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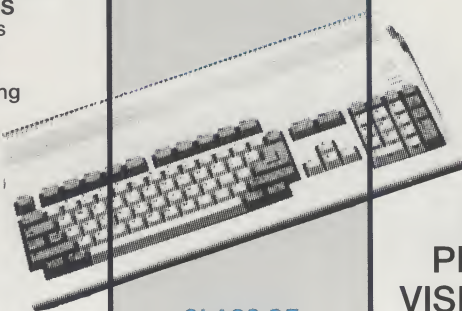
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Contents

MARCH 1990 Volume 4 Number 3

CONSTANT FACTORS

- 5** *Amiga Dimension:* Antony Jacobson considers system crashes, coast-to-coast and the protection of thermal socks
- 6** *News:* Pages of all that's new in the world of the Amiga
- 62** *Amiga Answers:* Yuri has the answers for problematic printers and contrary keyboards
- 87** *Competition:* Win Hound of Shadow books
- 109** *PD:* Stuart Williams explores educational software

MENTOR

- 21** *Intuition:* More intuitive instruction from Mike Nelson
- 38** *A-Z of the Amiga:* Part two in the series of what's what and who's who
- 53** *Quad:* Quick and Dirty from Guilio Zicchi
- 102** *Programming Tools:* Continuing Paul Overaa's series

FIELD REPORTS

- 28** *Middle East Amiga:* Antony Mael reports
- 93** *BETT Show:* AUI report on the education training show
- 48** *Amiga in the Outback:* Amiga shines in the sun
- 57** *Amiga Art Contest:* Results and winners of a recent Amiga art contest

TEST DRIVE

- 18** *Yid! Amiga:* Peter Lee tries out a low-cost screen frame grabber
- 26** *Sharp:* Cannon's new still video camera
- 34** *CanDo:* Lost by halibuts? Confused by compilers? CanDo comes to the rescue
- 94** *Sara and Pipes:* Bells and whistles abound in this MIDI sequencer

SPECIAL OFFERS

- 100** *Control Centre:* Amaze and amuse your friends with this handy space-saving piece of equipment

ENTERTAINMENT

- 66** *Drivin' Force*
- 68** *Windwalker*
- 72** *Rotor*
- 74** *Renaissance*
- 76** *The Untouchables*
- 80** *Hound of Shadow*
- 82** *Star Flight*
- 84** *Heard It On The Grapevine:* Nigel Streeter hears the rumbles of the gamesworld
- 89** *Super Cars*

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THE AMIGA DIMENSION

One of the main forces behind the end of the Cold War and the drive for democracy in Eastern Europe was the Electronic Revolution. That accelerating influence poured a stream of unstoppable messages, by radio, TV, telephone, computers, through the increasingly leaky Iron Curtain. The information carried invalidated the official lies and the bureaucratic deceptions. Knowledge and understanding became the motors of change.

However, dependence on complex electronics can be dangerous as is clear from the story we report in this issue of AUI on the partial collapse of the AT&T Bell system in the U.S.A. For almost a day, public telephone and other communications carried over AT&T's huge coast-to-coast packet switching network were virtually closed down.

The cause was a kind of domino effect that shut down one switching point after another because a software bug - ironically in a program put in to improve the service - gave a minor but disastrously erroneous instruction. And, to the humiliation of the largest communication corporation in the U.S.A. and a world power in the advancement of electronics, down went the system.

In an entirely unconnected event, a hacker accused of introducing a "worm" - a travelling bug - into another major network in the U.S.A. and causing it to sieze up, was found guilty and faces six months in prison.

Both incidents show how vulnerable we are as we become ever more interconnected with and dependent on electronic systems over which we have very little control.

Even relatively simple machinery, once we have become to depend upon it, can suddenly give us an unpleasant shock when it fails to perform as usual: a car that refuses to start in the

morning; a computer program that hooks us into a loop from which it will permit no escape; a printer moved carefully from one room to another which now remains stubbornly silent - all of which happened to me recently; or, for Sandra of AUI's editorial staff, an 8 meg upgrade just nicely installed giving the abrupt reply that her Amiga was "out of memory"!

The trouble is that once the machine has taken an integral role in our lives, we too often assume its automatic reliability. When the machine fails, we become resentful of the curt withdrawal of service - probably more resentful than of its previous non-existence.

But shocks, such as the AT&T shut down, are perhaps good for us occasionally. They remind us that we should not become too dependant, too cotton-wooled by anything, especially electronics, which for most of us, is still too recon-dite a subject for us to be able to fiddle around, solving its mysteries and bringing offending machines back to life.

The reason I mention the fallibility of the machine world is that outside, as I write this, a gale is howling. There is blowing through the office a vary nasty draught. This building, all five floors of it, is cold and miserable. The central heating boiler is being "re-commissioned". Tomorrow we shall all wear thermal socks. In the meantime, we can only warm ourselves by the heat of our speeding Amigas.

AT&T's nationwide shut down? A mere nothing. No central heating - now that's serious. It's a good thing the boiler isn't electronic. And it was lucky that the Cold War never turned Hot. Forget the Bomb, what the electronic systems alone would have done to the globe does not bear thinking about...

Antony H. Jacobson
Managing Editor and Publisher

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17 BIT SOFTWARE	95
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APPLIED RESEARCH	88
BATH COMPUTERS	110
BEAUJOLLY	88
BYTES & PIECES	98
CALCO	53
C&M MICROS	113
CHECK MATE	88
COMPUTERWISE	113
CONDORINT.	104
CYB COMPUTERS	99
DANIEL BURNS	112
DATAPLEX	78
DATTEL ELECTRONICS	49, 50, 51, 52
DELTA PI	78
DIAMOND COMPUTERS	2, 3, 42, 43
DIGICOM	17
DIGIPRO	20
DIGITAINT'L	25
DIGITALX	78
DS&K DESIGNS	86
EVE SHAMMICROS	13
EXPRESS-WAY SOFTWARE	112
GASTEINER TECHNOLOGIES	31
GRAPHIC MUSIC SYSTEMS	92
GTIGMBH	70
HAMMERSOFT	79
HARRISHITEK	47
HARWOOD COMPUTERS	115/IBC
HB MARKETING	33
HOBBYTE	99
HOME BASED BUSINESS	113
HS COMPUTERS	47
I.C.P.U.G.	29
ICS ELECTRONICS	86
JEMEUROPEAN	36
MAGNETIC MEDIA	112
MAIN MEDIA	86
MD OFFICE SUPPLIES	60
MEGALAND	47
MEMORY EXPANSION	8
MERLIN EXPRESS	97
MICRO SNIPS	23
MIDLAND MICROSOFT	65
MUTANT SOFTWARE	23
MY DISC	40
NEW TEK INC	
	OBC, 105, 106, 107, 108
NOVA	112
OFFICIAL SECRETS	63
ONCE BY TEN	29
OVERSEAS MEDIA DIST LTD	9
PINBOARD COMPUTERS	86
PURPLE PD	88
RAMSOFT	32
SABRE 16	79
SAS COMPUTERS	112
SILICA DISTRIBUTION	73
SOFTMACHINE	95
SOFTSTORE	112
SOFTVILLE PD	30
SOFTWARE MADNESS	113
SOFTWARE SUCCESS	90
S.P.A.	113
SPEED COMPUTERS	112
SUBLOGIC CORP	92
THE DISC COMPANY	10-11
THIRD COAST TECHNOLOGIES	29
TRILOGIC	55
UBISOFT	75
VSE TECHNOLOGIES	113
WIZARD SOFTWARE	78
WTSELECTRONICS	113

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GIANT NERVOUS SYSTEM TO LINK EUROPE'S NETWORKS

The European Commission has launched an ambitious programme of research which aims to link all the electronic networks of Europe into a single supra-national structure, the European Nervous System (ENS). The commission says that the establishment of such links is critical to the success of Europe's single market, planned for 1992, and to its industrial competitiveness. The free movement of goods, services, people and capital will be impossible without unrestricted movement of information, the commission says.

The 12 member states of

the EEC have already approved the R&D component of the plan. The aim is to develop software and pilot projects that hook together the networks which already exist between national governments, industry and individual citizens. The merged network will provide instant access to information in areas ranging from tax and social security to crime and the transport of freight.

The ENS will require stringent security measures, since it will require the transfer of personal data, such as medical information and criminal records, across national boundaries.

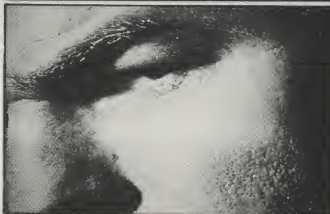
NEWTEK RELEASES DIGIVIEW 4.0

The eagerly awaited 4.0 upgrade to Newtek's popular digitiser Digiview is now being released. Newtek tell us that it contains a number of exciting new benefits for Digiview users - who number hundreds of thousands around the world.

From what we have seen in a preliminary look, Digiview 4.0 certainly lives up to the established reputation for innovation that Newtek has earned.

Included in the 4.0 version is an exceptional 'Dynamic Hires' mode that offers some extraordinary results from difficult pictures. (See above). Newtek claim - with apparent justification - that it offers the highest resolution pictures ever on the Amiga, 4096 colours in Hi-Res mode. Rely on Newtek for achieving the impossible! And we hear that the long awaited Video Toaster is about to reach the public in the US and Newtek tell us that a PAL version will certainly arrive in Europe in the not too distant future.

NewTek's
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4096 COLORS IN
HIGH RESOLUTION



ROLLING THUNDER

The successful coin-op has now been re-released on the Amiga. A horizontally scrolling platforms and ladders shoot-em-up, Rolling Thunder casts you as a Secret Agent for an international police organisation, your task being to find and rescue your female colleague who has been kidnapped by a very nasty baddy. The scene is set in an abandoned warehouse complex with loads of strategic tricks to learn.

With music identical to the original Namco coin-op, Rolling Thunder costs £9.99.



ACCO MULTIFEED AND FRONTLOAD PRINTER STANDS

Two new printer stands from Accodata, one of Europe's best-known suppliers of computer and office furniture, have been specially designed to harmonise with the modern office.

The Multifeed Deluxe printer stand, measures W550 x D440 x H850 mm overall, and if fitted with top and bottom print-out baskets.

The SuperFrontload printer stand is a space-saving unit designed to stand against the wall. Paper is stored on a feed tray mounted at the base of the stand, and the print-out automatically folds neatly behind the printer. Price from Action is £118.00. Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL.

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That's Some Memory. *pact removable 5.25" laser disk.*

What is claimed as a revolution in storage has been announced by Sony. No, it is not an Amiga Walkman but an optical drive, using optical disks. The worlds first fully configured Re-Writable Optical Disk Drive for the Commodore Amiga 500, 1000 and 2000 computers.

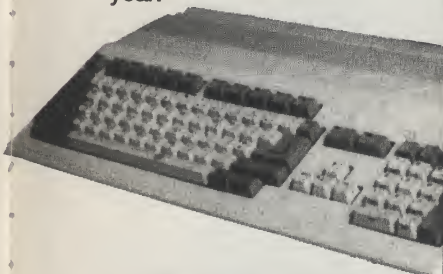
The drive offers a massive 600 Megabytes of on line error corrected data storage, all on a convenient and com-

The state-of-the-art unit is said to offer one of the lowest ever 'costs per megabyte' for data storage. Obviously the more Re-Writable cartridges bought, the cheaper the 'cost per megabyte'. However, the original cost of the drive ranging from £4900 to £7600 may cause some A500 owners to think awhile before acquiring one. But 600 Megabytes.... that's some memory!

MOTOROLA'S 68040

Motorola unveiled its long-awaited 68040 processor which the company estimates that the 25MHz chip, with a speed rating of 20 MIPS, will run applications at double the speeds achieved by the 68030 (the Amiga runs on the original 68000 chip but can be upgraded).

The 32-bit chip, priced at \$795 in sample quantities, offers an average of 3.5 million floating point operations per second, with a peak performance of eight MFlops. Big enhancements on the clock speed are also anticipated - up to 300 MHz by 1995 was predicted by Barry Waite, Motorola's corporate vice president. Initial testings of the chip are now complete, and Rob Baxter, Motorola's operations manager for European microcomponent operations said volume deliveries would be likely in the third and fourth quarter this year.



"The first prototype systems using the chip will probably ship in late Q2," he said, adding that volume shipments are likely to start in late Q3. Manufacturers intending to use the chip include Apple, Bull, Commodore, HP, NCR, Nixdorf, Philips and Unisys.

Baxter said that lower-end 68000 chips would not be phased out as a result of the new one. "The chips tend to start off in a high-end application, for example a workstation, and when hardware is updated it brings the cost of the last set of chips down," he said, "so they work their way into the low-end low cost market."

Mike McCourt, UK director of sales and marketing, said a 68050 chip is under development, although there are as yet no signs of a release date.



CASTLE MASTER

Castle Master, to be released in April, follows the signing for an agreement in which Domark has licenced Incentive's action adventure.

Set in 16th Century England, the game revolves around two objectives. The

main plot being to rescue a captive Prince or Princess from one of the four castle towers, no mean feat with numerous floors and rooms to each tower. You may be able to pinpoint the general direction by listening for the

cries of help. Spirits hinder you progress every step of the way.

The sub-plot sets you the unenviable task of flushing out the many evil spirits infesting the castle. These may possess an animal or object and as you come close the castle shakes and an eerie banshee wailing will be heard. The only way to kill the spirits is to catapult rocks at them. The strength of the spirits can be read by glancing at the Spirt level. Should their combined strengths overpower you, you'll lose the game and the portcullis will come crashing down.

Featuring an Advanced form of Incentive's popular Freescape technique, the graphics are said to be precise and interesting. Castle Master will be packaged with a 24 page booklet, written by Mel Croucher (which Domark hope will not stop you buying the game).

SHARPER TELETEXT

A sharper, more colourful television information system has been developed by a Norwegian company, Link Communication Systems (LCS), of Oslo, writes Lynton McLain.

The teletext system has 600 times as many colours and is 20 times as sharp as existing teletext systems, allowing designers greater scope with complex and intricate shapes in languages, including Japanese and Arabic, that would not reproduce well on current telex systems.

Existing teletext has seven colours. The ConCept 3 design from LCS, based on a European standard called Cept 3, can reproduce 4,096 colours, up to 32 of which can be displayed simultaneously.

The screen resolution of the LCS teletext is 110,400 pixels per screen, compared with the 5,520 of existing teletext systems.

LCS is working with Granada Business Services to market the system, especially to hotels. The installation is at the Hyatt Carlton, Tower Hotel, London.

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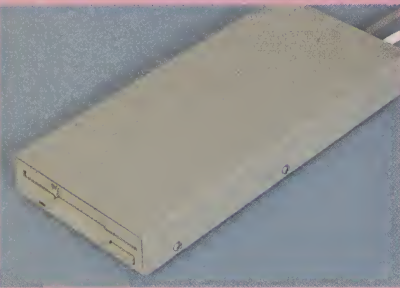
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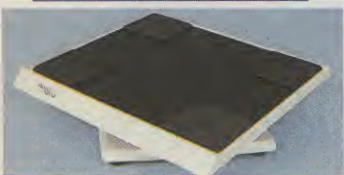
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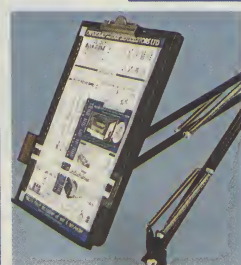
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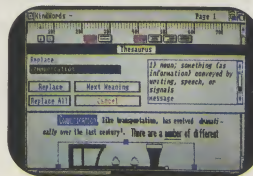
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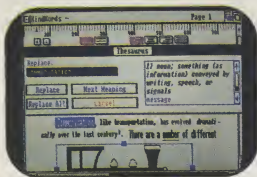
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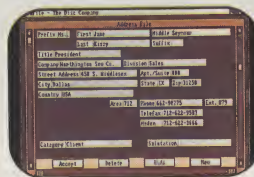
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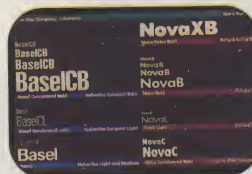
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POWER TO THE 500 PEOPLE

Nigel Streeter takes a privileged look at a low price box that lets you run MS-DOS on your A500 - and throws a 1/2 Meg upgrade in for free!

If you own an Amiga 500 and someone whispered "PC emulation" into your ear, your most likely reaction would be one of intense hilarity, followed by looks of pity and/or disbelief!! Well, all that may be about to change.....

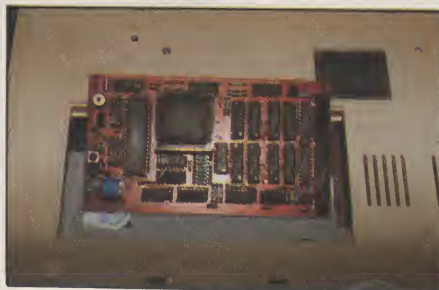
Since September 1988, a gentleman by the name of Peter Verhey has been working fiercely, along with his colleagues, to produce such an item at their company "Kolff Computer Supplies B.V." in Dordrecht, just outside Rotterdam, Holland. AUI was invited to Holland to see the latest prototype of a PC board in action.

The first thing that impressed us was the physical size of the board. It is designed to fit into the "A501 expansion slot" underneath the computer (thereby not invalidating CBM's guarantee) and carries not just all the necessary hardware to fully emulate a PC, but a megabyte of RAM and battery-backed clock as well! Peter Verhey told us that the Power PC Board actually started life as a hobby-type project and was only commercially viable when mega-bit chips became more readily available, enabling a major reduction in size.

Incidentally, Peter Verhey also developed the original "Power Cartridge" for the Commodore 64 and, he claims, was the first person to come up with the

idea of "freezing" a program to restart it again later from the point at which it was originally stopped.

The split ram board is based around an NEC 8086 and an APSIC (Application Specific Integrated Circuit), that KCS have developed themselves, running at 7.14MHz and is capable of addressing 7044 of RAM by using an EMS (Extra Memory Space) driver. When in "Amiga Mode", the RAM is "split" into two, 512K "banks". One bank serves as a 512K expansion and, although the other 512K is invisible to AmigaDOS, a specially developed device will allow you to use it as a RAM disk, by switching between the two banks.



Two versions of a "PC Boot" program are supplied on a 3.5" Amiga disk, one is an ASCII file for installation on a hard drive and the other in the actual boot blocks of the disk. An installation

program is used to set up all the parameters for mouse, disk drives, ports etc.. The board will emulate 16 colour (CGA - Colour Graphic Adaptor) and Hercules black and white graphic modes, plus black and white. Although there are plans for an EGA (Enhanced Graphic Adaptor) upgrade which allows much better quality colour. Peter Verhey told us this would probably require extra memory and possibly be very slow.

Settings are available for every function including mouse drivers through both COM1 and COM2, switchable joystick and SER:/PAR: ports, keyboard and cursor rates and an adjustable printer buffer.

A test program showed the board running as an IBM at 6.3 MHz and running Wordstar Professional showed no loss of speed whatsoever, in fact it actually seemed to be running faster than on my own PC. Unfortunately, we were not able to see the graphic capabilities of the board as the CGA emulator was not fully functional at the time of our visit. By the time you read this article however, we should have a final version in our possession and will report on the graphics in the near future.

The cost for the board has been set at around £300, which on its own represents excellent value. Essentially, what you are getting for your money is a 512K RAM expansion for the Amiga, with a battery-backed clock, plus a fully-implemented hardware PC emulator but, not being content with that, KCS are also bundling an excellent program called Phoenix DOS Help!, which gives you a total on-screen help facility for all commands, plus a complete introduction to MS-DOS. As you will probably need a copy of MS-DOS, they are also including MS-DOS v4.01 as well!

If you are considering a PC emulator for your Amiga 500, then you may not have to look any further. Although the PC board that we saw was not fully functional, if the finished product is of the same quality we can expect to see a lot of A500s running MS-DOS software in the very near future.

For more information, in the U.K. contact: Bitcon Devices Ltd, 88 Bewick Road, Gateshead, Tyne & Wear, NE8 1RS.



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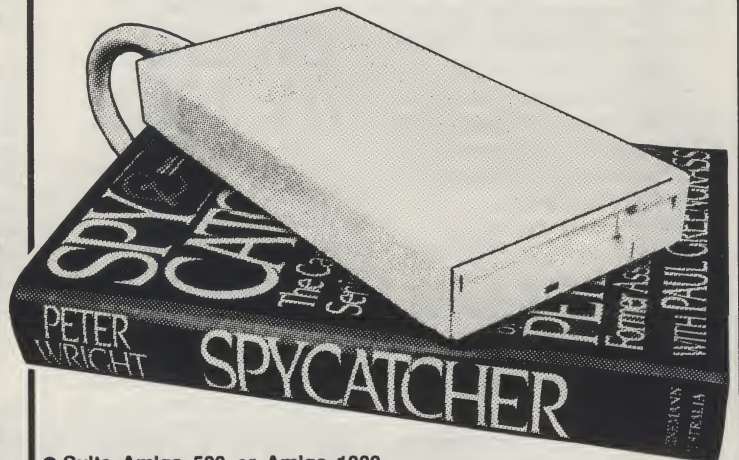
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ONE BUG - AND THE USA SHUTS DOWN...

Defective software brought AT&T's long distance network close to collapse recently. Traffic on the network, among the world's most advanced, slowed right down as malfunctioning code turned a routine procedure into a nine-hour disruption.

It happened at 2:25 pm New York time on 15 January, just after problems - which were not related to the bug - occurred in one of AT&T's New York City 4ESS packed switching centres.

A procedure that in such cases is routine - the switch taking itself down and signalled a third switch, which also notified another switch and then shut itself down, and so on across the United States.

Within 20 minutes, all 114 of the 4ESS switches on the network were jammed, said Bill Leach, manager of AT&T's network operations centre in Bedminster.

Monitoring the signaling networks made it clear that the Signaling System 6 network was operating normally, Leach said. This led the centre to conclude the problem was with the SS7 network.

Between 4:30 and 5:00 pm, the centre started forcing more network traffic onto the SS6 trunks, quickly boosting their occupancy rate to 100 percent. The rerouting helped: The number of calls completed started improving immediately.

Meanwhile, at AT&T Bell Laboratories facility were trying out different configurations of the network, in an effort to find the problem.

"Limiting the network management signals required us to put in a software overwrite, an actual change in the program".

At 5:00 pm Bell Labs began electronically transmitting the network management overwrite to NESAC. The centre passed it on to AT&T's seven remote work centres. By 6:30 pm the remote work centres had implemented the overwrite in the switches in their areas. Software engineers were still

trying to come up with an overwrite program that would solve the broader problem creating the congestion. By about 10:00 pm they had devised what they considered a temporary overwrite solution and used the western US as a trial region.

Once the overwrite's effectiveness was proven, it too was sent out to the remote work centres. By 11:00pm the network had returned to normal with a temporary, well-constructed patch. But the damage was done.

\$50 BILLION BY 1993!

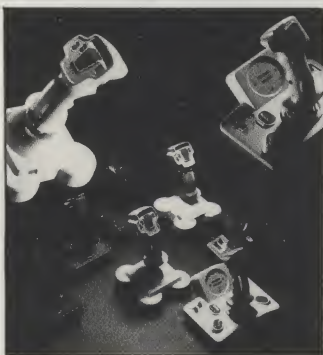
In 1985 worldwide sales of computer hardware and software sold to the engineering and scientific marketplace totaled \$20.9 billion (£13 billion) and by 1988 sales increased to \$29.6 billion (£18.5 billion). In 1989, sales are expected to reach \$33.1 billion (\$20.6 billion), rising to top \$50 billion (£31 billion) by 1993.

This and other key findings are revealed in a new report entitled, "Engineering and Scientific Computer Markets Today: Marketplace and Strategies", published by Market Intelligence Research Corporation. This report surveys computer hardware and software sold to the engineering and scientific marketplace.

HAVE BLEEPER, WILL TRAVEL

First it was the portable phone. Then came the electronic diary. But the latest electronic badge of yuppie-dom must surely be the wrist-watch pager.

In the UK, Mercury Paging will start selling the digital watch-cum-pager from Motorola, of the US, in the spring. The two-ounce time-



QUICK JOY FOR SPECTRAVIDEO

Over the next few months many new Quickjoy joysticks now handled by SpectraVideo are to be announced so that by the end of 1990 the range will consist of 15 different products. These will cover the complete spectrum of joystick types with prices from well under £10 to almost £40.

SpectraVideo think they have sold more joysticks in the UK than any other company. Although they have enjoyed great success with the Quickshot range, they are looking forward to even greater sales with Quickjoy.

CHAMPIONS OF DRYNN ARE COMING

The saga of Pool of Radiance 16-bit continues, as it is now consigned to the "no confirmed release date" file. Champions of Krynn, however, is being programmed in-house at SSI, the Amiga version by Norm Kogel the programmer responsible for the well received Stellar Crusade and Red Lighting.

The storyline of this Role-Playing Epic is set in TSR's Dragonlance Role-Playing World of Krynn, and is not

GPTERM-AMIGA V4.0

An Australian communications software program featuring full Videotex and ANSI terminal emulations has been released.

Developed in Australia to specifically meet the needs of the Amiga user who wishes to access a variety of communications services GPTERM-Amiga is claimed to be the only software to provide comprehensive terminal emulations for both videotex and ANSI in the one program.

Designed with the beginning comms user in mind, GPTERM-Amiga also provides another features and shortcuts for the experienced user.

GPTERM-Amiga is packaged with an extensive manual and is not copy protected. Recommended retail price (Australian dollars) \$99.00. Contact: Dr Greg Perry of GP Software (07) 366 1402.

linked with Pool of Radiance, except that it uses an enhanced version of its award winning predecessors game system.

The player guides his party of characters through a web of intrigue and combat of defeat a plot by the forces of evil to establish the dark Queen Takhisis as undisputed Ruler of Krynn.

Player characters include Kenders and Knights of Solamnia in addition to the races and character classes found in Pool of Radiance and Curse of the Azure Bonds. Players will have the opportunity to meet and work with characters from the Dragonlance novels - Tanis, Tasselhoff and Caramon - as they struggle to overcome the forces of evil.

Champion of Krynn will be the first full blown role-playing game to be released on the Amiga in the AD&D computer products range. It will also be released in a 64 version.

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LIGHT SPEED COMPUTER

An experimental computer, which processes information using light rather than electricity, has been demonstrated by AT&T Bell Laboratories of the US.

This optical computer system, claimed to be a world first, is a dinosaur in terms of processing speed - it is only as powerful as the chips in a washing machine. But because light travels more quickly than electricity, optical computers should be able to process more than 1,000 times as much data as their electronic brethren.

The AT&T system is based on a group of gallium arsenide, optical switching elements, each with a potential processing speed of 1bn pieces of information every second. The devices rely on molecular beam epitaxy, where materials are built up one atomic layer at a time. Each chip has 1,700 layers.

Initial exploitation is likely to be in telecommunications, where optical computing would be combined with optical fibre cables, and in parallel processing computers.

VIDEO WINDOWS

Digihurst Ltd, based in Royston, Hertfordshire, has announced Picture Book Professional - an Inmos Transputer driven package which enable live video to run in Windows for IBM compatibles.

The mouse-driven product, is the result of a £750,000 investment into developing multimedia for the desktop computing market. Aimed at educational and scientific research establishments requiring image analysis, it enables video frames to be captured, stored, digitised, analysed and altered.

The Inmos Transputer based colour image processor board is designed to plug into an AT. It will convert data from video sources such as laser disks into graphics.



NEW TERMINAL TABLE

The simple but effective design of the Roffs Straffors Terminal Table 6, at £189.00, allows it to accommodate a complete microsystem whilst giving the operator working space and leg room.

The table measures 1010 x 700 mm overall, and height is adjustable from 665 mm to 725 mm. It has an open shelf

unit at the rear on top of which the printer and vdu are mounted, with space underneath for both paper supplies and the cpu. Features include a removable paper catch basket, lockable castors and adjustable feet for levelling. Contact: Action Computer Supplies on 0800 333 333.

LOGOTRON CLOUD KINGDOMS

Cloud Kingdoms is the first Logotron tells us that the upcoming release, to have an injection-moulded, eight-way rolling, rubber bottomed software here!

The hero of Cloud Kingdoms is a character of a style typical of Japanese games such as Bubble Bobble and The New Zealand Story. The game is simple and Logotron insist, "frustratingly addictive", featuring eight-way scrolling, thirty-two different levels, a wide range of collectables and a host of pitfalls for the unwary player!

In Cloud Kingdoms, the action is viewed from above looking down onto each kingdom which floats high above the clouds, with parallax scrolling clouds below each kingdom.

Cloud Kingdoms has been designed by Dene Carter, creator of 'Druid' and 'Enlightenment'. Price £24.99

MCM RELEASES

MCM have announced the availability of a number of new products for the Amiga and PCs.

Tiger Club: 12 track sequencer, graphic editing and notation able to print to dot matrix and laserwriter. Endorsed by Roland UK as part of their CM module package. Amiga version available now. Price £99.00.

KCS V3: Now fully GEM compatible with many new features including Automix which gives 32 graphic faders assignable to any sys ex number. Tempo, volume, pan etc can recorded in realtime. The faders also move on playback. Amiga version available now. Price KCS £225.00 and KCS Level II £299.00.

Master Tracks Pro: "The most graphic pro sequencer available for the PC and compatibles". 64 Tracks, graphic editing, SMPTE compatible. With a midi interface and midi transport with SMPTE, Master Tracks allows 32 independent midi channels. MSDOS version available now. Price £285.00.

CHECK MATE'S A1500

The A1500 is a new all-British product that will transform your Amiga 500 into the equivalent of a fully-loaded Amiga 2000.

It comprises two main parts. The base unit accepts all the A500 internals plus an extra hard, or floppy drive, plus an expansion slot that will accept a "flicker-fixer" or any 2000 video card. It also features a separate keyboard. Both the internal drive and the mouse/joystick ports are re-mounted to the front.

Secondary add-on units, each containing three B2000 slots, stack on top of the base unit and are internally connected to the unit beneath. The 86 pin expansion socket has been adapted and boasts a full 100 pin connector.

Prices for the units have yet to be finalised but Check Mate's Stephen Jones assures us that the cost of a fully adapted A500 should not be more than two-thirds of the price of an equivalent B2000. The base unit is expected to be about £200, each add-on unit £100 and a separate power supply unit around £50.

Check Mate are already planning a whole range of projects and enhancements for the A1500, including a full, industry standard midi interface and transputer boards.

All the units are 19" rack-mountable (a positive boon for musician/studio use) and are supplied in DIY kit form. Check Mate will also be offering a fitting service and new warranties for any work undertaken that invalidates CBM's own guarantee. Contact: Check Mate on 01-923 0658.

AUI will be reviewing the A1500 in the near future.

Intro: This is proving to be a very popular starter package for the PC as it incorporates a very intuitive 16 track sequencer with good graphics, a 16 stave notation package from Dr T and an MPU401 compatible midi interface. Price £235.00 Contact: MCM on 01 724 4104.

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Vidi-Amiga

Moving with the times, Peter Lee checks out a new video digitiser which will freeze the action without burning a hole in your pocket!

The Amiga has probably the best selection of video digitisers around - and still they come. The professional end of this boom market is dominated by some serious hardware, matched by a serious price tag.

But for the home user, a number of digitisers are competing fiercely. Indeed, to try to keep ahead of the opposition, DigiTek are continually improving their product and have just released a revamped version 4 software for Digi-View - probably the most popular of the cheaper units.

But like everything in life - you pay your money and make your choice; some digitisers will give you full colour, others are solely black and white.

"I was able to grab 99 consecutive frames on my computer, and was frankly amazed to see them played back at such length and speed."

A number of digitisers work in real-time - which means they can grab an image from your video source (a video camera or VCR usually) in a split second, while others require long exposures of a static image while they gradually build up the picture on the computer screen.

The benefits of real-time digitising are that frame shots can be digitised whilst the source videotape is playing, or while an object moves in front of the camera, effectively freezing the action. This is an excellent tool for animators who can capture a sequence of stills into memory, then edit them in an animation or art package afterwards.

Belonging to this breed of 'freeze-frame' digitisers is Vidi-Amiga, a relatively inexpensive new product with a lot of potential from Scottish company Rombo.

By using an internal 32K RAM store the digitiser can grab a frame in 20 milliseconds, though the computer display is only updated four times a second. This does not give totally fluid movement, but ignoring the slight jerki-

ness, is quite an achievement.

The digitiser is relatively small (8.5cm x 9cm x 3 cm) and fits directly into the parallel port of your Amiga. Power is drawn from the computer in two ways - from the parallel port itself, and also by connecting a cable from the unit into a joystick port. This unconventional approach means that Amiga1000 owners cannot simply get away with a gender changer to make the port connection - but a modified cable is available from Rombo.

Vidi-Amiga causes a modest prob-

lem for A2000 owners because when inserted, it fouls the RGB output to the monitor; the answer is to use the 2000's composite monochrome output directly into the monitor, which is then switched to CVBS mode. Alternatively a parallel port extension cable can be supplied by Rombo, or a port sharer box.



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The digitiser has manual controls for brightness and contrast for the incoming signal, which is received through a standard phono socket, and the hardware comes with a disk which boots directly into the digitising software.

Digitising works in PAL (no overscan though) but only in low resolution and in black and white. Some users will lose interest here, because serious work

generally requires higher resolutions. Colour you can generally do without, but for a high standard of display, interlace and high resolution are often a necessity, not a luxury.

However, as Vidi-Amiga has no pretensions, it is more than adequate as a hobbyist unit with a very high entertainment factor.

As the owner of two digitisers already, I was surprised at how much I enjoyed using Vidi-Amiga. It was not the digitising itself - after all, in the resolution used the images themselves can be

coarse and grainy; it was the real-time ability to capture movement, and store as many frames as memory allows for either instant playback or saving to disk.

The software will store 22 frames in RAM on a 1 meg machine, with a further 32 screens per additional megabyte. I was able to grab 99 consecutive frames on my computer, and was frankly amazed to see them played back at such length and speed.

The premium you have to pay for this pleasure comes when you decide to save a sequence of frames. As is usual with digitised images, where each frame has many differences from the previous one, the images are saved singly, and not as an ANIM file. You simply

specify a start and end frame number, type in a name with a number in it, and the program saves frames individually by incrementing the number you gave.

Fast thinkers will have immediately realised that unless you have plenty of space on your hard drive, the maximum number of frames you can get on a standard 880K floppy is around 18, which will give short - but interesting - bursts of animation.

I did not find this too disruptive, as in any event I only use a digitised image as a starting point for artwork, and import screens into DPaintIII for cleaning up; by taking off portions of the background you minimise the amount of storage space needed for a picture.

"This global display is very similar to a photographer's contact-print sheet, and extremely useful as even at this size, the images are clearly defined."

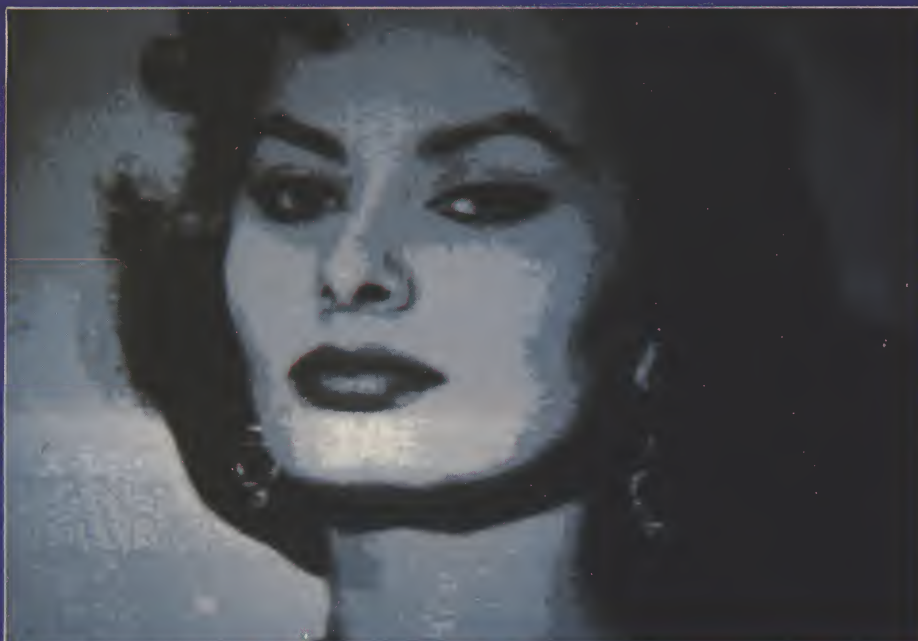
And another dodge I use is to have one frame as the background (ie it never changes) then simply isolate the moving portion of the animation by erasing everything else. This is a slow process, but worthwhile in many cases because it allows you to compress the resulting frames into a very tidy ANIM file. As Dpaint allows pictures to be merged, it is a simple matter to stamp the static background behind every frame containing this isolated movement. Once instructed, the program will grab frames on a carousel basis, looping around however many frames you have specified.

One particularly clever option allows you to see a sequence of 16 miniature frames on one screen, each numbered; in this way you can see how the animation has been captured; you can enter any frame you choose with the mouse, page through more mini-screens, and specify start and end frames for animation saves.

This global display is very similar to a photographer's contact-print sheet, and extremely useful as even at this size, the images are clearly defined.

One of the cleverest attributes of the software is the ability to grab into, or outside, a rectangular window, which is defined anywhere on screen simply by dragging out an appropriately sized box.

If you do this after grabbing one set of frames, then the next grab will overlay the new images in the defined area, overlaying it on top of the frames already stored - picture within picture as it were. The window can be moved around, to capture different areas of a scene.



If planned well, this can lead to some startling effects, with animated scenes moving within each other if a software option called autoadvance is active. Once digitising is halted, you can play back the stored images to see how well they animate.

As mentioned, when grabbing, frames over-write each other in a loop. But frames you want to keep can be held, and safeguarded against erasure while the grabbing continues on free frames.

Portions of a frame can also be cut and stored into a clipboard.

"There is also a Fast Grab option which adds speed to a frame's capture, only displays it in 4 colours until halted."

This is a single spare frame, which can hold up to 40 non-overlapping images for saving. There is a useful option which will allow you to select a grid, upon which cuts are snapped for greater precision.

Before frames are grabbed, you may alter the brightness through software, and this together with the two hardware controls on the unit give a fair scope for obtaining best results from your source signal, which of course will vary in quality.

The palette defaults to a 16-shade grey scale, but colours can be amended either individually or as a range to suit your tastes. There is also a Fast Grab option which adds speed to a frame's capture, but only displays it in 4 colours until halted, when the image - which will have come to the point you actually want captured - is caught in the full 16 colours.

The actual speed of capture and display is sufficient to allow positioning

of the source image without the need for a separate monitor. In the case of videotape it is like watching a jerky version of the original on the computer display, and from a camera signal things are obviously quite simple to place correctly whilst watching the output on the screen.

The software is well-designed, with pull-down menus, on-screen gadgets and keyboard shortcuts. Included on the disk is VirusX, and an IFF frame display utility. The manual is a flimsy 17 page effort which nevertheless contains everything you need to know, and the package comes complete with a phono-to-phono plug.

CONCLUSION

Good fun and good value, Vidi-Amiga is a delightful entry into the world of digitising. The only problem with it is that it works in low resolution in black and white - but this should prove no deterrent for the first-time enthusiast, to whom I wholeheartedly recommend it. And there are plans to improve the unit even further by producing an adaptor to connect the digitiser directly to the processor bus for a massive leap in speed. A full-colour upgrade pack, called Vidichrome, is also in the offing. The animation potential is enormous; you can simply play back sequentially grabbed frames, or use them as the basis for rotoscoping - tracing around the image in a paint program then erasing the digitised image. Disney perfected this technique for his cartoons - using live actors then painting them out, and some stunning effects can be achieved with patience. But remember, you will need a video source signal (VCR or video camera) before you can utilise the digitiser. Then it is just a case of bringing your imagination into play!

P.L.

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INTUITION V: Requesters Part 2

Mike Nelson explains how to transfer data between AmigaDOS, Intuition and a program of your own.

Last month I described the definitions needed to tell Intuition what the requester is going to look like and where all the various gadgets are going to appear. This article will deal with the internal aspects of how the data is stored and passed between AmigaDOS, my program and Intuition. Naturally, this is largely taken care of by our old friend with the unpronounceable acronym, IDCMP.

Next month I shall explain how the AmigaDOS side of things works but we need to bear in mind the information that the latter will require to search out files buried in several layers of the filing system. In order to avoid "Needle in a haystack" syndrome, with 200 files filling up a disk directory and being extremely difficult to display and process, AmigaDOS is geared up for a hierarchical system of filing. This is not really as impressive as it sounds and is analogous to the filing cabinets in the office of yesteryear. The floppy disk is any cabinet with several drawers, each of which may contain any number of folders hung on those fiddly little plastic things. Inside each of these folders there could be a ring binder, itself partitioned into various divisions. This partitioning of information is theoretically endless and serves to organise your data so you can find it, dare I say intuitively? The same applies to AmigaDOS with, for example a DPaint disk containing the usual WorkBench drawers for utilities, system, and the program. The data files then could be divided into brushes and pictures, then further being sub-divided into the various graphics resolutions. In theory again, your own personal filing system could start here with each project you may work on having its own separate drawer (directory in DOS terms). So how may this affect the program?

As long as it is, (nearly 500 lines, in fact) all the program really does in the end is to elicit a filename and tell you what it would try and load. This is not as frivolous as it may seem as AmigaDOS must be told of the "PATH" to the file from the "ROOT" of the disk. (I use the term disk loosely as all this applies to

any AmigaDOS filing system including the RAM disk and hard disks). More jargon designed to confuse and deject? For the uninitiated used to dealing with the vagaries of a C64 cassette system all this is a bit much but it's quite logical really. The root is the name of the disk or drive. Thus, AMIGABASIC:, dh0: or df1: are all (potentially) valid roots, suffixed by the colon. The path can include the root, although this not strictly necessary, as DOS automatically uses the current directory, if no root is specified. All the path represents is a string of directory names joined by a 'slash' character (/). For example, the filename Dpaint:Datafiles/Pictures/Lo-res/KingTut (as well as playing havoc with your word processor justification thing) will load the file KingTut regardless of which disks are present as AmigaDOS will post its own requester telling you to insert the disk DPaint and search the path until it finds the file. You can mess around with this using very few DOS commands such as CD, Dir, Assign etc.

Essentially, a large proportion of the program is involved with string manipulation which, in C, means playing around with arrays of characters and pointers. A comprehensive description of how C handles strings and the intricacies of address arithmetic is worthy of a chunky chapter in a reasonably sized book, so I shall have to limit the discussion, and refer anyone hopelessly confused to one of the many books on C (for further confusion). The most bizarre concept is that C does not contain strings as such, but instead uses arrays of characters. This is not really as outrageous as it seems since this is what BASIC does, except it is more transparent to the programmer. In the final analysis it means that a C array of strings has two dimensions instead of the BASIC one. Additionally, the C language contains no internal string handling routines (like Right\$, Left\$ etc). They are "welded" into the program from the standard library provided with the compiler, at compile time.

I have declared an array (just before main() in the listing) 300 characters big to take the ultimate filename and, sur-

prisingly enough, called it FileName[]. 300 characters is actually quite a lot and allows for rather a large amount of expansion to say the least. Still, 300 bytes on an 8-Meg Amiga is not something to get jittery about! The next array is called FileList and is two dimensional. Why is this? I have catered for some 250 (defined as the macro MAXFILES) files in any one directory - slightly excessive for users with floppy drives, but I have over 200 sampled sounds in one massive directory on my hard drive (when it works). The 31 refers to the maximum number of characters AmigaDOS currently allows in any component of the file path. The limit is actually 30, but I use the extra character to identify if the name is a file or another directory, as will be seen next month. A further array is 14 (NUMFILES) strings of 20 (MAXLENGTH) characters used to store the names of the files currently displayed in the requester. The 14 and 20 are constraints placed by the size of the requester which I decided on (somewhat arbitrarily, in fact) and impose one or two programming difficulties when dealing with filenames larger than this. We are now ready to dive into the actual code of the program, starting as ever with the function main().

The usual call to OpenStuff() announces our intentions to Intuition, and also allocates some memory for the communications with AmigaDOS which I will describe further next month.

After ensuring that the buffers for the string gadgets are set to zero, I use a function called SetFileGadgets() to build up the definitions for three arrays. One of these is an array of Gadget structures and the others are concerned with text rendering. I have already described the usage of these structures in previous articles but this application warrants some further explanation. C is an extremely powerful language when it comes to organising your data. The equivalent way of programming this in BASIC would be to have a separate array for each member (i.e Width, Height, GadgetID etc) of each structure (Gadget or IText) so your code would be knee-deep in loads of array

continued on page 22

continued from page 21

definitions. This seems like a good place to distinguish between declarations and definitions. At the top of the program (i.e. before the main() function) I have declared to the compiler that I need the memory for arrays FileGadgets[], FileTexts[] and ITexts[]. This does no more than add the required amount of memory to the size of the file loaded in and ensure that appropriate pointers (addresses in other words) are set. There are no values set and the memory is all zero. One point about pointers (!) is that you cannot rely on their value as they will change every time the program is run since the Amiga is multi-tasking. The compiler generates relocatable code and the address of FileGadgets[] will be determined at run-time and not when compilation occurs (after all, Uncle Lattice, as powerful as it is, is not able to foresee the future and tell what else is likely to be competing for memory). There is an alternative which is more convenient for single structures and is employed for all the other data. This is to declare and define the data in a single statement. Therefore definition means setting the components of the structure to real values which can be relied on when main() is entered, whereas declaration means that the memory is allocated and not loaded with any data (unless you call zero data!).

The FileGadgets[] array is used for the list of filenames displayed in the requester. They are NOT string gadgets, however. They are simply Boolean gadgets, meaning they are either selected, or not, and you cannot edit

their text in the same way that a string gadget can be. In simple terms they act in an identical manner to the "DF0:", or "PARENT" gadgets and, as the only real difference between them is the text (representing the filename), it makes sense to put them all in an array. This makes further programming much easier than having individual gadgets and fooling about with pointers.

Quite conveniently, we find ourselves at the IntuiText definitions. These correspond directly to the FileGadgets[] definitions above. The latter contains a pointer its FileText[] (i.e. FileGadgets[i].IText = FileTexts[i]). The character data is stored in to two-dimensional array called ITexts[]. Some serious explanation is required at this point as Commodore have done their utmost to confuse things more than usual. The problem is over the use of the term ITexts as a structure member, in that it has two meanings in different contexts. In both an IText is a pointer, but in a Gadget structure (as in the array FileGadgets[]), the Gadget.IText is a pointer to an IntuiText structure, itself containing an IText. In this case, however, the IText is a pointer to the array of characters containing the ASCII codes of the string displayed in the gadget box, and not another IntuiText as may be implied.

By now you can appreciate how the subsequent processing of these structures is going to work. I have so far established a set of gadgets which will be displayed as text, and defined that text as a string of spaces (using the built-in strcpy() function of Lattice). All

we need now is the ability to modify the contents of these strings when the list of files changes (e.g. on entering a new directory). Intuition provides us with this by allowing us to alter the characteristics of the gadget by way of the RefreshGadgets() function. This is used to effectively redraw the requester, so rendering any changes you may make to the ITexts[] array. Reference to the inset will clarify each of these arrays.

To wrap things up this month, I will briefly outline the algorithm for the rest of the program. When the requester is posted, we wait until a device is selected and then read the files of the root directory into memory, and store the filenames in a character array called FileList[]. Once this is complete we copy the first 14 of these filenames into the ITexts[] array which is displayed by Intuition after calling RefreshGadgets(). Finally, we calculate the values needed for Intuition to set the position of the scroll bar. Tune in to next month's exciting episode for further details.

M.N.

FileName[] String to store the path to the filename.

FileList[][] Array of strings holding ALL filenames in directory.

ITexts[][] Array of strings storing filenames displayed on screen.

FileGadgets[] Array of Gadget structures for filenames on screen.

FileTexts[] Array of IntuiText structures for above.

N.B. A string is an array of characters in C. An array of strings is 2-D.

```
/* This month I'm doing requests, well requesters at least. This is the
ultimate in super deluxe disk requesters, with all mod cons. Yes,
only AUI is so bold as to go where no other mag. has gone before */
```

```
#include <exec/types.h> /* Just for a change, */
#include <intuition/intuition.h> /* use angled brackets */
#include <libraries/dos.h> /* Cos we're speaking to Aunty AmigaDOS */
#include <libraries/dosextens.h> /* this month we need these */
#include <exec/memory.h> /* Need to get a special piece of memory */

#define BLACK 2 /* Well here we are in the macro definitions once */
#define ORANGE 3 /* more. Hope everyone out there is having a wild */
#define WHITE 1 /* time, enjoying whatever there is to enjoy at */
#define CANCEL 1 /* this time. Here's to the designers of Lattice C*/
#define LOAD 2 /* coz it's pretty brilliant. Such a pity it costs*/
#define HARD 3 /* nearly two hundred quid. How about releasing a */
#define FLOP 4 /* PD version of 3.1? Bring C to the masses! */
#define RAM 5 /* Nearly running out of space now so goodbye! */
#define PARENT 6 /* This space is intentionally blank -> */
#define HARDUP 7 /* Aren't we all? */
#define HARDDN 8 /* No comment */
#define FLOPUP 9
#define FLOPDN 10 /* As you may have gathered, these are mainly */
#define DRAWER 11 /* GadgetIDs and are simply there for clarity */
#define FILE 12 /* Who is this clarity person, anyway? */
#define SELECT_FILE 13
#define PROPID 50 /* Who says Gadgets are boring? */
#define REQWIDTH 268 /* N.B. If you change these, also change */
```

*/
continued on page 24

MUTANT SOFTWARE

ANIMAL'S TOP TWENTY - in no particular order !!!

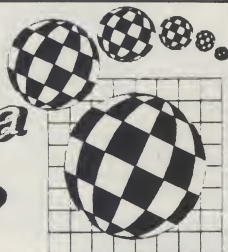
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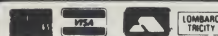
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continued from page 22

```

#define REQHEIGHT 219 /* corresponding values in arrays Line1 & 2. */
#define BUFFSIZE 300 /* Number of characters in Drawer & File buffers */
#define NUMFILES 14 /* The requester can hold 14 file names, so there */
#define MAXFILES 250 /* Shouldn't have > 250 files in 1 directory! */
#define MAXLENGTH 20 /* Largest file name displayable in requester */
#define MAXPOSS 30 /* Currently largest name allowed by AmigaDos */
#define FILE_SIZE (LONG) (sizeof (struct FileInfoBlock)) /* PHEW */

struct IntuitionBase *IntuitionBase;
struct Window *Window;
struct FileInfoBlock *FBlock;

struct IntuiText LoadText = {BLACK, WHITE, JAM1, 6,4, NULL, "LOAD", NULL};
struct IntuiText CancelText={BLACK, WHITE, JAM1, 5,3, NULL, "CANCEL", NULL};
struct IntuiText HardText = {BLACK, WHITE, JAM2, 7,2, NULL, "DHO:", NULL};
struct IntuiText FlopText = {BLACK, WHITE, JAM2, 7,2, NULL, "DFO:", NULL};
struct IntuiText RamText = {BLACK, WHITE, JAM1, 7,2, NULL, "RAM:", NULL};
struct IntuiText ParentText={BLACK, WHITE, JAM1, 2,2, NULL, "Parent", NULL};
struct IntuiText FileText = {ORANGE, WHITE, JAM1, 15,38, NULL, "File", NULL};
struct IntuiText DrawerText = {
    ORANGE, WHITE, JAM1, 14,19, NULL, "Drawer", &FileText};

struct IntuiText ReqText = {
    BLACK, WHITE, JAM1, 41,5, NULL, "Mike's amazing requester", &DrawerText};

USHORT chip AwUpData [] = {0x0400, 0x0e00, 0x1f00, 0x3f80, 0x7fc0, 0xffe0};
USHORT chip AwDnData [] = {0xffe0, 0x7fc0, 0x3f80, 0x1f00, 0x0e00, 0x0400};

struct Image ArrowUpIm = {0,0, 11,6, 1, &AwUpData[0], 0x2, 0x1, NULL};
struct Image ArrowDnIm = {0,0, 11,6, 1, &AwDnData[0], 0x2, 0x1, NULL};

SHORT Line0 [] = {0,15, 269,15};
SHORT Line1 [] = {0,0, 265,0, 265,217, 0,217, 0,0};
SHORT Line2 [] = {0,218, 266,218, 266,0, 267,0, 267,219, 268,219, 268,0};
SHORT Line3 [] = {0,0, 44,0, 44,14, 0,14, 0,0};
SHORT Line4 [] = {0,15, 43,15, 43,0, 44,1, 44,15};
SHORT Line5 [] = {0,0, 58,0, 58,14, 0,14, 0,0};
SHORT Line6 [] = {0,15, 57,15, 57,0, 58,1, 58,15};
SHORT Line7 [] = {0,0, 43,0, 43,12, 0,12, 0,0};
SHORT Line8 [] = {0,13, 42,13, 42,0, 43,1, 43,13};
SHORT Line9 [] = {0,0, 52,0, 52,12, 0,12, 0,0};
SHORT Line10 [] = {0,13, 51,13, 51,0, 52,1, 52,13};
SHORT Line11 [] = {0,0, 177,0, 177,9, 0,9, 0,0};
SHORT Line12 [] = {0,0, 12,0, 12,141, 0,141, 0,0};

struct Border Brd [] = {
    {0,0, BLACK, NULL, JAM1, 2, Line0, &Brd [1]}, /* These is da */
    {0,0, BLACK, NULL, JAM1, 5, Line1, &Brd [2]}, /* Requester box */
    {0,0, BLACK, NULL, JAM1, 8, Line2, &Brd [3]}, /* lines... */
    {29,195, BLACK, NULL, JAM1, 5, Line3, &Brd [4]}, /* This is Load */
    {31,195, BLACK, NULL, JAM1, 5, Line4, &Brd [5]}, /* and this. */
    {169,195, BLACK, NULL, JAM1, 5, Line5, &Brd [6]}, /* Now Cancel */
    {171,195, BLACK, NULL, JAM1, 5, Line6, &Brd [7]}, /* Ditto */
    {216,60, BLACK, NULL, JAM1, 5, Line7, &Brd [8]}, /* DHO: */
    {218,60, BLACK, NULL, JAM1, 5, Line8, &Brd [9]}, /* DHO: */
    {216,80, BLACK, NULL, JAM1, 5, Line7, &Brd [10]}, /* DFO: */
    {218,80, BLACK, NULL, JAM1, 5, Line8, &Brd [11]}, /* DFO: Doops! */
    {216,98, BLACK, NULL, JAM1, 5, Line7, &Brd [12]}, /* RAM: */
    {218,98, BLACK, NULL, JAM1, 5, Line8, &Brd [13]}, /* RAM: */
    {208,116, BLACK, NULL, JAM1, 5, Line9, &Brd [14]},
    {210,116, BLACK, NULL, JAM1, 5, Line10, NULL}
};

struct Border DrawerBrd = {-1,-1, BLACK, NULL, JAM1, 5, Line11, NULL};

```

to be continued next month

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SNAP!



STILL VIDEO ON THE AMIGA

Rico Gusman investigates an exciting development to combine photography with your computer

As in the world of computers the world of photography moves fast. We are all familiar with all electronic cameras that can autofocus, work out exposure, shutter speeds etc, but the basic principle has remained the same with a lens at one end of the camera and film at the back. That is until now...

Canon have brought out the world's first freely available digital still video camera. With all the normal video cameras available, this may not sound all that exciting, but the new camera is very different from the conventional form.

Still video was developed by Canon about four years ago to enable pictures, photographs, to be stored directly on a 2" floppy disk that can be displayed on a



conventional TV or monitor. The images could also be sent electronically to printers anywhere in the world. Canon have released Still Video cameras in the past but only in Japan and the first cameras were quite bulky and well in excess of £1000.

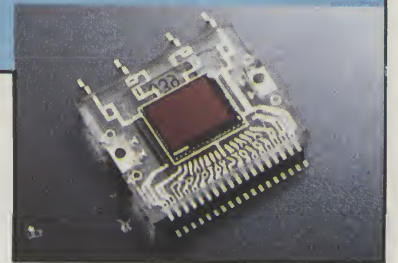
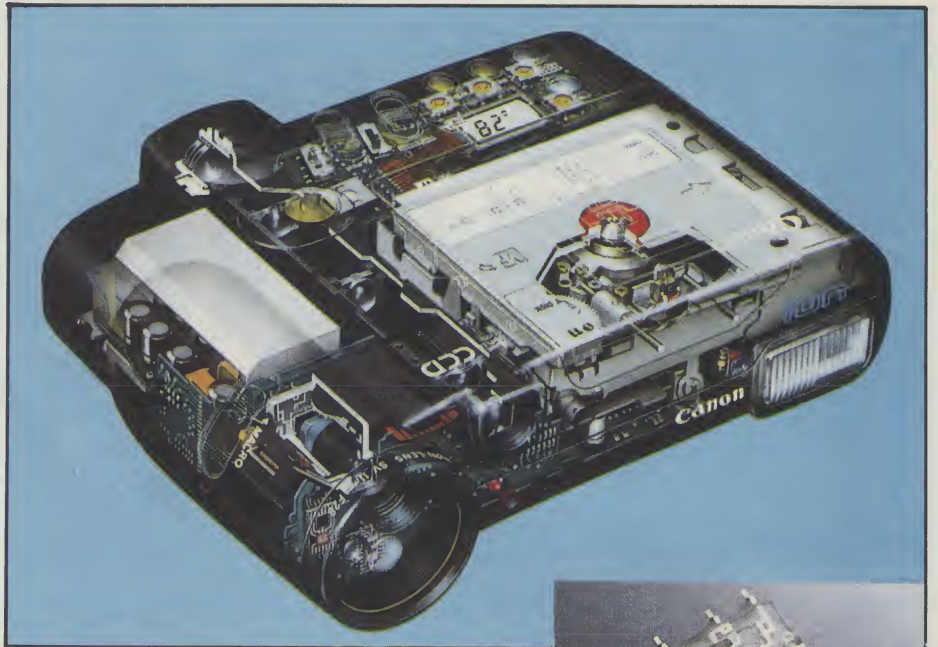
This new camera, the ION RC-251, is very compact and attractive and is £500, but I expect that this price will fall as other companies release their versions of SV. (Still Video).

The camera connects directly to an Amiga through a digitiser, in this case Digi-View Gold was used, and because the ION is so portable you can snap away to your hearts content anywhere, as it also has a built-in flash. There is one drawback, however, unless you take the colour filter wheel with you and shoot three separate pictures you will only get a black and white image, this is because the digitiser needs RGB input as separate information. But the quality of the image is excellent and the sheer convenience is worth it. The IONs real purpose is a display images on normal TV. This is done via three separate cables and boxes which I found a clumsy design for home use but once it is all set up the results are quite astonishing. I could hardly believe the clarity of the images on the TV. The resolution is greater than Hi-Res on the Amiga with 786 pixels horizontally. There are forward and reverse buttons on the camera so you can flick through pictures very easily. The images on the disks can be erased if you make a mistake or just want to clean up the disk.



One word of warning though when showing pictures using the cameras rechargeable battery is that it will only display for about 15 minutes and then a full recharge is needed which can take from 3-5 hours. So, if you can, always show the pics using the AC adapter included in the very comprehensive kit which also came with all the necessary bits and pieces such as carry case, wrist strap, PR converter and a 2" floppy disk that holds 50 pictures. The disks only cost £4.99 and are excellent value when you consider that a decent roll of 35mm film is £5-£6 for a 36 exposure plus processing. Don't expect 35mm quality though, but it is not far off.

My criticism of the system is the lack of creative flexibility of the pictures compared to a good 35mm camera, such as shutter control or filters for the



lens. There is an optional 'Action Set' which includes an action grip with a tripod socket to which a teleconverter lens can be attached. There is also a special macro-stand for the camera which is pre-set to the correct focal length for the macro switch on camera. It also has a self timer and facility for continuous shooting at 3 frames per second. It seems quite sturdy and is about the size of two 110 cameras stuck side to side.

Canon are obviously committed to the idea of still video, it will not replace existing film formats at the moment but it certainly to be in widespread use in the next few years as a very quick and convenient means of photography. Journalists would find the system very useful as the photographs can be transmitted from any phone line to their offices. For use with an Amiga and ION is

superb and fast. This is only the beginning, and I expect we will see colour printers and other peripherals coming out to complement the range, as well as other makes such as Olympus and Minolta bringing out their own cameras. If you can afford the £500 price tag it does its job well, but on the other hand it might just be worth hanging on just a bit...

R.G.

Contact: Bywaters Photo Video, Waltham Cross Shopping Pavilion, Waltham Cross, Herts. EN8 7BZ. Tel: 0992 717117. Price: £499.99.



AMIGA IN THE MIDDLE EAST

The Amiga's impact on the home computer scene is already noticeable. Its growing popularity among professionals in such areas as graphics and video is, paradoxically, less immediately visible, except when it hits the eye in a big

way as it has been doing recently. Nevertheless, more and more the Amiga is being used in TV and also in presentations at public events. The most well-known of these was last year's American football spectacular, the Superbowl.

The man responsible for the 60 foot (approximately 8 metres) scoreboard graphics was Joel Tester, a specialist Amiga graphics consultant. Joel told AUI that at first the technicians at the Miami Dolphins' stadium would not believe that their massive scoreboard could be graphically filled by a computer as low price as the Amiga. But they had to swallow their doubts when they saw the results which put the Amiga and its astonishing graphics before an audience in the hundreds of millions around the world.



Friendship Games

Impressed by the Superbowl graphics Joel had carried out, Commodore Electronics, CBM's international arm based in Switzerland, called on Joel to go out to Dubai which was staging the "Friendship Games" - an international sporting gathering of seventeen Muslim countries.

The resulting Amiga graphics - on another tremendous scoreboard screen - caused a sensation that echoed around the Middle East.

At the same time, Commodore Electronics organised a roadshow to tour the major cities of the Middle East to show off the Amiga and its talents. Commodore Electronics told AUI that the Amiga and especially its graphic abilities were given a very warm welcome wherever the roadshow went. The Amiga - and other CBM products - received wide media coverage and are clearly making an increased impact in this prosperous but - in computer terms - still underdeveloped area and are starting to sell fast.

There is no doubt that with events such as the Friendship Games, the Amiga is certainly getting some huge exposure...

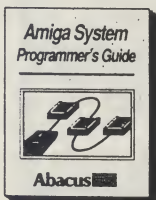
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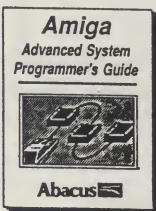
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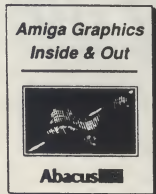
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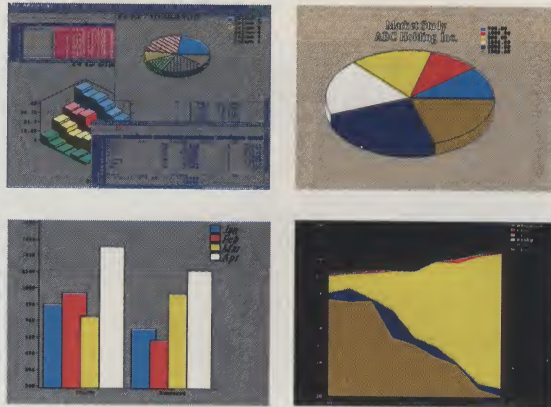
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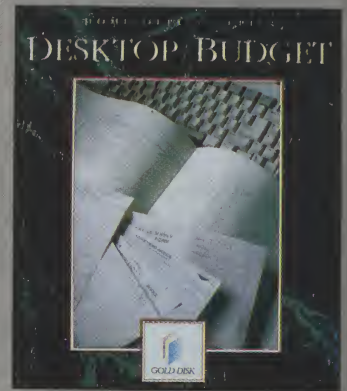


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	The Advantage	MaxiPlan
Maximum size:	65,000 x 65,000	512 x 32,760
# of simultaneously open worksheets	Unlimited	3
Maximum # of graphs	Unlimited	8
Maximum colors on charts	16	8
Multiple views	Unlimited	No
Sideways Printing	Yes	No
# of functions	90+	66
ARexx Support	Yes	No
PERFORMANCE COMPARISON		
	The Advantage	MaxiPlan
Redraw	0.87	2.35
Save	2.23	5.33
Load	3.84	6.69
Recalculation		
First	2.44	5.15
2nd (no changes)	0.19	4.30
2nd (w/changes)	2.24	4.88
Memory used	43216	69832

Tests performed on 1 MegaByte Amiga. Spreadsheet size: 9 rows x 44 columns.

The Advantage has a suggested list price of £99.95, Desktop Budget is £39.95 and Transcript is £39.95

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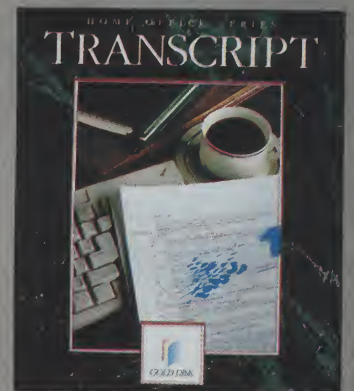
AmigaWorld, July, 1989

Desktop Budget 'Bank on it'

"...If you want a precise account of your monetary activity, along with options to reconcile your bank statement, keep track of your portfolio, print checks, and manipulate several kinds of reports choose Desktop Budget."

Desktop Budget has an intuitive icon-based interface and precise report generation. It outsells all other North American Amiga financial programs 2 to 1.

Requires 512K Amiga, 1 drive.



AmigaTimes, Aug., 1989

Transcript

"...this is the best program, and the best value, on the market."

Transcript is incredibly fast, includes a built-in 90,000 word dictionary, auto index and mail merge, and has direct on-line support for The Advantage and Professional Page.

Requires 512K Amiga, 1 drive.

CanDo

Has there ever been an Amiga program like it? Peter Lee discovers there is very little CanDo can't do!

The Amiga elite. They deserve to be at the top for mastering and harnessing the power of such a complex computer. Anyone who can program Commodore's gem has got to have an IQ of 160 and a degree in Maths, right?

WRONG! From now on all you need to create a program is an ounce of ability - plus a unique piece of creative software called CanDo, from INOVAtronics.

It maybe the final piece in the Amiga jigsaw; all the power commands and tools which high-level language boffins struggled to master have now entered the home, and the mysteries of the Amiga's Intuition environment are within your grasp - if still not wholly understood.

Because the beauty of the program is that you don't need to know how windows work, the difference between a raster and a bob, how drop-down sub-menus know which program to run or how to get an animation onto a screen; the fact is that you can instruct the Amiga to do it very easily through CanDo's intuitive interface.

CanDo is the key which unlocks the Amiga's complex front end, and at the same time buffers you from the need to come to terms with such things as machine code, C, library calls or ROM routines.

The software is supplied on two disks, one containing some examples, and is unprotected to allow transfer to a hard drive. The hefty manual is vital, not just because of the difficulty of using the software but because of its vast scope. This program does most useful things you could hope for - from playing a sound to self-drawing a structured graphic screen.

This is easy meat actually; with a little time and planning CanDo will allow you to write the kind of programs which are now commercially available. DOS front-end controllers spring readily to mind, but the scope for creating professional software seems limitless - after an hour's use the opportunity to create animated games or tutorial disks on every conceivable subject came readily to mind.

It really is time for every closet software author to come out and contribute to the richness of Amiga programming. There's no longer any excuse!



THE SOFTWARE

As well as the manual, the version of CanDo under test (v1.0) had plenty of additional information on disk - enhancements, additions and revisions. Quite surprisingly there were a couple of dozen additional commands only referenced on disk, so checking these files out is a first priority. Also, a minimum 1 meg of RAM is required to run.

“Quite complicated effects can be achieved in this simple way - the standard slideshow for instance, or an animation playback menu.”

Using a program on the disk the transfer from floppy to hard drive was achieved quickly, and thanks to the large number of options available through the program icon's tooltypes, paths and default options were readily set up (such things as where the program should look to find graphics, sounds, and whether or not to show verbose help requesters).

CanDo's basic building block is called a Card; a number of cards make up the finished application, which is termed a Deck. The Deck can be made to auto-run without CanDo being pre-

sent, which opens the way to freely-distributable or commercial software of your own creation, with no licence fees to pay - and believe me, there will be plenty of home-grown programs written before long. From train-spotters to graphic adventure writers, they'll all be at it!

Due to the structure of the program, it is very easy to launch straight into a project, using the mouse environment for creating your application. Quite complicated effects can be achieved in this simple way - the standard slideshow for instance, or an animation playback menu.

The ability to design, size and position 'buttons' which can be activated by a mouseclick frees the user from any kind of keyboard input if desired. By using an art package to draw a 32-colour menu screen, with swish-looking option buttons, then using this as your backdrop for a project, you can position the true control objects where you have painted them.

And as buttons can be invisible, in use all you will see is your lively menu, which can dispatch the user to any pre-selected action once the correct button (in reality, the correct area on screen) has been selected.

Buttons can be simply boxes containing text, and this can be achieved from with CanDo itself with no need to

draw your own, using various box styles to surround the text, which can be printed in any of the colours, fonts or styles available. In this way an ultra-fast intuitive menu can be constructed, with your definition for each individual button having a pre-defined action, which you specify when creating the button.

A button can even be a brush clipped from an IFF screen - for instance you could define a series of numbers in glorious styles, save them and have them available for any application. But what is even more amazing and useful is the ability to make an odd-shaped brush only respond if the pointer is clicked onto a non-background colour within its shape.

One application which could be useful in education, and which serves to illustrate the point, is a drawing of a human skeleton, comprised of many brushes for each bone shown. By having the program respond only to the actual individual brushes, it would be simple to construct a tutorial to guess the names of each bone. Choice of name could be either from a displayed menu list of alternatives, or by text input - both methods being very easy to monitor and check within the program.

All IFF graphic modes are supported, including HAM

IN USE

On entering the program, you are presented with a main control panel at the bottom of a blank screen, with a number of options available.

The menu offers two modes of operation - design, and edit. In design mode you create your Cards; you can tailor your screen resolutions, sizes and colours, and generally decide on the structure your creation will take. Windows can likewise be created, with the option to include all the classic Amiga window gadgets - close button, depth button, drag bar and sizing button.

Cards can be created (added to your Deck), or edited at will; objects such as buttons on already defined Cards can be amended in any way, or even trashed if you no longer need them. In fact the editing facilities range across the whole spectrum of functions - the watchword is, if you don't like something, then change it.

Having designed the skeleton of your card, the next step is to build on the framework; There are 12 control panel options immediately available: Buttons are simplicity to place on screen, and equally straightforward is defining the action your program needs to take once it detects an event on the button (and this could be a mouse click, release or double click).

A control icon for the Menu option takes you into the realms of sophisticated Amiga control, allowing you to design the kind of pull-down menus from a title bar which have become

second nature to users. Menu items need a name, then if needed sub-menus can pop out as the mouse is moved.

The action you instruct the program to take if a menu item is selected depends on your application - it could simply be a pull-down menu version of several often-needed CLI commands, or a more useful tool for hard drive users to run from Workbench those programs salted away under many directory layers. While defining the menus, alternate keyboard commands can be specified - how about that for comprehensiveness?

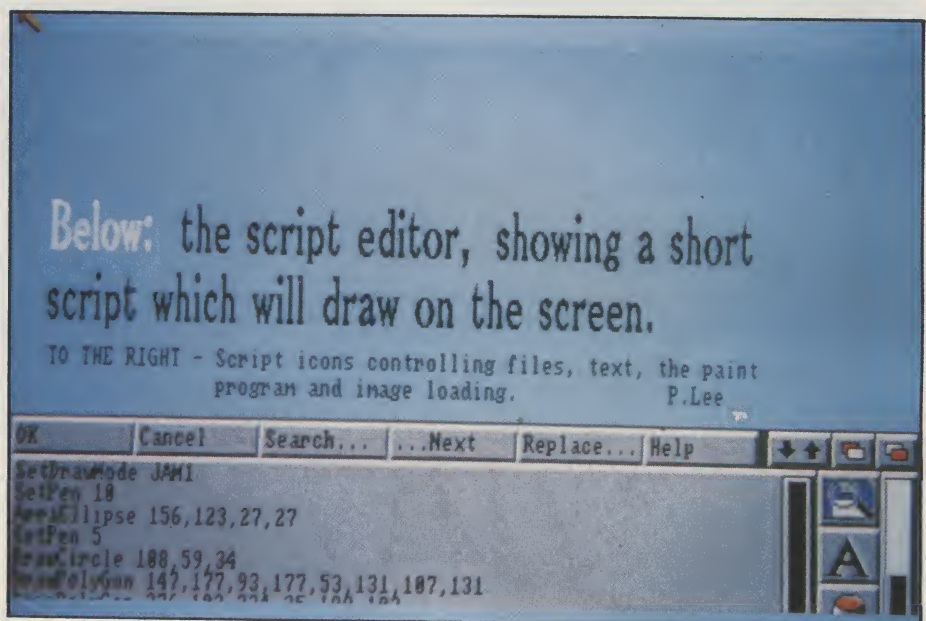
To enhance a powerful utility even further, brushes can be used instead of text on the pull-down menus, so you can add graphic information as the final embellishment.

The control panel also gives access to a Document section, which is used to create either a simple text display utility, or a rudimentary text editor onto your current Card. The document definition can include sliders for scrolling about a piece of text (both horizontally and vertically), and it is possible to have multiple

timer is activated, the script you have created comes into effect; for instance, your general knowledge program could have a variable difficulty level depending on the amount of time allowed for an answer.

Also available with a click from the main control panel is the ability to create a Sound Object, enabling you to synchronise other sounds or graphics with a sound. In effect, this allows a script to be performed when a specified sound starts or finishes. The software supports standard 8SVX format sounds. Actually to get a sound played, you would have to enter a specific command in the script.

The panel gives access, too, to a Brush Animation player; this will permit the display and movement of the type of animated brush created by DeluxePaint III. The animation playback can cue a script to be run in a variety of ways - on each frame, at a specified frame or when the moving brush reaches its destination. In this way it is possible to synchronise multiple brushes on screen, one being triggered by another



text windows open on one screen.

These windows can be in any colour available from the selected palette, and using any suitable font (which on our test version excluded proportional fonts). ASCII text can be loaded in from disk for display only, or for actual editing, and re-saved once completed if you wish.

Selecting the Disk icon on the control panel simply allows a script to be run if a disk is removed or inserted into a drive. In this way, if multiple disks are needed by your application, the appropriate action can be taken if a disk is removed.

Timed events can be defined on a Card, primed to activate after a set period, or at a specific time. Once the

at some point (target exploding when a bullet hits it perhaps ?).

Finally on the panel are icons which permit the use of Routines - stored scripts which can be written once, saved, and re-used; a button giving access to any additional objects added by the programmers at a later date, and one giving access to the inter-port communications standard ARexx, through which it is possible to pass and receive data to another applications geared to use this technique (more and more programs are beginning to use this facility, incidentally). By making a series of ARexx objects, one for each command word in your application, you could easily create a complete ARexx server.

But alongside this immediate and

continued on page 37

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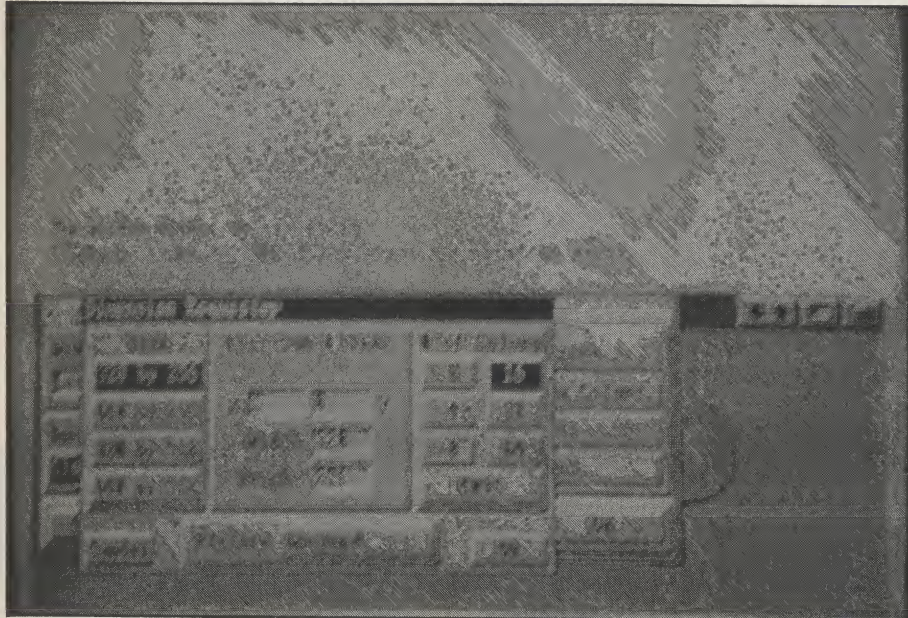
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fulfilling icon-driven Deck creation from the control panel lies something even more wonderful - but something which will require much more of your time and commitment. CanDo features a script language which has over 200 commands, and with it comes the ability to perform the kind of magic which will blow your toes off, let alone your socks!

At beginner level, the point-and-click panel's commands are awesome in their own right, but the true powerhouse of the program lies in the flexibility of the script.

And the 'gee-whiz' script commands which are the most spectacular, if not necessarily the most complex, are really only the tip of a giant iceberg: commands with neat touches, for instance loading a brush as a pointer for your program (giving scope to change it, depending on an action taken by the user; however, these brushes can be only 16 pixels wide), scrolling the screen in increments by means of a loop counter, playing animbrushes as you move them around the window, creating icons, and cutting and pasting areas of the screen in real time while your program is running.

The script function reminded me a little of an old favourite - The Director, but CanDo's application is of a much higher magnitude.

Script commands can be built up in some cases from the program's icon menus - for instance, if you want a picture to be loaded into a Card, then by clicking on the landscape icon alongside the special script editor, a file requestor appears for you to click the name of the image. The script command ShowPicture, together with the path and filename of your selection, then appears in the script editing window. This behaves in the same way as a text editor, with each command occupying a single line, each line being

editable.

One interesting function available from the editor is a drawing program - but one unlike any you may have experienced. Using a series of icon-controlled drawing routines, you can paint shapes on screen (circles, lines, polygons) which are entered as script commands. This means that your exact actions can be replayed in a program as a series of script commands.

And as well as including the colours and shapes you have created, there is also a feature for moving a cut-out brush around screen too; any action done in the drawing area will be automatically added as a line to your script. However, this is not a bitmapped painting program as such, more a sketching screen for drawing diagrams perhaps, or simple block animation to conserve memory (you can draw a rectangle and move it around the screen in a couple of lines of script).

Generally, you will need to digest the excellent manual and plan your project in advance. Tinkering about with the framework of icon-driven commands produces some amazing scripts to begin with, but more precise applications will clearly need to be based on an understanding of just how powerful the program is. Thankfully there is a complete Help facility on disk, which prints out information on your chosen subject.

A couple of niggles - minor ones at that - to end on; you have to beware of loops on some Cards, because they tend to prevent you from re-editing in some circumstances. This happens rarely, but it did happen during the review. Also, one of my many projects did hang the computer (only once), but thanks to the addition of a rescue file on the disk, which can be run from the CLI, nothing was lost and the Deck recovered. In some cases, using multiple directory structures on my hard drive, I

found the program's filename requestor would not accept a filename because it was too long - an annoying shortcoming. You need also to be aware that simply specifying a drive as a pathname (ie DF2:) is not the same as actually giving the volume name. If you select a drive, the program looks there regardless of what the volume is called, which can be a little confusing.

But the program is on the whole extremely well-behaved and as idiot-proof as you could hope for. Having a somewhat pedantic structure - cards are layered and you have to go through each definition of a particular attribute to get to the item you wish to change - has the benefit, I suppose, of thoroughness.

Once complete, your Deck can be Bound with a utility program which will allow it to boot up and run on anyone's Amiga.

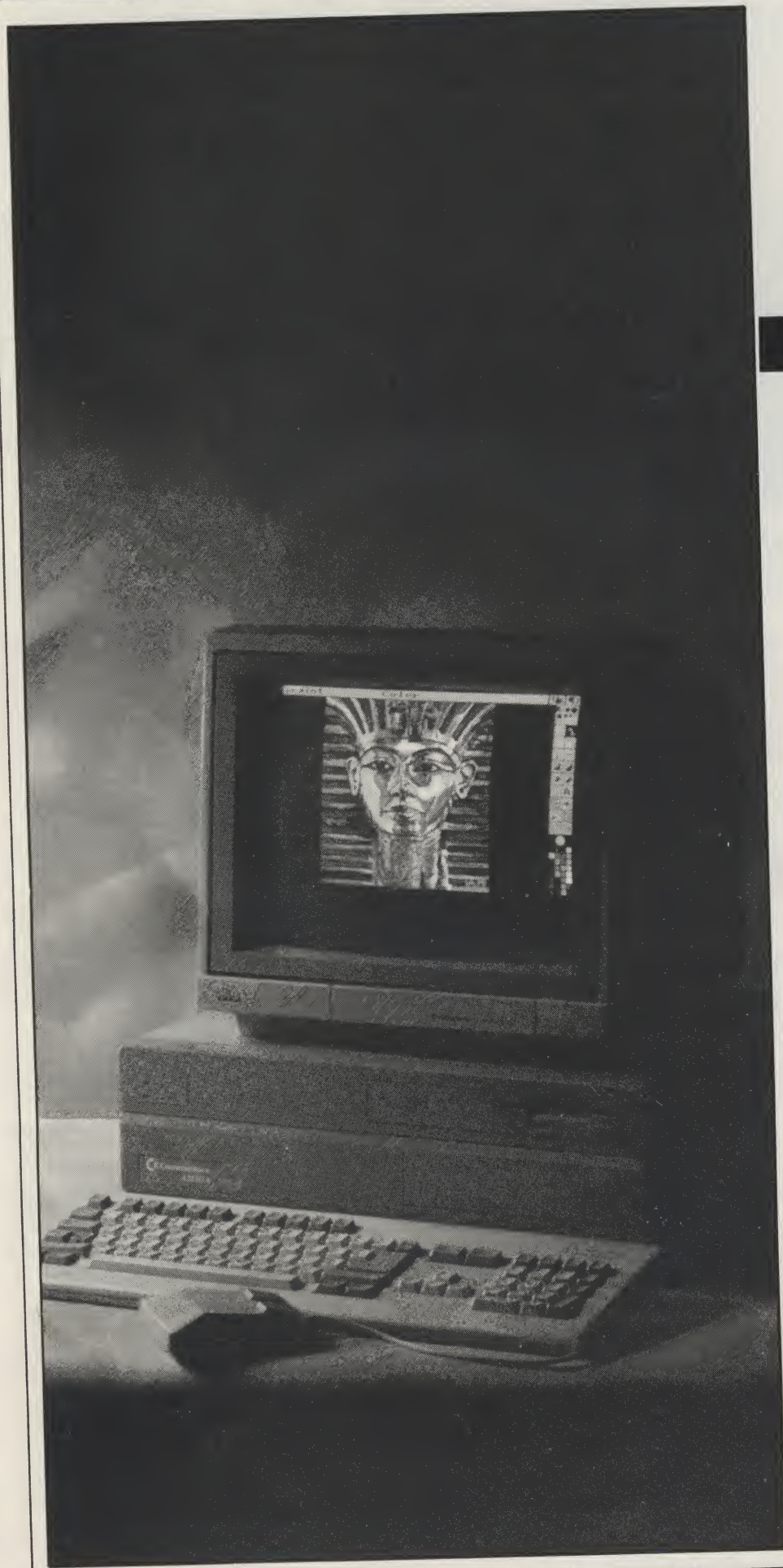
The bottom line of the program is that it will let you structure a program to suit your needs. Obviously if you intend to play animation, show screens or display text documents, you need to have created them in the first place. What CanDo does is tie all your work together into a professional application.

CONCLUSION

This program is - to steal a line from Keats - a thing of beauty. And I can see it being a joy for ever to any Amiga user who actually wants to DO something for themselves with the world's finest home computer. In the three years I have owned an Amiga I have never felt so good at being able to achieve something - the first pull-down menu you design will just make you beam! I cannot think of a single program which comes anywhere near CanDo for sheer usefulness or completeness, and it will pave the way to many, many offbeat and useful programs entering the software domain as more people realise their ambition and start programming the easy way. Obviously fast arcade-type shoot'em ups are out (there are enough of those already); but specialist databases (perhaps even a small-business accounting package), various educational programs which allow people to point and learn, animation players and polished business presentations are all well with the realms of possibility. The program's outstanding text and numeric handling routines will also be the spur to many an application. At the price it offers a wealth of pseudo-programming skill beyond most people's dreams (mine included), and I would put my neck on the line and say CanDo will be THE program of 1990. CanDo? Must have!

P.L.

Price: £149.95. Contact: Digipro Ltd., 32 Castle Way, Southampton, Hants SO1 0AW. Tel:(0703) 234949.



A T O Z

Part II

Compiled by Richard Franklin with assistance from Mark Smiddy, Nigel Streeter and Anthony Mael.

EDITING COMMANDS - Commands that are input from the keyboard and control an editing session.

EDIT MENU - A menu used for text processing containing editing functions.

EHB - 'Extra Half-Bright' is a graphics mode on the Amiga which gives a maximum of 64 colours instead of the normal 32. This mode takes up one extra bit plane. The extra 32 colours are generated when the RGB components of selected pixels are halved before displaying. Some of the earlier A1000 machines cannot handle this mode.

ENABLE - To make something available for use.

EXTENDED MODE - Commands that appear on the AmigaDos command line and are not executed until the user has finished with the command line.

EXEC - The name given to the multi-tasking operating system Executive on the Amiga. Exec is a library of routines containing all of the general purpose routines such as the setting up of separate tasks, supplying memory to a process, and messaging between processes etc.

EXPANSION - The Amiga's expansion capabilities are enormous with everything from extra RAM (9Mb) to a 68030/68887 turbo board to speed up this already fast machine. Most expansions fit onto the side of the machine (internally on the A2000) where most of the internal bus architecture is extended via a port (A2000 slots) to the outside world.

FAST RAM - The Amiga has several custom chips to take the pressure off of the Central Processor. These chips can access memory directly without the need of the Central Processor supplying the information for them (DMA). Unfortunately, this DMA can cause the processor to wait for the custom chip if accessing the same RAM. FAST RAM is an cannot be accessed by the current custom chips and, if fitted, is used up first for the actual programs. The first 512k of expansion RAM added to the

Amiga becomes FAST RAM automatically. In future, this will all be CHIPRAM - FAST RAM will be any exceeding the 1Mb partition.

FLOPPY DISK - A floppy disk is a round piece of plastic with a magnetic coating which can be written with magnetic impulses and then read at a later date. Unlike RAM, this written information is not lost until it is overwritten. Floppy disks come in different sizes from 3" through 3 1/2" and 5 1/4" to 8". Most are largely obsolete. The Amiga (if suitably equipped) can read either of the two common 5 1/4" or 3 1/2".

FONT - (Or Fount) is another term for character set which is used on the Amiga. A font can contain several different sized sets of data that make up the characters.

FORTAN - FORmula TRANslator, a language, used in scientific and engineering applications. It is mainly used in universities but rarely used with home computers as BASIC is easier to use.

GADGET - A Gadget is an area of the display which when clicked on by the mouse will cause an operation to occur. Typical examples are window close, drag, sizing, and depth arrangement gadgets.

GARY - GARY stands for Gate Array and is another of the named chips on the Amiga. Gary's purpose is to talk to

peripherals and pass information to them or collect information from them.

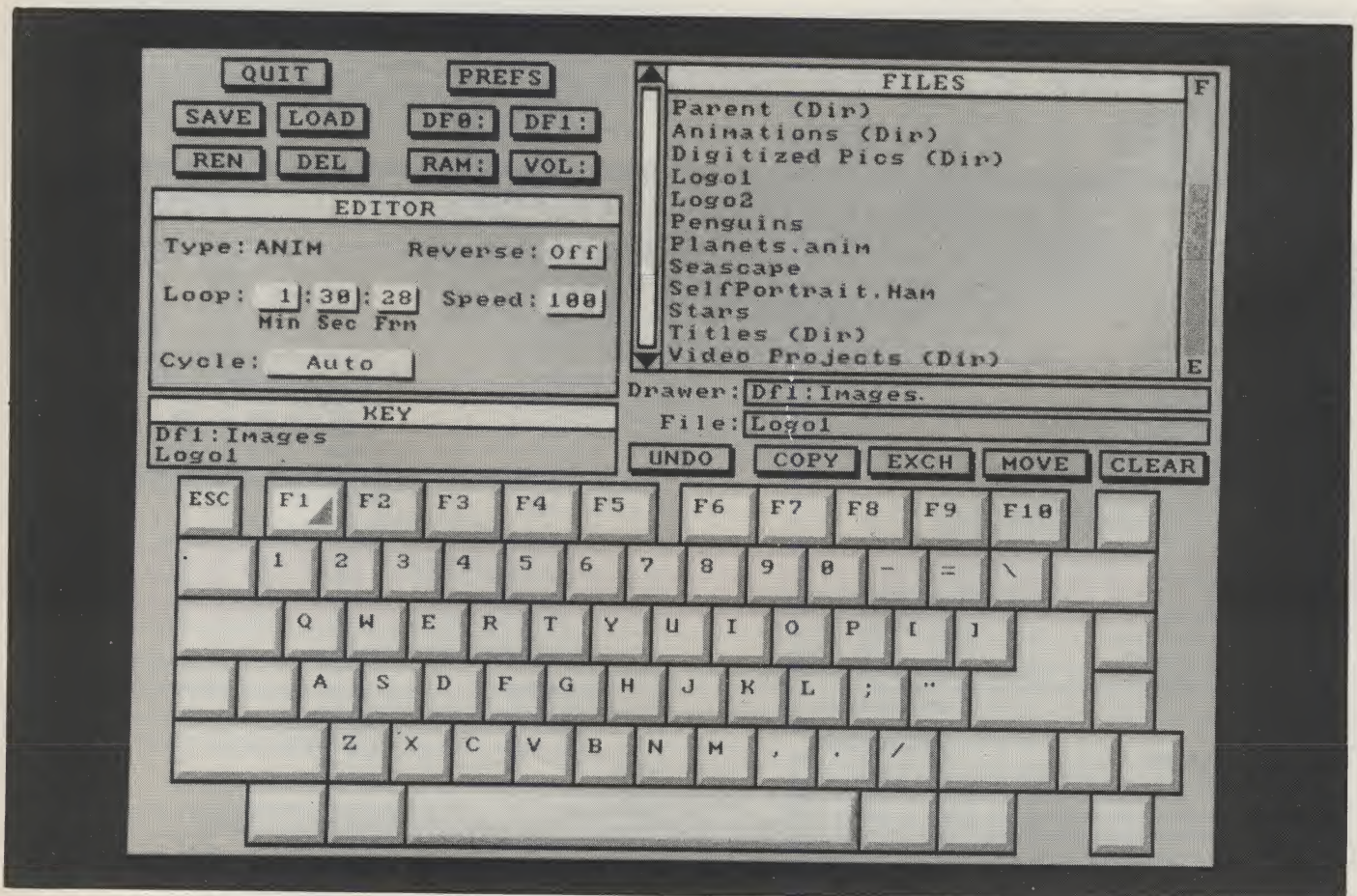
GENLOCK - A device that allows the Amiga to mix computer generated text and graphics with a video source - the resulting output is then fed to monitor or video recorder. Channel 4 use Amigas to generate captions on some of their programs for young people.

GHOST - An image which is made slightly indistinct by overlaying it with a pattern to indicate that it is not enabled or active.

GIMMEZEROZERO - This is a window type on the Amiga that excludes the border from the drawing area of the window. A gap of one pixel top and bottom, and two pixels left and right are left between the border and the drawing area. Windows created in Amiga Basic are automatically created as GZZ - which also accounts for their slow speed.

GRAPHICS - All of the calls for graphics operations on the Amiga are held in routines in the Graphics Library. These routines take parameters from the program and do the required operation. In some cases this means passing more information to the BLITTER.

HAM - 'Hold And Modify' is a graphics mode on the Amiga which allows all 4096 colours to be displayed on screen at one go. In the normal display modes,



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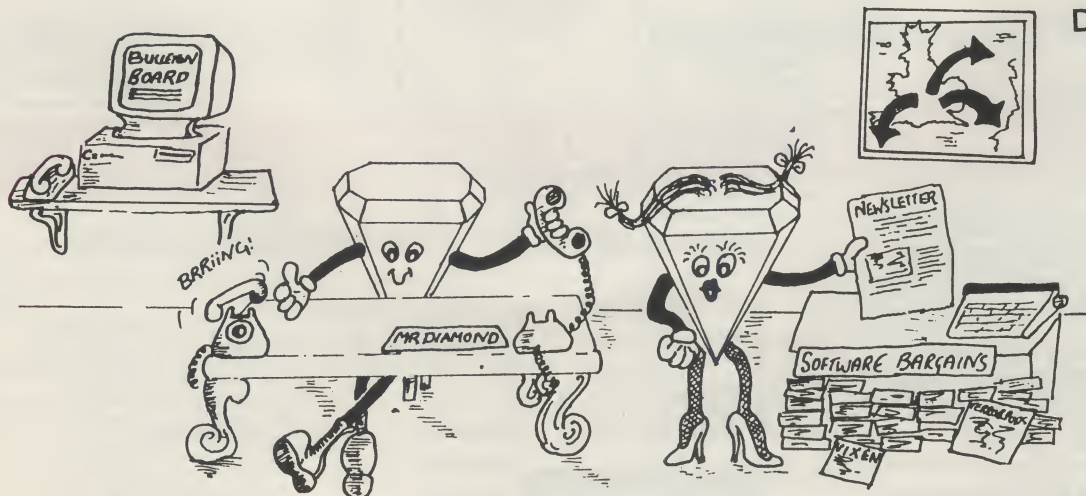
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AMIGA IN THE OUTBACK

A solar powered, self-starting Amiga is entertaining visitors to a marine park in the rigours of Australia's Northwest outback. Anthony Temple explains how it works.

About twelve hundred miles northwest of Perth in Western Australia, is a National Park where the sun shines virtually every day of the year and temperatures reach over 50 degrees centigrade in the surrounding canyons. The park's Visitor Centre has recently installed an Amiga-controlled, interactive videodisk system, powered by the sun! The interactive system was developed for the solar powered Milyer-



ing Visitor Centre, located in the Cape Range National Park and flanked by the Ningaloo Marine Park on the Northwest Cape.

The future of the Amiga in the fast-growing interactive videodisk (IV) market seems assured, but currently the IV market is dominated by IBM and its clones, despite the fact it takes considerably more special hardware and money to make them perform half as well as Amigas.

The arrival of the Ariadne Interactive AAAE.Microtext authoring system, just at the time the Ningaloo project was taking shape, prompted a close look at the Amiga as a viable professional option for public access videodisk. The Amiga offered better price performance than the IBM or clones, plus the graphics packages were easier to use. The Rendale 8806 Genlock, that delivers RGB.PAL and PAL composite video at the same time made it easy to run projection televisions and drone monitors

off the same system. This was an important requirement for the installation.

AAAE.Microtext is a special version of the Microtext Authoring Language whose core was first developed by the National Physical Laboratory in England. This version is an Amiga compatible interpreted language that can be extended to meet new requirements and the AAAE system supports many of the Amiga's features. Part of the system is a program called AAAE Video Player Device (AVPD) that supports videodisk players and some VCRs with a common interface, similar to the way preferences supports printers. In this application, an Amiga 2000 was combined with a 44mb hard drive, Rendale genlock, a Pioneer Compact disc player, a touchscreen and the ASAP/Ariadne Amiox multi-serial card, to complete the basic system.

The Ningaloo Videodisk is named after the Marine Park that borders the National Park. This park has a fabulous

FIELD REPORTS

continued from page 48

coral reef just a few metres offshore and is rapidly becoming a popular tourist destination during the winter months (April to October). The videodisk contains nineteen video segments and about five hundred slides of plants, fish molluscs and corals. The program has over forty segments. The system has made use of Amiga graphics and sound in some sequences, to deliver volatile information that can be easily changed. The system can currently be used with a touchscreen input by the public and a special hidden menu allows staff to transfer control to the theatre in the centre building, where they can present information from the disk on the projection TV, using trackball or mouse control.

Major worries for the system were dust, power and heat. Currently the system operates in a sealed kiosk with filtered air and two extractor fans running on solar power. The solar power is also filtered as the output from the solar system inverters is a 240v, 50Hz square wave. An isolation transformer cleans up the waveform very well and makes a big difference to the stability of the genlocked image. Heat has not been a problem as the building is of a passive solar design and stays cool even in the height of summer. Power usage of the system is about 440 watts. This amount was of some concern as the Centre is open seven days a week from 10-4. To cut down on power requirements, a simple sound activated switch, connected to the right hand audio channel of the Amiga, has been added and is activated by the Amiga's "SAY" command in the program. A viewer coming near the system is spotted by a security infra-red device which, in turn, emulates a mouse button press and starts the program. The Amiga then says the letter "A" and closes a solenoid, switching on the monitor with a remote I/R hand control. When the system is no longer surrounded by viewers, the program goes to sleep and switches off the monitor again, thus saving valuable energy.

The videodisk in the system is a PAL glass disk, cut on the special Optical Disk Corporation's glass disk machine in England. Most of the video material on the disk was custom shot for the application. No graphic menus were put on the disk, relying instead on the Amiga for all the menus needed. A 16 colour palette in 640x256 resolution was chosen for menus, graphic information pages and maps. This also meant that a digitised, 16 colour picture could be used as a menu, if required. Although this was something of a compromise, using dithering techniques, nearly 200 colours are produced from the palette.

Public access systems benefit from a consistent user interface, as people must understand how to use the system



very quickly. The Ningaloo project was developed using a simple visual and oral syntax for the program, with just six rules. Text pages in blue give marine information about the Ningaloo Marine Park, whilst green text pages refer to the Cape Range National Park. Targets that are yellow on digitised colour pictures lead to video segments with full motion colour and sound. There are three special feedback sounds when the screen is touched. One indicates a successful menu choice, the second that there is a failure to touch a specific target and the third indicates that the program is returning to the main menu. Verbal sound prompts were also added using digitised voice files and the system makes use of sound statements, using the SAY command, when starting the program to indicate to staff that all is well with

loading.

The text pages use digitised backgrounds depicting marine or land scenes, created with Digiview, then reduced to two or three colours using Butcher II, to give greater text clarity.

The hard disk on the system is partitioned into three sections and uses a floppy disk strapup. DH0: has the operating system on it, DH1: has the application programs for editing the graphics and sound and DH2: has the authoring system plus all scripts, graphics and sound necessary for the program. A RAD is created at startup that holds 1.5mb of graphics and sound. Audits of the system usages are recorded on DH1: so that the startup partition, authoring system and program do not get corrupted if there is a power-down during an audit summary write sequence.

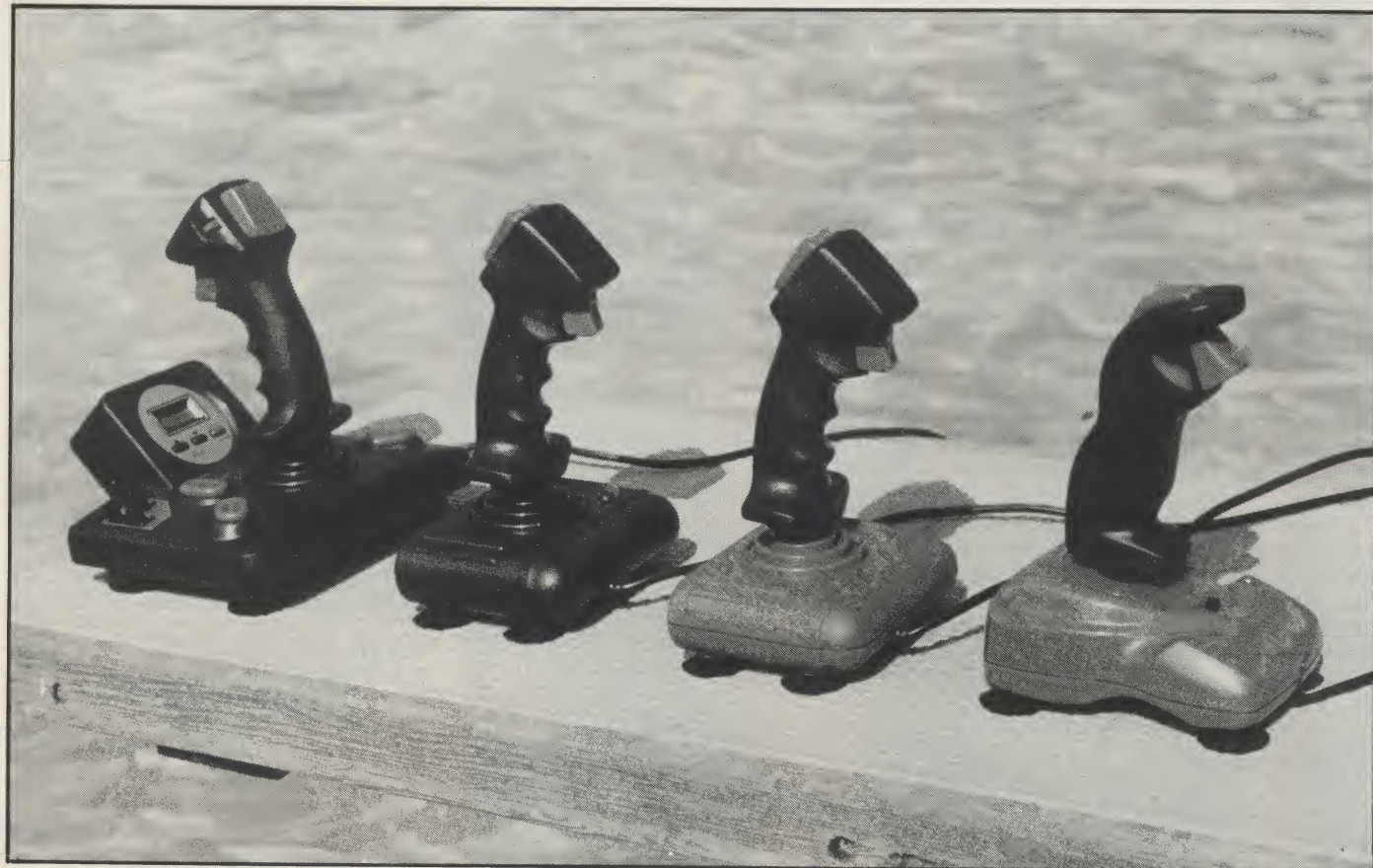
The goal of the system is to be potentially self-supporting, as the Northwest of Western Australia is over 1,200 km from Perth. Future on-site enhancements may include a sound digitiser, a Canon Zapshot still video camera with underwater housing plus a PAL RGB splitter and Digiview. This would allow pictures shot on the reef, or park, in the morning, to be presented to a bus load of tourists in the afternoon. The addition of a window keypad is also being considered and would allow use of the system after hours, provided there were enough solar energy stored in the batteries that feed the power supply.

The Amiga is often underrated as a computer platform. For interactive communications it is a very cost-effective and powerful tool that merits more universal acceptance. For further information on the project, Contact: Anthony Temple, Temple Interactive Media, PO Box 762, Perth, Western Australia, 6005.

A.T.



continued from page 39



each pixel is represented by bits set in one or more of the bitplanes. These bits correspond to a colour register number which holds the setup for that colour (32 colours max.). In HAM, the previous colour is held and the bit plane information just changes one of the three components of the colour (Red, Green, or Blue).

HARD DISK - A hard disk is very similar to a floppy disk in its use, but it is fixed in place and gives a much larger storage capacity. This larger capacity is obtained because instead of one disk, there are several all cased together and the disks are rotated at a higher speed. Hard disks are much faster at allowing data to be written or read due in part to the faster rotation speeds and partly due to the disk constantly rotating (instead of just when it is read or written to).

HEADER FILE - A file used at the beginning of a C language compilation sequence which includes the definitions and constants etc..

HIGH RESOLUTION - A display mode which has 640 pixels per horizontal line when the line is a full screen width.

HIT SELECT - A technique of gadget selection where the gadget becomes de-selected on release of the mouse button.

HUE - The characteristic of a colour determined by the position of the colour in the visible spectrum.

ICON - An ICON is a graphical image put on the screen to represent an action. For example, rather than clicking on some

text that reads: 'Disk Directory', you are shown an icon in the form of a Disk to click on.

ICPUG - The 'Independant Commodore Products User Group' is a user group set up to cater to all users of Commodore computers. For a small annual fee, you receive six bi-monthly newsletters full of reviews, hints, and help from some of the most knowledgeable people in the world of Commodore computers. ICPUG also have available several large libraries of public domain software and provide special offers on certain software purchases.

IDCMP - 'Intuition Direct Communications Message Port' is the main way for the system to communicate with a program. All keyboard and mouse information is passed through the IDCMP to the program. This system allows the program to 'sleep' - allowing other programs to run - while it waits for a particular event, such as a gadget being selected. IDCMP is the only mind-boggling abbreviation in the whole Amiga system.

IEEE488 - This is a standard interfacing protocol - devised by the Institute of Electrical and Electronic Engineers - to connect peripherals to a computer. Commodore adopted this protocol on the PET computers for accessing such peripherals as disk drives and printers. It is faster than the C64's method as data is transferred in parallel between the peripheral and the computer. IEEE interfaces are available for the C64 which allow it to access PET peripherals

such as the SFD-1001 and Hard disk drives.

INTERFACE - An interface is a connection on the outside of a computer that allows it to communicate with other devices. Some computers come with standard interface connections such as Disk drive, Serial, and Centronics. Other interfaces can be purchased or come with a specific peripheral such as a Hard disk will come complete with SCSI interface or it's specific interface. Interface actually means a piece of hardware that allows the computer to communicate with some other device.

INTERLACE - Interlace is a display mode on the Amiga which allows the display of twice as much information vertically on the screen. Normally, every 50th of a second, data for the whole screen is sent to the monitor to make up the picture. In interlace mode, only half the information is sent every 50th second. On one pass, all the odd numbered lines are sent and on the next pass, all the even numbered lines are sent with a slight offset. Unless you use a high persistence monitor which holds the first dots on the screen longer, you will see a flicker because the first pass display will have faded before the second pass has been displayed.

INTERRUPT - Certain events within a computer can cause an interrupt which causes the main program that is running to be temporarily suspended whilst some other routine handles the cause. The interrupt may be caused by many

continued on page 48

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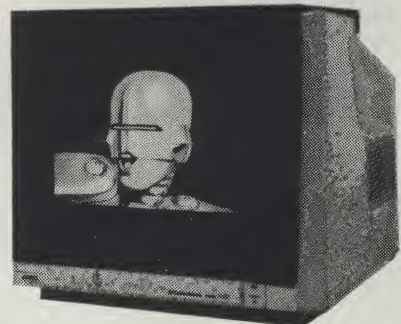
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continued from page 46

different things such as a key being pressed on the keyboard. In this case, the keyboard causes an interrupt which causes the computer to get the keypress information and store it in the keyboard buffer before passing control back to the main program.

INTUITION - Intuition is the name of the graphic interface employed on the Amiga. It is a library of routines that handle all of the standard WIMP (Windows Icon Mouse and Pointers) to present an easy front end for the user to understand, and to pass precise information back to the program from the user's actions.

IO - IO stands for Input/Output and is used to refer to the way that some devices can pass information in both directions.

JOYSTICK - A joystick is a device that allows the user a simple form of control of the computer. It basically gives the user the ability to give up, down, left, right, and 'click' instructions. This is usually used when playing games where the 'click' is used as 'FIRE'.

KEYMAP - A Keymap is a translation table that allows the computer to decide what character a certain keypress represents. In the Amiga, the keyboard reading system allows for the use of keymaps to translate the presses into the required characters for different countries.

KICKSTART - This is the ROM part of the Amiga's operating system. It consists of the most common used libraries such as DOS, and EXEC. Owners of A500 and A2000 machines have this code on a 256K ROM inside their machines. A1000 machines load Kickstart from disk into 256K of read only RAM immediately after switching on. So far there have been four versions of kickstart, 1.0, 1.1, 1.2, and 1.3. Version 1.4 is in production.

LIBRARY - A collection of pre-defined routines or functions that can be called and used by any program.

LIGHT PEN - A light pen is a device that is used to select a point on the screen. The light pen is held near or against the actual screen and a pulse is sent to the computer when the electron beam is pointing to where the pen is.

LINKED LIST - A collection of like objects linked by having a pointer variable in one containing the address of the next object, the final object in the chain will carry a null pointer.

LISP - 'LISt Processing' is a symbolic programming language used for expert systems and artificial intelligence research.

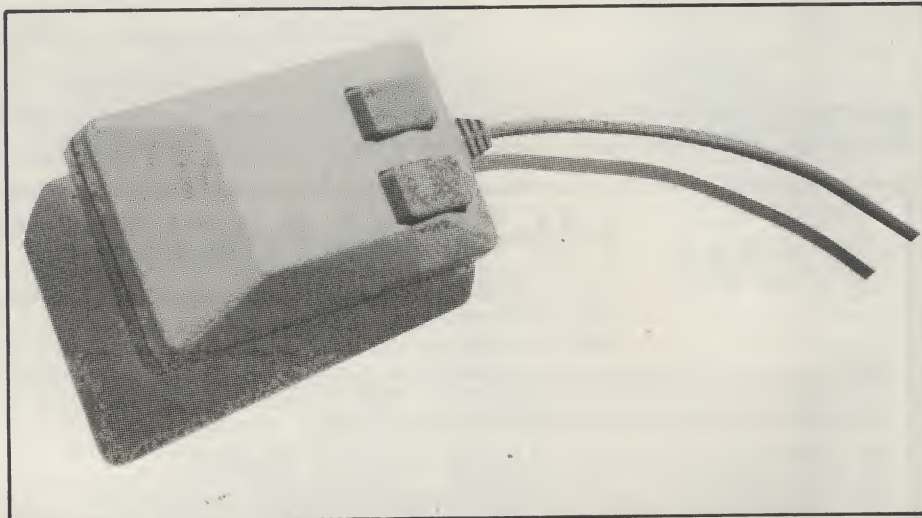
LOGO - A simple language devised to teach children a basic appreciation of computer programming. A Logo program consists of a set of functions each defined in terms of previous ones. The advantage of Logo is the ease in which complex geometrical patterns can be produced using the Turtle.

LONG WORD - A Long Word is two consecutive Words and is used primarily for storing addresses to other parts of memory. Although a long word contains 32 bits, the 68000 used in basic Amigas only uses the first 24 bits however.

LOW RESOLUTION - A display mode which has 320 pixels per horizontal line when the line is a full screen width.

MENU - A menu is a list of options which the user can choose from. As computers have become more powerful, and programmers have learned more about the art, menus have changed from lists where the user enters the first letter, through lists where the user moves a highlight bar up and down (or left and right), to the very common 'Drop Down' type in use today.

MESSAGE PORT - A message port is the device that allows tasks on the Amiga to pass information between each other. A Message is created in a block of memory and then that message is sent to the message port of the receiving task. As long as the receiving task understands the form of the message, it can act on it.



MIDI - or Musical Instrument Digital Interface, is the standard interface for computers to interact with electronic musical instruments such as keyboards. The MIDI interface allows music to be played on the instrument and recorded on the computer, or make the instrument play the music under the control of the computer.

MODEM - 'MOdulator DEModulator' is a device which sits between the computer and a standard telephone line and converts signals from the computer to be transmitted to another modem at the other end of the telephone line. Linked with a suitable Communications package, you can keep in touch with other people, get up to date news, or 'Download' programs directly into your computer.

MODULA 2 - Modula 2 is a modular programming language which is becoming more popular nowadays. It was developed by Nicholas Wirth as a more

advanced version of his PASCAL language.

MODULATOR - A Modulator is used to convert the normal monitor compatible output of a computer into a signal that can be understood by a television set. The quality is not as good as that obtained by using a monitor but works out much cheaper. Many computers have a modulator built in - the Amiga and PC machines do not.

MONITOR - A monitor will provide a much sharper picture than that obtained through a TV. This is partly due to the fact that some definition is lost when the signal is passed through the modulator and partly because the tube in a monitor has more dots per inch. This figure is often called the dot-pitch - lower numbers are better.

MOUSE - A mouse is a device which is moved by sliding it on a flat surface. This movement corresponds to an arrow (or other pointer) on the screen. It consists of a ball (which rolls on the desk top) and two disks at right angles to each other. As the ball rolls, it turns either or both of the disks and the

rotation is picked up by a light detector through slits in the disk. The faster the disks rotate, the more times the light sensor detects movement.

MULTITASKING - 'Multi-Tasking' is the ability to execute more than one program at a time. This is done by giving each program a small 'slice' of time and switching between the running programs (or 'Tasks') at regular intervals. The routine that does the switching runs as an interrupt that is triggered by a timer.

NAFF - The CCI/AUI rating for a game that is no good and should be avoided.

NTSC - NTSC (never the same colour?) is the television standard in the USA. The television tubes in the USA have less lines vertically and thus allow for a lower resolution. Programs written for NTSC can only give a vertical resolution of 200 lines where those for PAL/SECAM (the British and European standards) can have up to 256 lines.

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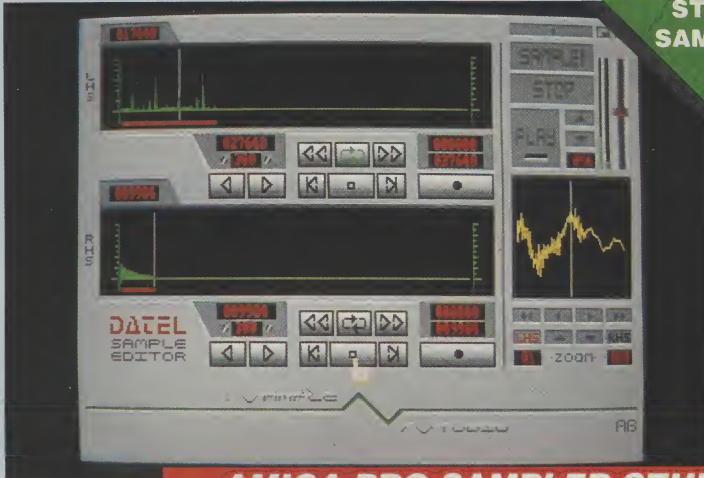
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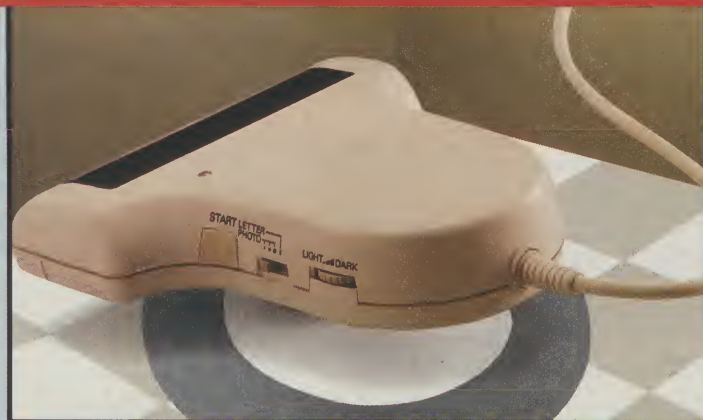
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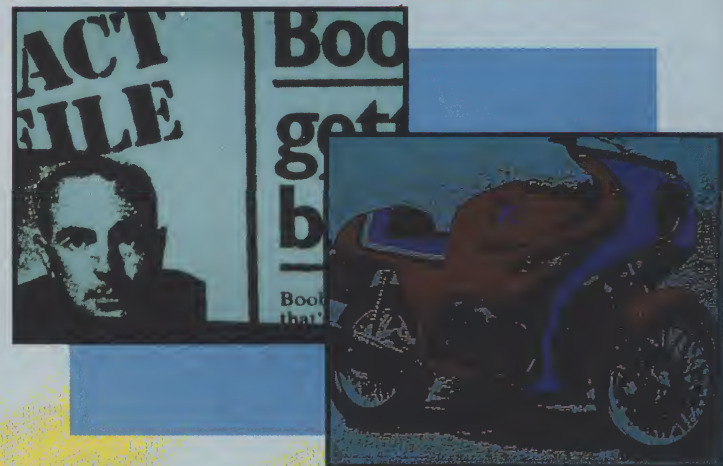
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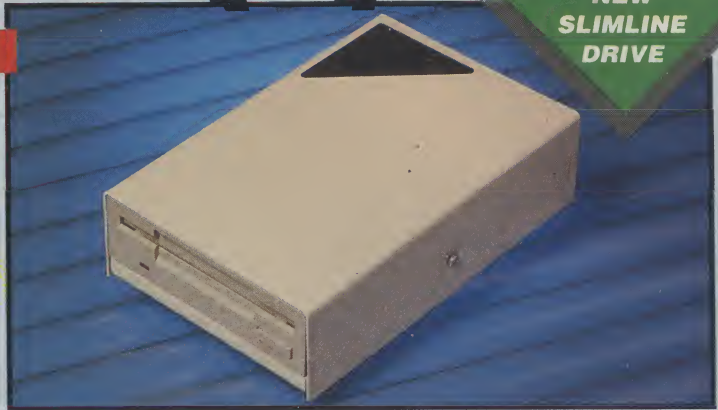
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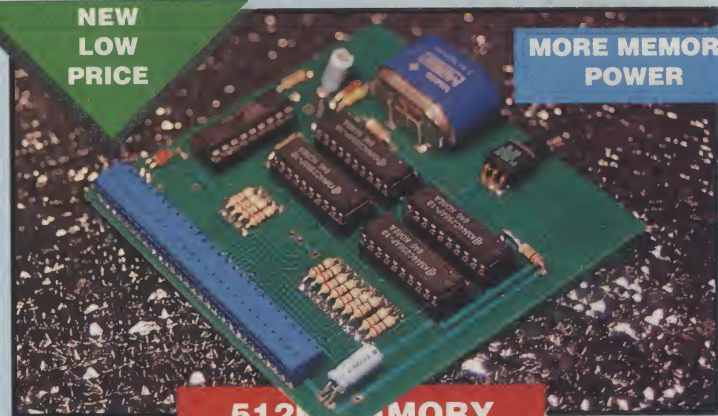
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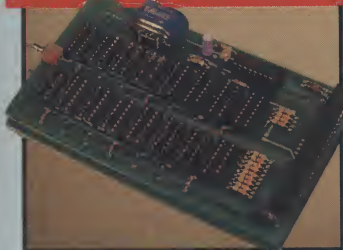
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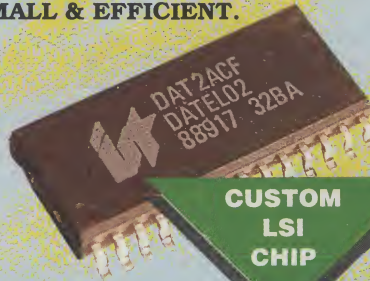
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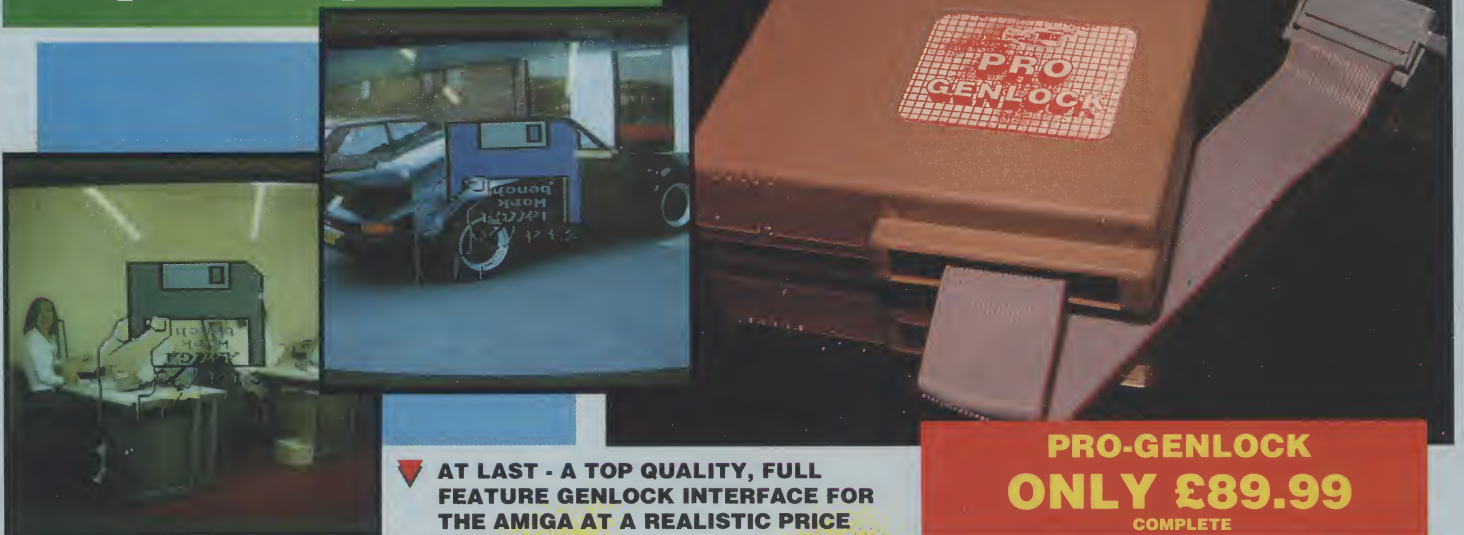
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QUAD

This month's program is a simple piece of code which sets up a copper list for a 320*200*4 plane (16 colour) display and allows you to scroll the screen through memory, viewing any graphics data which may be present in this format. This may be useful after a system reset, for instance, when you would like to find game screens that have not been cleared.

Initially, the program opens the Graphics Library and stores the base pointer. The current copper list that the system is using can be found (in all Kickstart versions) at a positive offset of 50 bytes from the -Gfxbase pointer. This too is stored so that we can restore the display later. After the new copper list address is inserted the program sits in a loop which calls the subroutine Key-Test and tests for an exit flag (-1) in D0 on return.

In order to update the screen at a reasonable speed, it is necessary to wait for a period of time equal to one

screen refresh. This is achieved by the four lines at label Mainloop.

Register \$DFF006 is the raster Y,X counter, the low byte of this word length register holds the current X position of the video beam and the high byte holds the current Y position. This is shifted low with the LSR.W #8 instruction and then compared with the value we wish to wait for (in this case, zero).

This obviously ties up the processor and is NOT the technique which would normally be used but it does suffice for this article.

The Key-Test subroutine also directly accesses a hardware register, the byte register at \$BFEC01 which contains the value of the current keypress. Directly accessing these registers is not advisable when writing a 'legal' piece of code for the Amiga since you will almost certainly bump into contention problems with other tasks.

The current keypress value is then 'cooked' into the values which you will

find in the Hardware Reference Manual and then a match is attempted with the table of values at label Keypress-Table.

At the same time as this table is scanned, the Jump-Table is being scanned and so, in the event of a match, the relevant subroutine may be called with a JMP (A2) instruction. The update routine ends with D0 = 0 which signals the main loop not to terminate. The escape key causes the call to Exit-Prog which returns -1 in D0, signalling the termination of the program back to the CLI, from which it must be called.

Those of you interested enough to experiment with the code will find it a simple enough matter to add further subroutines to adjust the modulus, data fetch start and stop, or even the palette; and saving the current display to disk is just a matter of reading the current plane pointers and calling the relevant DOS subroutines.

The program was written using Devpac's Genam2 assembler package.

```

;-----
;
; A short piece of code to allow scrolling through
; memory as follows :-
;
; ESC = quit      Uparrow = scroll up
; DownArrow = scroll down
; LeftArrow = scroll left
; RightArrow = scroll right
; LeftAlt = skip 10 lines up
; RightAlt = skip 10 lines down
;-----

opt c-,d+

incdir dh0:include/ change _dh0:_ to your own include dir
include exec/exec_lib.i
include exec/memory.i

;-----

SCREEN_WIDTH equ 40 byte width of default display
X_SCROLL equ 2 add one word when scrolling L<->R

;-----

Main
Callexec Forbid stop multi-tasking
lea GfxLib,a1 Library to open
moveq #$00,d0 any version
Callexec OpenLibrary perform open
move.l d0,_GfxBase store pointer
beq NoLib_exit null pointer = no library
move.l d0,a0
move.l 50(a0),OldCopper store current copper ptr
move.l #NewCopper,50(a0) insert new copper
mainloop
move.w $dff006,d0 read raster X,Y
lsr.w #8,d0 shift Y to low
tst.b d0 test for 0 Y
bne mainloop non zero = wait
bsr Key_test check key presses
tst.w d0 test exit status
beq mainloop loop until _ESC_ pressed
move.l _Gfxbase,a0 retrieve library base

```

continued on page 54

continued from page 53

```

move.l  Old_Copper,50(a0)  restore old copper
move.l  a0,a1             close graphics lib
Callexec  CloseLibrary
Callexec  Permit         allow multi-tasking
moveq   #$00,d0         clean exit to CLI
Nolib_exit
rts

```

```

;-----
Key_test
lea  Keypress_Table,a0
lea  Jump_Table,a1      Table of subroutines
moveq #NUMKEYS-1,d0    -1 for dbra instruction
move.b #bfec01,d1      read keypress register
not.b  d1               cook to match keytab
ror.b  #1,d1           from Hardware Reference Manual
KT_loop
move.l (a1)+,a2
cmp.b  (a0,d0),d1      match ?
beq   KT_found
dbra  d0,KT_loop
moveq #$00,d0         no key - clear exit flag
rts
KT_found
jmp   (a2)

```

```

;-----
; The subroutine entry points are below, each one
; passes the increment (or decrement where negative)
; in D0 which is then added to the current plane addresses
;-----

```

```

Jump_Screen_D
move.l #-SCREEN_WIDTH*10,d0
bra  Adjust_Planes
Jump_Screen_U
move.l #SCREEN_WIDTH*10,d0
bra  Adjust_Planes
Scroll_Left
move.l #X_SCROLL,d0
bra  Adjust_Planes
Scroll_Right
move.l #-X_SCROLL,d0
bra  Adjust_Planes
Scroll_Up
move.l #-SCREEN_WIDTH,d0
bra  Adjust_Planes
Scroll_Down
move.l #SCREEN_WIDTH,d0

```

```

Adjust_Planes
lea  BPL1_High,a1      ptr to copper instruction
moveq #$03,d2         for four planes
AP_loop
move.w 2(a1),d1       skip instruction - get high addr
swap  d1             move to high word
move.w 6(a1),d1       get low addr
add.l  d0,d1         add increment
andi.l #$7FFFE,d1    ensure chip mem only
move.w d1,6(a1)      store low addr
swap  d1             move high
move.w d1,2(a1)      store high addr
lea  8(a1),a1        skip to next instruction
dbra  d2,AP_loop     for all four planes
moveq #$00,d0         clean exit
rts

```

```

;-----
Exit_Prog
moveq #-1,d0         set exit flag for _ESC_ key
rts
;-----

```

```

SECTION      ChipStuff,DATA_C

New_Copper
dc.w  $0100,$4200,$0102,$0000,$0104,$0024
dc.w  $0108,$0000,$010A,$0000
dc.w  $0092,$0038,$0094,$00D0
dc.w  $008E,$2C81,$0090,$F4C0

BPL1_High
dc.w  $00E0,$0006,$00E2,$0000
dc.w  $00E4,$0006,$00E6,$1F40
dc.w  $00E8,$0006,$00EA,$3E80
dc.w  $00EC,$0006,$00EE,$5DC0

```

continued on page 56

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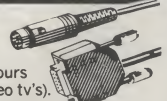


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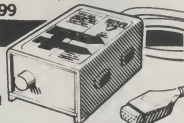
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continued from page 54

```

Palette
dc.w $0180,$0000,$0182,$0ECA
dc.w $0184,$0600,$0186,$0A33
dc.w $0188,$0EAA,$018A,$0004
dc.w $018C,$004B,$018E,$0FEF
dc.w $0190,$0160,$0192,$0150
dc.w $0194,$0140,$0196,$0116
dc.w $0198,$0114,$019A,$0112
dc.w $019C,$0300,$019E,$0200

dc.w $FFFF,$FFFE

;-----
Gfxlib dc.b "graphics.library",0
even
_GfxBase dc.l 0
Old_Copper dc.l 0
Keypress_table dc.b $45,$4C,$4D,$4F,$4E,$64,$65
NUMKEYS equ *-Keypress_table
even
Jump_Table
dc.l Jump_Screen_D
dc.l Jump_Screen_U
dc.l Scroll_Right
dc.l Scroll_Left
dc.l Scroll_Up
dc.l Scroll_Down
dc.l Exit_Prog

```

This is the program following on from last month's article

```

opt c-,d+

incdir dh0:include/      replace _dh0:_ with your include dir
include intuition/intuition.i
include intuition/intuition_lib.i
include graphics/graphics_lib.i
include exec/exec_lib.i

;-----
NULL equ 0

;-----

lea IntLib,a1      ptr to library name string
moveq #$00,d0
Callexec OpenLibrary attempt open
move.l d0,_Intuitionbase
beq err_exit      not successful

lea Gfxlib,a1      ok - now open graphics library
moveq #$00,d0
Callexec OpenLibrary
move.l d0,_Gfxbase
beq err_CloseInt  not successful - clean up

lea QuadScreen,a0 ptr to our NewScreen
Callint OpenScreen
move.l d0,Screen_ptr
beq err_CloseGfx  not successful - clean up

move.l d0,a0      all is well - get Screen ptr
lea sc_BitMap(a0),a1 offset to BitMap structure
lea bm_Planes(a1),a1 offset to bitplane addresses
movem.l (a1),d0-d3 get four plane addresses
movem.l d0-d3,Plane1_ptr store four plane addresses

lea sc_ViewPort(a0),a0 offset to ViewPort
lea Palette,a1      ptr to colours
moveq #Numcols,d0   number of colours
CallGraf LoadRGB4   attach palette to screen

```

continued on page 61

AMIGA ART COMPUTER ART CONTEST



The first computer art contest in Switzerland, featuring artwork created on the Amiga, has been organized by the Gallery Shirley in Geneva, Switzerland. Works were submitted on paper or on diskettes, and included drawing or painting in two and three dimensions, and

animations. The participants came from various backgrounds: artists, graphics artists, art students, computer enthusiasts and high school students.

The winners for 2d drawing:

Fiorenza Bassetti: an artist from Lugano, who made enlargements of her portraits and

self portraits (16 printouts mounted on fiberboard). Some of these are closeups of a woman's eyes coloured and textured to give spectacular results.

Pierre Mermin: an administrator in a large advertising agency, started his career as a graphic artist. He digitized his own pen drawings and colored and textured them with the Amiga. The results are soft, resembling water colours.

Marie-Chistine Haugen: a specialist in patchwork quilts, used her Amiga for developing designs which gradually became more abstract and refined.



The winners for animation were:

Cyril Van der Haegen (19) first prize, whose drawings showed a strong sense of humour and technical skills. His "Book of the Gods" showed a book opening and closing with text and an eye which winked at the spectator.

Thierry Coutaz (18), second

prize, created an old boot with the laces closing and opening as if by magic.

Jean-Francois Schmid, another young contestant, displayed drawings of logos and other objects turning.

The whole exhibition provided an interesting overview of the artistic expression which this new

medium, the computer, can offer. This is especially true for a computer with excellent graphics, such as the Amiga. The various paint and sculpt programs give almost endless possibilities to anyone with talent and imagination. The jury was made up of three specialists: Ms Sharon Aki, computer programs director at the Art Centre College





of Design in La Tour-de-Peitz (a branch of the California Art College of Design), Mr Luc Joly, artist and teacher at the Geneva Ecole Superieure d'Art Visuel, and Mr Jean Meli, specialist in animation at the Swiss Romande Television.

Prizes were given in all three categories and the winners announced during the opening of

the exhibition. The works on diskettes are shown on videotape and the works on paper framed and hung. The exhibition will last until the end of March 1990.

Music by New Yorker Steve Berkowitz, composed with the aid of the Amiga, was played during the opening.

The Gallery Shirley where the

judging took place shares space with a computer store called Edusoft, which specializes in the Amiga and its many graphic possibilities. It first organized a computer art show last April with artists from Switzerland and the USA. The Gallery now specializes in this new form of art.

A.M.



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continued from page 56

```

bsr Draw_Rectangles      draw directly into planes

Callexec  Forbid      stop multi-tasking
Callexec  Disable     stop interrupts
LB_wait
btst     #6,$bfe001     wait for left mouse button
bne     LB_wait
Callexec  Enable      allow interrupts
Callexec  Permit      allow multi-tasking

KillScreen
move.l   Screen_ptr,a0  clean up - first close screen
Callint  CloseScreen
err_CloseInt
move.l   _Intuitionbase,a1  now close Intuition Library
Callexec  CloseLibrary
err_CloseGfx
move.l   _Gfxbase,a1     then close Graphics Library
Callexec  CloseLibrary
err_exit
moveq    #$00,d0        tidy exit to CLI
rts

;-----

Draw_Rectangles
move.l   Plane2_ptr,a0
move.l   Plane4_ptr,a1
lea     810(a0),a0      arbitrary offset for plane2
lea     1216(a1),a1     arbitrary offset for plane3
moveq    #100,d7        line count
DR_outer_loop
moveq    #$03,d6        horizontal count (4 longwords = 128 pixels)
DR_inner_loop
moveq    #-1,d0
move.l   d0,(a0)+      write directly into planes
move.l   d0,(a1)+
dbra    d6,DR_inner_loop  for all longwords X
lea     24(a0),a0      modulus
lea     24(a1),a1
dbra    d7,DR_outer_loop  for all lines Y
rts

;-----

Intlib    dc.b  "intuition.library",0
         even
_Intuitionbase  dc.l  0
Gfxlib    dc.b  "graphics.library",0
         even
_Gfxbase    dc.l  0
Screen_ptr  dc.l  0
Plane1_ptr  dc.l  0
Plane2_ptr  dc.l  0
Plane3_ptr  dc.l  0
Plane4_ptr  dc.l  0

;-----

QuadScreen
dc.w     0,0           ; XY origin
dc.w     320,200      ; width, height
dc.w     4             ; depth
dc.b     8,1          ; detail, block pens
dc.w     NULL          ; display modes
dc.w     CUSTOMSCREEN ; screen type
dc.l     NULL          ; screen font
dc.l     QuadScreenName ; screen title
dc.l     NULL          ; gadgets (N/A)
dc.l     NULL          ; custom BitMap structure
QuadScreenName
dc.b     _Quick and Dirty...,0
cnop    0,2

;-----

Palette
dc.w     $0000,$0008,$0029,$003A,$015A,$017B,$02AC,$02CD
dc.w     $0FA0,$0E80,$0C60,$0B40,$0A30,$0920,$0710,$0600
Numcols  equ  *--Palette

;-----

```


Amiga Answers

*Yuri Large tracks down the tips
that keep you on top!*

Dear AUI,

May I congratulate you on your excellent coverage of music software and hardware for the Amiga in the June issue of your magazine.

I am thinking of using Copyist Professional with an A500, including an external 3.5" drive and A501 memory expansion, to transcribe music played on an analogue synth (not MIDI compatible) into musical notation. Is there any way to do this and still have the ability to edit the sound obtained (by using Audiomaster II for example), or am I setting my sights too high? If not, how long may a piece of music last? I am also a little confused about the quality of musical reproduction on the Amiga; is it really as good as original analogue sound?

Yours faithfully,

TIM MOORE, KETTERING.

Dear Tim,

Unless you use a MIDI compatible keyboard to connect to your Amiga via a MIDI interface, you will not be able to transcribe your performance using the Amiga. The essential point is that MIDI is used to translate your performance into data that can then be manipulated by software such as the Copyist Professional. However, if you do use a MIDI compatible keyboard you will then be able to transcribe music, which can then be have individual voices adjusted by the use of different MIDI parameters. This process will require the use of a sequencer of some sort, such as Dr. T's KCS.

The Amiga's sound quality is not quite that of an analogue synthesiser.

In fact it is a digital synthesiser, which will play at a maximum rate of 28KHz., or thereabouts. This compares with a CD player, which has a playback rate of around 44KHz. So, although the Amiga's sound quality is good it will not rival most professional equipment.

Dear AUI,

Could you give me some facts about the A590 memory expansion/hard drive unit. I own a 1Mb Amiga 500, with external drive, and I am very interested in expanding it further. This looks like exactly the right thing.

Yours faithfully,

**ANDREW DAVIDSON, BOURNE-
MOUTH, DORSET.**

Dear Andrew,

The Commodore A590 Hard Drive Plus is probably the answer to most A500 owner's dreams. It is a 20 Mb. hard disk with sockets to expand the RAM of the A500 by a further 2 Mb. The 20 Mb. hard disk autoboots from 1.3 and runs off a cut down version of the Small Computer System Interface (SCSI). A full specification external SCSI port is also included for the addition of further hard disks. The RAM needed for the A590 is low power consumption 1 MBit CMOS chips. Four are needed per half Mb. of extra memory required. The A590 can be upgraded to give half, one or two Mb. of extra RAM. The price for the RAM is roughly 80 pounds per half Mb. Another bonus is the excellent, easy to use installation and testing software.

All in all the A590 is an open ended upgrade for the ambitious A500 owner, and at 400 pounds it offers excellent value for money. I can thoroughly recommend it as I am using one myself right now!

Dear AUI,

We have used the Commodore 64 since 1984 and we were very proud of it.

For serious computing, however, we used an IBM PC compatible. After reading some of your AUI magazines and others, we are falling in love with the Commodore Amiga. It has amazing graphics, sounds, and it can emulate IBM PC as well as the C-64.

It's a shame that Amiga doesn't have any dealers in Indonesia, so we're

facing many difficulties in gathering information. If you don't mind we want to ask several questions: (1) With a stock Amiga 500 equipped with the Transformer (IBM PC emulator), how much compatibility does it have? Can we use a Seagate hard disk (originally for IBM PC) in its PC emulator mode?

(2) Does it have a PAL video output (we want to use it for video recording)?

(3) Is it possible to buy an Amiga through mail order? If it is, can you give an address for us to contact?

Thanks for your attention.

Yours sincerely,

SUSI LOWATI, INDONESIA.

Dear Susi,

(1) The A500 with the Transformer only offers the barest compatibility with IBM software. It allows the use of text only applications at about a quarter of the speed of a standard XT compatible, which is slow enough itself. I am afraid I have no hesitation in suggesting that for someone such as yourself, who already has some experience of PC's, the Transformer is of little use.

(2) The A500 comes with a mono composite video port as standard, which is PAL on European specification A500's. In order to produce a colour composite signal you will need to invest in the A520 TV modulator which gives colour RF and composite video signals. The A520 TV modulator comes free with most A500's, but if not can be supplied separately for about 20 pounds or so.

(3) Most of the companies who advertise in AUI will sell the A500 mail order.

Dear AUI,

I am just about to upgrade from an 8 bit micro to an Amiga 500, and I would like your advice on what language I should use. On my old computer I used to do a lot of music and graphics programming using basic, but I found this didn't fully exploit the machine's capability, and naturally was rather slow.

What can you advise me on languages for the Amiga which fully exploit the machine's capabilities, but at the same time being easy to learn and understand.

Could you also answer some questions for me concerning the Amiga's internal electronics?

What is the "blitter chip" and what exactly does it do?

How do "co-processors" work and are they advantageous to the overall performance of the machine?

Yours thankfully,

ALAN CLARK, STEVENAGE, HERTS.

Dear Alan,

Programming the Amiga can be a rewarding yet frustrating pass time.

The intricacies of the Amiga's multi-

continued on page 64

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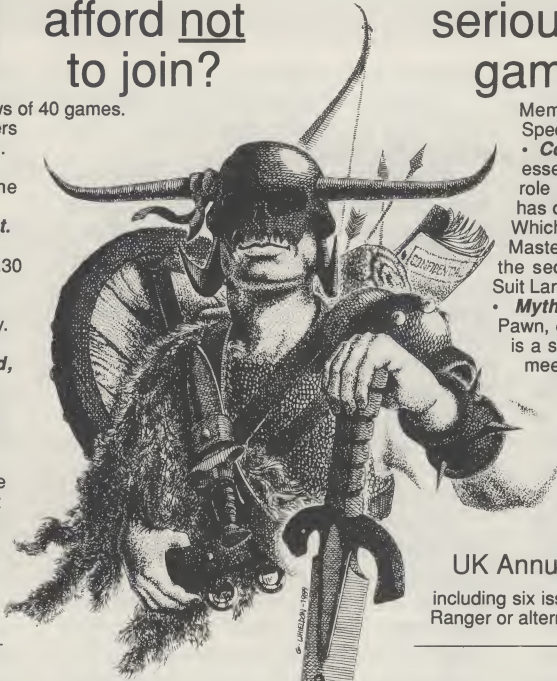
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continued from page 62

tasking operating system can be both perplexing and intriguing. So the choice of the language with which you intend to program becomes more important than ever, especially when you consider the costs involved in most cases. There are many languages now available for the Amiga - C, Pascal, Modula-2, Assembly, Fortran, Forth, Lisp and BASIC - to name a few!

Of these multifarious languages there are four popular contenders to the Amiga programming crown. Firstly there is BASIC in many forms, which is a far different beast to the language most of us were brought up on. Gone are the line numbers and all the baffling pieces of code which jumped from place to place making them totally unreadable.

Thankfully, all the different versions of BASIC for the Amiga are a window into the world of object orientated programming structure (OOPS). This makes the programs easier to piece together and should also help to stop the occurrence of bugs.

Amiga BASIC is obviously the standard for BASIC on the Amiga, as it comes free with all machines. It was originally written by MicroSoft and as such it is still a very powerful and easy to use interpreter.

Although Amiga BASIC is a great step forward from the 8 bit BASIC's, it still lacks a little speed when compared to all the compiled languages for the Amiga and the editor provided is to say the least clumsy.

However, for any beginner looking for a place to start before coming to a decision about which language to really chose, you could do a lot worse!

On the other hand, for those that still want the ease of use given by BASIC but need more speed, there are plenty of compiled BASIC's around.

These BASIC's, such as HiSoft BASIC and AC BASIC, give at least a three fold increase in speed with almost all programs. This makes them a very viable alternative to some of the more expensive compiled languages.

The pick of the compiled BASIC crop on the Amiga has to be HiSoft BASIC. It has the advantage that it will compile most Amiga BASIC programs as they stand, and thus allows the use of the interpreter for program development; program routines can be tested before moving on to the more laborious process of edit, compile, run, edit, compile... It is also very fast (in BASIC terms) and at around 60 pounds offers excellent value for money.

The other three contenders are C, Assembly and Modula-2. All of these will require a good year or so to come to grips with and thus should only be considered by those in search of a challenge.

C is the popular choice at present, as it gives the low-level system control of Assembly Language, while being very

readable and modular.

The two compilers for the Amiga are produced by Manx and Lattice, more about which later.

Assembly Language is lightning fast, but on the other hand program development isn't, if you see what I mean. For the beginner Assembly Language is a scary prospect. This one is definitely only for the brave! The HiSoft DevPac version 2 offers the best starting point for those who fly in the face of caution.

Lastly, Modula-2 is a highly structured programming language, which offers many of the concepts that computer scientists of today cling to.

The major problem for the beginner is that there is little documentation relating to the use of this language with the Amiga. The two compiler produced for the Amiga are the M2S compiler and Avant*Garde's Benchmark Modula-2.

To sum up briefly, all the languages available for the Amiga can be used to access its innermost power. However, for the beginner I would say there is no better place to start than a compiled BASIC.

The Blitter is one component of Jay Miner's custom Agnes chip. Blitter is short for bit block transferrer, which is exactly what it does. In layman's terms it is used for the fastest possible transfer of data around the Amiga's memory. Indeed, it is this that allows the Amiga's graphics to continually astound us.

Co-processors are often used to replace the Amiga's 68000 with a faster 16 or 32 bit processor or to add super charged math processing abilities. All the co-processors used are also in Motorola's 68xxx series. These basically increase performance by running the tasks of the CPU at a far faster rate than the 7.16 MHz. 68000, which the standard Amiga is equipped with, is capable of.

Dear AUI,

I have been collecting your magazine since March 1988 (two months before I actually bought my Amiga 500). I would like to ask you some questions. It would be extremely helpful and I would be very grateful if you'd answer them.

(1) In the near future I will be buying an expansion (512k internal) to make my Amiga a 1Mb machine. Later on in life, if I wished to expand again (externally, of course) to make my Amiga a 2Mb machine I would have to buy an external 1Mb expansion. I know the Amiga 500 is expandable to 9Mb, but everywhere I look I see 1.5Mb or 2Mb expansions etc., but I've never seen a 1Mb expansion. Yes, the 4 million dollar question, is there really a 1Mb expansion out there? If there is one that might have slipped

my eye, please could you tell me about it, so I can always keep it in the back of my mind! And if there are lots of them, please could you recommend the best for the best price?

(2) In one of the AUI's (I can't remember which), you said that the Cumana CAX-354 or something like that (I'm never good with numbers, you know!) was probably the best 2nd external drive, because of its on-off switch etc. What I would like to know is whether the Cumana 2nd drive has another disk drive slot behind it or somewhere, so that I could "daisy chain" another drive onto it?

I also have a thing to tell all you unsuccessful Magnetic Scrolls adventurers out there. If you can't solve certain puzzles in your game then write to: MAGNETIC SCROLLS, 1 CHAPEL COURT, LONDON, SE1 1HH, and they will be happy to help you out with your problems. Wait, don't go rushing off to your pens and papers, include a SAE with your letter, and you'll probably have to wait over 2-3 weeks for the reply to come!

Yours askingly and informingly,
ANJUM KHAN, ILFORD, ESSEX.

Dear Anjum,

(1) I cannot think of an external memory expansion for the A500 which will give you exactly 1 Mb. of extra RAM. However, I can think of two good ones that are available in 1 Mb. configurations. One is the excellent StarBoard2/500, which gives a maximum of 2 Mb. expansion.

This will also allow you to add a SCSI interface card or a 68881 maths co-processor. The StarBoard is available from Oasis Services on 01-859 4936. The other one I can think of is the MiniMegs from M.A.S.T., which is again capable of a maximum of 2 Mb. RAM expansion. This expansion does not have the additional features of the StarBoard, but it is available for about 50 pounds less. M.A.S.T. are on 077082-234.

Although, these two expansions are not just 1 Mb. expansion they both offer the option of further memory expansion. Don't forget that within a couple of years 2 Mb.'s may not be considered as very much...

(2) The CAX 354 external drive from Cumana does not have a daisy chain drive port. This is for the very important reason that the A500's power supply will not cope with more than one unpowered external drive.

However, all drives that come with a power supply have a pass through, so if you are considering a third drive at any point you should get one with a PSU. This will of course allow you to daisy chain on your unpowered external drive.



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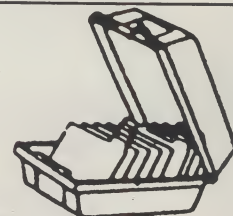


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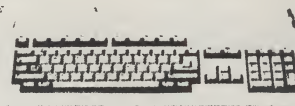
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Drivin' Force

Digital Magic Software

The words "fast and smooth" are often used to describe 3D racers. In fact, it's extremely rare that that's the case outside the arcades. Super Hang On is about the only Amiga game that can live

"The mouse has the advantage of allowing propotional steering"

up to such a claim, as although they play well, even the likes of Chase HQ, Batman and Power Drift are noticably jerky. Drivin' Force on the other hand, once it gets going, is just as smooth as the latest coin-ops, and believe me, that's no exaggeration.

Whilst Drivin' Force is original in that it's not a conversion of an existing game, it owes a lot to Sega's Power Drift. From the options screen, you can select to compete in either a knockout or league competition. You can also choose to drive or ride a specific vehicle, or work your way through the list of five. Control is either by the mouse or joystick. The mouse has the advantage of allowing propotional steering, although the high speed and sudden tight bends ensure that you're never quite in full control.

If you went for the default knockout competition, you'll soon be placed on the start line of the first



track. Immediate impressions are a shade disappointing. The road is made up of what look like logs, which extend part of the way into the distance.



Both the logs and the objects on the roadside are extremely blocky, and move jerkily at low speeds. However, once you put your foot to the floor, all that changes. The low resolution of the graphics becomes far less noticable when everything is flashing past at its amazing speed.

"The tracks are set in the usual selection of desert, snowy mountain and tropical scenes"

The tracks are set in a the usual selection of desert, snowy mountain and tropical scenes. Most are contorted, undulating loops, littered with bridges and jumps. Unfortunately the jumps often go unnoticed, and are really no more than small gaps in the track. Sketches of all the tracks are included in the instructions, which is a help in working out where you're going, but they're pretty innacurate a lot of the time.

Soundwise, Drivin' Force is far less impressive. The tunes are forgettable, adding nothing to the



Since the old sprite-based C64 racers, smooth 3D has been in short supply. Now, with the use of new techniques, Digital Magic Software have brought about a return to old values. It may look chunkier than a bar of fruit and nut, but it's certainly got some whellie under the bonnet!

game, and the engines drone rather than roar. You do get a slightly different sound for each of the vehicles, but it falls far short of complementing the speedy graphics.

The blocky graphics do make Drivin' Force look like an old 8-bit show, but that's compensated for by the speed of the game. While the game is excellent on the technical side, it has something missing in the gameplay. All games need to give the player an incentive to keep going. In most 3D racers, that



comes from the promise of new scenery and features. As there's only a limited variety of scenery in Drivin' Force, and the choice of vehicles can be freely selected, there seems little point in playing for long. Winning a league or knockout competition is rewarded by a race around a bonus track, but that's not much of an exciting prospect. The potential is here for a great game, and had the clever programming been backed up with gameplay of similar quality, that's just what we would have got. Nevertheless, Drivin' Force for its speed alone, to be considered state of the Amiga art in motor excitement.

B.V.



Graphics: 71% Sound: 37% Playability: 85%
ABSOLUTE VALUE: 80% Price: £24.95

Windwalker *Origin*

It was not very long ago that software houses "discovered" a new form of computer entertainment: "interactive games". Otherwise known as roleplaying games (RPGs), this new type of software featured full interaction between the central character and his/her surroundings and other characters who would appear in the game. The games usually included some form of quest or task and always feature a method of fighting with opponents.

"Depending on whether you are fighting with bare hands or a monks staff, the moves include a variety of kicks, punches, hand-springs and strikes with the staff."

Over the months there have been numerous games of this type, some good, some not so good and some absolutely awful. As with all games software though, every so often a program is released that stands head and shoulders above the rest. The latest from Origin, through Mindscape, is just such a game.

"Windwalker", written by Greg Malone, is set in the ancient Oriental land of Khantun and, although there are various tasks you can choose to undertake, asks nothing more of you than to survive.

in Khantun.) Having roused him from his meditation, Moebius will greet you, ask your name and offer you the chance to practice the martial art skills that you will need, before starting your adventure. On selecting to practice, a



The scene is set during the opening sequence which, although fairly long, is worth watching to the end. A press of the spacebar will put you in the presence of Moebius, the Windwalker. (Those of you with good memories might well remember an earlier release from Origin entitled Moebius, which was also set

screen opens and presents you with a side view of the combat area, on which you may move backwards and forwards. A series of icons along the bottom of the screen depict the various moves you can make. Depending on whether you are fighting with bare hands or a monks staff, the moves include a variety of kicks, punches, hand-springs and strikes with the staff. All the moves can be selected with either keyboard or mouse, I preferred using the mouse as I didn't have to look away from the screen to see what I was doing.

The sheer quality of this game is very evident here. Your opponents are a selection of characters ranging from a simple thief, to a swordsman armed with two swords, to the dreaded Ninja. To ensure authenticity of the fighting sequences, Greg Malone used a variety of books and texts such as "Ninja: Warrior Ways of Enlightenment" and "Zen in the Martial Arts", as primary sources of infor-



mation about the weapons and fighting tactics used by these ancient fighting men. However, to provide the detailed images needed for the game, depicting the intricate movements of the various forms and disciplines of fighting, martial arts experts were videoed and photographed hundreds of times and these images were then digitised and incorporated into the game.

An Abacus shows your state of health and each time you are hit one of the beads will slide across the wire, once they've all moved you are rendered unconscious and the fight is over. If you manage to strike your opponent enough times, you will knock him out instead. When each bout has ended you are given the option to re-play the sequence, enabling you to see what mistakes you made, before going on to the next opponent. At the end of the practice sessions, you are returned to Moebius and, once again, given the option to start your adventure.

Supplied with Windwalker is "I Ching - the Book of Changes", an oriental work that contains 64 Hexagrams that, when used correctly, will answer any question you might have. Each of the Hexagrams has a single descriptive

word attached to it and, at the start of each game, you will be asked to enter one of these words. The game proper then starts.

The screen is split into three main areas. The largest of these shows the land of Khantun, with its buildings, temples, seas, forests and mountains. Your character is displayed as a head-and-shoulders portrait, as are all the other characters you will meet on your journey. As I mentioned earlier, if you wish, you don't have to do anything other than survive but, should you choose to do so, there is an underlying quest that you can take up.

The Emperor, Chao Ti, and his wife, Cheng Sing, have been imprisoned by the Warlord Zhurong and the mad Imperial Alchemist, Shen Jang. Zhurong also invaded the land of Nubia and kidnapped the Ivory Princess, daughter of the King of Nubia and made her his slave. Shen Jang is intent on releasing hordes of evil spirits into the land and, on the nights of a new moon, evil spreads across the land. Your task is to rise from being a humble fisherman in the village of Xiang Loh, to become a master of both martial and mystical arts and a leader of men. Only then will you be able to enter the

Celestial Palace, where the Emperor and his wife are imprisoned, and challenge the might of Zhurong and Shen Jang.

The top two-thirds of the right hand portion of the screen contains four Abacus-type indicators, which show the condition of your main attributes: Body, Spirit, Hon-

"From time to time you will meet some of the less savory characters, robbers, thieves, pirates and assassins and, if you are really unlucky, Ninja armed with deadly shuriken throwing star."

our and Karma. Under this are three icons: Inventory, Talk and System. Inventory is self-explanatory and also contains the options for eating, sleeping etc. Talkicon is used when a character appears on the main window with whom you wish to converse. Talking to other characters is the only way that you will gain any more information about what is going on and what you are supposed to be doing.

From time to time you will meet some of the less savory char-



continued on page 71



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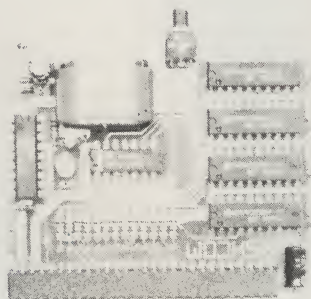
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GTI

continued from page 69



acters, robbers, thieves, pirates and assassins and, if you are really unlucky, Ninja armed with deadly shuriken throwing stars. This is when all the practice you did ear-

"The characters are totally believable, the fighting sequences are truly excellent and the overall flavour of the mystical, ancient Orient is superb."

lier will start to pay off, defeating one of these opponents is usually followed by some form of reward. Khantun is surrounded by seas, as a fisherman you have your own boat but care must be taken if you choose to sail, pirates may attack your vessel although, if they attack and you defeat them, their ship might contain much treasure.

There are many, many other things contained in Windwalker that makes this program not only immensely playable, but almost a voyage of discovery through one of the richest and most detailed computer landscapes that I have ever seen. The characters are totally believable, the fighting sequences are truly excellent and the overall flavour of the mystical,

ancient Orient is superb. There are also lots of little touches that, for me, really finish the program off, for example; when you start, your character icon wears a wry smile, if you get tired or are injured the smiling face changes to a frown and then despair!

At the time of writing this review, I have not yet completely finished playing Windwalker and. I think I've still got a long way to go before I finish. A good test of this

type of game is whether it has any staying power - whether it is interesting enough to make the player want to finish it. For my part, it has been a long time since any game has grabbed my attention quite so solidly and maintained my interest so well. In my opinion, Windwalker is a truly excellent piece of work that should keep any fan of this genre totally occupied for many hours.

N.S.

Graphics: 88% Sound: 64% Playability: 95%
ABSOLUTE VALUE: 80% Price: £29.99



Rotor

Arcana

Tony Horgan discovers a new category of game: "Thrust 'em up". Do you have to be over 16 to play or just remember it?

Arcana have been rather quiet recently, but for the endless stream of press releases promoting the severely delayed Mars Cops. While we're waiting for that "imminent mega-game", there's Rotor.



Rotor is a shoot 'em up in the style of Gravitar, Thrust and Oids. Unlike most other zappers, when flying your ship, it's essential to take into account the forces of gravity and momentum. Controls are similar to those of Asteroids, so rather than simple

"Once the level has been cleared, you're given a couple of co-ordinates, which indicate the location of the exit"

directional control, you fly using a combination of rotating and thrusting.

The instructions are of the most irritating kind, taking ages to get to the point. Fortunately, anyone who's played any of the other Gravitar clones will be able to pick it up fairly quickly, but that's no excuse for all the unnecessary beating around the bush. Of course, if you read DHSS forms for fun, this will be a big point in the game's favour.

Your goals are actually quite simple and straight forward. In each multi-directionally scrolling level, there are a number guns fixed to the walls, with boxes of supplies nestled between them. It's your job to blow up the guns, open the boxes and retrieve their contents. Once the level has been cleared, you're given a couple of co-ordinates, which indicate the location of the exit.

Before you can get into the proper missions, you

Coming soon from Arcana is Mars Cops, an original multi-stage space shoot 'em up. Setting you the task of policing the starways surrounding Mars, you may well be in need of a boost during your marathon bounty hunt.

have to prove your worth on a couple of simulators. Muster the necessary points on these, and you're given a password to get you into the big boys' levels. The differences in the real missions and the simulators are mainly graphical, with an increased difficulty level.

I quite like this type of game, Oids being one of my favourites. However, Rotor is just a bit too slow and uneventful to be gripping. Compared to most thrust 'em ups, the ship in Rotor feels very heavy, while the effect of the thrust and gravity is low. That makes it all move along at a lethargic pace, which does nothing to raise the addiction level.

One other point about the game that annoys, is the supposedly clever front end. The idea is that all the options are selected from your personal computer, which involves messing around with a fiddly and inconsistent menu system. Despite all of this, it still plays fairly well, but it's just not exciting. Try it out if you fancy a thrusty zapper, but don't expect anything to rival Oids.

T.H.



Graphics: 65% Sound: 78% Playability: 62%
ABSOLUTE VALUE: 61% Price: £19.95

Renaissance

Impressions

Renaissance is a collection of four of the most popular early shoot 'em ups: Space Invaders, Galaxians, Centipede and Asteroids. Two versions of each game are included on the disk. The "classic" versions are supposed to be identical copies of the originals, whilst the "contemporary" versions are updated with better graphics and the odd additional gameplay element.

Space Invaders is first up. The classic game plays about as close to the original as you could expect, although the invaders themselves are not so well drawn, and have lost what little character they had. The updated version features a set of more finely detailed invaders, which take a few hits before disappearing. The spaceships drop mines, but other than that there's no difference.



Galaxians moves on a step, introducing aliens that break away from the main cluster, swooping down towards your over-sized ship. Again the graphics and gameplay are pretty much identical to the coin-op. A new load of sprites is about all that separates the old and the new versions.

"Its black and white pseudo-vector graphics are near enough to the old game, but the inertia and friction levels don't feel right"

Centipede does well in cloning the coin-op, but then that's hardly a heavy demand. The insect annihilation is as frantic as ever, but there's nothing new to be seen after a couple of minutes. Although the contemporary game features a nicely drawn backdrop, it clutters the screen, confusing the

graphics, making it less playable than the original.

The Asteroids clone is a little disappointing. Its black and white pseudo-vector graphics are near enough to the old game, but the inertia and friction levels don't feel right. Rather than gliding around the screen, your ship accelerates and stops abruptly. Having to control the thrust by pulling the stick back is illogical and awkward. The second version has a pleasant backdrop and solid sprites, with a few extras, but plays just the same.

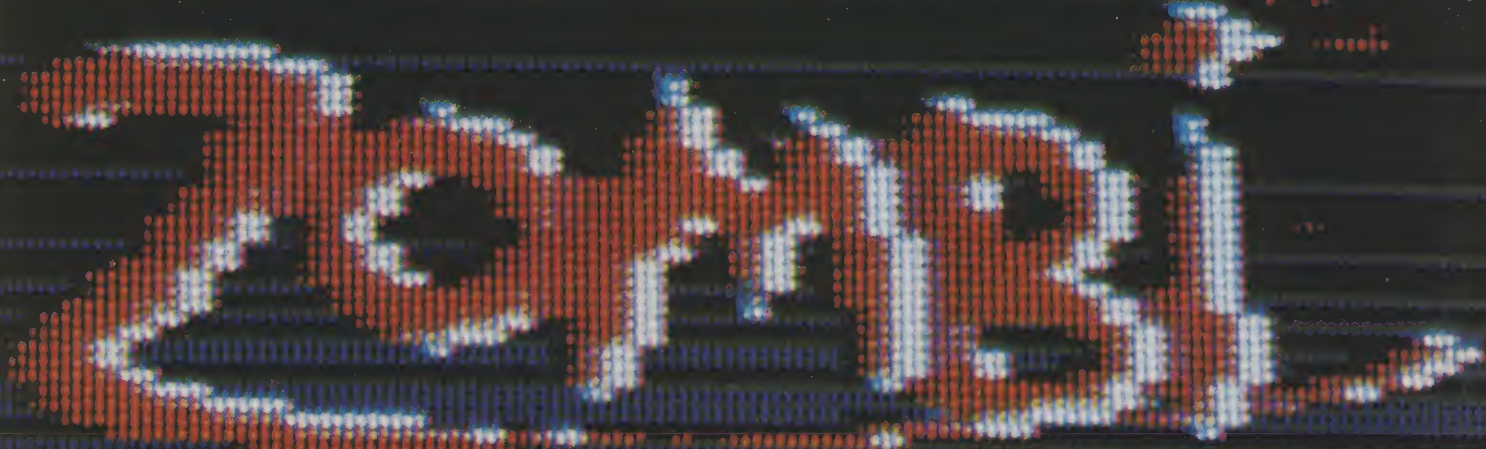
With the re-working of Space Invaders and the rest under their belt, rumour has it that Impressions are beginning work on a TV game clone, with such delights as squash, tennis and football included (all played with paddle-controlled white bars on a black screen). If all goes well, we may even see an Amiga version of that classic memory game 'Simon'.

A compilation of these old coin-ops was never going to cause much of a stir, but even so, each of the games could have been better. None of them is quite as good as the originals, and the updates, unexpectedly are merely the same games with new backgrounds and sprites. In terms of gameplay, they can't touch today's shoot 'em ups, and for anyone other than an absolute beginner, the compilation will be just a mundane trudge down Memory Lane.

T.H.

Graphics: 37% Sound: 50% Playability: 44%
ABSOLUTE VALUE: 35% Price: £19.95

When there is no room left in Hell... ...dead people come back to Earth



The nightmare has just begun

For mysterious reasons, dead people come back to life to feed themselves on the flesh of human beings. The Earth is inhabited by millions of Zombies, who are spreading terror, and by gangs of hooligans, who are ready to do anything to survive. Yet four people didn't lose hope and decided to run away to new horizons.

"What a great game ! UBI SOFT have taken a video nasty and an arcade/aventure, and combined them, coming up with a real winner in the process. Moving your four characters around the building, trying to find a way out, all the time fighting off attacks from zombies, is very atmospheric. There are some good puzzles to work out, and a hell of a lot has gone into the game. By all

means, get hold of this game."

"Everything is nice and detailed, with the background graphics looking particularly effective."

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UBI SOFT

Entertainment Software



Ocean

The extent of the "guns and gangsters" shoot 'em ups has never strayed far from the simple format of coin-ops such as Dead Angle. The Untouchables however, with six levels inspired by a selection of scenes from the film, goes all out for variety.

Playing the parts of four of The Untouchables, it's your job to bring Al Capone to justice. His illegal trade in alcohol is no secret, but before you can nail him you need proof, or at least evidence of his crimes. Following a tip-off, you locate a warehouse being used by his men, and decide to pay them a visit.

"Intercepting the convoy on a bridge, you decide to give your trigger finger a little light exercise"

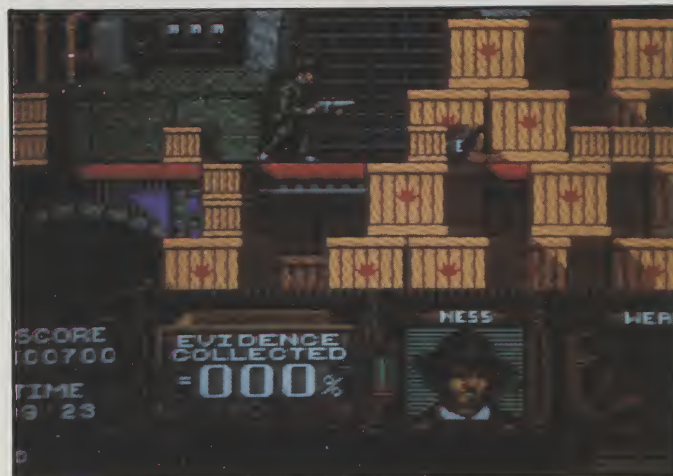
Although you'd planned just to break up the party and make some arrests, you find that some of the accountants are there with substantial incriminating evidence. Chaos ensues, as you fight off the endless army of gangsters, whilst tracking the accountants. Shooting the accountants forces them to give up their documents.

On the whole this first section plays well. The gameplay follows a predictable pattern, with the accountants appearing in the same places time after time, but it's fast moving and gives a very playable account of itself. However, it's also rather drawn out, and would benefit from moving on to the second

stage a little sooner.

From the information you picked up at the warehouse, you discover the location of a liquor run on the US/Canadian border. Intercepting the convoy on a bridge, you decide to give your trigger finger a little light exercise. Your current gunman is seen at the bottom of the screen, rolling left and right as he dodges the machine gun fire. A small window in the score panel acts as your sight. The idea is that you use this to line up your shots, which works fairly well, although it's a bit awkward having to watch both the sight and the main screen. At times it's easier to use the bullet holes made by your shots as a form of crosshair.

Section three is set in the shady alleyways of the city. Capone's accountant is making a run for the station, in an attempt to escape by rail. The mob have





heard the news, and are out to stop your gang of four. Armed with a double-barrelled shotgun, you have to clear each alley of mobsters before moving on to the next. Ducking into a sideroad allows you to reload in safety, but there's no time to hang around. If time is tight, you could always reload within range of the enemy, but of course the risk to your health is far greater.

Chicago in the 1920's was no place for Dixon of Dock Green. Al Capone had set up a massive liquor racket, which of course during the prohibition was illegal. This organised crime was getting out of hand, so to fight the mob, hard nut cop Elliot Ness set up his own counter-force made up of his best men. Through their unbending determination to bring down Capone, they gained the title of The Untouchables.

The fourth stage is a little more light hearted. At the station, The Untouchables meet up with the accountant and his armed escort. Yet another shoot out follows, but in the confusion, a mother and here baby are separated. The runaway pram sets off down a large flight of stairs, and it's up to you both to guide the baby to safety and deal with the baddies. With that done, in the fifth scene you are given five seconds to shoot the accountant, making sure you don't hit his hostage. The climax comes with a rooftop chase, presented in a similar fashion to the alleyway shoot out.

It's obvious from the variety of design and quality programming, that a lot of time has gone into The Untouchables. It's extremely neatly presented, with a superb loading screen. The sprites are of a high standard, as are most of the backgrounds. Although there are six varied levels, most are very repetitive. The alley scene for example, has you popping out from the sideroad, shooting a couple of villains, and then repeating the action over and over again. The programmers have done a fine job in realising the storyboard, but I can't say I find any of the sections particularly engrossing. Some satisfyingly large explosions and gory death sequences would have made for a "meatier" feel, but even so, I'm sure The Untouchables will be a favourite among fans of Platoon and Batman.

T.H.

Graphics: 88% Sound: 60% Playability: 71%
ABSOLUTE VALUE: 72% Price: £19.95



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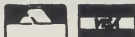
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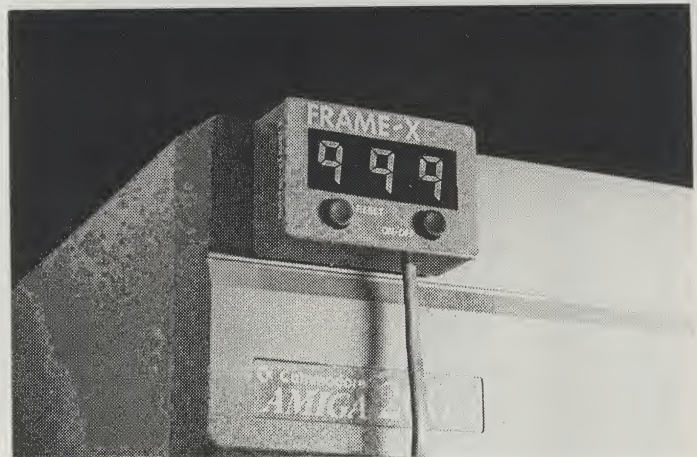
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The Hound of Shadow

The Hound of Shadow long has been the subject of controversy. (One computer magazine refused to review it. Terrified?)

Andy Moss investigates



There were six people in all, seated at arms length from each other around the circular covered table. The room was dark, save for a small red lamp sat in the exact centre of the table. Stranger eyed them all, not sure of just why he was there. Was it just that his friend John had badgered him into it, or was it the keen sense of adventure in the Stranger that pushed him into it? It was indeed a curious mixture of characters, and as the Stranger warily looked around again he focused his eyes on the turban covered head of his host, The Adept Karmi. There was no mistaking the menace in the sharp dark eyes, the slight scowl of his lips nestled just under the trim beard. Next to him sat a rather plump lady dripping with jewellery, and next to her was John. Behind John stood Yasmin, the maid, whose very presence the Stranger thought was odd. Seated next to John was a rather bookish young man who constantly put on then took off his glasses. It was time. The Adept Karmi began his ritual for the start of the seance. The Stranger, a worldly gent naturally saw right through the whole charade, even rightly choosing the plump woman as the obvious target for the Turban man's tricks. But it all went rather wrong from that point on, as halfway through his imitation of her dead husband, the Adept

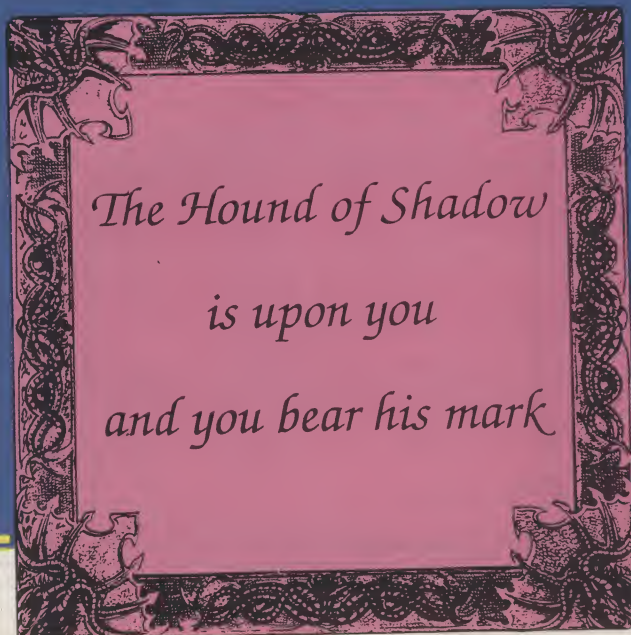
Karmi stiffened visibly, began to sweat profusely, and with his eyes bulging out of their sockets, turned to John and rasped in a voice that was neither human nor beast "THE HOUND OF SHADOW IS UPON YOU AND YOU BEAR HIS MARK!".

Something was obviously amiss, as collapsing in a heap, the Adept Karmi was in a bad way, and it was left to Jasmin to usher the guests out into the night. What could it all mean. One thing was sure, the Stranger was now involved in a true mystery that smelt of the occult, and that it was time to go to work to uncover the Hound of Shadow.

So it begins. A story so vile that it chills the very soul. A true horror tale.

"After all in real life, people know whether you are a man or a woman, and they use your name if they know it."

THE HOUND OF SHADOW is an adventure that has been heavily marketed by Electronic Arts, who have used the time before its release to send out countless reminders of its coming. I have recieved a paperback of HP Lovecraft's gothic tales, (and many other things). Each posted with a note which read 'The Hound of Shadow is upon you and you bear his mark'. The main engine room of the adventure is the 'Timeline' system which allows the user to create a character that not only has the usual skills and strengths, but also a detailed background, including date of birth, sex, religion and knowledge. What this



means is that this and any future Timeline adventure, will recognise this character and adapt itself to it, making the character as real as possible. After all in real life, people know whether you are a man or a

John work here? Simple huh? Another nice feature is that you can around very easily, no more west, west-south, south, east to go back home, just type 'go home' and you will automatically be there. The beauty of the adventure is not making you find each 'room' but rather how you manipulate the story



... Wish you were here...? THE HOUND OF SHADOW

woman, and they use your name if they know it. Your characters profession and skills are very important to how you progress in the game, as for instance, two characters may find out the same thing in different ways, and what comes easily to one may be hard for the other.

The writers are quick to point out that HOUND is not a conventional computer adventure, where gameplay relies heavily on collecting objects, and solving puzzles, rather, it is a role playing game set in the London of the 1920's and runs in real time.

On loading you have to generate your character, and after choosing which sex you are, you get to choose a profession, which ranges from reporter, to socialite. Your skills are next. Once your character

"The user friendliness even stretches to a listing in alphabetical order, of the main verbs used in the game."

is created you save it to disk, and then plunge into the murky world of the occult. You need to talk to a lot of the characters in HOUND, and at last, you do not need to type in 'say to Fred...' and you do not enclose the sentence in quotes. What you do is just ask in plain English what you want like Excuse me, does

using the information that you learn. Just like in real life, you cannot act on knowledge that your character does not have. The user friendliness even stretches to a listing in alphabetical order, of the main verbs used in the game, and on that point the authors get a clap on the back from me.

The only let down for me was the pictures. The sepia type presentation was fine, but the actual drawings themselves were poor. They reminded me a little of the painter Lowry using 'little matchstick men' and served no purpose for me, other than to destroy my own mental image of the proceedings. That apart, a thoroughly playable text adventure that like its' predecessor Infocom's WITNESS relies heavily on times and dates for things to happen. So be in the right place at the right time, and you will not go wrong. It will look great in your Amiga collection. Highly recommended.

A.M.

Graphics: 40% Text: 80% Playability: 88%
ABSOLUTE VALUE: 86% Price: £24.95

FLIGHT

C PERSONNEL

FILE # 1 NEXT PREVIOUS

DICK
 SKILLS:
 SCIENCE : 58
 NAVIGATION : 58
 ENGINEERING : 58
 COMMUNICATIONS : 58
 MEDICINE : 58

VITALITY: 100%
 RACE: HUMAN
 DURABILITY: 6
 LFN. RATE: 9

TYPE : MAMMALIAN
 AVG. HT.: 2.0 M
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HUMAN THRYNN ANDROID
 VELOX ELDOAN

OK



nise, destroy or plunder. No matter which way, it's all up to you how you go around, but the idea is to make loads of money doing so. As always the longer and harder journeys are, the more productive, nothing comes easy, does it?

Your ship can be landed on any planet but information from the science officer of inhospitable conditions may make you change your mind. When choosing to land you have the option of opening a landing window to view the spectacle. This graphically pretty option only wastes time to the earnest trader in a hurry to make a fast buck and after a couple of looks you may soon not bother to view.

On the planet's surface you can go hunting in a little moon buggy able to pick up things around you and stun or kill the little nine legged beasties you may encounter. You can communicate with some of the aliens using the on-board translating device. The more unskilled your Communications Officer the more gobbledygook your comms

screen will fill up with.

As you would expect, a game of this type, has a load/save feature, this is necessary because you

will be many hours playing before you could even consider having scratched the surface of a tiny part of the universe, there are 270 star systems and 800 Planets to start with, each have thousands of locations that'll have you going on and on in search of more money making opportunities for a long time to come.

The idea of the game sounds good, the sound of the loading screen music however will be a disappointment to all. I also think that the game lacks heavily in the graphics department. A mouse-driven screen with menu options and action screens do not really do justice to the Amiga. Although I would say that this is the type of game that could get away with poor graphics as the gameplay is excellent. Overall a good story and a good challenge to the space adventurer.


B.C.

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ABSOLUTE VALUE: 67% Price: £24.99

Heard it on the Grapevine

With all the rush of releases at the end of last year, you would think the software houses would have exhausted themselves. But that was then and this is now... Nigel Streeter discovers the grapevine is buzzing with whispers...

shoot-'em-up, but only by using strategy and cunning will the aliens be defeated, Microprose tell us. Scheduled for release in mid-March.

DAY OF THE VIPER from Accolade is from the "search for items that can be used and shoot

Due for release in mid-February, is the Amiga version of the follow up to Space Harrier, entitled (unsurprisingly) **SPACE HARRIER II**, not from Elite but (surprisingly) from Grandslam Entertainments. Billed as "The Ultimate in Shoot-'Em-Up Conversions", with twelve levels of frantic activity including two bonus levels, Space Harrier II promises "truly stunning graphics of arcade quality with excellent sound effects and music." Also from Grandslam is **SCRAMBLE SPIRITS**, which puts you in control of a vintage fighter plane as you battle your way through "wave after wave of enemy attack planes, plus huge aircraft carriers."

From Mastertronic, on their 16 Blitz label, come three very different games. **GRIMBLOOD** is a gothic whodunnit written by Mike Singleton, features digitised sound and graphics and offers a different game every load. **CONFLICT** is a simulation of Middle Eastern Politics in 1997 when, after twenty years of peace, tensions are running high and war threatens. Conflict, Mastertronic tell us, is NOT a game (Oh yeah?), but rather a frightening simulation of what is probably the only real threat to world peace. **HUNTER KILLER** is Mastertronic's version of an American WWII combat submarine in the South Pacific and features eleven different submarines, fourteen separate missions, a range of difficulty levels as well as practice patrols that take place during the day or



night. All three games will be sold for the remarkable price of £4.99!!

Also at the budget end of the market comes a plethora of re-releases of Infogrames full-price games on the Smash 16 label. For immediate launch is **CAPTAIN BLOOD, OUTLAW** (originally titled Wanted) and **WARLOCKS QUEST**. Whilst mid-February will see the release of **ACTION SERVICE**. Once again, each of these will cost only £4.99.

At the other end of the price scale comes **FIRST CONTACT** from Microprose on the Rainbird label, an enormous space game soon to be released on the Amiga. The game follows a fleet of highly intelligent alien beings who take on the human race. First Contact can be played as a fast and furious

anything that moves" stable, set in the five buildings of a distant Sun League Defense Force base complex. All you have to do is find twenty-five floppy disks, hidden somewhere on the twenty-five sub-floors of the complex, each floor contains as many as fifty rooms... You know the sort of thing!!

Activision, who've been rather quiet of late, come back in force during March and April, with no less than seven games scheduled for release. Although we've had few details of the games yet, the titles are: **SONIC BOOM, HOT ROD, NINJA SPIRIT, DEATH TRACK, DIE HARD** (I wonder if that's a Bruce Willis Simulation?), **MECH. WARRIOR** and **WAR-HEAD**.

Logotron have two games of differing styles due for release in March. **CLOUD KINGDOMS** is described as a multi-level, eight-way scrolling game in the style of Bobble Bubble and The New Zealand Story and features an "injection-moulded, rubber-bottomed software hero!" and, Logotron tell us, is totally addictive. (So was Jane Smith but whatever happened to her?). The second is titled **KID GLOVES**, a platform game set against scenes through the ages and "similar in look to the classic game 'Bombjack' but with playability more akin to that of 'Rick Dangerous'." Both games are priced at £24.99.

The ever-lovely Lesley Man-

slightly different slant, is **ESCAPE FROM HELL**, which features heavy metal rockers, sleazoid politicians, kinky evangelists and a sadistic physical education teacher (sounds just like my old school!!).

SKI OR DIE is an action-packed winter sports game from the people who designed Skate or Die and features five events that definitely won't be seen in the Men's Downhill at Kitzbuh! These include the Innertube Thrash, Snowball Blast and Downhill Blitz and can be played alone or with up to five friends. The fourth game also takes a different view of one of this country's favourite sports, Boxing. **LOW**

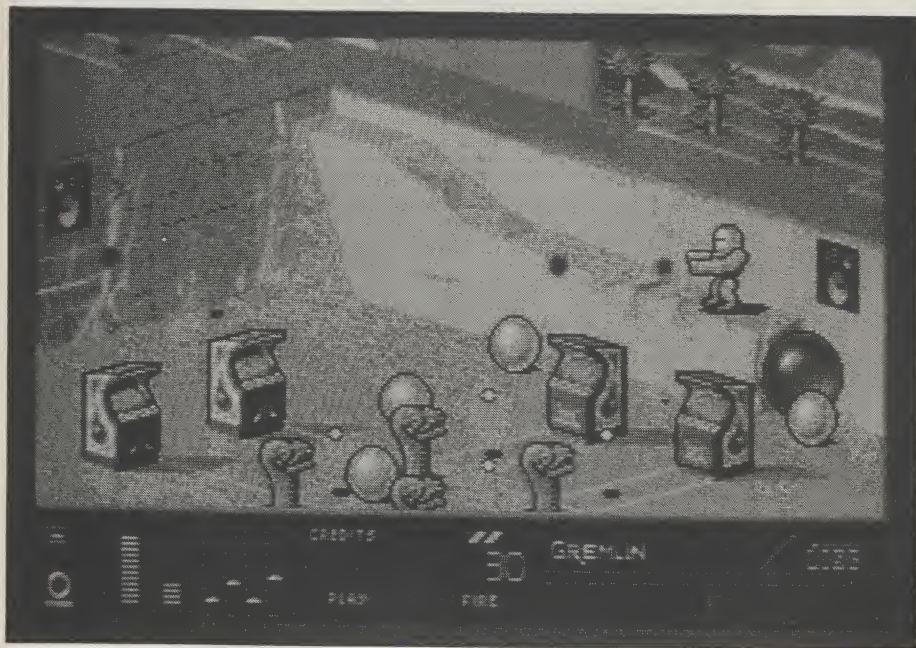
game with fluid animation, realistic and detailed graphics and over 25 authentic movements per art form" and includes music by Rob Hubbard.

Submarine Simulations have always been very popular and Lesley showed us a pre-release version of **688 ATTACK SUB** with her, a simulation that puts the player in command of a top secret attack submarine, either American Los Angeles or Russian Alpha class. 688 Attack Sub looked far better than any other sub. sim. I've seen to date and is set to be a winner. In the world of Flight Simulations, there are constant efforts being made to produce the "ultimate simulator". For nearly two years Jez San, the man behind Starglider I & II and Afterburner, has beavered away to create, what EA hope will be, the truly definitive flight simulator. It has taken EA almost as long to come up with a suitable name. The working title was "Hawk" and, after hours of pondering and deliberation, someone finally suggested a name that was acceptable to everyone - (you guessed it!) - **HAWK!!** That aside, Lesley told us that it "will not only have advances of its own, but will incorporate every advance made by all the other flight simulators".

EA have two more games from Bullfrog, the programmers of Populous, due for release in the near future. **FLOOD** is along the same lines as Populous, but is more "arcadey", whilst a program with the working title Warmonger is to be level with Populous in terms of quality and complexity. EA tell us that Populous itself has been an amazing success, with over 100,000 units sold in Europe alone and the PC version selling well into five figures - possibly the largest European PC game ever.

I'll finish off this month's little round-up with the latest from Gremlin Graphics who promise to bring us (yet another) "totally new concept in Computer Entertainment", this time you have to "entertain" your computer. We've not yet seen a working copy of **RAMROD** but the PR blurb sounds as though they have included just about every conceivable arcade feature into one game. Due for release in March, it should be good!!

N.S.



sford recently took time out from her busy schedule to pay us a visit at AUI Towers. She arrived looking slightly windswept, having fought her way through hurricane-force winds, clutching the latest goodies from Electronic Arts. EA are one of the few games companies who maintain a strong presence in the PC games market. To further enhance their position they have four very strong forthcoming titles. **EMPEROR OF ROME**, from the designer of Defender of the Crown, is described as "a unique combination of strategy and role-playing... as you, a young officer, start your climb through the ranks and set out to rule the historically accurate Europe of 275BC." Also on the role-playing theme, albeit from a

BLOW is a boxing game with a difference - it encourages you to break the rules! The idea is to fight your way to the top, against seven other fighters, using as many foul moves as you can.

EA are not forsakeing the Amiga though and the next few months should see the release of some very strong contenders for the "Game of 1990" title. **IMPERIUM** is a new title developed in the UK. Set in the year 2020, the game simulates the next thousand years of human development as the player seeks to become the last surviving emperor of the galaxy. Following the continued liking for any game containing martial arts, **BUDOKAN: THE MARTIAL SPIRIT** is "an action-orientated Japanese/Okinawan martial arts

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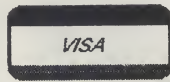
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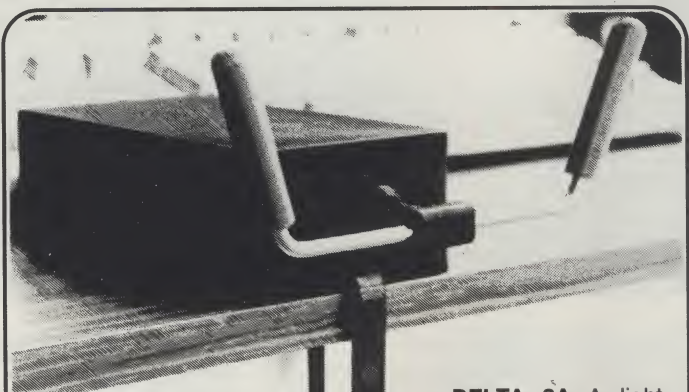
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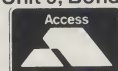
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So, when at last the most interesting hyped up games of the eighties - 'Hounds of Shadow' (we had one staffer, the gorgeous pouting Billionaire from New Orleans, Marvellous Melissa leave the country after receiving a note that said 'The Hound Of Shadow is after you') was shipped over to the Croftward Towers we felt confident enough to approach Electronic Arts in order to arrange a competition. So confident in fact that we didn't even have to phone them. The AUI editorial team had just emerged from that all important monthly meeting which usually lasts well into the night. Everybody was there...Bud Vennos, Anthony Mael and Zack Mule Skinner to name but a few all busily talking to themselves about the month ahead. The 'Hound of Shadow' competition was on everybody's lips and then as if by magic a phone bell rang!

Lesley Mansford, the Electronic Arts beauty (once named the most desired P.R. Princess in Edgware Road) whispered an amazing idea which had just been conceived inside her marvellous mind. And the rest my dears; I'm afraid is history.

To get your hot hands onto a copy of this black book (Sorry, we couldn't find a better word to rhyme with book) just answer the four simple questions below and post your answers to us before the second of April.

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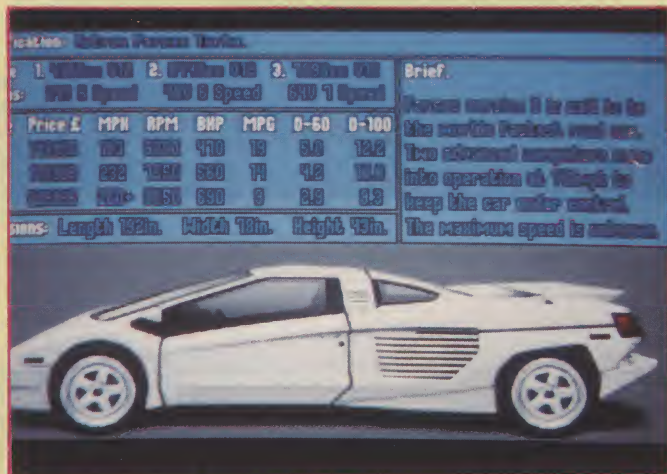
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Super Cars

Gremlin



They may not look as spectacular, but bird's eye viewed racing games can more than hold their own against their 3D rivals. Atari proved this with their original Sprint, a colourless but extremely playable forerunner to Super Sprint. Despite an almost pixel-perfect ST conversion, Super Sprint never made it to the Amiga. Sega's more laid-back variation on the theme, Hotrod, is due to appear on the Amiga later in the year. Until then, there's Super Cars, a hybrid of the three, with a few ideas of its own.

Unlike those coin-ops, Super Cars has no multi-player option. Instead, it's up to the solo driver to work his way through three sets of nine tracks, racing against an increasingly tough opposition. The current nine tracks can be raced in any order, which introduces the possibility of a little strategic planning. Choosing to race the more difficult tracks when your opponents are still easily beaten, can help ease the pressure of the more skilled drivers later on.

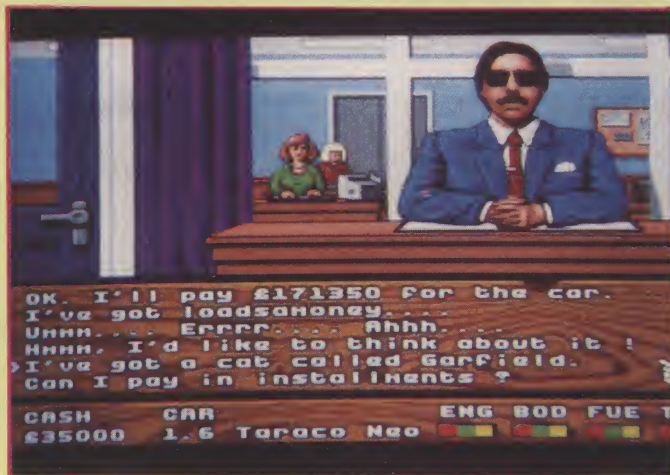
The controls are simple enough. With no gears to



mess around with, all that's left for most of the time is the acceleration, braking and steering. The first few tracks are also quite simple, beginning with a figure of eight. Each new track is just a bit more complex

"Although you'll always outrun an opponent in a straight sprint, you'll have to master cornering to get anywhere."

than the last, although the designs are rather unadventurous, consisting of straights, 90 degree turns and hairpin bends. As there's not enough room on the narrow tracks for a grand prix style grid start, the cars are lined up in single file, with you at the back. The game isn't too harsh when it comes to collisions, so barging your way up through the back markers is common practice in the opening stages. Although



you'll always outrun an opponent in a straight sprint, you'll have to master cornering to get anywhere. While slowing down on the approach to a corner results in a nice looking handbrake turn, it loses ground and takes its toll on your tyre tread. Just powering round at full speed does the trick.

There are four main attributes of the car that need to be monitored throughout the game. Should either the engine, fuel level, body or tyres give out, it's game over. To avoid this, you need to pay regular visits to the garage. Here, a friendly shop assistant offers you such upgrades as a turbo charger and power steering. You can also buy front and rear missiles, which can be used during a race to wreck the cars of your rivals, although you can only have one of each in any race.

If you've had enough of your old car, you can pay a visit to the car showroom. There are three fictitious

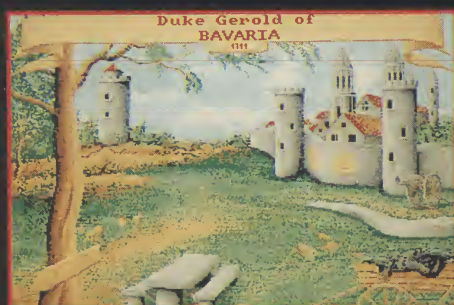
continued on page 91

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continued from page 89



cars to choose from. The spec sheets include a detailed picture of each car, and very nice they are too. That Retron Parsec Turbo is one tasty motor. Buying a car isn't as straight forward as you'd imagine. At the prices these sell for, it's worth haggling, as you could save yourself a fair few quid. You talk to the salesman through a multiple choice menu, which offers you some pretty strange lines. A further addition to the game is the results desk, where the current standings are read out by a couple of newscasters.

It seems that Super Cars is another game that has ignored the Amiga's hardware scrolling and sprite

functions. The game screen is smaller than usual, and the scrolling would benefit from being faster and smoother. A fast PAL overscan version would have been nice, but fortunately, the gameplay still manages to pull through. The in-game graphics are

"Easily the most addictive game I've seen this month."

all quite plain, but the shadow effect, which also affects the cars, is a clever detail. The garage scenes are a lot more impressive, with a distinct likeness to Cinemaware's bold graphical style.

I always like to have an option to switch out the music in a game, but leave the effects playing. That way you can listen to some real music while you play, without shutting yourself off from the game. Such a feature is absent in Super Cars, and as the effects aren't bad at all, it's a shame to have them muffled by the tacky music. Although it lacks variety, and is a bit easy to start with, Super Cars is a good laugh, and easily the most addictive game I've seen this month.

T.H.



Graphics: 76% Sound: 51% Playability: 88%
ABSOLUTE VALUE: 75% Price: £19.95

St. Louis



Hawaii

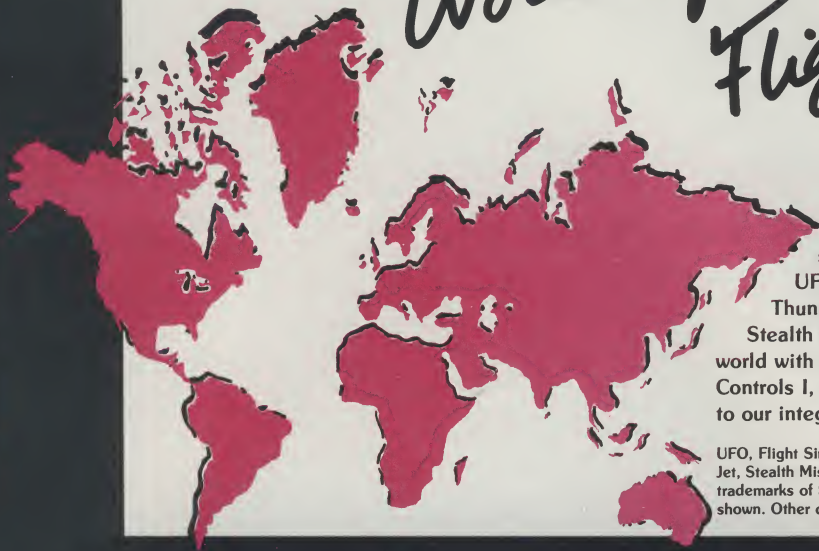


Paris



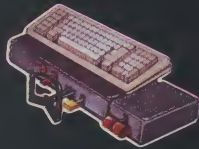
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BETT Show

Anthony Mael finds Commodore at the BETT Show aiming accurately at a market that could give them a lifetime of loyalty

"Creative Education for the 90's". "Give me a child to the age of seven and he is mine for life." No, that is not a quote from Peter Talbot who spearheads Commodore's drive into the educational market. It was a declaration, somewhat before Commodore's time, by St Ignatius de Loyola, the founder of the Jesuits. But, though it came from medieval Spain and led to the creation of a world network of Catholic schools, that comment applies equally today to education and its powerful personal, social even commercial influence; a point not lost on Commodore.

It is clear that the educational field is in the forefront of CBM's thinking about future markets, especially in the U.K. However, in the U.S. too it is mounting a substantial effort and by the end of this winter should have a sales team of 35 stalking the groves of academe.

With a modest but highly dedicated team of ten here, in the U.K. schools and colleges are already beginning to become more and more active as the Acorn-manufactured BBC computer series becomes obsolescent and requires replacement.

Commodore's increased dynamism in the educational sector has been marked by the build-up of its team taking a role in "Partnerships" and "Initiatives" (see box) to bring them into close collaboration with educational institutions and, most recently, with its strong presence at the British Education Training Technology Exhibition (BETT).

The BETT Show is a major gathering for educationalists from all over the country - and even from other nations especially Scandinavia and Germany to see and test the latest developments for use in the classroom, lecture hall or other learning environments.

At the Show, held over three days at the Barbican in London, there was everything from "electronic books" to CAD/CAM, from computerised health data to music composition systems - the last notably played by MCR who often appear at the Commodore Show.

There were many devices intended for children with special needs, concept keyboards - one announced for the Amiga - and mark readers for teachers. Virgin were there with interactive video

and CDROM and there were even tapes for subliminal learning- though unfortunately not one for absorbing Amiga-DOS in your sleep! And there was a flight trainer using the same 68000 chip as the Amiga.



Steve Franklin Managing Director

In addition to CBM, there were all the major hardware manufacturers, with obviously the Acorn Archimedes struggling to win acceptance. No-one would deny this is a fine machine but its high cost - about two or three times that of the Amiga or a low-level MSDOS computer, and its restricted local market - it will hardly sell outside the U.K. - mean that it will not be the general replacement for the BBC - another machine which itself proved too narrow for full educational needs.

While the Amiga is steadily gaining ground, it seems that the British Government is attempting to push general educational purchasing toward the MSDOS standard because of its wide acceptance in the world outside of education. It is estimated that over the next two years some 70% of all educational computers bought will be MSDOS. Commodore, of course, is also covering this field with its increasingly powerful PC series.

In view of the advancing MSDOS

situation, it was not surprising to find a substantial amount of the software at the Show appearing in that format but more is coming on the Amiga too.

Commodore, taking its involvement with the wider field of education seriously, launched a project to enable individual schools to pioneer technologically-based education and also two separate nationwide contests for schools to win CBM kit.

CBM have also supported Amiga-associated developments for the new National Curriculum, the use of the internationally-recognised educational computer language LOGO and even the famous old Valiant Turtle, which entertained and taught so many children when it was used with the 64.

One Commodore advantage is its already established reputation running back to PET and 64 days, two machines which before the arrival of the BBC were a major force in UK education. It has also, in the last two years, built a credible support system for its ambitions in education - a sector where decisions are taken slowly but have long-term effects.

Another factor is the rise of the Amiga outside the schools. Because it has become so much more popular with the general public, CBM is finding that schools are reporting that their students are already familiar with the computer before they lay their hands on it for educational purposes, very beneficial in reducing the learning curve. However, the Amiga's user-friendliness is one of the qualities frequently mentioned as a reason for its acquisition at all levels.

Above all, as CBM underlines in its newly-coined slogan, it can, especially with the Amiga, provide more than just techno-learning, it can offer "Creative Education for the 90's". No machine at the Show could match the Amiga for that, in its sheer creative value for schools, colleges, universities or in any other learning environment, even the home.

If he had been alive today, St Ignatius would certainly have welcomed all the power that educational technology gives. Commodore, for somewhat less spiritual reasons, no doubt share the same point of view.

A.M.

Bars and Pipes -

A Sequencer with a Difference

Bars and Pipes is a piece of software that is currently making waves in the States. It is an object orientated MIDI sequencer package that looks set to give some of the more conventional heavyweight sequencers a run for their money. One thing is already certain... it is undoubtedly one of the most interesting MIDI sequencer packages to arrive for the Amiga to date!

Bars and Pipes comes from the US company known as the Blue Ribbon Bakery Inc. The package, which needs 1 meg to run, is supplied on a single disk together with a well produced A5 ring binder manual. It has been quite a difficult package to review simply because it is so very different from other offerings. It is certainly powerful and well programmed, but as you use it you become aware of the fact that it is not just a sequencer.... it is a compositional tool which actually gives you the freedom, and the incentive, to be more creative with your music.

THE SEQUENCER

As far as sequencing goes the centre of the main screen seems to hold, at least at first sight, a fairly conventional track list. Tracks can be selected, set to play or record, re-channelled etc., but this centre section is actually where the conventional sequencing approach ends.

The Bars and Pipes sequencer is sitting graphically in the middle of a 'PipeLine' which starts at the left hand side of the screen. Conceptually your musical input flows into the left hand input side of the pipeline, through the sequencer, and then leaves via the output side which is situated on the right of the screen. When the program boots up each track has MIDI terminal icons at the far extremes of the pipeline and these represent the fact that real-world MIDI input and output facilities are available. The rest of the left hand side of the pipeline consists of straight-through

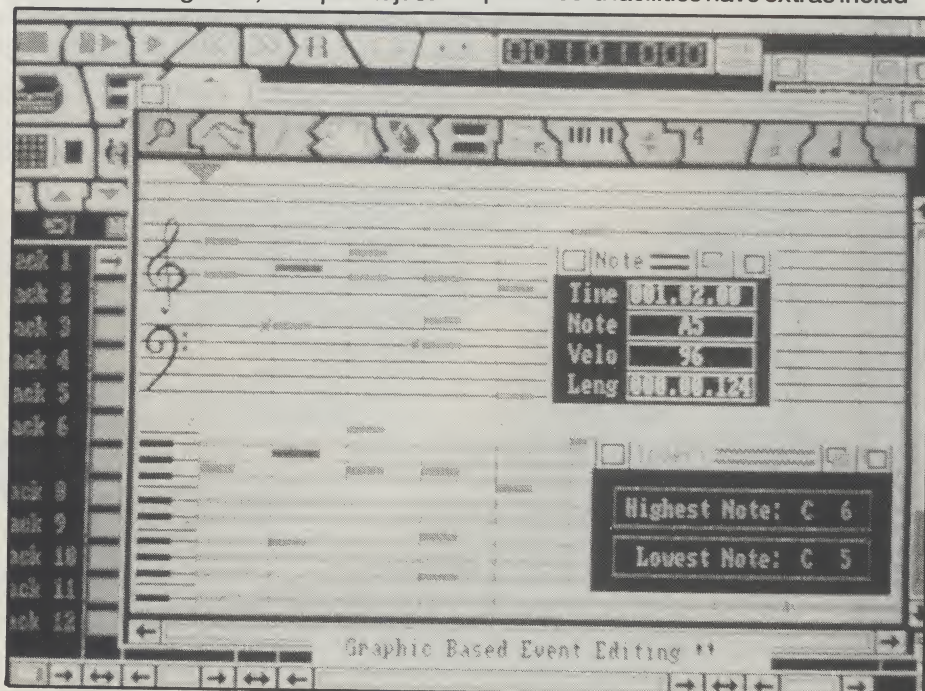
pipes - so the net effect is that your MIDI input goes straight into the sequencer. The pipeline's output side is similar except that each track has a valve, a tap which (amongst other things) you can turn on and off. When a valve is switched off the pipeline flow for that track is stopped - i.e. the track is muted. Providing sufficient memory is available there is no limit to the number of tracks which you can create.

Across the top of the track display are nine icons which can be grabbed and moved. These 'flags' are used to set editing, recording and looping limits and they include a cursor flag which moves through the track area as you play and record. In another area of the display a set of tape transport gadgets offer some more conventional facilities... start, stop, play, rewind, fast forward, record, loop, punch-in/out, two auto-locate registers, tempo adjust-

ment and a song position pointer marker.

Bars and Pipes displays measure numbers and time signature changes in a strip above the track display. Since the sequencer only shows a section of your song you can view other parts by scrolling forwards or backwards using the scroll bars immediately underneath the track list.

To be honest there just is not the space to mention everything that the sequencer offers but one of the particularly nice touches is an eight chance auto-looping record option. This firstly lets you make up to eight attempts during recording and then secondly offers a requester containing accept/cancel icons together with eight 'attempt icons'... so you can replay your various attempts before deciding which one you want to keep. Even the transport record facilities have extras includ-



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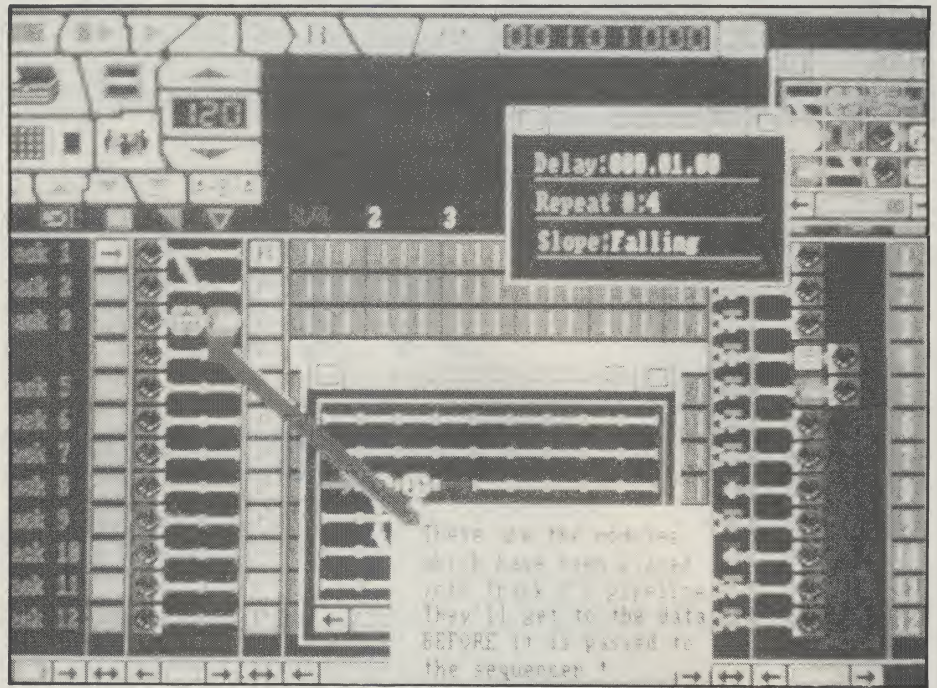
ing remote control options that allow the sequencer to be manipulated using specific MIDI note events. Metronome facilities are user definable and include an option for designating a MIDI note so that a metronome note becomes available on the MIDI communications lines. In short all of the commonly required professional sequencer facilities are available and these, especially when linked to the ToolBox modules makes the approach used by most other sequencers look downright archaic!

THE TOOLBOX

These components are conceptually brilliant: A toolbox is available containing pipe junctions, quantize modules, echo boxes, inverters etc. If you want to quantize track 1 events you pick up the quantize module icon and place it into the track 1 pipeline - the quantize facilities are then operational on that particular track. Pipe junctions let you move data vertically, ie between tracks, and this coupled with the fact that you can rearrange tracks in any order provides the potential to do some absolutely amazing things with your MIDI data.

When a toolbox icon is placed into the pipeline the track gets its own copy of the module. If, like quantize and echo facilities, the module is editable then clicking on the icon will provide an edit box which lets you set the required characteristics. This is a local edit so all tracks can not only have their own quantize facilities, but they can be individually adjusted. As well as multi-connectors (merging and splitter connectors), quantize and echo facilities there is also a randomizer module which takes your input and randomly varies it in timing and a harmony generator which provides interval harmonies to accompany the MIDI input data. Chord inversion and keyboard splitting modules are also provided and all are used by just picking up the appropriate ToolBox icon and moving it into the required track's pipeline area. The pipeline allows both multiple tools and multiple versions of the same tool and these objects can be moved in and out of the pipelines at any time. Specialized combinations of ToolBox facilities, macros, can be created by the user using the Bars and Pipes 'Create a Tool' window.... so a set of commonly used modules can be combined to produce a single new toolbox item.

Tools on the left hand side of a track's pipeline modify the MIDI data before it enters the sequencer... so placing a quantize module here for example is equivalent to input-quantizing and produces a quantized 'stored' track. Modules placed on the right hand side are conceptually different, although the effect which you hear will usually be the same. The big difference is that modules placed on the right-hand-side of the pipeline affect the se-



quencer output after it has left the sequencer. The result? Right hand side modules affect the MIDI data stream but do not affect the stored sequence... so the changes to your MIDI data are not permanent and occur only whilst the module is present in the pipeline. If, for instance, you have recorded a track using a particular right-hand-side quantize setting and decide that you would like to 'unquantize' it - all you do is remove the quantize module from the pipeline area of that track.

It really is hard to do justice to the ToolBox area of the program. The ideas are well thought out, well programmed and extremely effective. They are easy to use and do far more than just record and modify what you play - they actually encourage you to experiment musically.

THE EDITOR

When you double click on a track you enter the world of the Bars and Pipes editor. It is a two-dimensional scrollable window arrangement which by default shows a multiple staff and keyboard-roll display using horizontal bars to represent events. The editor also has the ability to show lyrics and chords, to provide velocity maps and to display a whole range of specific MIDI events such as controller and pitchbend data. This is another goldmine for serious use containing display sizing options and command buttons which let you carry out very complex editing extremely easily. The tools from the ToolBox are also available and work in two ways in the sequence editor. You can process all notes between edit flags or you can touch notes and make individual changes. By drawing a box around a collection of notes you can perform operations such as quantizing, transposition, modulation and filtering on

note-groups. To view and edit in detail - just click on a note and you will be given the full MIDI data. New notes can be entered either using the icon approach or directly via a MIDI keyboard. Graphic display of controllers, pitch-bend, after-touch, and program change are available and all are editable in much in the same way as is used for note data.

LAST WORDS

As well as the facilities we have already mentioned, Bars and Pipes also contains lots of other goodies: Song parameters for instance supply you with the means to describe your music in terms more sophisticated than MIDI events, providing the foundation for your composition in terms of lyrics, chords, key, scale and rhythm data. The graphical display and editing facilities for song dynamics are, for example, able to modify the velocity data of your sequence. Add to this SMPTE and MTC support, track grouping, A-B-A style pattern duplication, clipboard editing, options for creating standard MIDI files etc., and you will begin to see why this package is causing heads to turn in the States.

Bars and Pipes is a superb sequencer program which has broken new ground in many many ways. Unlike other alternative novel 'Amiga MIDI sequencer' offerings this package is not a toy - it is capable of serious professional use. I have barely scratched the surface as far as the existing facilities are concerned and because it is an open-ended package, ie more ToolBox tools can be added as time goes on, it is a package which is likely to move from strength to strength. In the United States the package sells for \$299 so it should sell in this country for around £199.00 (+VAT).

P.A.O.

MERLIN



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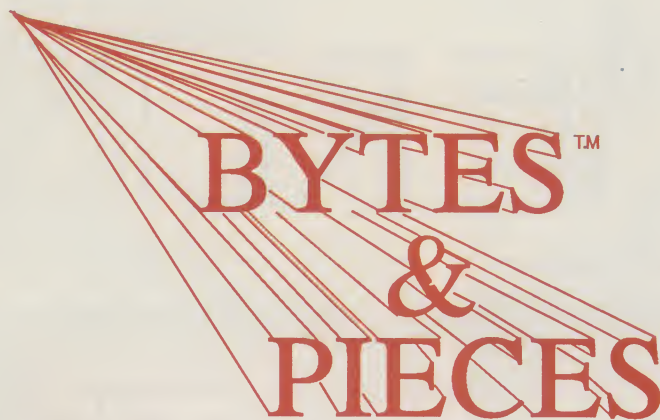
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Programming Tools

- Part V

Amongst their arsenal of system tools most serious programmers will have a collection of smaller utilities that, although not particularly spectacular in isolation, can be combined to automate and simplify many time consuming tasks. This month we shall look at two useful proprietary offerings and also look at a self-written search utility that could be modified to suit a number of purposes.

BUILD and EXTRACT

BUILD and EXTRACT were initially offered as part of the Lattice Compiler Companion package. They have been around for a long time and are incidentally now supplied as part of the Amiga's Lattice C compiler. EXTRACT, as the name suggests, extracts filenames from a directory and it uses this sort of syntax...

```
extract [-b|-r] [-n] file1 file2....
```

Here, the 'b' flag, refers to the base-name and means that only the root portion of the filename is output. By default the filenames are sorted but by using the 'n' flag this can be suppressed. The 'r' flag lets you remove prefixes or suffixes from the output filenames.

Wildcard names are permitted so the command.... EXTRACT #?.info for instance will list all the files in the current directory that have the '.info' extension. EXTRACT can be used with the redirection operators, so.... EXTRACT >RAM:FILES DF1:#?.BAK will create a file in the ram-disk called FILES which contains all files with a '.BAK' extension. You can do similar things using the AmigaDOS DIR command but EXTRACT is far more useful to programmers because the output format is more flexible.

The command line syntax for BUILD is...

```
BUILD file1 file2
```

where file2 is assumed to be a file consisting of a number of lines of text and file1 is the generated output file. Typically each line will be the name of a file if you are using EXTRACT and BUILD to construct batch command files. BUILD can also read directly from the keyboard but, irrespective of how it gets its input data, the net effect is that each line of input is considered as a model from which to construct lines in the output file.

A model is a sequence of text lines where the exclamation mark ! and the forward slash / have special interpretations. Each line within a model in which

an exclamation mark appears is repeated for every name in the list and the name replaces the ! character. The forward slash indicates that a newline is to be generated although to use a literal forward slash you can use the // character pair.

As an example, suppose we wanted to extract the names of all '.c' suffix files from directory 'dir1', and build a file called 'file1'. We would use this type of command...

```
EXTRACT file1 -b dir1/#?.c
```

If we then read that file and created a second file (file2) using 'diff dir1//! dir2//!' as the BUILD model line, ie if we typed this sort of input at the keyboard...

```
BUILD file2 file1
DIFF dir1//! dir2//!
cntrl
```

we would create a file, called file2, containing lines like these...

```
DIFF dir1/somefilename.c dir2/
somefilename.c
DIFF dir1/someotherfilename.c dir2/
someotherfilename.c
```

Things become clearer when you realize that DIFF is a Lattice file comparison utility which compares files to identify differences between them. What we have effectively done by using EXTRACT and BUILD is to create a final batch file which can execute this DIFF utility automatically on every file that was found in directory dir1 and compare it to an equivalent file in directory dir2. By typing 'EXECUTE file2', the potentially very long winded CLI based file searching and comparison process can now be carried out completely automatically - and all it has required is the typing of these lines at the terminal...

```
EXTRACT file1 -b dir1/#?.c
BUILD file2 file1
DIFF dir1//! dir2//!
cntrl
EXECUTE file2
```

Lattice's EXTRACT and BUILD are very useful for these type of 'build a batch file' operations and there are similar short utilities available on various PD disks if you can find them.

To be honest the CLI directory DIR command would be more useful for batchfile creation if it had a more flexible output as far as its nested directory search 'ALL' option was concerned. Unfortunately it has not, but it is not too difficult to write your own nested-directory searching utilities and, once

you have written one and seen the overall ideas in action, you will realize how straightforward it is.

Modern operating systems such as AmigaDOS use disk filing systems which are based on tree structures. A Directory is a 'node' in a tree and it contains information about three types of things ... details which characterize the node itself, details of any files connected with the node, and details of any directories associated with the node.

Now although the Amiga's DIR command is quite capable of providing complete searches of nested directories etc., the output provided takes the form shown in figure 1...

```
dir df1: all
devs (dir)
keymaps (dir)
usa1
printers (dir)
generic
customprint
special.drivers (dir)
custom-driver-sd.0012B
custom-driver-sd.0015B
clipboards (dir)
narrator.device
serial.device
s (dir)
startup-sequence
```

Figure 1: A typical directory listing - it has the right information but in the wrong form for further use!

The output in figure 1 is all very well, but the format makes it awkward to use such listings (via output re-direction operators, pipes etc.) as intermediate files. There are a lot of occasions, e.g. writing a 'script file' based disk-cataloging utility, when it would be really useful to have output in this form...

```
device-name:directory1/filename-X
device-name:directory1/directory2/
filename-Y
device-name:directory1/directory2/
filename-Z
```

or even better, with the filename duplicated as a fixed length 'key field' - so that the output list offered both the isolated filename and the full name including the path needed to reach it, like this...

```
filename-X device-
name:directory1/filename-X \
filename-Y device-
name:directory1/ directory2/
filename-Y
filename-Z device-
name:directory1/ directory2/
filename-Z
```


Why the filename duplication? Convenience really, because if we can get an output form that is easy to handle we are likely to find more opportunities to use it - e.g. AmigaDOS includes a simple sort package that can use fixed positions within a line of text as a sorting key. Having the key field at the front would make it easy to use such a package to sort the output. It also makes it easier to ignore if, on occasions, we find that we don't need it.

Utility programs which provide this type of output need a routine which searches the whole of the filing system tree structure and locates every file. Providing the routine keeps track of the path that it is following, all it has to do when it finds a file is export both the filename and the path needed to reach it.

A routine carrying out such a search is unlikely to have prior knowledge of the tree structure's size or depth, so it is fairly obvious that approaches based on filling up a pre-allocated set of variables as the search proceeds would be poor. The best approach to adopt is a recursive one, with the routine using local variables and dynamically allocated memory to get its workspace at any one level. In other words we set up a frame for node operations which is self-contained. The frame operations are simple: Look at a set of node entries, if an entry corresponds to a file then export the name and the current path details, if it corresponds to a directory then make a recursive call to the frame handling routine - this latter event results in the operations in the current frame being suspended whilst a new frame is opened to deal with the directory just discovered.

In this way frame operations are stacked as the routine moves down through the nested directories eventually terminating at the outermost parts of the tree (empty directories, directories with only files in them) where no further recursive calls are made. As soon as any particular node analysis is complete, the frame is shut down and processing continues at the higher level again.

Such a routine needs a language which supports recursion. The following Lattice C based example has been written for AmigaDOS, but the overall ideas would actually be similar for any number of other tree-based directory systems.

The example program itself is a command line (CLI) nested directory searching utility which produces a straight list of every file on a disk together with its full pathname. It takes a single parameter - the name of the device to be scanned. The initial code checks that only two parameters are present (program name and device) and

then passes the details to a routine called CreateFrame() which processes the request.

CreateFrame() uses functions available from AmigaDOS to carry out its filing system node operations. The AmigaDOS Examine() routine reads in an information block which gives details of a directory and entries within this are subsequently examined using the ExNext() function. AmigaDOS requires node entries to be 'locked' before they are examined and this is the purpose of the Lock() function. Figure 2 shows the frame the operations described in pseudo-code form.

Lock node using Lock()
Allocate memory for file information block
Read file information block using Examine()
do... Check all entries in node using ExNext()
copy imported pathname into export variable holding the current path (making adjustments for ':', '/' etc.)
add name of this entry to current path if file - export details
if directory - set up new frame to process it
(recursive call to this routine)
... until no more entries exist
Deallocate memory used for file information block
Unlock node

Figure 2: Pseudo-code of the required frame operations

The source code for the completed utility was compiled using Lattice 5.02. How to use it? Just type the command name followed by the device you wish to examine, e.g. the command...

CATALOGUE RAM:disk-contents
DF0:
 will search drive DF0: and send its output to produce a ramdisk file called 'disk-contents'.

I have not implemented full error analysis with the AmigaDOS calls for two reasons... firstly it tends to complicate what is essentially a very simple piece of code, and secondly because all errors (including any unusual errors such as finding an file information block which has been deliberately interfered with) will simply result in CreateFrame() closing down and terminating without any untoward effects.

P.A.O.

```

/* -----
/* Amiga Nested Directory Listing Utility:                PAUL OVERAA      */
/* -----
#define FIB_SIZE (LONG)(sizeof(struct FileInfoBlock))
#include <exec/types.h>
#include <exec/memory.h>
#include <libraries/dos.h>
#include <libraries/dosextens.h>

TEXT *error[6] = {
n",          "dummy error - should never occur
n",          "format..... catalogue <device>
n",          "Device not found
n",          "Insufficient memory to continue operations
n",          "Examine() error - system related problem
n"
};
UBYTE global_error=0;
main(int argc, TEXT *argv[])
{
void CreateFrame();
if (argc!=2) {printf(error[1]);}
else {
CreateFrame(argv[1]);
if(global_error) {printf(error[global_error]);}
}
} /* end of main() and logical end of program */

/* -----
void CreateFrame(TEXT imported_path[])
{
TEXT exported_path[300];
struct FileLock *FrameLock_p,*Lock(); struct FileInfoBlock *fib_p;
if(FrameLock_p=Lock(imported_path,ACCESS_READ))
{
if (fib_p=(struct FileInfoBlock *)AllocMem(FIB_SIZE,MEMF_PUBLIC))
{
if(Examine(FrameLock_p,fib_p))
while(ExNext(FrameLock_p,fib_p))
{
strcpy(exported_path,imported_path); /* copy name */
if(exported_path[strlen(exported_path)-1]!=':')
{strcat(exported_path,"/");}
strcat(exported_path,fib_p->fib_FileName);
if(fib_p->fib_DirEntryType<0)
{ /* EXPORT DETAILS OF THIS FILE */
printf("%-30s %s
n",fib_p->fib_FileName, exported_path);
}
else { /* SET UP A NEW FRAME */
CreateFrame(exported_path);
}
}
else {global_error=4;} /* Examine() failed */
FreeMem(fib_p,FIB_SIZE);
}
else {global_error=3;} /* AllocMem() failed */
Unlock(FrameLock_p);
}
else {global_error=2;} /* Lock() failed */
}
}
/* -----

```


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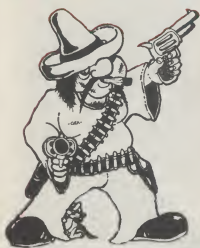
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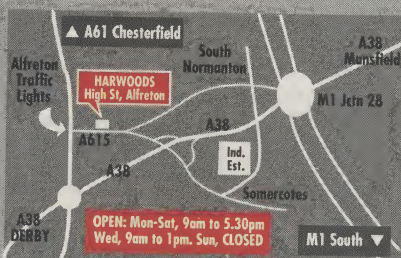
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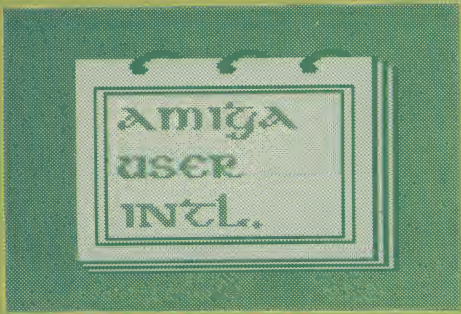
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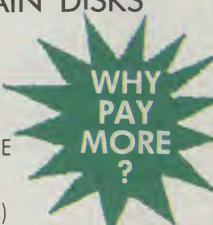
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As many of you will be aware, the Commodore Amiga is becoming an increasingly popular choice in less blinkered Educational circles; after all, what do you replace ageing and underpowered Acorn BBC Micros with at the end of their life? If you wish to retain a large degree of compatibility with your old Beeb BASIC software (and most schools consider this a priority), then it makes a lot of sense to buy new computers that are not only capable of running the majority of your old BASIC programs, but are also state of the art. They must have with the power to be used not only as high-resolution graphics workstations and powerful aids to music teaching and instruction in programming in real-world languages such as Pascal and C, but for business training in the black arts of wordprocessing, databases, spreadsheets, and presentation graphics. And, if possible, should include the more esoteric fields of video graphics production and, not least, art! In addition, you want a micro that is simple to use and easily mastered by pupils (and teachers!) of all ages - hence a fast machine with mouse controlled WIMP system would be ideal, instead of a computer that re-

quires the memorisation of a huge manual to get to grips with the simplest of tasks.

Where do we find this paragon of educational computing? Why, in the Amiga of course! The A500, perhaps with the A590 hard disk and ram unit, plus the powerful BBC Micro Emulator software (which is capable of running many BBC BASIC programs at up to seven times the speed of a BBC Micro!), would be the ideal educational system for many schools and colleges, particularly as Commodore are currently running their astounding 'Class of the 90's' offer, where it is possible for educational users to purchase an Amiga A500 with TV modulator, Midi interface, Deluxe Paint II, Superbase Personal database, Publisher's Choice (Desktop Publishing with PageSetter and wordprocessing with Kindwords 2), Maxiplan 500 spreadsheet, Dr.T's Midi Recording Studio software, Amiga LOGO language, and of course the BBC Emulator Version 2! All this plus various odds and ends including the Education File (info for teachers) and, of course, the indispensable copy of Amiga User International, adds up to the bargain of the decade for the hard-pressed educational user, who not

only effectively receives over #@500 worth of goodies free, but is also eligible for a whopping Commodore Educational Discount!

But what has all this got to do with Public Domain Software, you may ask? Well, the fact is, there's quite a bit of PD educational software about, much of it of an excellent standard, and surprise, surprise, a new pack of Educational PD has just dropped onto my desk!

Put together by those champions of Public Domain and Shareware software, George Thompson Services, 'Education With the Amiga Part 1' is a set of five disks of educational programs, many of which are not only of use to school children but to adults as well! There isn't space here to describe the full contents of the pack, so I've just picked out a few outstanding examples to give you a taste of what to expect.

German Language Course V1.0

One program which might prove equally useful to the adult tourist or school languages pupil is the German Language Course on Disk 1 of the GTS education pack. This is a simple but effective interactive program designed to

continued on page 111



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continued from page 109

give a basic sense of the German language.

The author, Troy R. Blake, lived in Germany for four years, and has used his experience of making his way through the tourist traps in this program. Troy calls his program Freeware, which is another name for Public Domain, which means that you may pass the German Language Course on to your friends or colleagues quite legally.

The basis of the program is quite simple. The program gives you a word or phrase in English, to which you must then guess the German translation. The author advises that it will help you to learn if you pronounce both versions as you work. Complete on-screen instructions are provided, and the whole thing is very easy to follow.

While this program is by no means a complete German language course, there is no doubt that it is a great aid to practicing your German learned elsewhere, and is a powerful alternative to studying a phrasebook, as well as being a lot more fun!

DrawMap

This is definitely one for the Geography teacher! DrawMap, which is on Education disk 2, allows you to produce a high resolution mode map of the Earth, using flat, Globe or Mercator projection, and to either view the planet from space or to zoom in close to individual land masses. This allows a close look at the shapes of the continents and islands around the world, but unfortunately there isn't any detail on the land itself.

The zoom control is toggled using a form of menu which I have only seen before on the Acorn Archimedes - instead of appearing from the menu bar, pressure on the right mouse button brings the menu up immediately beneath the mouse pointer, wherever it happens to be on screen! This is extremely convenient, as all you need then do to select an option is to hold down the right mouse button and release it when the option of your choice is highlighted. Menu options include choice of Colour Fill, Flat, Globe, Mercator or Orbital projections, Zoom In, Zoom Out, Box (which allows you to draw a 'rubber band' box around

an area on the map to select it for zooming to full-screen size), Grid (which places a grid over the map), Flood Fill (which enables you to fill outlined map areas with a colour to make them stand out better), Colours (which provides a toggle between various colour palettes for the display), and Clear, which of course clears the screen.

DrawMap is an interesting but limited application which should capture the imagination of pupils beginning their studies of Geography, and might well prove useful in some areas of primary education to give children an insight into the shape of the world about them. While the program runs in high-resolution interlace mode to allow a good degree of detail in the outlines of the land masses, the resultant screen flicker is unobtrusive, especially if display colours are carefully chosen. It would be nice to see a version of this program which provided information and statistics on countries selected by mouse, perhaps with a digitised photograph of the people and their ways of life - this would be fairly easy to implement on the Amiga without spending a fortune on Video Disk Units!

DrawMap, which was written by Bryan Brown, is in the Public Domain.

Evo

Education disk 3 includes many programs, but one on evolution caught my eye, as it would not only prove useful to those studying human evolution, but is also an excellent demonstration of the Amiga's practical graphic abilities. Evo portrays the changes in the shape of the skull of modern man's ancestors from 20 million years ago to the present day, using eight known hominid forms and interpolating between them to infer what hominids looked like at intermediate times.

Evo shows overall tendencies of human evolution over long spans of time, and does it in a very interesting way. The main screen display consists of a large outline drawing of a skull on the left, with captions on the right showing the Genus (eg Homo - man), Species (eg sapiens - 'thinking'), Subspecies (where applicable), and the age in millions of years.

Below this is a scale stretching from 20 million years in the past to the present day, including the Miocene, Pliocene and Pleistocene periods. Pointing the mouse at this scale and clicking causes a scale indicator to move to a new age, and produces a corresponding change in the shape of the displayed skull - generally the size of the skull and the brain area, and the shape of the jaw, show the greatest and most significant evolutionary change. It is possible to see a continuous change of shape by dragging the mouse pointer along the age scale - it is fascinating to watch the skull flow from one shape to another before your eyes, over a range of 601 cranial shapes.

Below the scale are five option 'buttons', labelled Help, Text, Map, Glossary and Notes. Selecting Help with the mouse explains the purpose of the program and tells you how to use it. The Text button gives you a short potted lecture on the hominid represented by the skull you have currently selected. Clicking on Map provides an attractively styled location map of African Hominid fossil sites. Glossary provides a brief description of some of the terms used in the program. Finally, selecting Notes gives an insight into the ideas behind the Evo program, and recommends some further reading.

Evo is a remarkable program, which should be of general interest to all descendants of the apes! It is written by Steve Bonner, and is in the Public Domain.

There are many more programs of a similar standard covering a wide range of topics on the rest of this five disk pack; something for everyone, and at the very reasonable price of #@12.99 including VAT and postage, I can recommend the George Thompson Services Educational PD pack to educationalists looking for cheap but useful programs as well as to parents hoping to find something to educate Little Johnny in between bouts of alien extermination!

S.W.

Education With the Amiga Part 1 was provided by: George Thompson Services, Dippen, Brodick, Arran, Scotland, KA27 8RN. Tel: (077082) 234.

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Upgrade Any Paint Program to Digi-Paint 3

If you own Digi-Paint or ANY other paint program, you can upgrade to the incredible power of Digi-Paint 3 and join the Cool Friends of NewTek at the same time!

Just send us the front cover of your Digi-Paint or other paint manual along with a cheque, postal order or VISA/Access number for £36.95 (shipping, handling, and VAT included). We'll send you a complete copy of Digi-Paint 3, including the box, expanded manual, software (including Transfer 24) and a highly prized CFONC application. Your friends will be suitably envious and respectful but act fast because this one time offer expires April 30th, 1990.

"Why is Digi-Paint 3 better than DeluxePaint III™?"
 Digi-Paint 3 works in the Amiga's powerful Hold and Modify (HAM) mode which allows you to paint using all 4096 colours simultaneously. By comparison, DeluxePaint III (by Electronic Arts) operates in less sophisticated modes, restricting you to a maximum of only 64 colours. Advanced features available in Digi-Paint 3 - including Colourizing, Variable Transparency, Shading, Lighten, Darken and Range Painting - are simply not possible in DeluxePaint III due to its 64 colour limitation. AMIGAWORLD warns, "Competitors may want to head back to the drawing board, because Digi-Paint 3 is hard to beat!"

What makes Digi-Paint 3 better than other HAM paint programs?"
 Digi-Paint 3 is the only Amiga paint program written in 100% assembly language. Although challenging to program (taking up to 10 times longer than other computer languages), it's the only way to achieve the incredible speed found in Digi-Paint 3. AMIGAWORLD says it is "the fastest HAM paint program yet" and AMIGA FORMAT calls the nearest contender "infuriatingly slow compared to Digi-Paint 3!"

Other advanced features found *only* in Digi-Paint 3 include: anti-aliased texture mapping, anti-aliased fonts, Arexx support, 1024 x 1024 super bitmaps with auto-scrolling and dithering to 30 bits per pixel (over a billion colours internally, giving you tens of thousands of apparent colours). AMIGA USER INTERNATIONAL says "Digi-Paint 3's user interface is a dream" and concludes "to be honest it's more fun to use."



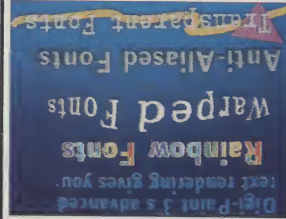
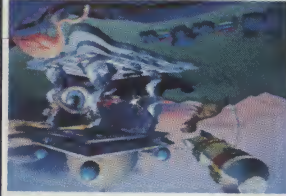
Have you ever dreamed of owning a desktop fusion reactor? Have you considered producing your own movie? Do you have an electronic wristwatch that does more than most ordinary computers? Have you hoped to go where no man has gone before? If you can answer yes to any of these questions, and buy any product direct from NewTek, then you are eligible for The Cool Friends of NewTek Club, where scientific inquiry isn't just a good idea, it's the law. As a member, you will receive NewTek Demo Reels, and NewTek lifestyle kits, information on new products and other essential items. Be seeing you!

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 don't you think?

DIGI- VIEW 4.0

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With the all new Digi-View 4.0 software you can do the one thing most people thought was impossible — digitize and display all 4096 colours in high resolution! We call this revolutionary new graphics mode Dynamic HiRes and you will have to see it on your own screen to believe it. But that's just the start of what makes Digi-View 4.0 a breakthrough. Other new features include: Dynamic HAM (fringe free HAM), Noise Reduction (for the sharpest images ever), ARxxx support, super bitmap digitizing, 24 bit colour support, 68020/68030 compatibility and dozens of other new features making Digi-View Gold the hottest Amiga graphics product ever. And it's still just as easy to use. Simply focus your video camera on any object or picture, and in seconds Digi-View Gold turns it into Amiga graphics that glow with vibrant colour and stunning clarity. Whether you are creating graphics for desktop publishing, presentations, video, or just for fun, Digi-View Gold gives you dazzling images with amazing simplicity.

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These images, photographed directly from an Amiga 1080 monitor, show Newtek's incredible new Dynamic HiRes mode available with Digi-View 4.0.

DIGI-PAINT 3 TAKES OFF!

ewTek has launched the latest in Amiga graphics technology, and computer artwork will never be the same. This article looks at some of the most important new features of Digi-Paint 3.

Wait a minute — what happened to Digi-Paint 2? Well, this new version is about three orders of magnitude better than Digi-Paint, explained Tim Jenison, president of NewTek.

“And it’s the result of over three man-years of software development. So the name ‘Digi-Paint 3’ really fits.”

The user interface is the key to making the program’s power available so Digi-Paint 3’s interface received months of design work, and was implemented by Jim Sachs (renowned as the premier Amiga artist). The result makes using the program simple for both beginning and advanced artists. When you’re using super bitmaps that can be up to 1024 pixels high or wide, navigating on the bitmap is no problem. Just move the pointer to the edge of the screen, and Digi-Paint 3’s real-time Auto-Scrolling allows you to easily move to another part of the bitmap or perform global screen operations.

Digi-Paint 3 works in the Amiga’s unique Hold-And-Modify (HAM) mode, making all 4,096 colours of the Amiga palette available at once.

The Transfer 24 software included with Digi-Paint 3 turns your Amiga into the ultimate image manipulation workstation. Convert your HAM pictures to any Amiga resolution and display mode (including halfbrite and averaging algorithms used with NewTek’s best-selling Digi-View Gold video digitizer. Transfer 24 also gives you complete control of the RGB levels, contrast, brightness, saturation and sharpness of your images, as well as the ability to remap them to any palette.

The 11 different drawing modes in Digi-Paint 3 give you different ways of applying paint to the screen. The Range Painting mode lets you blend colours and create smooth gradient-filled backgrounds. Using Colourize mode, a black and white picture turns into lifelike colour. Resizing a custom brush looks terrific with Digi-Paint 3’s sophisticated Smoothing power. Smoothing, also known as anti-aliasing, is the process of adding intermediate colours to reduce the “jaggies” that normally result when you resize.

Digi-Paint 3 adds another dimension to painting with powerful and flexible anti-aliased Texture Mapping: multiple levels of warping and control of the location and

Texture Mapping). The advanced text handling of Digi-Paint 3 lets you render any Amiga font in any drawing mode. The Smoothing function in the Text Rendering controls uses anti-aliasing to make the text appear sharper and of greater resolution. This is perfect for video work. Now that you’ve heard what we have to say, here are two of the most famous Amiga artists’ thoughts on Digi-Paint 3:

• “Digi-Paint 3’s unlimited transparency control allows me to easily create effects that would quite simply be impossible on other paint programs” — Jim Sachs

• “Digi-Paint 3 is not only a great stand-alone HAM paint program, but also the perfect companion for enhancing ray-traces and digitizations” — Louis Markoya

Turn to the last page of this newsletter to find out how to upgrade to Digi-Paint 3.



(below) This image demonstrates the use of Texture Mapping (the cube and perspective floor), user controllable Transparency (the reflections on the floor and the wall) and the 4096 color Hold and Modify mode.

“Digi-Paint 3’s unlimited transparency control allows me to easily create effects that would quite simply be impossible on other paint programs” — Jim Sachs

The Transparency controls add transparency to any painting operation in any drawing mode (including Texture Mapping). The Transparency as the brush is re-drawn is possible, and realism, varying the amount of warping or fully variable transparency produces matchless subtlety type of warping (horizontal, vertical or point) are provided; Digi-Paint 3 lets you

render any Amiga font in any drawing mode. The Smoothing function in the Text Rendering controls uses anti-aliasing to make the text appear sharper and of greater resolution. This is perfect for video work. Now that you’ve heard what we have to say, here are two of the most famous Amiga artists’ thoughts on Digi-Paint 3:

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Turn to the last page of this newsletter to find out how to upgrade to Digi-Paint 3.



(top) The Texture Mapping and Transparency by premiere Amiga artist Jim Sachs demonstrates the use of Transparency for montage effect.

DIGI-PAINT 3 TAKES OFF!

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