more interesting to look at.



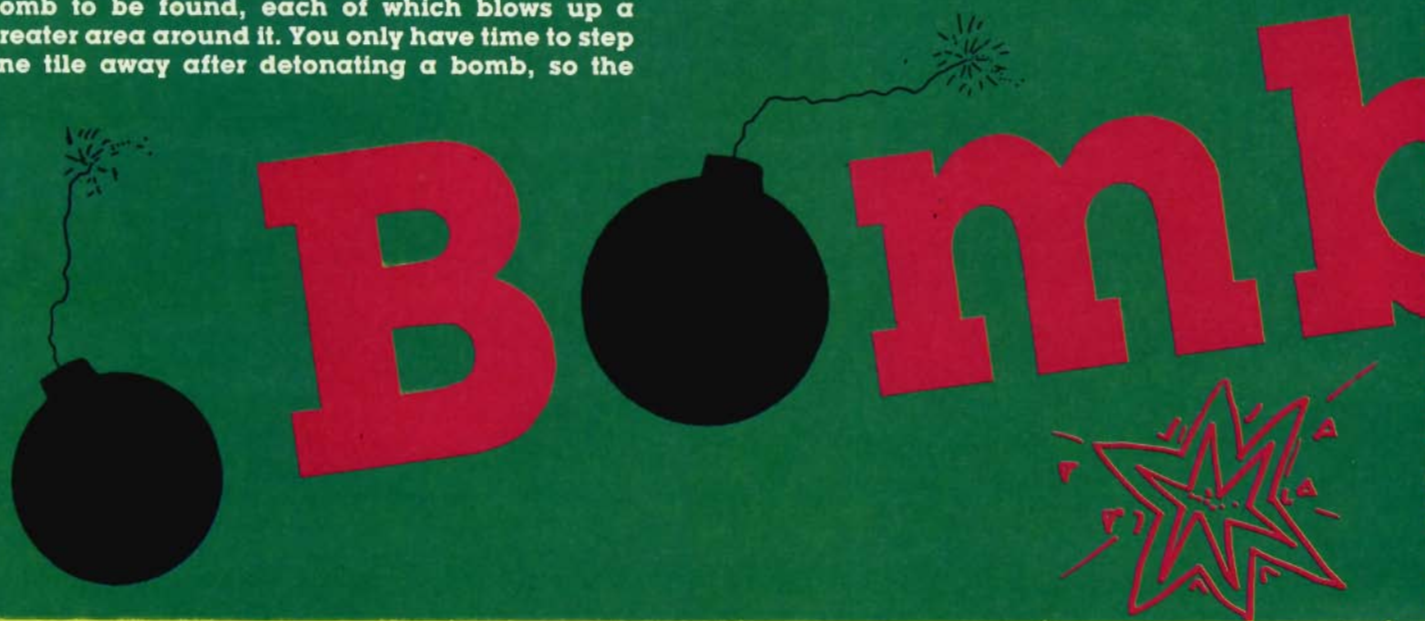
Each screen is a set of various types of tiles. Some tiles are crumbly, others are made of slippery ice and some are indestructible. On these tiles are bombs of different sizes. These are detonated by stepping onto them and pressing the fire button. Walk onto an adjacent tile and the bomb blows up. There are three strengths of bomb to be found, each of which blows up a greater area around it. You only have time to step one tile away after detonating a bomb, so the



only ones you can blow up directly without getting blown up yourself are the smallest of the lot.

Bigger bombs are disposed of via smaller bombs. So, detonating a carefully placed small bomb can set off a chain reaction that finishes off the entire level. Apart from killing yourself in a massive explosion, there is the problem of stranding yourself with unexploded bombs still on the level. A couple of Boulderdash-like aliens have also been included to keep you on your toes. After the bombs themselves, the biggest problem is the time limit which ticks down throughout the game.

The levels are all made up of a few base ingredients: tiles, teleports, bombs etc., but by the emphasised use of certain objects in some screens there is more variety than you would expect to find. Some are just a matter of knowing your route exactly, others require a lot of forethought to position yourself and the bombs to avoid being stranded or blown up. One method of solving the more complex screens is to jot down a diagram on a piece of paper and go through possible solutions.







Your nameless character jollies up the game a great deal with his dopey expressions and lumbering movements. All the rest of the graphics are simple but very big and colourful. Sound effects are limited to explosions and a snatch of digitised speech, though the title music is not at all bad.

Graphics: 7  
Sound: 6  
Playability: 8  
Value: 8  
Price: £19.95

# Bombuzal

Image Works



A password system gets round the boredom of playing through the opening screens each time which should boost its long-term appeal. Bombuzal is not a game for everyone. Some will have seen all they want after ten minutes, others will be playing it for hours, weeks, or even months on end to get that one level further. I do

have slight doubts over its lifespan, but then that will depend on your own attraction to puzzle games. For anyone who likes a lot of fun and want to give their brain a bit of a workout, at the same time. Bombuzal is the perfect solution.

T.H.



# EDDIE EDWARDS' SUPER SKI

*Loricciels*

**I**t looks as if Loricciels' timing was pretty good, releasing the Amiga version of Super Ski as the winter falls days grow shorter (can something grow shorter?) but look at the game's endorsement and you may think otherwise. (He fell even when the days were long!) Unfortunately for Loricciels, the attention surrounding the world's most successful loser Eddie Edwards has died down, so maybe their timing was not so good after all.

Super Ski is a multi-player, multi-event simulation of professional winter sports. There are only four of these sports the slalom, giant slalom, downhill and ski jump which can all be practiced or competed in by up to six people.

Slalom is viewed from just behind the player, Pole Position style. Pushing the joystick forward makes the skier (supposedly Eddie Edwards) crouch and speed up. With different combinations of left/right joystick movements and the fire button you can turn to either side at any of three speeds. The course twists and undulates drastically in places. Eddie flies over bumps very realistically, compensating for the slightly jerky movement of the rest of the scenery. The effect is enhanced further by the brows of hills rising and falling independantly of the mountainous backgrounds.

Two of the remaining three events are almost identical to the slalom which in effect cuts down the overall



variety to two events. On all the downhill ski events the course can be chosen from a selection of three slopes of varying difficulty.

The ski jump takes the same view-point as the others. Press the fire button to launch yourself off the end of the ramp and then use up and down to keep yourself in the perfect flight and landing position. Once you are down there is still the problem of stopping before you pile into the barriers at the bottom of the hill.

Sound plays little part in the game, just white noise swishes and crunches and no music.

Although Super Ski has four events it may as well have two.

Compared to its rivals, Winter Olympiad and Winter Games, super Ski is very limited. However, both events have been extremely well done but are just not enough on their own. Two things that make the Epyx games so popular are the variety of events and the odd out-of-the-ordinary one thrown in to keep the interest up, two additions that would have given Super Ski a welcome boost. Don't not expect anything like the classic Winter Games. I can see anyone limbering up for a session on the slopes this winter enjoying the speed and realistic 3D views of Super Ski it certainly has as realistic a feeling of Skiing as you will find on the Amiga. (In fact you'll probably never be able to ski so well again!).

T.H.



Graphics: 7  
Sound: 2  
Playability: 6  
Value: 6  
Price: £19.95



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# Daley Thompson's

**S**o Daley fell short of the mark at the Olympics, but that's no reason why you can't re-make recent history and win that gold for Britain. Employing the old waggle technique, Daley Thompson's Olympic Challenge is almost as hard work as the real thing!

The perceptive amongst you will have realised Ocean's latest Daley-endorsed game is centred around the Olympic decathlon. (Of course you did, didn't you?). Although the 8-bit versions featured Daley quite prominently, with the Amiga version Ocean have taken the idea much further.

bottle and you can rest for the remaining time or try and go for another. When the two minutes are up you get another chance with a slightly different exercise.

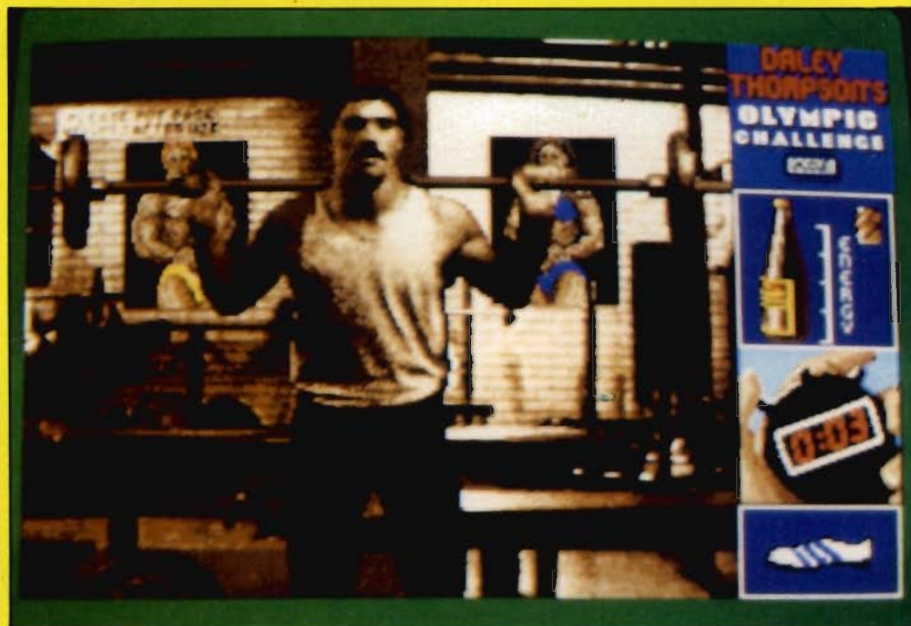
Those bottles of Lucozade can work miracles on the track. Who needs steroids when a bottle of this stuff before hand can boost a long jump personal best of 5.80 metres to 8.20? Perhaps a touch optimistic I think.

A good work-out in the gym is followed by the headlines in the "Daley" paper predicting a top performance from our fave athlete. Day one commences and you limber up for the 100 metres. The main



stick man on the inside lane.

Between the events a neat computer scoreboard clocks up your time and points so far. Now you can compare your scores to Daley's on the wall chart that comes with the game, giving you some idea of how you are doing. Failing to come up with the goods will put you in danger



After entering your name, the computer asks if you want to go ahead with the training section or go straight onto the track. Either way you are made to select a suitable shoe for the event from a choice of eight Adidas spikes and trainers. If you opted for a bit of body building, a couple of two minute weight training sessions to follow. A digitised Daley squats up and down as you waggle the stick from side to side. With each squat a little drop of Lucozade appears in a bottle. Fill the

screen area shows a view of the track surrounded by the crowded stadium. To the left is a digitised Daley on the starting blocks.

*"Wait for the gun and waggle your way to the tape. The animation is superb as Daley powers his way along the track"*

represented on the right by a little







of being disqualified. I cannot say I have ever heard of an athlete being disqualified for being a bit below par, but it adds to the incentive to win.

Long jump, 400 metres and 1500 metres are all along the lines of the sprint. The rest of the events all take different approaches, each one featuring big, smooth digitised animations. This gives the game a unique link to its endorsement. For a change you are actually controlling Daley, not a characterless blob. Whether you get the gold or not all comes down to how fast you can waggle your joystick, and for that the

skills demanded from the player are no different from the original Track and Field clones. What it does have though is the kind of spectacular graphics and spots of detail that have only been made possible by the emergence of 16-bit home micros in the last few years.

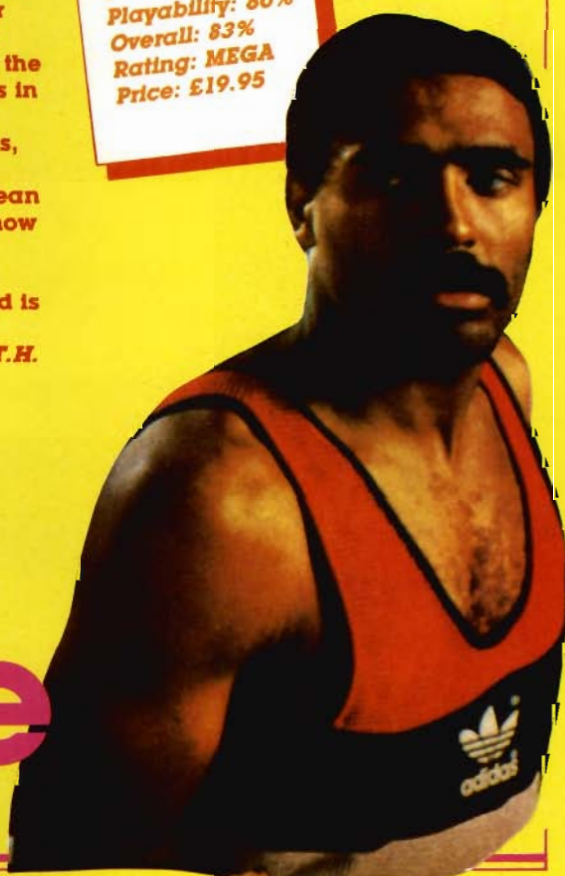
In short, splendid graphics, pleasant sound and sweaty gameplay. Congratulations to Ocean for a great game, but next time how about developing a few less strenuous control methods? I'm exhausted and my wagging hand is dying!

T.H.

Graphics: 95%  
Sound: 71%  
Playability: 80%  
Overall: 83%  
Rating: MEGA  
Price: £19.95

# Olympic Challenge

Ocean





# Revenge II

**R**EVENGE II is the sequel of Jeff Minter's Attack of the Mutant Camels. Sadly, due to a number of reasons it is not the zany-all-action-shoot 'em up Mastertronic had hoped for. A ninety foot high mutated camel fighting the Zzyaxian Empire might have made a great game, but when it is put in such a crumbly form as this it degenerates into one of the most tiresome uses of a joystick known to man (or women).

This camel has been modified to allow flight and been given the ability to spit bullets in seven directions. The screen constantly scrolls from right to left with backgrounds of abstract blobs, pyramids and a load of other unrecognisable features. Aliens come in similarly abstract forms. Pacmen, hearts and credit cards are a few of the projectiles that come your way before being shot or blown up by baby camels dropped from your belly.

***"Pacmen, hearts and credit cards are a few of the projectiles that come your way before being shot or blown up by baby camels dropped from your belly."***

Survive a level and you can select the next by moving a cursor onto an adjacent square in the grid. Extra

weapons can be bought between levels but are nothing exciting and make little difference during the battle.



Variations in the levels are mainly graphical. Instead of shooting micro-chips on one level you could move onto attacks from faces that hatch out of eggs. The extremely plain blasting stays almost exactly the same which ever level you play. Didn't these kinds of silly sprites die out after the Jet Set Willy craze? As if the weak design of the graphics was not bad enough, there are even some Spectrum-style colour glitches here and there!

In-game sound effects are limited to three pathetic varieties of bleep and the title music sounds like a half-baked Christmas carol!

The Amiga version was not actually programmed by Jeff Minter, but converted by Icon Design from his original C64 game. The standard of the programming is well below par, greatly exaggerating the dated design. Its acute deficiency of variation in the game-play means its life span will be very short. The so-called budget price of £9.95 may look cheap but for the limited entertainment I got from Revenge II, a tenner is still over the top.

T.H.



Graphics: 4  
Sound: 1  
Playability: 3  
Value: 5  
Price: £9.95



# CHARON 5



Charon 5 is an unparalleled design concept that combines strategy with Arcade action to produce a game of epic proportions. The action takes place on over 5,400 full color screens spread throughout 11 action packed levels. The game is further enhanced by the use of exceptional true stereo sound and music.

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**T**hey say you are the bravest alien blaster of them all. When a colony on a far away planet was overrun by intruders from outer space there was only one man for the job. Your orders are simple: seek out the colony and rid it of this alien invasion.

A familiar scenario fronts a familiar game in *Hybris*. Fly up the screen, shoot some aliens, collect a few weapons and get blown up by the mother ship at the end of the level. You would be hard pushed to find an original aspect of *Hybris*, but it is not always originality that means everything for as vertical scrolling shoot 'em ups go *Hybris* ranks with the best and is total fun to play.

On the title screen you are given the choice of playing either J P Maverick or K Lovett during the game, the significance of which is not very clear. Pressing the spacebar takes you into an options



# Hybris

screen where you can change the number of lives you start with, the aliens' bullet speed and rate of fire, and the rate at which they split up.

Start up the game and a desert landscape like that seen in *Commando* scrolls down the screen. Once ejected from your main ship you are on your own against the enemy. Small craft swerve across the screen as they tend to do in these games. Ground-based anti-aircraft guns open up and let off slow moving fireballs. To begin with these are easy picking but soon they appear behind shields forcing

you to fly dangerously close to have any chance of hitting them.

Numbered cubes glide into view and must be shot to transform them into weapon upgrades. Collect them for wider, more powerful lasers. Pressing RETURN removes your wing lasers and forms them into alternative arrangements. Smart bombs are also available for emergencies.

The levels are long and can get repetitive but the background graphics are always well drawn. Canyons, ridges and craters of the first level desert are off-set by high-tech buildings. Completing a level rewards you with a congratulatory piece of graphics while the next loads in.

Soundwise, *Hybris* is impressive, including some good effects and sampled music. Its graphics are a bit up and down; backgrounds are attractive but the

sprites are small and often uninteresting (though they do have some really excellent flight patterns). I would say its graphics, sound and gameplay are on a par with; *Vyper*, *Sidewinder* and the marvellous *Xenon*. *Hybris* is a top notch zapper. It may be not the newest idea around but it was designed for sheer exhilaration and it really makes it. At the recent Ami Expo, *Hybris* drew the crowds and the oohs and ahs from stunned shooters, who had to be dragged away from the joystick. I think it is likely you will suffer the same infection from this highly addictive game.

T.H.

Graphics: 7  
Sound: 8  
Playability: 7  
Overall: 7

Price: £24.95





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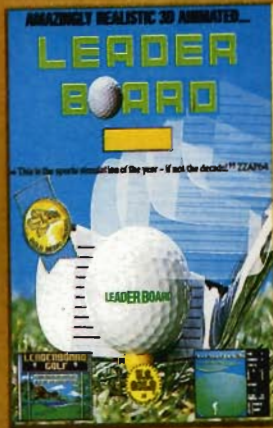


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## Electronic Arts

**N**ow this makes a nice change. Electronic Arts have done away with the usual rambling scenario by telling the player straight away that Fusion is a game, with you at the controls, not a futuristic simulation of one. Hard luck then for the few people on Earth that actually read the novels that comes with a game, but good news for the rest of us! Good marks for E.A.!

Your objective is to collect all the bits of a bomb from the many alien levels. You start in a small land based craft, trundling around the raised section of the first level. In this form you are very vulnerable due to your slow pace and limited firepower. Make your way to the aircraft and you can get on with the game properly.

*"All the time you are working out these locks and keys, aliens of various kinds are homing in for the kill."*

In your more conventional spaceship the screen scrolls around faster, but very jerkily. This is a shame as the graphics have obviously had a great deal of time spent on them and have rewarded the effort. Around the levels you will find exits to deeper sections. The trouble with these is that leading back from them are a series of locks, and as the sequence is not immediately obvious, a good deal of planning is called for. No doubt you intelligent E.A. fans always do that anyway.



These locks are small coloured blocks on the background, each of which has a corresponding key somewhere on the level. All the time you are working out these locks and keys, aliens of various kinds are homing in for the kill. This gives rise to some shoot 'em up action to keep the game together.

Fusion is unusual in its mix of highly enjoyable mindless blasting and challenging logical puzzle solving. The two work well together but the nature of the problems set by the locks are probably not really exciting enough to marry perfectly with the rest of the game. A racey soundtrack does well to lift the

game's overall pace together with the sampled effects.

Fusion's sprites and backgrounds are extremely colourful and detailed which makes the poor scrolling even more of a shame. I am all for the inclusion of spots of brainwork in action games, but I would like to see those in Fusion fitting in more naturally than they do. Even so, Fusion is a very pleasant game that indeed I am sure will be enjoyed a great deal by loads of people. Just who would get the most from it is hard to say, so if at all possible give it a test run down at your friendly neighbourhood software shop. You may well end up taking it home in preference to the mindless, mindless blast 'ems that fill the shelves.

B.V.

Graphics: 7  
Sound: 7  
Playability: 6  
Overall: 6  
Price: £24.99





# Heard It On The Grapevine

*Tony Horgan while keeping his nose to the grindstone, puts his ear to the ground and his finger to the pulse of the Amiga games world . . . He's been on the grapevine again . . .*

**C**ast your mind back to about this time last year. Games released by UK software houses could be expected on three main formats: Spectrum, C64 and Amstrad. A few of these would eventually appear on the ST. The Amiga's games were nearly all coming from European and American companies, and the few from the UK mostly came from relatively small dedicated but talented 16-bit houses like Psynosis or Melbourne House.

In just a year that situation has changed drastically. All the European and American games have kept coming in increasing numbers, but the biggest change concerns the big British companies. Now, games from the likes of Ocean, US Gold, Gremlin, Grandslam, Hewson and Firebird are not just being released across the 8-bitters, but in the vast majority of cases are appearing on the Amiga. We are even beginning to emerge from the frustrating situation of having games ported directly from the ST versions and have real Amiga products. Take Grandslam's almost byte for byte accurate conversion of Pacmania for example which really exploits the machines brilliant talents.

The traditional Christmas up-surge in the games software world, combined with the realisation of the 68,000 computer's entertainment potential has meant a boom in Amiga games. Finishing touches are

being added to a host of imminent releases. Tune in for the facts about tomorrow's hits . . .

On show at the recent AmiExpo in Los Angeles were four new games from American software house Starvision. Their first, Mega Pinball, is just that; not content with fitting the whole table into one screen, Starvision decided on having Mega Pinball's four tables all 640 x 384 pixels in size! All the usual flippers, mushrooms and tunnels are decorated by superb artwork to give it an authentic look and feel, rounded off with a choice of sound effects or one of four stereo soundtracks.

Twin Ranger combines horizontal, vertical and 8-way scrolling in a three-part shoot 'em up. It uses a special 3D effect, looking a bit like the vertically scrolling sections of Thunderblade, that Starvision tell us has never before been seen in an Amiga game.

**"3D vector graphics and standard 2D sprites are used to chronicle your adventure through the stars"**

On a less violent plane there's Snowberry, a polar platform game with a cuddly bear as the central character. If leaping around icebergs dodging silly baddies is your thing, this game originally designed for a Nordic TV show should be right up your iceberg.

Their last game is Starfighter One "The ultimate space adventure". As the sharpest starfighter in the universe, you have been called upon to release a princess trapped in a coma. Seven crystals need to be found from around the galaxy to awaken her.



continued on page 48



# ESPIONAGE



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continued from page 46

## Heard It On The Grapevine

Ocean have a varied line up for the festive season. Coin-op conversions of the highly involving *Operation Wolf*, Konami's revolving race game *WEC Le Mans*, the two-player beat 'em up *Dragon Ninja* and the game of the film *Robocop* can be expected in the near future. *Rambo III* promises more murder and mayhem based on the film. A threesome of coin-op licenses from yesteryear are to be given the 16-bit treatment, namely *Jackie*, *Combat School* and *Green Beret*.

Remember *Batman* the computer game? The dynamic duo were the subject of an isometric arcade adventure a while ago in 8-bit forms and are set to swing back onto our screens in their second digital adventure. The new *Batman* takes a totally different approach from the first game with comic book style presentation. Development house *Special FX* are the brains behind it. The *Caped Crusader's* adventures are controlled with a system of icons and menus, accompanied by large cartoon sprites and colourful backgrounds.

The Penguin had devised a fiendish plan to overrun Gotham City: using his twisted ingenuity, he hopes to build an army of homicidal robotic penguins from a factory in his mansion. Sliding down to the Batcave you kit up in your sexy grey tights, held up of course with your utility belt, and you are ready for anything the Penguin can throw at you.



As I write, US Gold's Amiga conversion of *Outrun* is having last minute tweaks made to it by programmers Probe. All the routes of the original are there, each with its own distinctive sights and scenery.

The version I saw did look a little too similar to the ST for my liking but the soundtracks are great imitations

of the originals. Watch this space for the full review in the next issue.

Also under construction at Probe HQ is *Savage*, a three part action adventure soon to be released by Telecomsoft. You play a tough superhero doing battle against an evil force's monster guardians in a mission to save yet another princess held prisoner in an old castle. Part One sees you running through a horizontally scrolling set of damp corridors. A number of mean weapons are available to hack and slice your way through the game, mostly along the lines of spiky maces and razor sharp axe heads.

**"Ripping along the highways of sunny California in your new Ferrari, wreckless Beetles, Mustangs and lorries cut you up, but your turbo-charged status symbol burns them off the road with no trouble"**

Probe are very proud of the four soundtracks that back the game, and rightly so. Loads of samples have been mixed together resulting in one of the loudest and trendiest soundtracks ever heard.



Arriving just too late for review in this issue was the Amiga *Impossible Mission II* from Epyx. The sequel to one of the C64's all-time greats has Agent 4125 (that's you) back on the case as Elvin Atom Bender once again threatens the survival of the world. More adventures are in store around the lifts and platforms of Elvin's lair, guarded as always by an assortment of robots.

All the speech has been re-sampled and the graphics enhanced. The six towers of Elvin's lair each have a different theme governing the types of objects and furniture that must be searched for vital clues. Your pocket computer

now houses a tape recorder and a device to crack the access codes needed for each tower. Expect to see it hit the store shelves any time now.



*Ex-Dragon* specialists Microdeal are set to release *International Soccer*. Among the 'amazing' features it includes is ' hires graphics'! The last time I saw that quoted as a game feature must have been the Spectrum version of *Jet Set Willy*! Apart from that, it does have some interesting points worth mentioning, such as the digitised sound effects, nine skill levels and various weather conditions. What's more, it takes advantage of the four-player interface from *Leatherneck* which allows three players against the computer or two teams of two, as well as the usual one and two player modes.

*Elite* have got a few things up their sleeve for the arcades amongst us. Conversions of *Space Harrier* and *Ghosts 'n' Goblins* will be barging among us soon and are looking great. Amiga versions of *Overlander* and *Paperboy* are also expected before long, and *Space Harrier II* (based on the levels that couldn't be fitted into the first) should be out in early '89.

**"Canadian-programmed Charon 5, a futuristic search and shoot affair"**

Another that just missed the review deadline was Canadian-programmed *Charon 5*, a futuristic search and shoot affair bearing some similarities to Hewson's old favourite *Paradroid*. The multi-directionally scrolling preplanned action takes place on a broken-down complex. Its lifeline has been severed in a number of places and it's up to you to seek out the components and repair the damage.

Most of this little lot are promised for a Christmas release date, but if the last few festive seasons are anything to go on, I wouldn't hold my breath for any of them if I were you!

T.H.



**P**ROTECTING your software from pirates is fair enough, but the protection used in *Stellaryx* is the most infuriating system I have ever come across! It uses a technique similar to that first seen in *Jet Set Willy*, where a set of colours are shown on the screen and the user is asked to give the co-ordinates of that particular formation from a large grid. *Jet Set Willy* gave you the co-ordinates and asked you for the colours, *Stellaryx* does it the other way round.

The quality of the printing on the colour grid supplied with the packaging is so hazy that finding the three sets of four colours seems impossible at times (there are so many different shades it only takes a slight twiddle of the brightness knob totally to throw out the balance). I am sure this will deter pirates but the time it takes for an innocent owner of the original game to get into it is too long for comfort.

As you can probably tell from the screenshots, *Stellaryx* is an update on the *Asteroids* theme. Each level is played on a single "wrap around"



asteroids, chunks of rock floating peacefully through space. They may not mean any harm but a collision with one of these is fatal, so blast them to bits if you want to

# STELLARYX

## Laser Gameship



screen, sprites leaving the screen reappear on the opposite edge. The controls have been altered from the old rotate and thrust buttons, now the mouse moves a sight across the screen and any thrust or cannon shots are directed straight to it.

Your initial enemies are the

stay alive. The further into the game you get, the more hazards appear. Space men, satellites, missiles and flying saucers can be expected before long. To add a bit of confusion there are magnets that pull you around in their wake.

With these new enemies come

more powerful weapons to be picked up. Guided missiles, grenades and photons help clear the galaxies while a tractor beam is helpful for scooping up ship additions.

All the sound is very basic. The music is a simple arrangement of dings and dongs, and the effects are little more than blips and bangs. *Stellaryx* graphics benefit from the backgrounds of planets and stars but the remaining asteroids and aliens are small and often uninteresting.

Since the early days of arcade-going we have come to expect detailed graphics, swirling alien attack waves and definite goals to go for. In the light of these more recent shoot 'em ups, *Stellaryx* looks very weak at times. The simple thrust and blast action has been reproduced well and is enjoyable in short bursts. Whether it can hold out against the ever-increasing quality of recent arcade hits and Amiga games in general is another matter.

Graphics: 5  
Sound: 5  
Playability: 6  
Value: 5

T.H.



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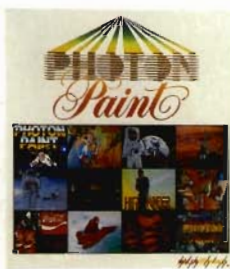
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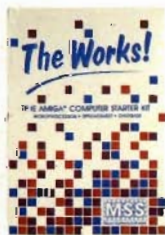
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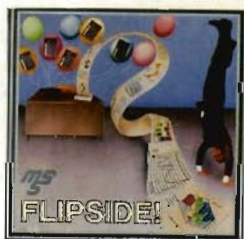
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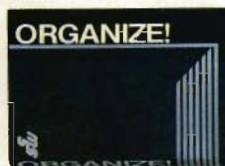
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# ALBEDO

*Loricels*

**M**agnetic boots, combination laser-shields and bouncing grenades are some of the super-heroic gadgets kitting out the players of *Albedo*, a kind of sci-fi sport of the future.

The game is broken up into a number of "trials", various tasks ranging in size and difficulty that must be completed to gain access to the ultimate trial. Some are played in a network of screens that form a maze, others are just single screens. All are inhabited by aliens which materialise and float around, draining your energy on contact.

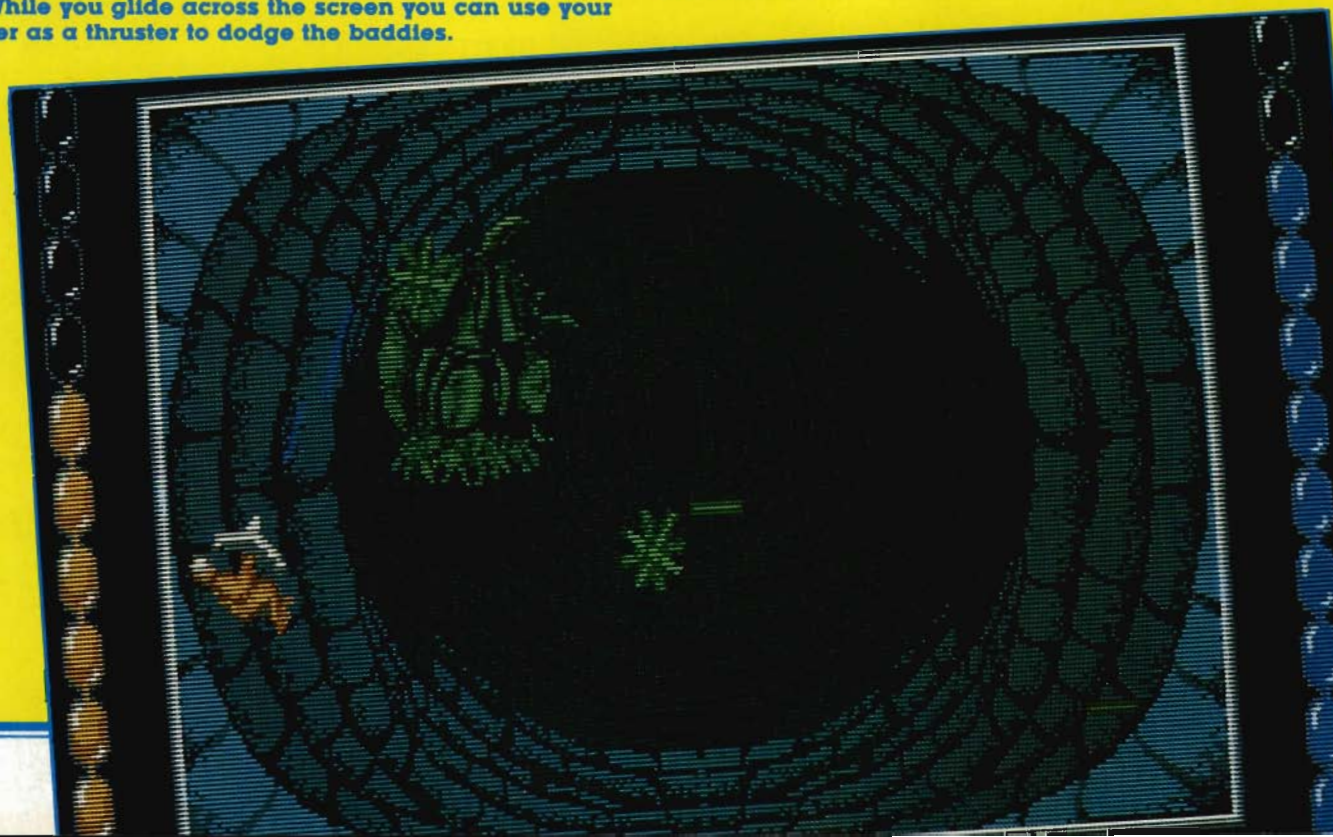
In the game you are in a zero gravity state, so your magnetic boots are used to keep you stuck to the floors. As there is no gravity, you can never suffer from being upside-down. The sprite may look top-down when running along the top of the screen but he is able to act exactly the same as if he were on any of the other four walls. Adjacent walls can be reached by running up to the corner, where the warrior automatically continues along the next surface. Opposite walls are reached by squatting against the floor and springing up (or down!)

While you glide across the screen you can use your laser as a thruster to dodge the baddies.



I have only ever seen anything like this once before, that game being Jeff Minter's *Ancipital* a long time ago. In that, you played some kind of long-horned yakly-goat, leaping from wall to wall in similar alien-filled screens. However, *Albedo* has a lot of new and highly interesting features of its own and is far easier to get into.

You carry a shield with you at all times. This can be raised and lowered very precisely with the mouse or joystick. On the front of the shield is a laser capable of firing shots of various strengths. Hold down the fire button longer for a shot that can demolish an entire





# ALBEDO

mother-alien, or tap it for small zaps that rid you of the smaller menaces. Grenades are limited but can be very effective when let loose on a biggy.

Albedo is extremely neatly presented. The trial selection screens have you moving a spark from a central globe onto surrounding icons, beneath which is explanatory scrolling text that contains a number of layers of parallax scrolling within the lettering. Your sprite is smoothly animated, bearing more than a passing resemblance to the hero of Impossible Mission. As for the rest of the graphics, the sprites are

mostly fairly basic, as are the backgrounds. On the other hand, the music is very pleasant, on equal terms with the sound effects.

The simultaneous two-player mode is a bonus for anyone with a friend to hand. While Albedo is a lot of fun to play, it could do with a bit more punch and a few surprises to keep you at it. Games tend to last quite a while without much change in the aliens and skills demanded from the player. Still, it is nice to see something different and Albedo is definitely that, making a very playable variation on the shoot 'em up theme.

T.H.



Graphics: 6  
Sound: 8  
Playability: 7  
Value: 7  
Price: £19.95



# Battlechess

Interplay/Electronic Arts

**F**OR as long as I care to remember, I have always had access to a chess-board of some sort or another and, although I've never become a very proficient player, I still enjoy a game now and then.

When I purchased my first Commodore, along with all the bits in the box, I bought a copy of the 'ultimate' chess game at that time, called "Colossus 4 Chess".

Since then, if ever I have wanted to play, it has been this program that I have used. Many other chess games have come and gone since, but none have ever come up to its standard.

Well, that's until now!

From Electronic Arts comes "BATTLECHESS", and apart from being one of the most *playable* games of chess I've ever seen on any computer, it is definitely the most entertaining. (More about that later.)

Battle Chess is supplied on a single disk and runs equally well on all Amigas, although I got a 'not enough memory' error on the 500 if I left the external drive connected.

Supplied within the very thorough manual, is a complete list of moves made in twenty games played between chess masters. The games vary from one played on the San Diego Freeway between Zimmer and Thaimann, sometime this year, right back to one played in London between Labourdonnias and MacDonnell in 1834!!

These lists not only provide an insight into how a master plays, but also serve as protection for the game. Once the game has loaded, you are requested to enter into the computer a randomly selected move from one of the lists. When you've got it right, the game commences.

Battle Chess pieces are red and blue, rather than black and white and all movement is mouse-controlled. To move a piece you simply position the

finger-shaped pointer over it. If it is capable of moving, the border of the square that it is standing on will flash. Press the left-button to select the piece and reposition the pointer over the square that you wish to move to. If the move is legal the border of this square will now flash. Press the left-button again and the chosen piece will move to the selected square.

*"The Move menu lets you force a move, go back a move (handy for cheating!!), replay the game, or get the computer to suggest a possible move for you."*

Pressing the right-button (when it is your move) reveals four menu selections at the top of the screen: Disk, Move, Settings and Level. In the Disk menu you may load and save games, start a

This will allow you to preposition pieces onto the board before you start playing.

The Move menu lets you force a move, go back a move (handy for cheating!!), replay the game, or get the computer to suggest a possible move for you.

Settings are as you would expect, with adjustments available for sound, 2D/3D, who plays which colour, if Human or Amiga and, very interestingly, whether you are playing via a MODEM. The Levels menu offers a Novice setting plus nine levels of play and the ability to limit the amount of 'thinking-time' allowed.

Because of space limitations, I have only run through the options very briefly, but even so you can see that Battle Chess is a very sophisticated program that can be as simple, or complex, as you wish.

This is all very nice and, to be quite honest, you would expect this sort of flexibility and quality of programming from Electronic



new game and quit the program, much as you would expect, you may also select 'Setup Board'.

Arts. As I said earlier, the playability is excellent and I would unreservedly recommend



this program to you on that basis alone.

But that is only HALF of the story!

For the 'chess purist' a two-dimensional board with chess piece icons upon it is perfectly adequate, as, for them, it's the ebb and flow of the game itself that is important. But for others, myself included, a little entertainment goes a long way, and with Battle Chess, entertainment is what you get!!

Allow me to digress for a moment . . .

Some while ago I was watching a film, I think it was one of the "Star Trek" movies, in which two of the crew were playing chess. The pieces were holograms that fought together when a piece was 'taken', the vanquished piece disappearing once beaten.

THAT is what makes Battle Chess so entertaining!

When you select the 3D mode, the 'standard' pieces are replaced by actual 'live' figures that move and fight in the

character of the piece!! The King is an old man and moves very sedately but the Queen is younger and she has got quite a wiggle!

The knight is unmounted and clanks as he walks whilst the pile of rocks that make up the castles, transform themselves into pounding great rock-monsters that stomp across the board. A rank of smaller men-at-arms fight as pawns.

*"When a knight gets booted between the legs it's hilarious!"*

When one piece is 'taken' by another, they move to the same square and start slugging it out with not only the weapons they carry, but also magic and a fair smattering of cunning and foul-play.

I won't say too much about what happens, but as a teaser, when a knight faces up to an attacking pawn, the look of anguish and pain on his face as

he gets booted squarely between the legs is hilarious!!

There are many, many other examples of humour, which I shall leave for you to find. Suffice it to say that I set the game up to play itself and spent a delightful hour watching it.



To sum up; I think that Battle Chess is an excellent program that will appeal to players of all ages and levels. Not only are the graphics and sound effects superb, but it also plays a MEAN game of chess!! Highly recommended.

N.S.

Graphics: 9  
Sound: 9  
Overall: 9  
Price: £24.99

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# Pioneer Plague

Antic



**Julia Forester attempts to save the universe from destruction. (Again?) . . .**

**P**IONEER Plague is a shoot 'em up, albeit a highly polished one, that does not pretend to be anything else. It is based in the near future, and sees the player defending Earth against a rampaging mob of genetically mutated, terraforming robot probes of Earth origin.

The main screen depicts the interior of your ship. The top part being dedicated to the various instrumentation and most of the rest just there for decoration. At the helm are four small monitors used to execute various sub-fuctions of the game itself: Planet Defence, Interplanetary Flight, Drone Programming and saving drone patterns to disk. If memories of Cinemaware's awful SDI suddenly come flooding back, don't worry.

Clicking over the leftmost monitor launches the LifeStar. An intermediate screen pops up showing the planet with the Approaching message. From then on — it is up to you. The LifeStar can only really be described as an impregnable technicoloured bubble drifting over the beautifully defined planet surface. Aha!, HAM graphics! Moving the joystick and clicking the fire button launches the AirShip and puts you into the thick of it.

The Pioneer Probes have a defensive system provided by the designers in case of a threat, you for example. Suffice to say the beggars have built themselves a mean armoury. With little more than a verbal "Enemy approaching" blurted under the stereo soundtrack — the swarms arrive.

Initially there are just the Star Shark fighters. These are quite easy to pick off either with a photon missile or a good shunt from one of your two drone aircraft. Then there are the Homers, odd shaped beasts these,

roaming around trying to pick you off when your guard is down. Easy to shoot but ramming with drones causes unpredictable results. Thirdly there are the various sorts of shield-draining Air Mines — the manual is not much help in dealing with these: avoid them.

Finally there is the ultimate foe, only referred to as a Boxer. I'm not sure if I have encountered one but they could be the reason I have died very abruptly several times.

If you manage to make it back to the safety of the LifeStar, the problems are only just starting, because the drones never rest and while you are busily cleaning up one planetoid they are happily recolonising another. Now comes the really nasty bit. Getting between planetary systems requires navigating your way through Sub-Euclidian space via a wormhole.

If all has gone well, and the navigation computer is still working all you have to do is survive the journey. While passing through the wormhole it is necessary to knock out the tractor mines laid down by the probes. Let just one get past and you will be dragged back to the starting point. This is made even tougher because to get to the planet you have to shoot at its image as it appears in the wormhole. Not easy I assure you.

If, on the other hand the navigation computer is no longer functioning — you have to set your co-ordinates manually. This is achieved with some cleverly designed overlay sheets and maps of Sub-Euclidian space. However, you only have limited time to do this or the wormhole closes, but get it wrong and you could end up anywhere.

In the end there just is not room to describe the sheer fun of this original shoot 'em up. The multi-directional scrolling is well up to par and the HAM graphics very pleasing although the game is not any better for them. There is plenty of fast action for all arcade freaks with enough depth to hold the interest for some time. Great stuff. Highly recommended.

Graphics: 9  
Sound: 7  
Playability: 9  
Overall: 8



# Strip Poker II + Data Disks Anco

**F**urther to their release of Strip Poker II+ earlier this year, Anco have come up with the first of the data disks to breathe new life into the game.

For anyone unfamiliar with the original game, it gave you the chance of playing strip poker against a couple of fun-loving girls, Donna and Shish, sorry I mean Donna and Sam. A series of digitised pictures gradually unfold before the successful player. The quality of the graphics is a little below par but they are pretty realistic from a distance. It looks to me as if they had trouble persuading the girls to strip off completely, as the final pictures have some very odd details!

Three other disks are available, and just to prove Anco are not sexist, one features the masculine attractions of Lee and Roy. If things go the same way as they did with Beverly and Dawn on the first disk, someone could have a



tricky job retouching those piccies! If you enjoyed the first installment and need a second helping, the data disks should sort you out.

Price: £9.95

T.H.

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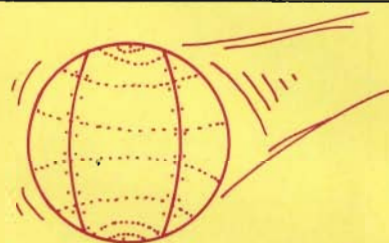
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# “Get it to Melissa!”

## Epyx Street Sports Basketball



**L**ISTEN to this: “Round up your friends! Grab a ball! It’s time for STREET SPORTS BASKETBALL.”

Everybody wants to play. There’s Butch, a great leaper, there’s Kevin, a straight A student and genius of the basketball court, and Dana, who’ll add spice to any game.

So flip a coin. Choose up sides. Out on the street, the action’s just about to begin!”

That is part of the introduction to Epyx’s “Street Sports Basketball”, a simulation that takes you away from the usual joystick-destroying, waggle-it-as-fast-as-you-can, type “professional sport” simulator. Here you control a team of ordinary kids playing basketball out on the street.

You get to choose where you want to play from a selection of four play areas; At School, in an alley, out in the suburbs, or in the City. As you make your selection the area is shown to you and gives you some idea of what each “court” looks like.

Having decided where you wish to play, you now choose whether you will be playing against an opponent or the computer, the level of play (easy, intermediate or tough), and the name of your team.

Now you’ve got to put your thinking-cap on! What you’ve got to do is pick the best team for your chosen area. The team will be made up of three kids chosen from a selection of ten. Each of the ten boys and girls have different characters and skills, so it is important to get the balance right. The toss of an on-screen coin decides who gets first pick.

The ten kinds now line up in the street and by moving an arrow over them, you get a facial close-up and details of their strengths and weaknesses. For example, “Radar, who can’t run so fast, but they call him ‘The Slammer’”. Just get him the ball and he’ll rocket through the air, stuffing the hoop with an incredible slam dunk.” Or Melissa, who has “got great moves: she can jam with the best of ‘em. She shies away from the spotlight, but if you need to move the ball, get it to Melissa.”

OK. So now it’s time to move out to the street. One final selection: how many points you’re going to play (2-100), then it’s time to play! Game control is by either mouse or joystick and I would suggest you play with the latter.

***“Pressing and holding the fire button changes the player currently under your control, the computer will look after the other two for you.”***

Obviously, with three players on each side, you can’t control all three at the same time, the shirt of the player that you directly control is lighter than the other two. The teams wear blue or green shirts and the only way to tell the individual players apart is by their faces and hair-styles. Pressing and holding the fire button changes the player currently under your control, the computer will look after the other two for you.

Once play has started, you are able to dribble, pass, steal the ball from an opponent and of course, shoot to score goals. When you are in a shooting position and you press the fire button, the computer will make the shot for you, deciding which type of shot to use: jump shot, hook shot, or slam dunk.







All things considered, the game actually plays white well. The backgrounds are well-drawn and scroll smoothly and the kids, though quite small and 'blocky', are easily recognisable.

A couple of things, though, let the game down. Firstly, the animation of the players tends to be a bit 'jerky' and they seem to move in 'jumps' rather than in smooth steps. Secondly, the sound, or rather the LACK of it!! I counted a total of only SIX different effects: the ball bouncing, hitting a manhole cover, hitting the net (x 2) and two pitiful little cries when the kids bump into each other and fall over. Never mind, I thought, they must be

saving it all up for a fantastic fanfare, or something, to proclaim the winning team. **WRONG!!!** All the winning team get to do is leap around the screen like a bunch of demented punks, pogo-ing all over the place, in total silence!!

Sorry Epyx, I got bored with this one very quickly. Maybe I was expecting too much after the excellent "Games" series. Still, please remember that this is only my own, personal view. If you like sport simulations, or basketball, and are looking for something a little different, pop down to your local stockist and check this one out. **YOU** might like it.

N.S.



# Amiga Chart

**I**T may have taken a long time — in computer terms three years is an age — but there are now so many games being released for the Amiga that, in the U.K. and other countries too, it is beginning to make up a significant part of the entertainment software market.

Games have always taken an important role in the Amiga's development. In the U.K. Commodore said that the emergence of the then-sensational *Defender of the Crown* from Cinemaware sold more Amigas than anything else had caused to happen until then. Since then Cinemaware has had interesting games but hardly made the impact of some others. Now they have released *Rocket Ranger* which is confidently predicted to head for the top of the Amiga Charts at the big-selling end of year period. At the present, however, another company is dominating the stores' games areas in the U.K. That company is Telecomsoft with its Rainbird and Firebird labels. Three out of the top four sellers in the U.K. this month

come from the Telecomsoft stable. In fact four out of the top ten Amiga games have been developed by that same team. That is one hell of an achievement considering the U.K. companies were, in general so late into the Amiga field. It is interesting to see that the biggest U.K. software entertainment houses, U.S. Gold and Ocean, are still suffering from that delayed entry into the Amiga game market. They have been out-paced by Telecomsoft, although they claim that their big releases for the end of 1988 should help make up that lost ground. The same applies to Mediagenic (the erstwhile Activision) although they have the advantage of having the distribution in Europe of Micro-illusions of Faery Tale fame.

It is odd that five out of the Top Ten all have some connection to a flying theme. But what is most exciting is the much higher standard of creativity we are beginning to see in Amiga games. AUI has said all along that *Starglider II* is an exceptional product and many consider its creator Jez Sans is on his way to establishing new and astonishing standards for Amiga games, levels of achievement that will make video or cinema-like games into stunning reality. Other companies too like the longtime Amiga supporters, Psynosis, who have just released the excellent *Menace*, are also showing the brilliant imagination that will give Amiga gameplayers the kind of entertainment that they have been dreaming of.

## The Top Ten in the U.K.

Name	Company	Price
1 Starglider II	Rainbird	£24.95
2 Daley Thompson's Olympic Challenge	Ocean	£24.95
3 Carrier Command	Rainbird	£24.95
4 Virus	Firebird	£19.95
5 Interceptor	Electronic Arts	£24.95
6 Menace	Psynosis	£24.95
7 Bionic Commando	GO!	£19.99
8 Football Manager II	Addictive	£19.99
9 Skychase	Image Works	£19.95
10 Starray	Logotron	£19.95



## Julia Forester meets the isometric arachnid . . .

**Y**OU could be forgiven for thinking Spidertronic is a rip-off of Marble Madness, because in many ways the two games do resemble one another. In fact Spidertronic, seems to be an uneven blend of marble Madness and Crystal Castles without the finesse of either — it isn't all bad though. Like Crystal Castles, the game is views and played in a 3D isometric projection — which invariably means the joystick control is a little odd until you get used to it. Although this is where the similarity ends.

You play the part of a spider, which is unusual in itself since spiders are most often thought of as the

To move on to the next level, the spider must repair certain parts of the web. This, in essence, is the main objective of the game. At the bottom of the screen is an

***"The particular spider in question seems to have taken its web far off into some uncharted backwater of the milky way and built it more along the lines of a space platform."***

indicator showing which coloured tile must be collected — run over — next. As the spider runs over the holes, they fill in allowing her to get to the teleport — and the next level. Not always as easy as it sounds since certain tiles stun the spider and webs cannot be

# Spidertronic

ERE

Sound: 6  
Graphics: 5  
Playability: 7  
Overall: 6  
Price: £19.95

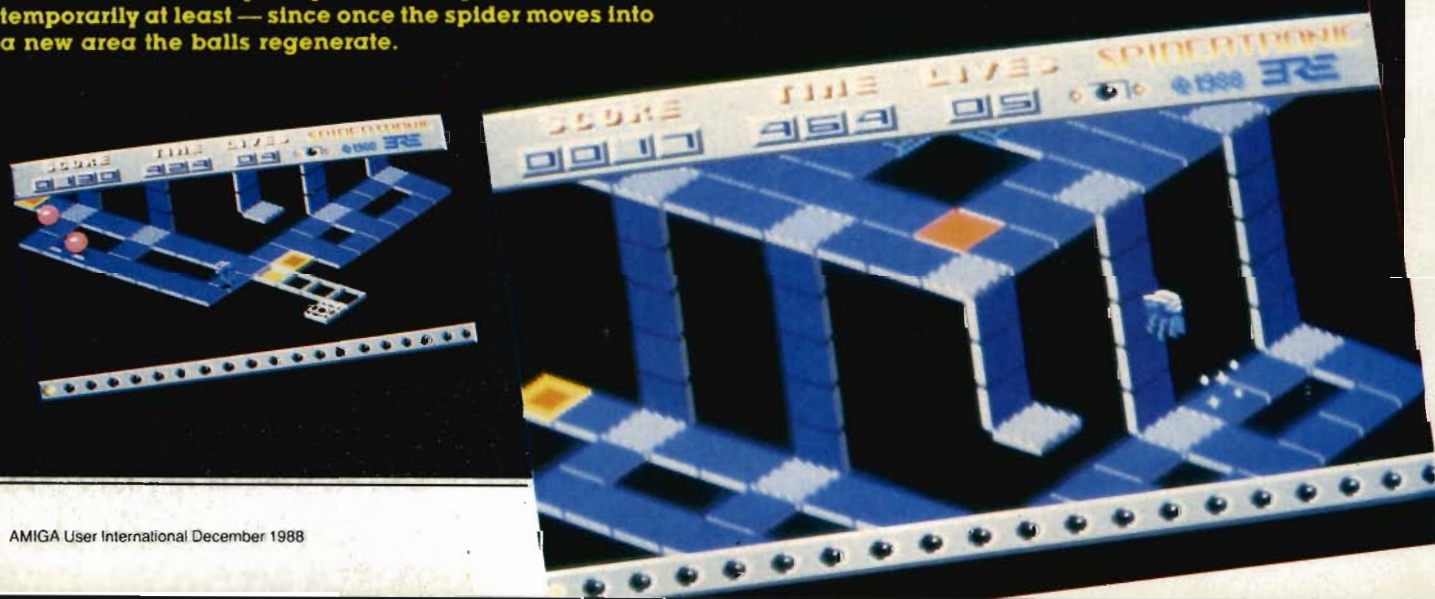
bad guys. Let's face it, spiders catch helpless insects in their sticky webs, paralyse them with an injection of powerful venom, wrap them up with silk and then store them — still alive — for consumption some time later. Fortunately for the faint hearted, Spidertronic is considerably less likely to put you off dinner. It is, on the other hand, remarkably addictive and likely to keep you absent at meal times anyway.

The particular spider in question seems to have taken its web far off into some uncharted backwater of the milky way and built it more along the lines of a space platform. Predictably, as you might expect in space, there isn't a juicy bug in sight — not a even midge. And just to aggravate matters the place is swarming with balls. The balls wander almost aimlessly around the squash poor Spidey if she gets too close. Like all good arachnids, she builds webs and these are the only way to destroy the balls — temporarily at least — since once the spider moves into a new area the balls regenerate.

traversed. There is a time limit to complete a level, but this can be increased by collecting the special time pastilles.

Spidertronic is not going to win any medals for stunning graphics or ear shattering sound, but what it lacks in style it more than makes up for in lasting appeal — the screen designer assures that. The dedicated arcadian will probably find the ten supplied screens too easy — but the beginner will find a game that is easy to live with. When either wants a new challenge, it is a simple matter of designing a new set of tougher screens. However, the key definitions for the editor are very French, try it for yourself and you will see my point. Overall, not shattering but still worth a quick look.

J.F.





# Powerstyx

## Axxion

**P**OWERSTYX is one of the many games around at the moment that originate from the early days of the arcades. Breakout, Pacman, Tron, Asteroids have all been re-hashed for the growing Amiga market. Powerstyx is a version of one of Qix, one of those early games with gameplay so simple it could almost be played by a monkey. (Was the level that manufacturers thought technically possible or was it their opinion of players?)

In Powerstyx, you control a small diamond that leaves a trail behind it wherever it goes. Around the screen are a number of aliens, some confined to the screen border and your trail, other have the freedom of the entire screen. Your task is to fill in the majority of the screen by closing off areas with your trail. Just like Tron, doubling back on the trail you are currently drawing kills you. If any of the aliens around the screen happens to touch the line before you box it off, another life bites the dust.

*"An added incentive to clear the screens is that unlike the old Qix, when a section is filled, a part of what is usually an excellent picture is revealed."*

The longer line you draw, the more risk you have of getting hit by an alien, but the quicker you fill in the screen the bigger bonus you get. Each person has a key alien that snakes around the screen and decides which section of the screen is filled when you complete a split. This can be used to your

advantage to speed up the screen filling. If you manage to section off a large area with this alien in the smaller area, the whole of the bigger area is filled.

An added incentive to clear the screens is that unlike the old Qix, when a section is filled, a part of what is usually an excellent picture is revealed.

Lines, skulls and rotating squares are hardly exciting to look at but the quality of the backdrops makes up for this. A very short piece of sampled music is looped throughout the game and the straightforward effects put up a weak fight as you reach for the volume knob.



I would much rather see something new than a spruced up arcade grandfather, but fans of these old style games will find it a worthwhile pursuit at the price. Everything looks neat, the graphics are smooth and it plays as well as any Qix variant can.

I was bored before long (I must do something about my minute attention span!), but going on the opinions of some of the others around the office there are many that will get a lot more out of it! Try it, you may well be one of them.

T.H.



Graphics: 8  
Sound: 4  
Playability: 6  
Value: 7  
Price: £14.85



# Ultima IV

## HAS LORD BRITISH'S ULTIMA IV BECOME THE ULTIMATE ADVENTURE FOR THE AMIGA? ANDY MOSS GOES IN QUEST OF THE AVATAR

**M**ENTION the Ultima series to any hardened adventurer and you will nearly always get the same answer. A wry smile, a knowing look and the feeling that something special has been shared between you, something that only experienced adventure role players have been a party to. There's no doubt that since the first Ultima appeared the series has attained almost cult-like status and even though others have tried to copy the Lord British style, and some taken even further steps with better graphics and sound, somehow whenever a new Ultima game appears, that is the one that they all want to solve. What is the secret? Why is it that everyone goes crazy over it? The graphics are sure nothing to write home about, little stick creatures that slide from one pixel space to the next, the sound consists of a few white noise crashes and with no smooth scrolling technique, just a good old fashioned jerky roll, you would be forgiven for thinking the author had only recently been taught programming. What I am saying is, if these were any other games they would get slated on the graphical element alone. But because they are Ultima, and the format is accepted as such, they are classics.

***"What makes them such fabulous pieces of work is simply the sheer depth of the games. The plots are complex intricate puzzles that need careful working out and patience that almost goes beyond human endurance."***

What makes them such fabulous pieces of work is simply the sheer depth of the games. The plots are complex intricate puzzles that need careful working out and patience that almost goes beyond human endurance. It proves the point doesn't it? That you do not need flashy graphics to get a hit on your hands.

So now we have Ultima IV on our Amiga, and does that mean a new look state-of-the-art Ultima? An Ultima with lifelike characters beautifully depicted in 3D multi-colour, using a subtle hint of pastel shading which

balanced against the fine tuned sonics would provide a never-before-seen backdrop of computer-digitized graphics? No, siree, Bob. You get just the same as before, only this time round, it's bigger and brighter, with a few more spells and a much enhanced character interaction routine.



In fact, talking with the people in the game is one of the most important features of Ultima IV. It is virtually impossible to solve the quests without talking to all the people in each town. The sort of conversation you would want to embark on typically would be to ask their name, and then about their job or health. Picking up on the wording of their answers will give you the basis for your next question and so on. Conversely, the people you speak to may choose to ask you a question, in which case you need to answer honestly. Depending on how these conversations go will result in you getting important information, or an additional member to your party, this second option is particularly useful in strengthening your party and should be done as soon as possible.



It is difficult to look at the blueness. Light seems to bend and distort around it, while the sound waves become so intense, they appear to become visible.



Before playing you need to copy a character disk, and this is the one you play with throughout. It is advisable to save your status many times in order to not die a violent and tragic death that you cannot return from, and remember that although monster bashing is part and parcel of Ultima's enjoyment, it is not the be-all and end-

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# Pacmania

## Grandslam



**P**acmania, the latest in the Pac series takes us back to the simplicity of the game that introduced the famous gobbling globe to our screens. The '88 remix takes advantage of the leaps forward in technology since then, beefing up the game to comply with today's strict standards.

For anyone new to the game, the idea is very straightforward. Guide Pac around the maze, gulping dots as you go, not forgetting to avoid the deadly ghosts. Eat a power pill and the tables are turned, giving you the chance to digest on spooks that get in your way.

Update number one is the revamped look. The 2D maze now has a 3D slant which gives everything a lovely solid feel. To make it all more attractive, Pac and the ghosts are a lot bigger than before, which means to accommodate a decent sized playing area, the mazes take up a few screens of scrolling background.

**"Unlike the original, Pacmania gives you the choice of three start levels, ranging in design and difficulty"**

The biggest new feature in the gameplay is Pac's ability to jump. A flick of the fire button can get you out of certain spots that would have been fatal in the first game. Fruit still appears beneath the ghosts' central refuge, but other goodies such as

turbo pills and cups of coffee have now been added for further bonuses.

Also there is the incentive of further levels with new features later in the game.

Pacmania was recreated on the Amiga by programming team Teque, authors of The Flintstones and Terramex. They have done a terrifically expert job, converting the game amazingly accurately. Not only are the graphics bold and colourful, Pacmania is one of the few games that uses the entire screen, leaving none of those black borders we are used to seeing. Lively tunes back the game together with familiar effects.

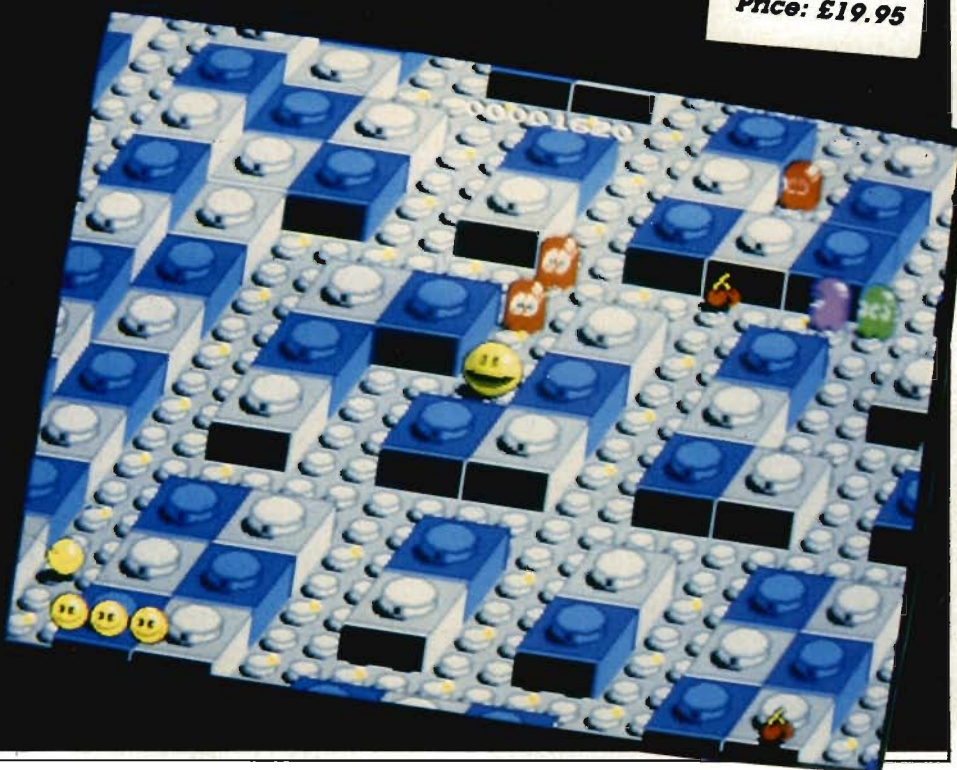
Every now and then a game comes along that establishes itself as a firm favourite in the office. Pacmania is the latest and has proven its instant playability with old hands and novices alike.

The familiarity of the gameplay may cut down lastability levels for experienced "paccers", but kids, part-time gamers and addicts of the coin-op should be sure to grab a copy as soon as possible. Highly recommended.

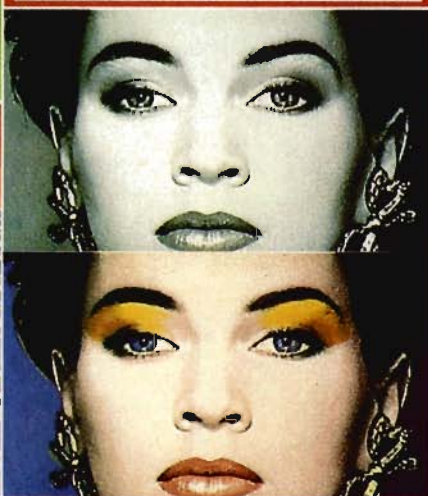
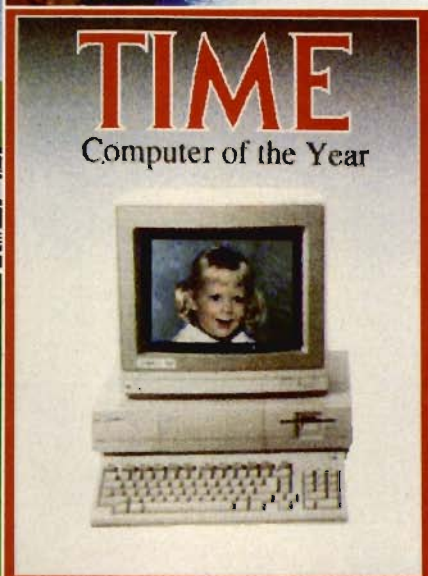
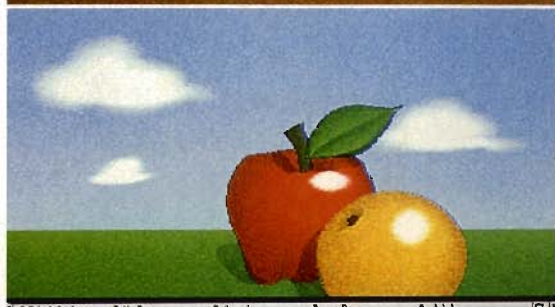
T.H.



Graphics: 8  
Sound: 7  
Playability: 8  
Value: 8  
Price: £19.95







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# TORCH 2081

*Julia Forester discovers a sheep in a wolf's clothing . . .*

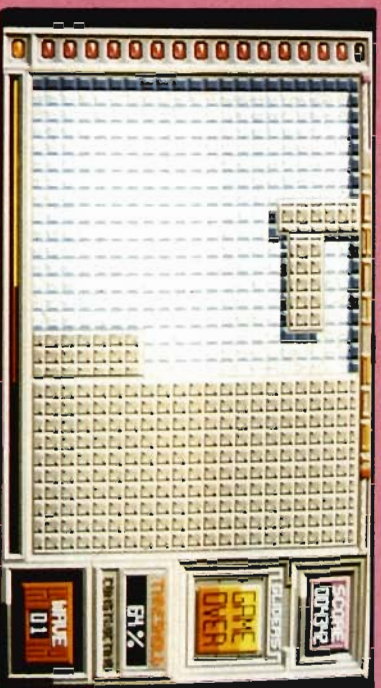
**Y**OU know, copy writers are really starting to get up my nose. They are the chaps responsible for dreaming up the mindless dross printed on software packaging to tempt you to buy a particular product. Case in point, Torch 2081, or so the blurb says is set in the 21st century; where, they remnants of some previous nuclear warfare are bombarding the surface of the planet Torch.

You are cast in the role of a brave young fighter pilot and the last hope of defending your home planet with nothing but a 20 year old surface defence glider. The glider has no weapon systems but instead is used to construct and maintain a metallic shield 10 miles above the surface of the planet.

This all sounds great until you boot the game and start to play. Am I suffering from *déjà vu*? Isn't this a *Qix*? *Qix* (pronounced kicks) is a very old game now. It used to be an Atari coin-op, but that was years ago. Since then it has vanished into the long lost mists of time and 8 bit conversions. This is, as far I know it's first venture out onto the 16 bit stage, albeit wearing new clothes. But was it worth it?

The idea of *Qix* and therefore Torch is essentially to fill a set percentage of the screen with colour. To do this you drive around the perimeter, launch yourself off and fly to another part — the path traversed being marked by a thread or road — in so doing, two parts of the perimeter wall become joined together and the area of the rectangle outlined by the new road is filled with colour, OK?

*Digital Concepts*



While you're busy doing this the baddies are trying to stop you. In *Qix*, the *Qix* were a set of flashing lines which bounced randomly between the boundaries and would destroy you if they touched a road while you were building it. Additionally there were the Pigs, these little fellas nipped around both the perimeter and the new roads trying to ram you. Once rammed you lost a life. On later screens the *Qix* also released Spax which had very much the same effect.

In essence, Torch is exactly the same with the major difference being the vastly improved graphics. The *Qix* have been replaced by glowing fireballs. Pigs by the perimeter patrollers and the Spax by spitfires — blobs of fire. Other than that, there are a few extras like bonus multipliers and extra lives to pick up but nothing exciting.

The reason I am a bit miffed with Torch 2081, is it presents quite valiantly to be something new — when in truth it isn't. *Qix* was a good game with simple graphics and excellent gameplay, even a little strategy. Torch on the other hand has only average graphics by Amiga standards and plays in virtually the same way. Now while I have nothing against revamps of old games — just look at Arkanoïd and the other spin-offs all spawned from Breakout — I dislike the same old formula with little else added. I can only hope Digital Concepts will try harder next time.

J.F.



Graphics: 6  
Sound: 5  
Playability: 5  
Overall: 5



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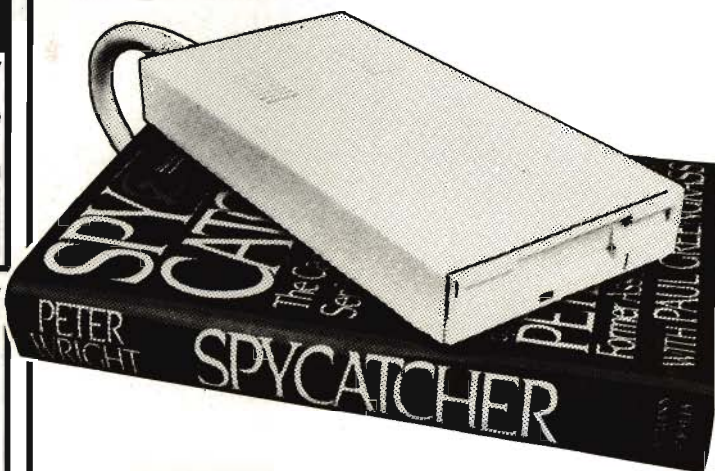
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# QUME SCRIPTEN

***Desk Top Publishing has, up until recently, not been taken very seriously. This was primarily due to the limited quality of the final output. The advent of laser printers has begun to change all that. John Walker was happy to put one to the test.***

**L**aser printers are already into their second generation, though the new machines follow the pattern set at the beginning, with the virtually simultaneous appearance of the HP LaserJet and the Apple LaserWriter.

Once, the LaserJet, was aimed at replacing the daisywheel and the dot-matrix printer for business use. The other, the LaserWriter, aimed more to emulate typesetters. The difference between them was cost and Adobe's PostScript, the page description language that gave Apple's machine its power.

For a time, the Apple LaserWriter was the only PostScript printer available. That situation has now changed, as more manufacturers rush to bring out machines that undercut Apple in price, or offer more for the money. One of the newest competitors is Qume's ScriptEN, which is a development of an earlier laser printer that emulated the LaserJet and its successors. It can still do that but it also has a PostScript driver so that it can keep up with the LaserWriter as well. Its advantages over earlier Post-Script printers are its speed — it can print, as its name suggests, ten pages a minute rather than the more usual six or eight — and its use of a 'write white' engine.

The first laser printers used a 'write back' engine, which gave areas of solid black a rather sport look. With a 'write white' engine, the blacks are

very black and of an even density. The trade-off is that the serifs on typefaces are slightly thicker, which makes the smaller type-sizes, of 6 point or less, less easy to read.

The Qume can be connected to the Amiga either by the parallel port, using a standard cable, or via the slower serial port. It can be used with the Preferences HP LaserJet driver. But it is obviously at its best in PostScript mode, although the number of Amiga programs that use PostScript is still limited. There are Excellence! and Professional Page and that is about it, for the moment, although a PostScript driver for ProWrite 2.0 is on the way. It will not be long before there is a draw program for creating high quality graphics with PostScript.

Inside the ScriptEN is the same processor as the Amiga's — a Motorola 68000 — 3 megabytes of RAM and Adobe's Poscript version 47.1, which helps explain its hefty cost of \$4995. It comes with 35 typefaces in ROM: Times Romad, ITC Avant Garde, Helvetica Narrow, Helvetica, Palatino, Courier, New Century Schoolbook and ITC Bookman in standard, bold, italic (or oblique) and bold italic (or oblique) styles, Zapf Chancery in medium italic and two collections of signs — Symbol and Zapf Dingbats. Downloadable fonts should be available for it soon. They are already around for the IBM PC and Macintosh but laser printer makers are taking a little longer to realise that the Amiga has arrived.



The ScriptEN is a bulky printer and not something that you would want to move around much, since it weighs around 20lbs. It is easy to use, with a knob at the back to set the correct interface, a simple panel on the front containing three buttons — for Form Feed, Manual Feed and Self Test — and a variety of lights to indicate some problem such as a paper jam. It has a paper-tray that holds 250 sheets of paper for automatic feed, or it can be fed in a sheet of so at a time manually when used for printing labels and the like. Running costs work out at around 2p a page, plus the cost of the paper.

In use, it is quiet — quieter than an Amiga 2000's fan. As with all laser printers, there is an appreciable pause when you switch it on until it warms up and prints a test page to show that it is working. Complex pages also take their time to be printed. You can wait 20 minutes or more for the first page of detailed graphics to emerge. After that, copies follow on every six seconds.

It is the versatility of PostScript laser printers that appeals. They can print text and graphics in 16 shades of grey and rotate and scale fonts to virtually any size. The Qume's quality to print matches that of the LaserWriter that I previously used.

I can say little about the ScriptEN's reliability in the long-term — or even in the short term. The machine comes with a year's on-site warranty which, in my experience, is just as well, as my ScriptEN developed a serious fault after less than two months' use. The company contracted to do Qume's maintenance responded swiftly and efficiently to my increasingly desperate calls. However, at the time of writing, its problems remain unsolved.

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**J.W.**



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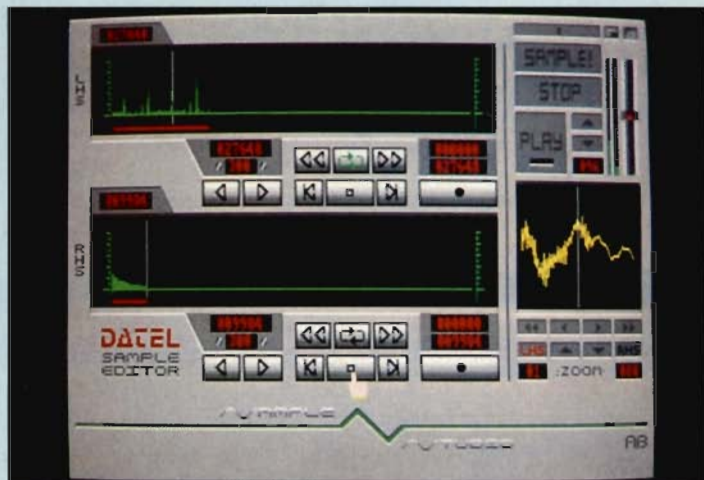
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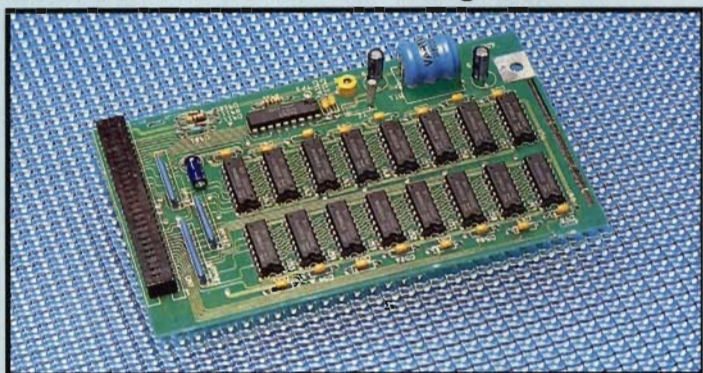


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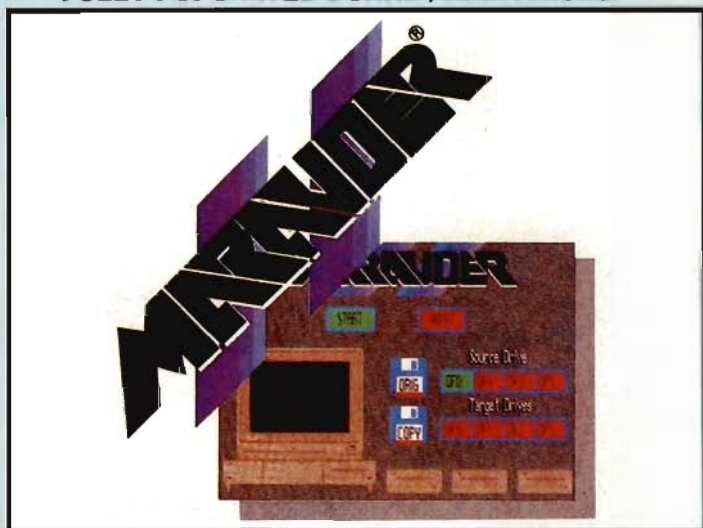
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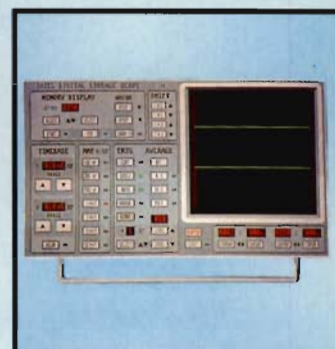
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# AMIEXPO L.A 88

***IF you are a follower of leading edge Amiga developments then an AmiEXPO is the place for you. Al Meric, an avid follower of Amiga fashion jetted off to the Los Angeles AmiEXPO, held in the appropriately futuristic setting of The Westin Bonaventure Hotel — He reports . .***



commodore's own new high resolution display. The big difference is the Viking 1 is ready NOW!

Pioneer Plague from Antic, publishing review of this **AUI** is being promoted as the first ever game to take advantage of the Amiga's HAM mode. Also from the same stable but due for release later in the year is Zoetrope, a powerful animation package. If the demonstrations I saw were anything to go by then this is going to be a biggie in 1989.

Brown Wagh had us all up at the

"I T'S not quite ready yet", "yeah . . . I know we said it would be finished in August but we want to make sure it is really something special before we release it" etc etc . .

It is almost starting to get boring. The same products at every show, big banners, trumpets, flags and flashing lights all proclaiming the greatest products since 'unsinkable ships' and yet half of them are not even finished yet!

We have seen some remarkable hardware and software displayed show after show, month after month. As Vapoulware, they soon begin to lose their appeal. By the time some of them hit the streets they are going to be last year's news. We won't mention names but; V%df0 T%a\$@r, P\$b&sing P\$c&t&r P\$c&f\$%n\*I, M\*%c X — They know who they are!

Enough of the griping . . . Some products that HAVE made it to our faithful Amigas are: Magellan, an artificial intelligence/expert system building tool from Emerald Intelligence (first presented at Ami-Expo

in Chicago). This product has been designed to enable programmers and non-programmers alike to be able to develop expert systems for almost any application.

The Viking 1 from Moniterm Corporation is a 19" 1008 x 800 pixel, flicker free, high resolution monitor. Sound familiar? It should do as it closely follows the specifications for



*continued on page 78*





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continued from page 76



crack of dawn one morning to show us their latest releases; Express Paint 3.0 and MIDI Magic. Express Paint 3.0 now includes virtual pages (image size is no longer restricted by the 512k Chip RAM limitation), unlimited undo's, and 3D perspective to name a few. Turning to music, MIDI Magic we were told was somewhere between Soundscape's Pro Midi Studio and Dr T's KCS — and so it seems from the review in this **AUI**.

A little kinder to us were A.S.D.G. who held their press gathering immediately after the show one evening. We were greeted with some very impressive displays of colour images scanned in from glossy magazine fronts etc with their latest version of the Sharp JX-450 colour scanner. This when combined with their Twin-X card and Spectra-Scan software driver is able to digitize and manipulate high resolution colour graphics between 30-300 dots per inch. However, the colour output obtainable with this system is not restricted to the range of colours displayable by the Amiga.

**"A full 24 bits per pixel of colour information is stored and can be used to produce a palette of up to 16 million colours."**

Gold Disk gave a stunning display of the output from their latest animation package — Movie Setter. Everybody's imagination was captured by the vivid images combined with a great sound track. Look out Steven Spielberg . . .

Another company to watch for in the field of video presentations is Innovision Technology. They were showing off a 'broadcast' quality titler program that enables the user to load in images and smooth out those nasty jaggies that so often let a great titler program down. Also to be found at their stand was Video Effects 3D. This program can manipulate, high resolution logos and titles causing them to tumble, spin, turn, zoom or shatter.

Page Flipper Plus/Fx although now available in the USA is still not quite ready for the European market. The reason — it has been specially doctored NOT to work on PAL systems. So it's no good sending off to your friendly US Amiga dealer for this one. Precision Software, responsible for the European marketing drive assured me it will soon be available on our FULL screen machines.



Whilst on the subject of Precision Software, they were keen to show me their latest version of Superbase Professional which now has several new features including Comms. The old Superbase Professional (less the database programming language) now becomes Superbase Personal II.

Microillusions were putting Photon Paint II through its paces at their booth much to the delight of crowds of onlookers. It has lots of new features and looks set to get off to a good start as soon as it is released. Photon Video, however, still does not have a firm release date.

MSS, creators of Excellence! are almost ready to start shipping their upgrade to 'The Works!' — 'The Works! Platinum Edition'. This con-



tains five integrated programs instead of its predecessor's three. Also included now are Sideways and a telecommunications facility. The wordprocessor (Scribble!) has been improved and has had its word spelling checker bumped up to 104,000+ word (US English).

Microfiche Filer Plus has been added to the Software Visions' catalogue and is designed to fill the professional niche. It has several extra features over its baby brother including automatic field calculations, HAM and overscan graphics support and optional macro programming using the ARexx language.

The overall feeling of the show was one of 'settling down to some serious business'. Some major applications are beginning to find their way onto the Amiga scene and the quality of much of the software now appearing has a professional feel about it. Yet the Amiga has not lost any of its magic. It was great to watch developers showing off their latest goodies and to see end users look on in disbelief as they saw the latest all singing and dancing demos, and soon, Tim Jennison assures us, very soon, we'll all be playing with Newtek's Video Toaster! At last! The Amiga may have matured but it's still just a big kid at heart!

**A.M.**



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# CRAPS ACADEMY

***Following up their excellent Blackjack Academy, Microillusions have released another gaming simulating — Peter Lee puts it odds-on to baffle most punters this side of the Atlantic.***

**C**rap is a peculiar casino game centering on the throw of two dice. As with most gambling games, the odds are well stacked in favour of the House but there are some interesting aspects of betting which make this an entertaining novelty.

Some people pour scorn on gambling simulations simply because they cannot win any money with them. This is a naive attitude for two very good reasons: some people actually enjoy the game itself and also there is no danger of going broke by frittering away real cash.

In the case of Craps Academy, part of the aptly-named Micro-Vice series, as well as being a well-designed simulation it gives novices the chance to hone up their tactics before innocently contributing money to the Casino management's lifestyle fund, should the urge ever arise.

Having played Craps in Las Vegas and seen it played (usually by hoodlums!) in many American movies, I was intrigued to learn the finer points of the game and also fascinated to learn just how hard it is to win. Luckily for non-experts, the program is extremely friendly to use, offering advice if you make wrong bet and the manual explains fully the complex rules.

The computer implementation is straightforward, with two thirds of the craps table displayed until a player throws the dice at the click of the mouse button; the the screen follows their beautifully animated path as they tumble to the far end of the table,

which scrolls effortlessly from right to left. Once the dice have come to rest, a moving hooked stick collects them and any payouts are made before the next series of bets and throws.

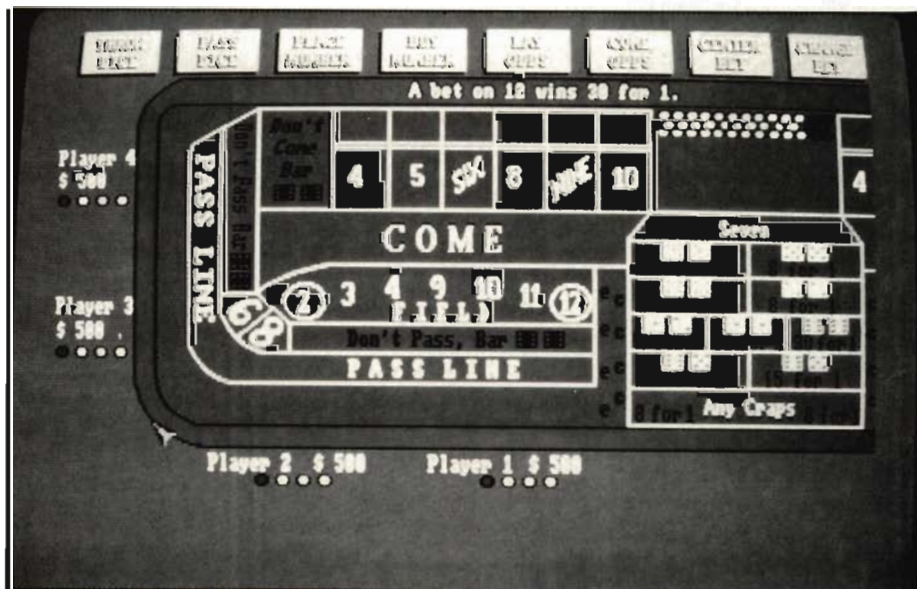
As well as a set of helpful pull-down menus, an on-screen gambling menu is also shown, together with the cash reserves of four players. Bets are made by clicking the mouse on your chips until the required amount is reached, then placing the pile on your chosen bet (or in some cases leaving it for the table operator to do). The computer sees to all the money management (it is easier to lose than to win, believe me!) and play continues until you go broke, quit — or save the current game if you happen to be on a winning streak.

The manual is an essential read to get the most out of the game but the betting structure is such that even with this help, novice players should be ready to invest some time in discovering the betting wrinkles. Apart from the superb glossary, the 20-page booklet is also vital for providing the percentage odds in favour of any one particular bet; in fact there are only four bets at all which give the house no advantage.

Author Dennis Saunders states bluntly that there are no betting 'systems' which work; even the advice he offers to gamblers will in the long term only minimise losses and not pave the way to riches. Which takes me back to square one: if you know you cannot win in a real life game but enjoy playing, then a computer simulation, especially at this realistic price, is the safest way to pander to your gambling vice.

This is the type of game to load up and enjoy with a couple of friends in the evening because it is not really too exciting for the solitary player. Whether Craps will find any following outside the U.S. is a bit of a gamble though — and I for one would not put money on it...

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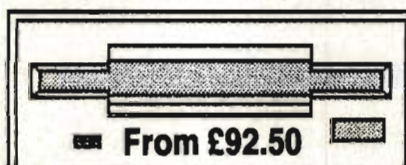
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# STAR LC-10 COLOUR

*Has the age of the colour printer finally arrived? Alastair Statham tries out a new contender for the low price crown.*

There was once a time when colour printout from a personal computer was well beyond the scope of most people's equipment or, more importantly, their budgets. Today, that is thankfully just a bitter memory. There are now several printers, costing between £150 and £300, which are capable of delivering reasonable quality colour output. The Star LC-10 is one such printer.

Based on tried and tested dot matrix technology, the LC-10 provides both colour and near letter quality text. By making multiple passes over each line it can print characters using up to 18 by 23 dots. Bit-image graphics in quad density have a resolution of 240 dots per inch. Print speeds vary between 120 characters per second in draft pica and 30 characters per second in near letter quality pica. While graphics and near letter quality text are printed in only one direction, the draft setting can also operate in bi-directional mode.

The four-colour fabric ribbon is contained in an easy-load cartridge and has an expected life-span of around one million characters per colour. The black, red, yellow and blue coloured bands of ribbon produce seven different colours. Mixing pairs of the red, blue and yellow bands produces the three intermediate colours of green, violet and orange.

This standard configuration includes: A Centronics compatible interface (uses 7 or 8 eight bit data) and an 8k printer buffer, although this is reduced to one line of text when downloadable characters are used. A simple switch settling determines whether the LC-10 will emulate an Epson LX-800 or an IBM Proprinter II. The Epson JX-80 driver supplied in Workbench Preferences seems to work with the Epson setting.

The standard character set contains ninety-six ASCII characters while the IBM compatible set contains two hundred and forty-four including ASCII, interna-



tional characters, symbols and simple block graphics. The fourteen international character sets include French, German, English, Danish, Swedish, Norwegian, Italian, Spanish, Latin-American and even Japanese. If all this is insufficient then up to one hundred and ninety-two characters can be downloaded in draft mode. This figure drops to seventy-eight when printing in near letter quality.

In draft mode there is only one type style that may be used with or without an italic slant. The near letter quality mode,

however, allows three type styles, each of which are also available in italics. The styles are Courier, Sanserif and Orator. Both Pica and Elite print pitches may be used in either normal or condensed mode and proportional spacing can be selected for all four resultant pitches. Extra large characters can also be printed using double height, double width, both together, or even quadruple height and width. Line spacing defaults to one sixteenth of an inch but is also programmable in eighths, seventy-



## STAR LC-10 COLOUR

seconds or two hundred and sixteenths of an inch. A print width of eight inches allows the printing of between eighty characters per line using Pica and one hundred and sixty with condensed Elite. Normal Elite gives ninety-six and condensed Pica one hundred and thirty-seven characters across the line.

**'One of the attractive features of this printer is the clever paper parking mechanism'**

Single-sheet paper measuring five and half to eight and a half inches wide is easily accommodated in a neat single-sheet feeder. Loading may be either manual or semi-automatic. The semi-automatic mode accurately feeds the paper ready for printing. Fan-fold tractor fed paper can also be used. This can vary between five and ten inches wide and up to three-ply multi-part. One of the attractive features of this printer is the clever paper parking mechanism. This relieves the need to remove Fan-fold paper from the tractor mechanism in order to produce the odd friction-fed single-sheet document. Parking is achieved by setting the printer offline and then pressing both the paper feed switch and print at the same time. The paper is automatically withdrawn from the platen. Moving a release lever now selects single-sheet feed. Unparking is even easier as it only requires you to move the paper bail and set the release lever to its former position. Once the Fan-fold paper has realigned itself the bail is replaced and printing can resume using the tractor feed. This is as simple and effective a system as I have ever seen on this class of printer.

The controls of the LC-10 are well thought out and easy to use. With the exception of twelve DIP switches under the top cover which are used to select the rarely changed settings, all of the controls are on the top right face of the printer. The DIP switches control functions like default page length, character set and whether the buffer RAM will be used as a print buffer or to hold a downloadable character set. International character set selection and emulation mode setting is also by DIP switch. Using these controls it is also possible to disable automatic carriage returns, the auto-sheet feeder and paper-out detection. Orator type style can use either small capitals or true lower-case letters. These are selected by another simple switch setting. The front panel controls are used to select more frequently changed settings. The controls consist of four membrane switches with ten small rectangular LEDs which indicate the settings selected. The four switches are marked Online, Paper feed, Print Pitch and NLQ type style although combinations of these switches do perform other functions such as the parking action

**'The LC-10 is packed with features and is probably the quietest dot matrix printer I have heard for a long time'**

mentioned earlier. All except the paper feed switch beep when pressed and the adjacent LEDs indicate their current status. One of the LEDs lights to indicate that the power is on, as controlled by a rocker switch on the left front face. The style indicators show whether courier, sanserif or orator style is selected and whether it will print in italics or not. Four more show whether the pitch selected is Pica or Elite and whether or not it is printing condensed or using proportional spacing.

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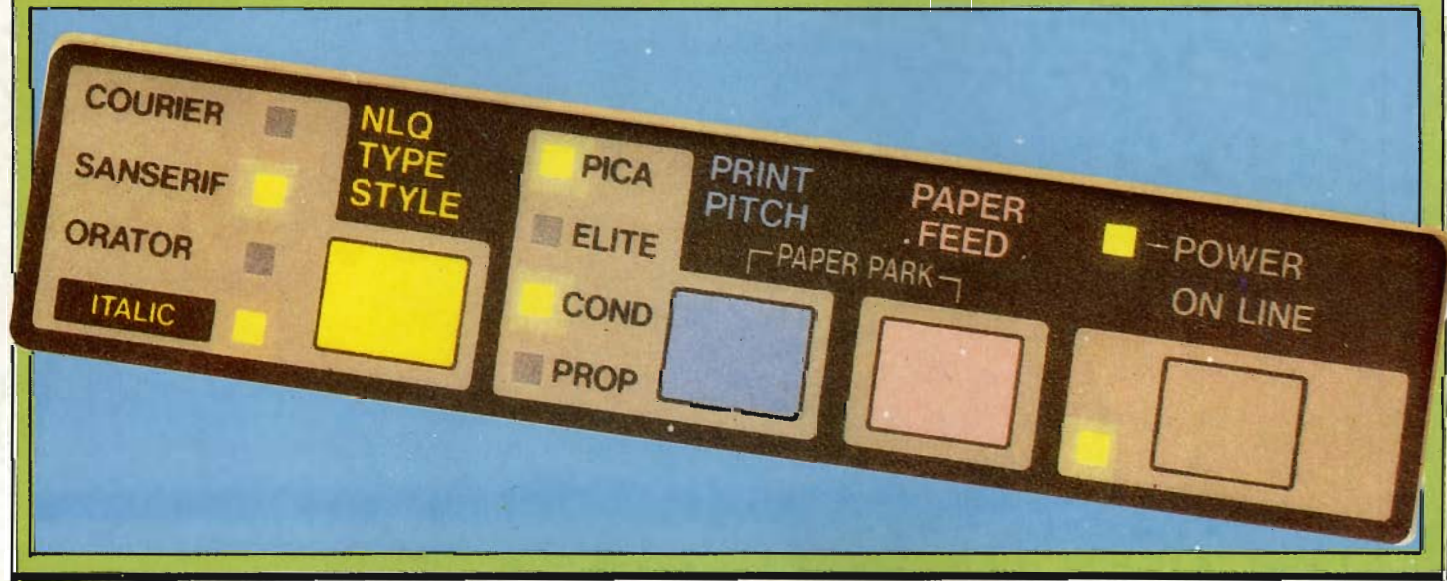
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Despite its budget price the LC-10 is packed with features and is probably the quietest dot matrix printer I have heard for a long time. Even the test-mode selectable at power-on by holding down the appropriate front-panel switches provides both long and short test options. All of the expected highlighting features such as bold, underlined and overlined text are available together with both subscript and superscript. The repertoire of commands available though escape codes is enormous and includes page formatting, character control and most of the front panel operations. The quality of the NLQ text is superb. The colour printing is probably more suitable for producing colour text, charts and graphs than high quality artwork but if all you need is a good quality NLQ printer and the ability to produce the odd colour hardcopy then the STAR LC-10 could well be the machine for you.

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# Starvision stereo sound sampler

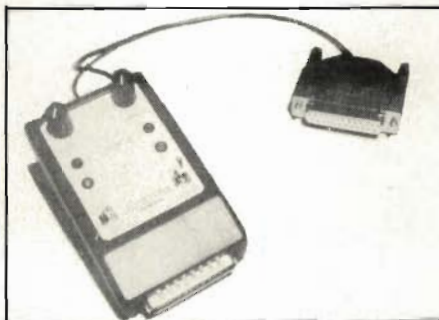
***We have seen sound sampler software supplied without hardware. Now Ron Webster looks at an exciting sound sampler that comes with no software . . .***

There are many superb pieces of demonstration software around for the Amiga. A common thread running through the best is the use of a high quality soundtrack to complement the stunning gyrations presented on the display. Of course, some of the soundtracks are generated entirely by the software but others take advantage of digitised sound recorded from a more conventional source. There are some sound digitisers on the market ranging in price from around twenty pounds to over ten times that amount. The range of features offered is as wide as the price spread. Basic models allow either line or microphone input but not often a choice between them and usually only support a mono input.

Mono may be quite sufficient for many applications such as talking sales demos or simple educational software but for more sophisticated uses such as the reproduction of music or complex sound effects stereo is almost essential. There are now a number of stereo audio digitisers available for the Amiga. One of the latest to arrive on the scene is made in Denmark and supplied by Starvision International. Other features of the Starvision device are selectable line and microphone inputs and LED indicators to show when data is being processed and when the sound level could be set too high and therefore cause distortion. There is also an adjustable level control for each channel.

As with most other audio digitisers the Starvision model is a compact unit having a footprint of three and a half by two and a quarter inches and being just under an inch thick. The case is well constructed of black plastic with a white fascia plate containing the two switches, two level control knobs

and four indicator LEDs. One of the short sides accommodates a male D-25 connector which plugs into the parallel port of the Amiga. On the opposite side is a 3.5mm stereo socket through which the sound source is connected, whether that be a microphone or line input from a Hi-Fi. A short lead terminating in a hooded D-25 socket exits the case nearby. This is for connection to the serial port of the Amiga. The serial port appears to be used only for power.



The controls of the sampler are simple but effective. The two flick switches select whether input will be from a microphone or the line output of a Hi-Fi and whether that input is in mono or stereo. Each channel has a red and green LED associated with it. The green LED flashes to show that a signal is present and is rather euphemistically called a VU indicator. The red one shows when the signal is peaking. The level control for each channel can be adjusted to give the strongest signal possible without too much distortion caused by overloading.

The unit is based on an 8-bit analog to digital converter able to sample at a rate of

28 kilohertz. When sampling in stereo this rate is split into 14 kilohertz per channel. Sampling at this high a rate causes a large amount of memory to be used to hold the sample data but quality not far from that heard from a compact disc player is possible. For comparison purposes I should mention that most compact discs are sampled at 44 kilohertz. Speech and non Hi-Fi applications only need a rate of around 10 kilohertz to sound quite acceptable. The sample rate is determined by the software used to drive the digitiser. On the box in which the Starvision unit is supplied it says that stereo software is included. However, do not be surprised when you find none in the box. The software referred to is in the public domain and will be supplied free of charge when you return the purchase registration form that does come in the box. A nice touch is the inclusion of a stereo jack-plug adapter and 5ft lead fitted with a 3.5mm jack at one end and two phono plugs at the other. I much prefer to be supplied with the required connectors instead of having to scabble around to find those leads I know I have somewhere but never seem to be able to put my finger on whenever I need them.

In use the unit performs remarkably well, with very little hiss present and a forgiving top end when the signal level is getting a little high. The flashing LEDs provide reassurance that all is well and a good signal is present. I do not particularly like the use of a 3.5mm jack for the audio input. A more robust connection would have been provided by phono sockets or a larger quarter-inch jack. Having said that I experienced no problems with connection to the test unit. The quality of construction is high and the unit neat and effective in use. The combination of stereo with dual input level and adjustable gain together with visual indication of a good signal must rank this Danish unit as one of the best I have seen.

R.W.

Contact: Starvision International, 305 Madison Avenue, Suite 411, New York (212) 867-4486.



# THE CP/M CONNECTION

***Many businesses have, at some time or other, used CP/M based computers. Quite a few continue to do so and have programs which still provide useful service. When new machines arrive moving an 'in house' program to a new machine usually causes more problems than it should. Occasionally things 'go right' and this month Susan Maxwell outlines some experiments in an area which could be of use to a lot of business users.***

**P**ROGRAMS written in BASIC are notorious for 'portability' problems. The situation has improved over the years and it is probably fair to say that one of the prominent reasons for this was the acceptance of Microsoft BASIC as a sort of 'defacto standard' on the wide range of available CP/M based machines.

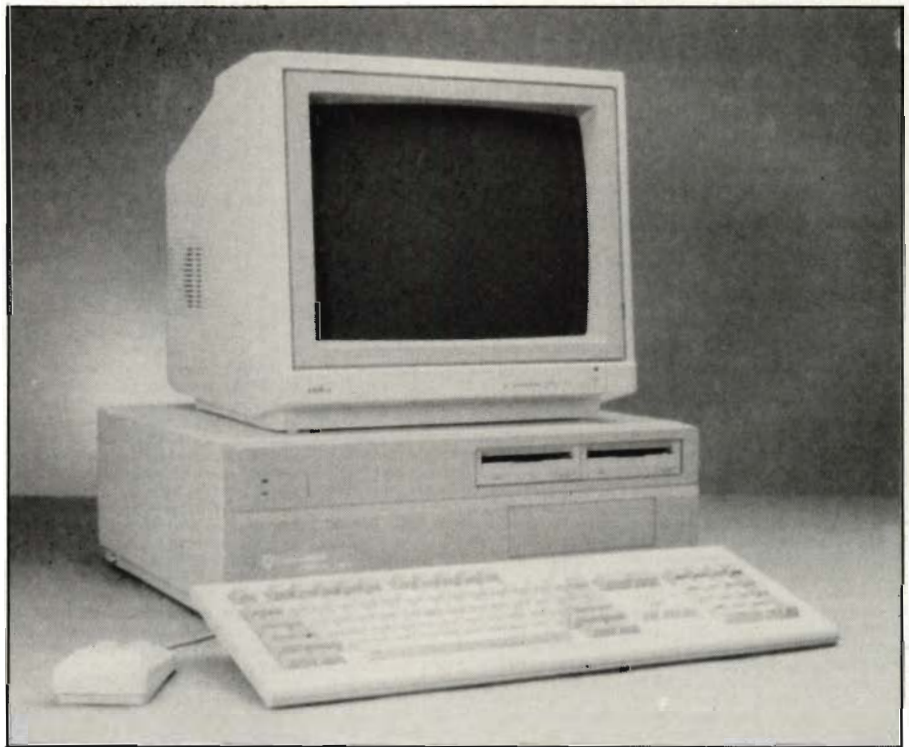
Although 8 bit CP/M machines are 'old hat' nowadays there are still plenty in use and that means there is a lot of useful software floating around — I still use an 'Osborne 01' and a Rair 'Black Box' for certain jobs as they are happily running Microsoft BASIC programs which were written many years ago. Although I am not a great lover of any BASIC these programs work and are fully tested so there is little incentive to re-write them whilst the eight bit CP/M machines are still operational.

Nowadays I use an Amiga and, because the bulk of my Amiga programming is done using C and assembler, I had not even looked at the BASIC manual properly until the other day. Amiga BASIC is also by Microsoft and although substantially enhanced it still supports a 'core' of commands almost identical to the older CP/M based Microsoft BASIC(s). Somewhere in the literature it was mentioned that "programs written in older versions of Microsoft BASIC should run with little or no change".

'quick and dirty' 3 wire 'no protocol' RS232 lead (just using pins 2, 3 and ground pin 7) was made to link the Amiga with the CP/M machine (I actually used the Osborne) via the machines' serial ports.

The three wire serial link arrangement will only work properly at slow baud rates. The first job was to configure the CP/M machine's serial port to a nice slow and safe 300 baud. At the same time I also assigned the LST: device to the serial port and used ED to create a short text file called TEST.

ASCII files are well catered for by CP/M's file transfer utility program PIP. I booted up, loaded PIP on the CP/



I had heard all that before but nevertheless decided that it might be worth spending a couple of hours experimenting — just to see. Whenever I do any of 'experimental' type projects I have one rule...keep it simple. The initial object was to see whether an idea will work or not, so a

M machine and then moved over to the Amiga to load up its BASIC Interpreter.

Here are the seven lines of BASIC code that were used to get the Amiga to read data from the serial device and place it in the RAM disk as a file called 'TEXT'....



## THE CP/M CONNECTION

OPEN "RAM:TEXT" FOR OUTPUT  
AS #1

OPEN "COM1:300,n,8,1" AS #2  
\$="D" 'just a dummy value to get  
into loop

WHILE (ASC(X\$)<94)  
X\$=INPUT\$(1,#2):PRINTX\$;:PRINT  
# 1,X\$;:  
WEND  
CLOSE 1: CLOSE 2.

I selected 'run' from the options menu...and the program just hung there. It waiting for some kind of input to arrive from the serial port. I went back to the CP/M machine, which was waiting with PIP's '\*' prompt and asked it to send my test file to the 'LST: device', i.e. I typed LST:=A:TEST.

The Amiga screen started displaying the data file as it was being received. The transfer worked perfectly but...at

the end of the transmission the Amiga just sat there, i.e. it 'hung'. It was, of course, waiting for the ASCII 94 character which it uses to recognise the 'end of file' condition. This was easily solved by typing control P (so that CP/M started echoing the keyboard), control Z (that sent the Amiga its end of file character), then control P to turn the echo off again. Amiga BASIC promptly gave its 'O.K.' sign off message so I know the program had recognised the end of the file and terminated properly. Since my CP/M'ing days are over I no longer have access to the manuals PIP sends an 'End of File' terminator or not depends on the file size, namely whether or not an exact number of 128 character blocks are being sent. If this actually is the case you might find that you will not have the problem mentioned above.

Only 30 minutes into the experiment I became a bit more ambitious. I loaded BASIC on the CP/M machine,

read in one of the old Microsoft BASIC programs, then re-saved it in ASCII form before returning to the CP/M system level. After re-loading PIP again I transferred this ASCII file to the Amiga. Once the file transfer was complete I selected 'open' from the Amiga BASIC menu, loaded the file 'TEXT' from the RAM disk and selected the 'run' option. I still do not believe it happened but it worked...and without any alterations at all! I repeated the procedure with another quite large BASIC applications program and again it ran without problems. Within two hours I had moved all of my main applications programs onto the Amiga.

Admittedly this 'experiment' used a 'quick and dirty' approach but it did the job and took me less than a couple of hours to do. I was, incidentally, very impressed by the ease with which the Amiga's BASIC can handle the serial port and suspect that this could be worth more investigation. If, like me, you use an Amiga (or for any other machine running an 'enhanced' Microsoft BASIC) but still use CP/M machines running Microsoft BASIC, you will probably find that moving programs to the new machine could be far easier than you might have imagined.

S.M.



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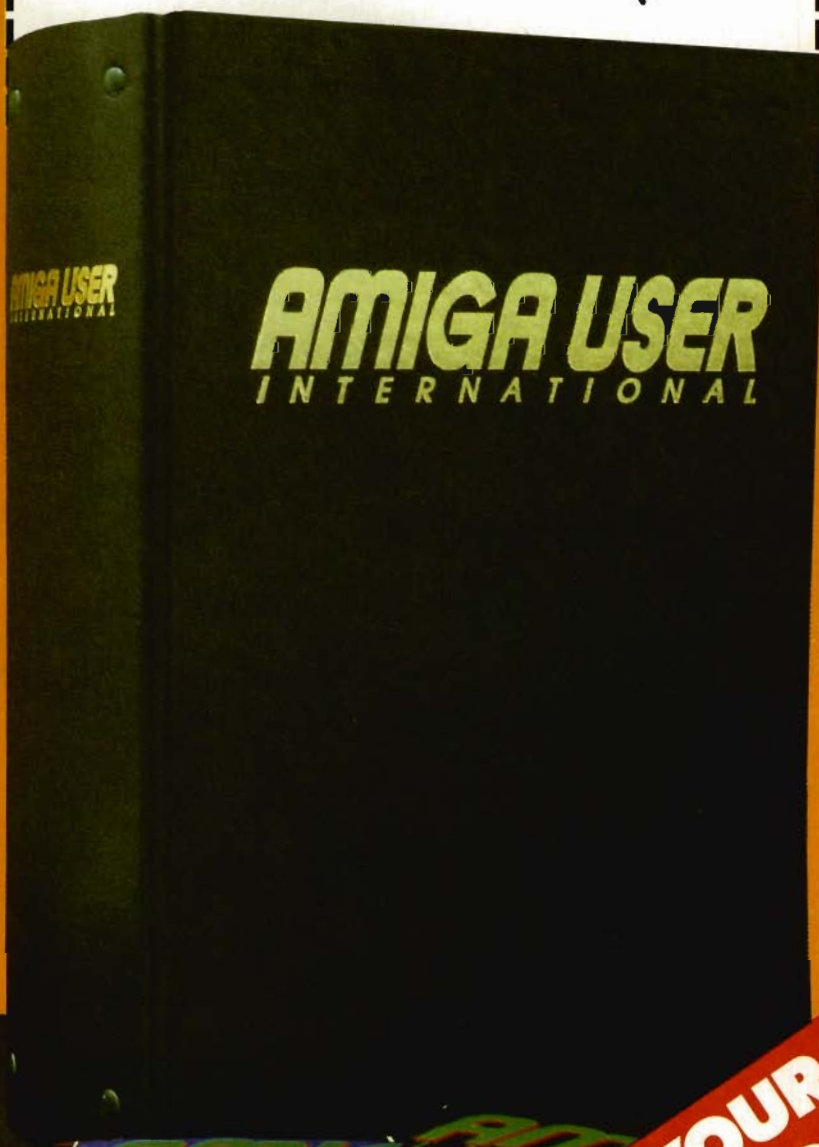
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**D**O YOU ever find it strange that graphic artists often choose to make their sprites cute and cuddly rather than mean and muscular in games where your prime concern is to murder everyone and everything in sight? Take Bionic Commandos, Joe Blade or Ikari Warriors for example, all feature characters that look almost as much like teddy bears as soldiers. Perhaps it helps us get away from the fact that with each shot we are brutally killing 'humans', and makes it all seem more like a harmless game with tin soldiers. Whatever the reason, it works, and deliberately or not that same technique comes through in Fernandez Must Die, where once again the sprites look friendly but act lethally.

Your part is that of a lone commando with a mission to terminate the evil dictator Fernandez. Not the most original background for a game, but then the game idea is not that new either. We have already had Lethenck and Ikari Warriors, and Fernandez follows a very similar trial.

It starts at the bottom of an enemy-occupied vertically scrolling landscape. You are kindly supplied with a jeep at the gates of the death zone. Mounted on the front is a machine gun that sees to the baddies, or if you feel really nasty you can run them over instead! This jeep can take a lot of hostile lead but is not indestructible. When it has had enough it starts flaming under the bonnet before exploding a short while later. This gives you time to jump out and make a run for it to escape the blast.

Graphics:  
Sound: 7  
Playability: 8  
Value: 7  
Price: £19.95

# Fernand



There are times when leaving the relative safety of the jeep is necessary. One such incident is when you come across an armoury or other building. Run up to the door and a stick of dynamite is automatically attached.

***"Take cover and once the door has blown off you can get at all that lovely ammo, or in some cases, rescue friends from prison camps."***

There are loads of little touches that pull Fernandez well above the level of other Commando variants. When you approach a level-crossing the odds are that the barriers will be up. Hang around and they are lowered as a train chugs past, killing any soldiers on the track who die with a tragic scream. One jeep is parked at a petrol station. Get in the jeep and you can even drive through the car wash! Rockets can be launched to put a stop to armoured gun turrets, but blast one of these at a tree and it is reduced to cinders.



One thing Fernandez could do with is a proper title screen. The non-savable highscore table is not enough on its own. As far as I could tell, the landscapes in the game are continuous, not broken up into levels (if they are they must be pretty long because I never got to the end of one). I would have preferred to see a level system as it can overcome the problem of having miles and miles of ground to cover every game without a break. Still, Fernandez Must Die is about on par with Ikari Warriors in terms of gameplay and has some nice sampled sound effects on top of that, while there is still room for improvement on the theme.

Definitely in the running for anyone without such a game, this is one blast 'em up that will appeal to the aggressive instincts of all game players. The sprite may not look it but Fernandez Must Die is one hell of a violent game. But that's what arcade playing is all about isn't it?

B.V.



# Fernandez Must Die

Image Works



# Midi magic

It is true to say that, compared to the supposed advantages enjoyed by the 'Atari ST brigade' there remains a shortage of good MIDI software for the Amiga. However, the situation has dramatically improved recently due to the release of Dr. T's KCS sequencer and with the growing Amiga/MIDI market there is plenty of room for more software of this quality.

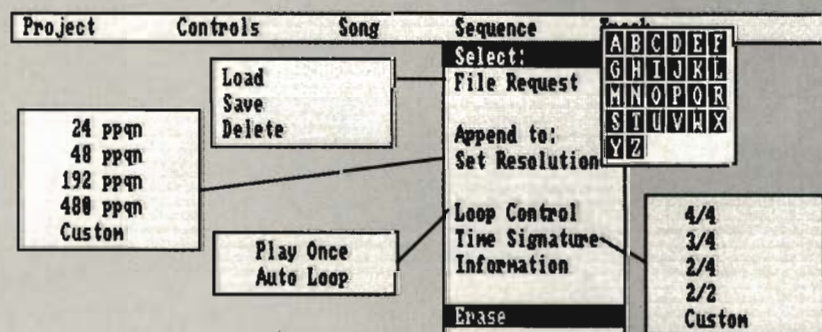
The package we are going to look at this month is called MIDI Magic. It is a MIDI sequencer package which comes from Circum Design Inc. MIDI Magic comes on a single unprotected disk together with an 80-page manual covering the operation of the sequencer. The manual, which was written by Rick Hamouris, assumes that you are familiar with the overall concepts of MIDI and concentrates exclusively on the operation of the sequencer itself. The manual does its job well but I could not help feeling that the presentation of the MIDI Magic package would be greatly improved if the manual adopted the A5 loose leaf binder arrangement used by so many



established packages. It is a small point but is nevertheless one which is worth making because the package looks likely to have to compete with the best of the existing Amiga/MIDI software.

MIDI Magic acts in much the same way as a 16-track tape recorder but records MIDI data rather than acoustic sounds. Recording of sequences is straightforward: by using gadgets (including some familiar looking fast-forward, reverse, record, start and stop 'tape recorder type' ones) it is possible to set and adjust tempo and sequence length characteristics. To record data you simply select a track then hit the record and play gadgets. You can choose between various 'start' options including a metronome count down, a 'first note received' cue or an immediate start. You can set different receive/transmit channels on any of the 16 tracks so it is possible to re-channel data very easily. If you were using a single keyboard set on channel 1 to record bass parts, drum parts and keyboards that you wanted to playback on channels 1, 16, and 2 respectively, then the appropriate tracks could be arranged to re-channel the data automatically.

## Sequence Menu



continued on page 94



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## Midi magic

Track editing facilities are available from a pull down menu and, when selected, an appropriate edit window is opened allowing track copying, cutting, inversion, pitch transposition, and quantizing, etc. Individual MIDI events can also be viewed and edited but there is no doubt that the absence of proper mouse orientated clipboard 'cut and paste' facilities make complex editing more time consuming than it ought to be.

*"Sequences and songs once created may be saved to disk so you can not only save whole compositions but easily build your libraries of drum parts, etc."*

MIDI Magic regards a set of track data as a sequence. Up to 26 different sequences can be held in memory at the same time and these can be combined to produce 'songs'. A song definition can include details of repeats, tempo control and individual transposition factors for each of the sequences used.

**CONCLUSIONS:** In most respects MIDI Magic is well integrated into the Amiga environment and makes good use of gadgets and pull down menus. There are a large number of options available and, in theory, MIDI Magic's features should appeal to the professional market. The package behaved quite well yet it did not make the impact on me that I expect from a package aimed at the serious user. There is very little that you cannot do with MIDI Magic but I am afraid I simply don't think that the package is easy enough to use for routine studio or professional musician use.

MIDI Magic is going to be priced at around £149 and my biggest worry is

that this is too expensive. At this price MIDI Magic is close to being in direct competition with packages intended for professional use. The home user market, which looks like the most suitable sales target, always includes large numbers of users who have need of low cost sequencer packages. With a reduced price tag MIDI Magic would satisfy this corner of the market and would become a useful foothold for those wishing to move into the world of MIDI sequencing.

P.A.O.

Price: £149.95  
Contact: Brown Waugh  
(US) (408) 3953838.





# Lattice Compiler Companion

***Most programmers could do with a friend to turn to from time to time. Paul Andreas Overaa found a new companion to fit the bill.***

**T**HE Lattice 'Compiler Companion' is a set of ten utilities designed to enhance programmer productivity. In one form or the other the individual utilities have been available for some time (and are therefore 'tried and tested') but Lattice have now decided to offer the complete collection as a single package. The two immediate benefits of this policy are that firstly the overall cost of the utilities has been lowered and secondly that a manual is now available which, in a single volume, covers the complete set of tools.

Only one of the utilities is specifically language dependent and this is the CXREF module. It is used to generate cross-reference listings of C language source files and produces tables showing Pre-processor definitions, Functions, Labels, Structure identifiers and Identifiers together with the line-numbers of the program in which they occur. Because a line numbered program listing can also be produced it is easy, even with large source files, to correlate the table data with your program listings. CXREF is command line driven and it supports the AmigaDOS wildcard arrangement. It can handle 'include' file processing and program output can be re-directed to any of the Amiga's standard output devices.

The Companion also contains the **EXTRACT** and **BUILD** commands which enable you to extract filenames from a directory and build batch command files. They provide a straightforward way to automating complex sets of commands and, in practice, are very useful indeed.

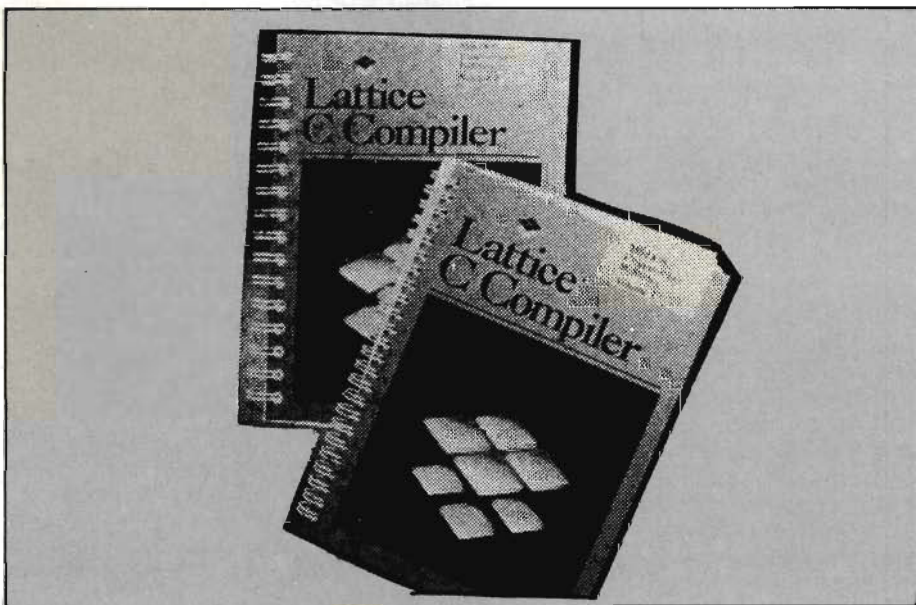
**FILES** is the file manipulation

utility. It allows you to search for, copy or erase files and directories and as well as dealing with named files it can also copy, move, or remove entire directory structures. File searching includes recursive examination of nested directories and options are available to limit the search of specific file types or those with particular date stamp or file size attributes. Filenames can include 'wild cards' so you can also use the utility to locate files even if you are unsure of both the complete name and the directory location.

**GREP** (Global Regular Expression Search and Print) is a utility which searches a set of files for a specified character pattern and prints each line containing the expression matching the pattern. This is a utility which I had not used before and to be honest I did not expect it to be particularly

useful... the search facilities offered, at first sight, seemed little different to those available with many editor/WP packages. It took about 15 minutes of using GREP to change my mind! Firstly it is convenient because it is available at the CLI... in a program compiling environment you have at least one and usually several, CLIs in use. Secondly, the pattern matching capabilities do in fact turn out to be very powerful indeed. GREP can handle disjunctive pattern analysis and supports the concept of a 'character class', i.e. a sub-set of characters which can define a target character within a pattern definition. The command line syntax for the more complex operations takes a while to get used to but it is definitely worth the effort.

Remember that these utilities





# Lattice Compiler Companion

have been designed to provide a 'framework' for the serious programmer and in this context it does not take long to appreciate the potential power of the utilities when viewed as an inter-related set. It is worth looking at a short example of how the functions of the various utilities can be combined: The following example is rather 'contrived' but it should give you the general idea... Let us suppose that, rather than searching through pages of printed header files, you wish to instigate a computerised search of ALL of the Amiga C programmer's 'include files', (i.e. all of the header files in all of the sub-directories) to find the filename of the directory path of the header file which defines the expression 'NULL'. This is how it could be done using three Compiler Companion commands:



## Lattice

Firstly we use the 'Files' command to create a RADdisk file containing the names of all of the header filenames and directory paths... **files ram:MyDirFile-name#?.h df1:include** Then we 'build' a batchfile which will use the 'GREP' utility on every header file in MyDirFile... **build ram:batchfile ram:MyDirFile grep "NULL" (plus a control/to end text input)** Lastly we instigate the 'include file' search by typing... **execute ram:batchfile**

The above lines take about twenty seconds to think about and type in and half a minute of so

after that in search identifies the reference we require... **df1:include/exec/types.h 40:#define NULL 0** It tells us that the definition of NULL occurs on the 40th line of the types.h header file... which can be found in the 'exec' sub-directory of the 'include' file directory.

I will not discuss the syntax of the example lines because it is not particularly significant. What is important, however, is that command combinations such as these enable rapid and easy automation of many hundreds of necessary but time consuming jobs that you, as a programmer, will often need to perform.

There is an added bonus with GREP if you are programming in C or can handle the interface of C functions to assembler or another language. The utility makes use of several functions which construct an internal representation of a pattern and then check to see if this pattern is matched in a given string. The Compiler Companion disk includes a library file containing these routines as usable C functions. This provides you with a ready made way of building the same pattern matching capability into your own programs.

**DIFF** is a utility which lets you compare files and determine textual differences between them. When combined with the Build/Extract facilities it becomes possible to automate many types of file comparison operations. You could, for instance, compare the command directories of two disks and display a list of commands which are present in one directory but not in the other. Needless to say, the ability to automate these types of operations, especially in a hard disk environment, is most useful.

**WC** (Word Count) takes a filename and will display the number of characters, words and lines in the file. It can also compute a checksum based on the printable characters present in the file. WC can provide a rapid, although not foolproof, check as to whether two files are identical in terms of printable content. This is a useful check to be made after a file has been transferred to or received from another machine. Because this latter use needs WC running on both machines Lattice have actually provided the source code for the program.

**SPLAT** is a line based editor similar to the AmigaDOS system editor 'Edit'. Its inclusion in the Compiler Companion simplifies

the making of minor changes to files or sets of files. There is no need to read entire files into memory and since it can handle several files at once it is easier and quicker to use than 'Edit'. There is an added safeguard as well because, unless you specifically ask for the source files to be overwritten, your original files will remain intact with the modified versions either being placed in a separate directory or being given an additional filename extension.

**TOUCH** is another utility which adjusts the time and date stamp on specified files to the current system time and date. Automated procedures which modify sets of files can include Touch directives so that the modified files are given an amended time and date.



## Lattice

**LMK** is arguably the most sophisticated tool in the Compiler Companion package. It is a utility which is used to co-ordinate the maintenance of projects involving multiple files. It enables you to specify the dependencies which exist between sets of files and then automate the operations involved with generating your 'final product'. It is particularly useful in hard disk environments, in projects involving many programmers and for 'on-going' projects. Because the C language encourages the use of a modular approach involving many files LMK is frequently used to automate the compile-link cycle although the utility is not language dependent at all.

The Lattice Companion costs about seventy pounds. It is supplied on a single disk and, as would be expected, the documentation and presentation are excellent. The price, relative to other Amiga 'utility type' packages, is very competitive — it can be heartily recommended to all serious programmers.

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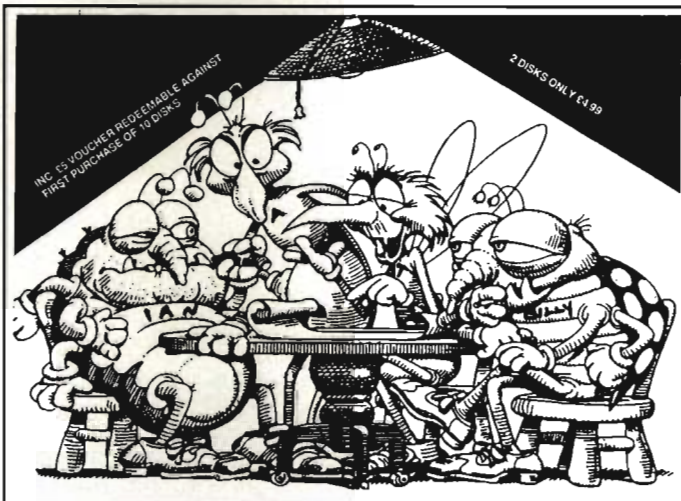
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# The Amiga

## A Moving (TV) Feast



technologies: computing and television.

The computer area is represented by 17 micros, nine of which are Commodore AT 40/40 computers built around the 80286 processor. To save space these are vertically mounted into tables in groups of three. Additionally, there are eight full-configuration Amiga 2000 computer systems. Of these, three systems have genlock capabilities, and two systems are equipped with video digitisers.

IBM's Tele Vision provided facilities for the European Volleyball Championship in Belgium.

**C**ommodore has a mobile Amiga Tele Vision service that has been operating at major European sporting events since the beginning of this year. It is now available to production companies and TV stations in the UK for outside broadcasts.

Amiga Tele Vision is packed within a 13 ton Mercedes truck and combines two



All the computers are interconnected on three network levels. The SK network links each of the 17 systems. There is a hardware-addressable V24 network offering the benefit of assigning a unique numerical designation to each device allowing it to be directly addressed.

Interfaces are a key factor for communication between systems. Each AT has 10 built-in serial interfaces. A special interface plug-board has been designed for Amiga Tele Vision allowing each device to be connected as required.





There are 210 serial interfaces on-board the "Mediamobile" these are linked to the television level through serial interfaces on the TV systems. This allows for computer controlled television.

The television level of Amiga Tele Vision's truck comprises two U-matic high band recorders and a C-Tape-Machine plus a video mixer and a 10-channel sound mixer.

Technologically, the cutting edge of Amiga Tele Vision is represented by five combined character and graphics generators which can be interlinked freely using a customised digital effects system.

Running under the name of Pinnacle this effects unit is based on an ordinary 80286 computer which has been programmed with an Amiga-style open system architecture.

Using bridge cards, the MS-DOS computer controls certain applications on the video bus, including a range of digital effects from enlarging or reducing images using digital storage of stills filed away on the hard disk. This system can also perform a number of "Paint-box" style utilities to the creation of full frames and more specialised applications such as computer animation and 3-D trick effects.

Commodore's Mediamobile allows three text and graphic generators to be combined, using the Pinnacle system, creating one signal. Up to 200 video stills

can be stored in the system at any one time. These can be grabbed from existing taped material to be stored and then superimposed over existing full frames.

**Computer Equipment: 9 Commodore AT 40/40s. 8 Commodore Amiga 200s, fully equipped. SK network under Novell. V24 Network. Link to television environment via V24.**

**Television Equipment Magnetic tape machine. 2 U-matic high band video recorders. Connections for three cameras. Video mixer. 10 channel sound mixer. 5 combined text and graphics generators (Aston 4 and Aston 3). Pinnacle digital effects system with a storage capacity of up to 200 video images. Video plug-board with 7 x 30 serial interfaces for linking the built-in devices. Wiring through a common cable duct with separate video, network and data sections.**

The AT computer side of the Mediamobile is used for video control, the eight Amiga 2000 systems belong to the "presentation sector". Images resident in the Amigas - such as logos and captions - can be easily retrieved. The Amigas are not handled manually but are under full control by the other computers.

The plug-board is at the heart of the Mediamobile. Each monitor in the vehicle is completely allocatable, allowing the system to be rigged to cope with any situation.

It is in this that the Mediamobile has broken away from standard TV operating practices. Old principles of TV work have been changed to achieve a new level of system flexibility by maximising the use of computers.

Mediamobile is fitted with two modems. If problems emerge during operation there is a direct link, through the telephone network, to Commodore's Innsbruck programming centre.

On a less hi-tech note there are two air conditioning systems within the truck to take care of all the heat generated by Mediamobile's equipment. Heat, when it is needed, comes from a diesel heat generator and special underfloor heating.

The importance of all this climate control equipment is that it eliminates problems associated with many mobile transmission units: such as water condensation causing plug connections to oxidise.

**For further information on the Mediamobile, contact: Rob Wait, Spire Communications, Hazlitt Mews, London W14 0JZ. Tel: (01) 6023 0806.**

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# AMIGA DISPLAY STRUCTURES

## Part Two:

*The Amiga is a powerful machine, capable of some amazing feats. This power, however, comes at a price – its advanced features require advanced programming techniques that can often be difficult to grasp. Betty Clay has taken it upon herself to learn all there is to know about the Amiga and to impart some of that knowledge to others.*



### VIEWS AND VIEWPORTS

The set of instructions needed to produce a display is called a View. You might want to think of a View as being one video frame, the information that is being displayed on a monitor at a particular time. Each different frame to be displayed must have its own View structure defined. These are managed by the graphics library routines `InitView` (which sets up the structure with default values or zeros) and `LoadView` (which loads the completed frame so that it is displayed on the monitor). A point of confusion is that the term "View" has two meanings in the system software. In the one case, it is a major structure (`View.h`). `View.h` is a major structure in the graphics library and it is made up of substructures for a `ColorTable`, `View`, `Viewport` and `RasInfo`. In the second case, a View is the smaller structure "View" within the major "View.h".

In the graphics library, you will find the necessary structure under "graphics/view.h." Here is what you will find there:

```
struct ColorMap
  UBYTE Flags;
  UBYTE Type;
  UWORD Count;  number of colours
  to be defined
```

```
  APTR ColorTable; points to the
  address of the actual table of
  colours.
```

This table is loaded with the command `SetRGB4(rp,n,r,g,b)`, which means that it points to the `RastPort` for this View, tells which register is being loaded and then gives the amount of red, green and blue needed to make this colour.

The command is used repeatedly until all registers are loaded.

#### Struct ViewPort

```
{
  struct ViewPort *Next; – ties this
  ViewPort to the system list struct
  ColorMap *ColorMap; – points to the
  ColorMap for this ViewPort. If this
  value is null, a table of default values
  will be used.
  struct CopList *DepIns; – causes the
  intermediate list of Copper instruc-
  tions to be made. This is later
  merged with:
  struct CopList; *SprIns; the set of
  Copper instructions for sprites and:
  struct UCopList *UCopIns; the set of
  user-defined Copper instructions,
  frequently null but used for special
  effects.
```

The three Copper lists are combined by the command to `MrgCop` (merge Copper lists) and the merged list is the final one that is actually used.

```
SHORT Dwidth, DHeight; The size of
this ViewPort
```

```
  SHORT DxOffset, DyOffset; the
  location of the upper left corner
  UWORD Modes; is it Med-Res, Inter-
  lace, HAM, etc.
```

```
UWORD Reserved;
```

```
  struct RasInfo *RasInfor; This holds a
  pointer to the bitmap and the co-
  ordinates for locating the ViewPort
  within that bitmap.
```

#### struct View

```
{
  struct ViewPort *ViewPort; a pointer
  to the first ViewPort for this frame of
  the display. It links the ViewPorts
  into the system's lists.
```

```
  struct coprlist *LOFCprList; pointer to
  the Long Frame Copperlist used in all
  modes
  struct coprlist *SHFCprList; a pointer
  to the Short Frame Copperlist used
  only for interlace mode
  SHORT DxOffset, DyOffset; co-
  ordinates for positioning the View.
  UWORD Modes; HAM, Interlace, etc.
```

The modes for a View can be of many types: `DUALPF` (dual playfield, so two bitmaps needed); `PFBA` (if set, this causes the second playfield to have priority over the first one); `HIRES`, `LACE`, `HAM`, `SPRITES` AND `VP_HIDE` (tells the system that this ViewPort is hidden by other ViewPorts, so no display instructions would be generated for it.) There can also be an `EXTRA_HALF_Brite` mode.

#### struct RasInfor

```
{
  struct RasInfo *Next; used only for
  dualplayfields, points to the second
  playfield
  struct ColorMap; needed for the
  second playfield
  SHORT RxOffset, RyOffset; the offset
  into this bitmap to determine the
  placement of the second playfield.
```

Notice that the first thing in a View structure is a pointer to the first ViewPort. These viewports will be linked using the system's normal linked-list method and a View can have many ViewPorts. Each ViewPort is a rectangular area on the screen. It need not be as wide as the view but usually is, because no two ViewPorts can share the same scanlines. In fact, there must be at least one full line between any two ViewPorts. That scan line gives the

*continued on page 102*



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# AMIGA DISPLAY STRUCTURES

*continued from page 100*

Copper time to make the changes needed if the upcoming view is to have different colours, resolution, etc., from the preceding one. A viewport may be as tall as the entire display, or may be only one screen line tall.

Many library routines are available to help the programmer manage the display of the ViewPorts. There are the macros that manage the Copperlist, the various routines that initiate the BitMap, ColorMap, etc. and those that initialize, manipulate and then remove the ViewPort when it is no longer needed.

A ViewPort is similar in many ways to a window but it is not a window. The Window is a far more sophisticated structure. Windows can be palced side by side horizontally; ViewPorts can only be stacked one above the other. Windows can overlap on the screen; ViewPorts cannot overlap either horizontally or vertically. Windows can be placed exactly touching each other; ViewPorts must be separated by at least one scan line. A Window is usually opened inside a ViewPort and most often that ViewPort is as large as the screen.

## THE RASTPORT

One of the most important of all structures for Amiga graphics is the RastPort. A RastPort structure is worthy of close scrutiny, because every screen, window and border must have at least one RastPort to manage the display. The RastPorts control almost every element that is displayed on the screen.

### Struct RastPort

```
{
struct Layer *Layer; this points to a
Layer structure, necessary for win-
dows and Intuition's rendering rou-
tines but null if those are not used.
Without a Layer structure, the win-
dows could not be moved.
struct Bitmap *Bitmap; This pointer
locates the Bitmap structure, and the
Bitmap structure then points to the
actual bitmap to be rendered.
USHORT Area Ptrn; points to the place
where the area fill pattern is stored in
memory.
struct TmpRas *TmpRas; points to
the structure which is used to control
an auxiliary buffer. This buffer holds
small, temporary areas of a large
```

bitmap during area fills, etc.

struct ArealInfo \*ArealInfo; — a pointer to an ArealInfo structure. This is a structure that stores the endpoints of an area to be filled.

struct GelsInfo \*Gelsinfo; — a pointer to a structure used to link any sprites or Bobs into the current bitmap definition.

BYTE Mask; The mask determines which bitplanes will be written to during a specific drawing operation.

BYTE FgPen; This sets the colour of the foreground pen, the one that is drawing the details.

BYTE BgPen; The one sets the colour of the background pen, which is the colour behind the drawing.

BYTE AOIPen; holds the value of the Area Outline pen, which determines the colour of lines drawn in the bitmap.

BYTE DrawMode; There are four modes: JAM1, put in foreground only JAM2, use foreground and background. COMPLEMENT — xor, chang all zero bits to ones and all to zeros. INVERSEVID — used mostly for text. It reverses the effect of the background and foreground pen colours. In practice, Complement and Inversid are almost always used in conjunction with JAM1 or JAM2.

BYTE AreaPTSz; This defines the size (in words) of the area pattern definition.

BYTE linptcnt; Linptcnt, controlled by the system, holds the current value of the line pattern count used by the Draw and PolyDraw functions.

BYTE dummy; a byte inserted to keep the RastPort properly aligned, probably made necessary by a software update.

USHORT Flags; bits are set to indicate the way to draw lines and to indicate double buffering.

USHORT LinePtrn; The bits in this two-byte pattern are used to determine which pixels are off or on in a line.

SHORT cp x, cp y; the coordinates of the current pen within the bitmpa; determines where the next item will be drawn. These values change as drawing or rendering takes place.

UBYTE minterms (8); a set of eight bytes that are used to control the logic of the blitter.

SHORT PenWidth; width and height in pixels of current.

SHORT PenHeight; drawing pen.

struct TextFont \*Font; pointer to the font to be used for rendering text in the current bitmap. This structure contains all the information needed for accessing and using the font.

UBYTE AlgoType; controls bold, underline, italics, etc.

UBYTE TxFlags; sets flags needed for the font.

UWORD TxHeight; pixel height (point size) of the font.

UWORD TxWidth; pixel width of the font.

UWORD TxBaseline; sets line upon which text sits, usually the pixel below the capital letters, though most authorities on fonts recommend the pixel below the descenders.

WORD TxSpacing; number of pixels between letters.

APTR \*RP User; a pointer to an Exec reply port of the task that is using this RastPort structure.

There are several reserved bytes at the end, to allow for future enhancements to the RastPort structure.

It is possible for a View of a ViewPort to have more than one RastPort. Some can be active and other inactive. Each RastPort can be set up with different text, colours and other parameters and they can be called as needed. As an example, consider that when we have version 1.4 of the Workbench, users will be allowed to change system fonts easily. The fonts will not be restricted, as currently, to eight pixel, non-proportional fonts. Programmers will need a way to determine the attributes of the font chosen by the user and their software must adapt to the size of that font, making sure it will fit into requesters, menus, title bars and the like. One way to do this is to set up a RastPort and have it rear the characteristics of the user-selected font before proceeding to set up the remainder of the screen or window. For another example, suppose you wanted four colours for your title bar and the standard gadgets but needed only two colours for the remainder of the display. In this case, you might choose to use one RastPort to control the title bar and a different one for the remainder of the display.

These then, are the basic structures with which graphics work. These are controlled by the graphics-library. They work at the lowest level and are called by the higher-level processes as needed. There are many other graphics objects available but at a higher level than the ones discussed.

*B.C.*

*Next month — A quick glance at animation routines*



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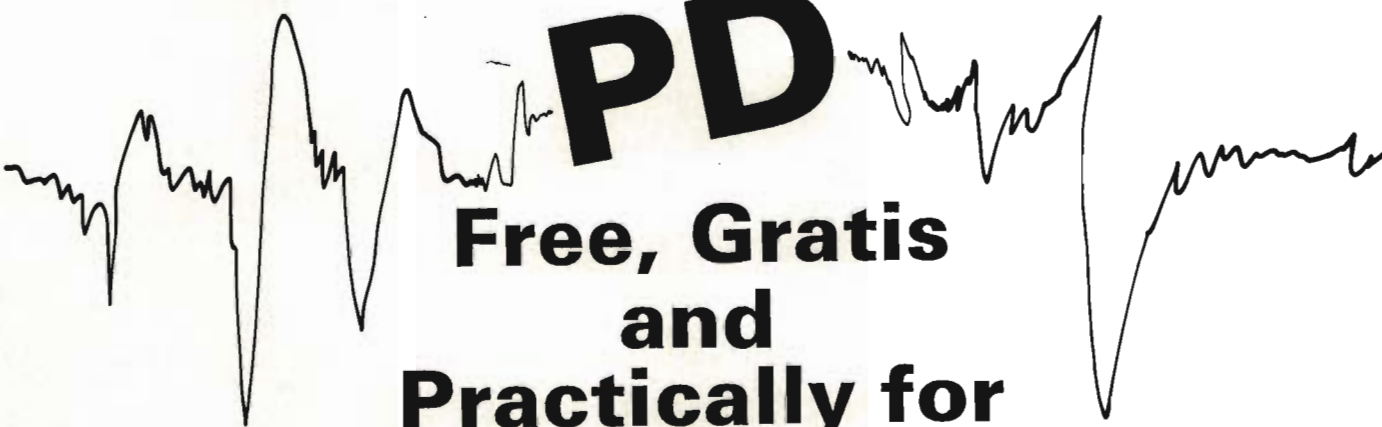
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# PD

## Free, Gratis and Practically for nothing

**A** change from the Fish disks this month, as I look at PD Utilities #2, one of a series of PD compilations put together by Capricorn Computers.

What distinguishes this disk from other compilations available is the sheer number of DOS and other utilities on one disk, forty two in all! While many of them are rather esoteric for the average amiga user, the regular inhabitant of the CLI will find this disk a boon. Since we only have limited space in which to parade the delights of the Public Domain, I have chosen four of the more outstanding programs from this disk to cover here.

### MyCLI MODEM

The return of one of my old favourites, with a rather startling difference — it now has communications facilities added! As you may recall, the original MyCLI was an alternative to the standard Amiga Command Line Interface with flexible command line memory and most of the commands you need to use while working in the CLI built-in instead of being stuck on the Workbench disk! What this means is freedom from endless disk-swapping, which is the bane of the single disk drive user. It also largely enables the twin drive user to do away with the Workbench disk and return the use of his internal drive to him. All commands are listed upon hitting the HELP key; as you will see, they are comprehensive and include new dumb terminal functions:

DEF, DEFINE, DEL, DELETE, DIR, ENDCLI, HELP, LIST, LS, MAKEDIR, MD, MORE, MV, NEWCLI, ONLINE, OFFLINE, SET, RENAME, SETCOMMENT, TERMINAL, TIME, TYPE, WHATIS.

Most of these mimic the standard AmigaDOS commands. The more unusual ones have special functions, like so:

DEF and DEFINE — define a function key, ie DEF f1 DIR sets key f1 to produce the string DIR.

TERMINAL and ONLINE enter dumb terminal mode, with a baud rate set in the preferences serial port set-up.

CAPTURE enables text file capture of incoming data via the RS232.

While in terminal mode, you can exit to command mode using CTRL-C to execute a DOS command and then drop back into terminal mode after doing so. MyCLI Modem is in the Public Domain and absolutely essential if you intend to use the CLI regularly and want to avoid considerable frustration!

### DISK/EXPLORER (DISKX)

If you feel like having a poke about in the depths of your disks, you will undoubtedly require a good disk editor. There are many of these available as Shareware or in the Public Domain. Disk eXplorer (aka DiskX) is one of the better and easier to use of these. Written by Canadian Steve Tibbet of VirusX fame, DiskX enables you to run through the data on your disk and modify it at will. Using both

mouse and keyboard, via a number of pull down menus and 'buttons', you are able to move by sector, block and track and display the disk's contents as ASCII, HEX, (or ASCII and HEX together on the editing screen), show details of the file header, file list, root block, data block of user directory block.

The on screen buttons enable the changing of offset, interpretation, finding of a string, writing of the modified sector and modification of the sector being observed. From the menu bar, in addition to various promotional messages from the author, it is possible to select the unit (drive) number, find a particular file, read a header and observe disk information. All in all, a fairly comprehensive setup.

Two points the inexperienced (and the experienced!) user should always observe with disk editors are that (a) you should always operate on a copy of the disk in question, never on the original and that (b) if you do not know what you are editing, it is probably better to leave it alone! For the hacker, though, an indispensable tool.

Disk eXplorer is Shareware, with a suggested contribution of \$15 Canadian.

### C-MONITOR

One for the machine code fans here, C-monitor (I do not know what the C stands for!) is by Andreas Hommel and is in the Public Domain. I have limited experience with machine code utilities but this looks like a useful monitor to have if you are getting



together a cheap machine code programming kit to learn 68000 assembler on the Amiga. There are several editors and assemblers available on the Fish disks or from Bulletin Boards, so this could be an economic alternative to buying a commercial assembler/editor/monitor package, giving you the opportunity to try out assembly language before you commit your cash.

The program has numerous facilities, a list of which are available from its '.' prompt; a hex memory dump, ASCII memory dump, disassembly to screen, program execution, loading and unloading of segments, loading and unloading of files, editing memory, setting of a wildcard, search memory, occupy memory, transfer memory, show segment list, convert hex to decimal, convert decimal to hex, execute CLI command edit C-Monitor! Phew! Certainly enough to keep you going for a while there.

## ZOO

A subject close to the hearts of communications enthusiasts who

tread the world's bulletin boards is saving telephone time uploading and downloading software. An essential part of the comms fan's armoury has long been the famous 'ARChive' program, which has appeared in many (mostly compatible) forms on CP/M and MSDOS micros, as well as the Atari ST, Macintosh and Amiga. Basically, ARChive enables you to combine several files into one file, at the same time compressing the files, often enabling a saving of as much as 40% in file size. The idea is that the reduced file size will enable speedier uploading of software to your favourite bulletin board and likewise significant savings in download time can be made if the files are present on the board are ARChived. There are various versions of ARC around, with varying features and degrees of efficiency; ZOO is an 'alternative ARChive', with a very efficient system of compression. Its greatest advantage, though, is that it enables the use of the lengthy description filenames popular on the Amiga — normal ARChive

systems only allow the eight character plus three character suffix type of filename produced under CP/M and MSDOS.

ZOO is invoked under two command structures, an abbreviated system and a simpler, more obvious command set, like so:

ZOO -cmd archive[zoo] file...

Wh-cmd is the relevant command, -add (add files to archive), -extract (extract files), -move (move files), -test (test file integrity), -print (print file), -delete (delete file from archive), -list (list files), -update (update files within archive), -freshen (freshen files), -comment (add comment).

Archive[zoo] is the proposed filename of the completed archive file with the optional .zoo suffix and file...is the multiple file list of files to be worked upon.

Zoo is in the Public Domain and an essential string to the bow of Amiga comms users.

S.W.

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# COMPILING A 'C' PROGRAM

*Learning C on the Amiga is not just a case of understanding the language. You also need to know how to compile and link a C program before you can run it. Paul Andreas Overaa sets out to solve some of the mystery.*

**W**hen we print a C program we print a listing of the source code. To create this source, which is simply a text file, you have to use a text editor. It does not matter what type of editor you use . . . it could be AmigaDOS's ED program, a utility like the Lattice Screen Editor, or a fully fledged word processor. If you go for the last option, though, you must be careful to check that your word processor allows you to create text files WITHOUT EMBEDDED CONTROL CHARACTERS otherwise you will get all sorts of weirdo error messages from the compiler.

Having created the source program the next step is to compile it. With Lattice C you first use a program called LC1 to turn the source code into an intermediate form known as a 'quad' file and then you use a second program, called LC2 (surprise, surprise), to turn the quad file into a linkable object code module.

People often complain that even after painstakingly typing in the source code and checking it carefully the first use of LC1 throws up literally hundreds of error messages. This usually has a very simple explanation . . . C allows you to 'include' additional source files, such as Amiga 'header' files which contain vast amounts of ESSENTIAL information . . . constant definitions structure templates, macros, etc. These header files can themselves include other files and so a simple C source line, such as . . .

```
# include <intuition/intuition.h>
```

because it causes the compiler to read in the complete set of Intuition related header files, actually results in an enormous amount of information being included in your source . . . just as if you had typed it

in yourself. If the compiler cannot find these files then none of the definitions, etc., will appear to exist and the compiler will throw up error messages for every reference in your program that it does not understand.

You will usually find the include files in the include directory of the compiler's system disk (but do check the manual if you are in any doubt!). The exact procedure to follow when compiling the source program varies according to whether you have one or two drives (and how much RAM you have to spare) but since the single drive technique is probably the most awkward we will deal with the approach needed for that.

Firstly copy your source program into RAM together with the system commands Copy, Dir and CD and then make the compiler's include file directory the 'current directory'. If you are using Lattice C you have to type the following command:

```
CD Lattice_C: include
```

Lattice will now know where to find the include files but you are left with the job of telling the compiler that your source program is in the RAM: disk and then telling AmigaDOS where the LC1 program is. LC1 is usually in the compiler's system disk 'c' directory and so to get LC1 to compile a source program called 'MyProgram.c' you would type this:

```
Lattice_C:c/LC1 RAM:MyProgram
```

Your source must have an .c name extension but you do not need to type this on the command line. If all goes as expected, i.e. you do not get any error messages, the compiler will have created

an intermediate file, called 'MyProgram.q', in your RAM disk. You can use LC2 on this quad file straightaway by typing:

```
Lattice_C:c/LC2 RAM:MyProgram
```

The compiler will produce an object code module called 'MyProgram.o' but . . . IT HAS NOT PRODUCED A PROGRAM THAT YOU CAN RUN, at least not yet anyway. The object code has to be linked with the standard start-up sequence code, which is an object code module called 'c.o'. This is done using a 'linker' program. The original Lattice linker was called ALINK, nowadays a faster program called BLINK (actually a public domain program) is often used. At the time you link the start up code you must also specify any libraries that contain routines which you may have used. If you have used any standard C functions in the Lattice Library then you must let the linker know. The same applies if you have used any routines in the AMIGA.LIB library. If you forget to do this, or if you have set the wrong current directory, you will get 'unresolved reference in file XXXX' errors) or some similar warnings).

With Lattice the libraries are NOT in the include directory, they are in the 'LIB' directory so . . . you will have to make this the current directory by typing:

```
RAM:CD Lattice_C:LIB
```

(remember the RAM: prefix or the CD command will not be found).

Having done that you can link the start up module with your program AND tell the linker which libraries it must look at by typing the following single command line:

```
Lattice_C:c/ALINK FROM c.o,  
ram:MyTest.o TO  
Ram:TestProgram LIBRARY 1c.lib,  
amiga.lib
```

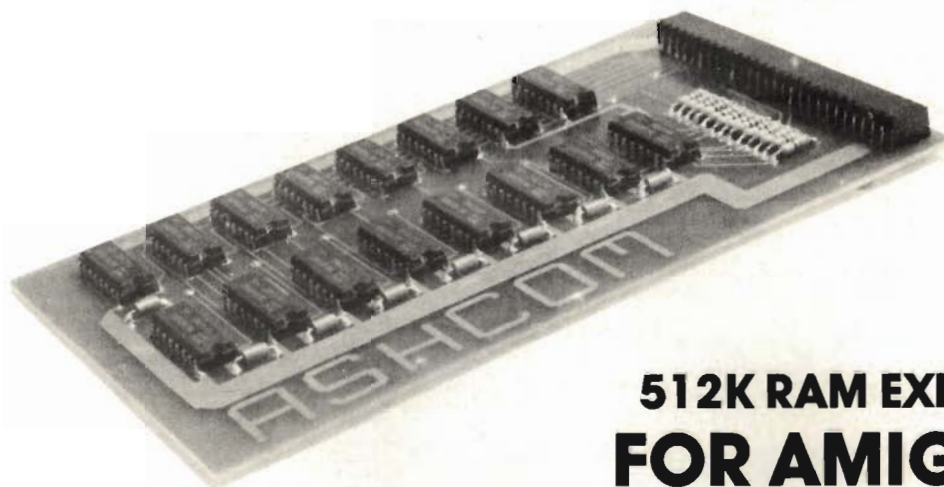
The linker will have created an executable program called TestProgram and placed it in the RAM disk for you. It is only at this stage will you actually be able to type the command MyProgram at the CLI and see the program run!

**P.A.O.**



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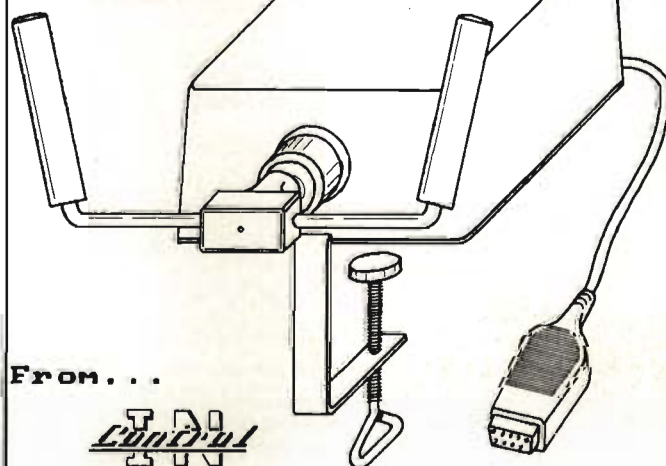
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# Programming

***This is the first article in a series that describes a number of basic program building blocks. Each article will include a BASIC program which will have the necessary scaffolding to make the function run. John Gardener starts us off with record sorting.***

**T**he first few articles will deal with sorting records in storage. By having records sorted into strict ascending

or descending order means that fast access to that data can be achieved (yes, there are better ways of searching for a data string than reading all the data sequentially).

## The Bubble Sort

The simplest method of sorting within storage is known as the BUBBLE SORT. The principle behind this sort is to read each record in turn and compare it with its neighbour. If the records are in the wrong order then they are swapped around. This process keeps looping until all records are in the correct sequence.

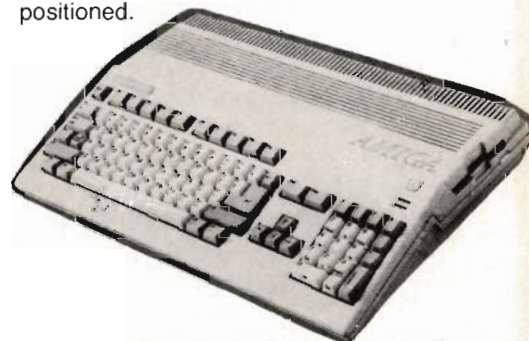
Although this method is simple, it is also slow. In the worst case the number of records read is the square of the number of records to be sorted.

## The Delayed Replacement Sort

This method will do a similar number of reads of the records as the bubble sort but

will not do anywhere near as many swaps, therefore making it more efficient than the bubble sort.

The principle of this sort is to read all the records to be sorted and get the position of the highest one. Assuming this one is not on the top of the list then the highest record is swapped with the one at the top of the list. As we know that the highest record is now at the top of the list then there is no need to read that record again so the search list is reduced by one. The process is then repeated until the last record is positioned.



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# techniques

```
'*****  
'* Bubble Sort Program *  
'* by John Gardener *  
'*****
```

```
INPUT "Key the maximum number of items to be keyed ",items  
DIM array$(items)  
a$ = ""
```

```
'*** Get data to be sorted ***
```

```
PRINT "Key each item, null will start sort"  
FOR i=1 TO items  
  INPUT a$  
  IF a$="" THEN GOTO leave  
  array$(i) = a$  
NEXT i  
leave:  
i=i-1
```

```
' sort array now contains the data to  
' be sorted and i contains the number  
' of elements in the array
```

cont. on next page

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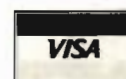
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continued from page 111

```

RecordsSorted = 0
'*** Do bubble sort ***

changed = 1 'allow first pass at sort

WHILE(changed<>0)
  changed = 0 'no swaps done yet
  RecordsSorted = RecordsSorted + 1
  FOR j=1 TO i-1
    IF array$(j) > array$(j+1) THEN
      'the pair of elements are in the
      'wrong order, swap them over
      a$ = array$(j)
      array$(j) = array$(j+1)
      array$(j+1) = a$
      changed = 1
    END IF
  NEXT j
WEND

'*** sort complete, print results ****

FOR j=1 TO i
  PRINT array$(j)
NEXT j

PRINT "It took ";RecordsSorted;" reads of the record array to
sort it"
END

```

To try out the Replacement Sort Program replace the Bubble Sort Routine in the above program by the following routine.

```

'*****
'* Delayed Replacement Sort Routine      *
'* by John Gardener                      *
'*****

'*** Do delayed replacement sort ***

j = i      'get size of array

WHILE (j>1)
  largest = 1
  RecordsSorted = RecordsSorted + j
  FOR k=2 TO j
    IF array$(k)>array$(largest) THEN
      largest = k
    END IF
  IF largest <> j THEN
    'put the largest record at the top of the array
    a$ = array$(j)
    array$(j) = array$(largest)
    array$(largest) = a$
  END IF
  NEXT k
  'that record is now in the correct position so
  'there is no need to look at it again
  j = j-1

```

*In the next article I will be dealing with Shell-Metzner sort and the Quicksort.*



# Syntax

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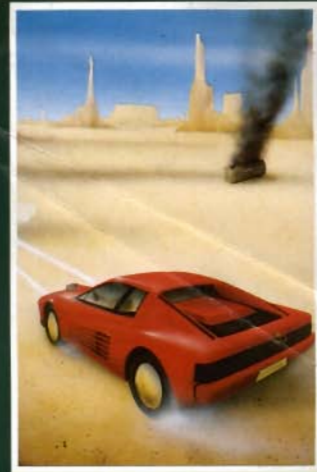
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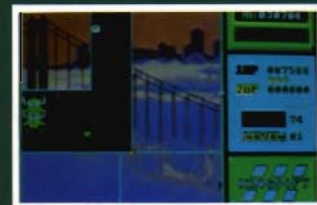


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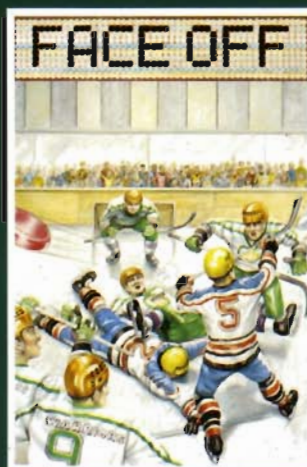
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