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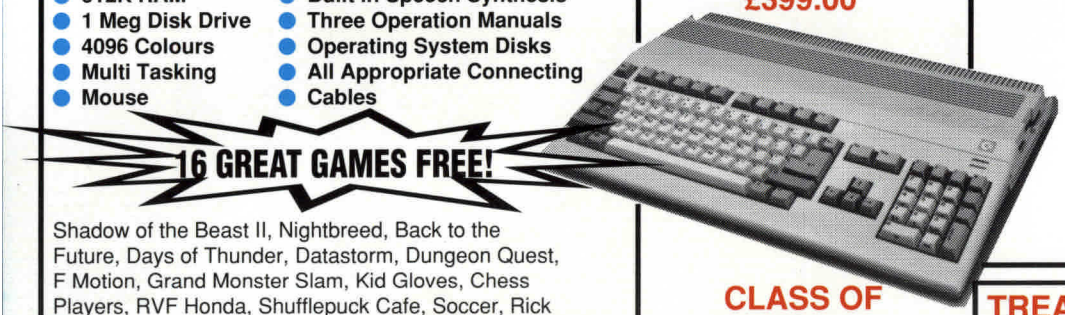

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AMIGA USER INTERNATIONAL

Contents

Volume 4 No. 8 December 1990

CONSTANT FACTORS

5 *The Amiga Dimensions: Managing Editor Antony Jacobson comments on the acceleration of the Amiga, its variety of applications and increasingly original entertainment value*

6 *Newsfile: Colour splitter, hand held printers, Accelerators and skullduggery between chipmakers, 8 pages of all the news that's fit to print . . .*

112 *Write to Reply: How you see the world of the Amiga*

MENTOR

54 *ClickDos II: Hartmut Schumacher follows on from shelling out with some useful hints*

86 *Basic: Susan Maxwell explains how to use it for some complex fielding*

109 *Amiga Answers: Andy Eskelson moves into solution mode*

HARD COPY

37 *Is English the world language? It should really be Ms-Dos. Daphne Moss reads how it is making the move in computing and business*

TEST DRIVE

21 *Contact: Mike Nelson investigates a program that may replace everything on your desk, except the Amiga*

30 *Accounts: Into the business Arena with accountant Mark Rose*

38 *Cygnus Ed II: ASDG's famed package gets an upgrade. Mike Nelson measures the progress*

42 *Power Board: KCS bring an exciting hardware add-on that beefs up your A500. Jonathan Living reviews.*

47 *Thinker II: Cogito ergo sum? Mike Nelson finds a Cartesian program to prove that he exists in upgrade form*

49 *AMOS: But no Andy? Tony Horgan speaks a new language of gamemaking*

56 *Kyocera F800: The laser printer is beginning to move within reach. Pat Kelly reviews an accesible example*

106 *Scene Generator: Fractal Graphics, will they replace the Leonardos or aid them? Barry McCarthy reviews a new package*

FIELD REPORTS

22 *Accelerating the Amiga: The 68040 chip is already appearing. Chris Wright reports on the latest developments on the Motorola scene*

32 *Very Sound Effects: Mike Nelson reports on the Amiga starring on the stage in amateur performances and Aspects of Love*

98 *Video — The State of the Art: a special report from Jay Gross in the U.S.A. on what is happening and where it is going. Plus Chromakey, the video mirage device*

SPECIAL OFFERS

93 *The great cover up: Protect your A500*

113 *Subscription from: get your AUI from your friendly postman*

ENTERTAINMENT

60 *Adventure Now - Including Operation Stealth and Camelot*
66 *Vulture's Pro Soccer*
68 *Image Works' Cadaver*
70 *Ocean's Night Breed*
72 *System 3's Tusker*
74 *Anco's Death Trap*
78 *Psyclapse's Anarchy*
80 *Gremlin's Lotus Esprit*
82 *Thalion's Wings of Death*
84 *Ocean's Plotting*
88 *Microprose's F-19 Stealth Fighter*
90 *Tony Horgan's Heard it on the Grapevine*

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THE AMIGA DIMENSION

The first review of an Amiga computer in a U.K. magazine, exactly five years ago, in December 1985, appeared in the forerunner of ***AUI***, Commodore's Business and Amiga User Magazine. In that quarterly publication, the coverage was called "The Amazing Amiga". The machine was indeed amazing for its time. Nevertheless, the anti-Amiga band sneered. "Too expensive" (at about £1700 they were not far wrong!) but their main jibe was "There is no software!" It took time to overcome that objection.

However, in these five years, the once derided machine has become accepted into the mainstream of computing. There is now an immense variety of software and in this issue of ***AUI***, we examine such areas as video, sound, business, programming, entertainment and other aspects of the wide range of Amiga activities.

In hardware, too, we have seen an extraordinary advance. In fact, it now seems that it is going through the same rapid progress that software began about a year ago. This is particularly noticeable since the fall in chip prices that has brought upgrades like the ½ meg within everyone's reach. But it is also visible in the frequency with which Amigas are now being moved up from the basic 68000 chip to 68020, 030 and even to the latest Morola "baby", the 68040, on which we report in this ***AUI***.

These higher power add-ons are not acquired just to play games. Indeed, they may have to be switched off to allow the games designed for the humble 68000 to run correctly. The 020's and up are expensive enough to demand a genuine reason, in many cases for applications such as graphics, video and sound, that cannot be properly addressed without something heavier than a 68000.

To me this indicates that the Amiga is taking its proper place as a leader in the "vertical markets", i.e. specialist applications where purpose is more important than cheapness but in which the Amiga has a sharp advantage because it does deliver "more bang for the buck".

One of these applications is the creation of computer games, now a huge, international business. The industry is, at least in western Europe, increasingly dominated by the Amiga, relegating the once leading Atari ST to "The machine you buy if you cannot afford an Amiga".

It is interesting to see that the creativity that machines such as the Amiga allow means that the four best games this month, Cadaver, Lotus Esprit, F19 and Death Trap, owe nothing to costly arcade licences and are entirely original entertainment products.

Perhaps the most significant Amiga achievement over these five years has been to show how an accessible, affordable machine can let us do what we want to more easily, with increased speed and, maybe most important of all, by giving us the chance to develop and exploit our creativity. This is clearly already happening in the games world. We are now, I believe, about to see it take place in other, probably more useful but no less entertaining areas of Amiga activity.

Antony Jacobson
Managing Editor and Publisher

Editorial Assistant

AUI needs a new editorial assistant, intelligent, alert, able to write decent English, preferably London-based, not younger than 18, computer literate and keen to make a career in publishing (not just in games!). This could be a great opportunity!

Contact Antony Jacobson at AUI.

ADVERTISERS DIRECTORY

(AMIGA USER INTERNATIONAL) DECEMBER 1990

16 Bit Software	83
Ace Repairs	111
Adam Soft	101
Amiga Repaiur Centre	73
Amiga User Group	108
Amiganuts	105
Anco	76,77
Applied Research Kernel	108
Bitcon Devices	28,39
Blitterchips	105
Byte Back	23
Bytes and Pieces	26,27
Checkmate Systems	65
Colour Vision	114
Commodore	13
Computer Lab	79
Computerwise	111
Delta Pi	108
Diamond Computers	IFC, 3, 43, 44
Digicom	19
Enchantment	114
ESP Software	63
Evesham Micros	86,87
First Choice Computers, Leeds	59
Gasteiner	17
GTI	100
Harwood Computerss	94, 95, 96, 97
Hobbyte Busbyte	58
Homebased Business	111
Instamec	111
Intraset	31
Kad Soft	64
Kyocera	10,11
Matrix Leisure	111
Memory Expansion Systems	41,69
Merlin Computers	50,51
Newtek Inc	OBC
Omega Projects	114
Pazaz	111
Pinboard Computers	55
Premier Software	100
Rombo	IBC
Softmachine	101
Softsellers	34, 35
Softville	63
Solid State Leisure	9
Start Computer Systems	31
Supervision PD	105
Track Computers	20
Triangle TV	111
Trilogic	25
Virtual Reality	108
WTS Electronics	55, 79

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Warp Your Time!

In Time Machine say Vivid Images, interfering with evolution you must escape a time warp and return to the future - while keeping it exactly the same - after all you don't want to upset the balance of evolution and wipe out the creatures that will one day become your forebear, do you?

Vivid Images claim this game is a "4D fantasy role playing arcade adventure" whatever that may mean!

A Gigabit per second...

BT&D Technologies, to improve upon the fibre distributed data interface standard's 100-megabit-per-second speed, has developed optical receivers and transmitters that send data across single-mode fibre at gigabit-per-second speeds. The devices use gallium ars-enide chips. The transmitter converts parallel information into a serial data stream, which travels faster than parallel data. The receiver then changes the information back to parallel. This lets the transmitters send data at 1 gbps with 10 kilometres between nodes over single-mode fibreoptic cable and back in the not-so-old days, we started with Sinclair's 1K computer. Times change...

BADLANDS

Domark have announced they are releasing Badlands, a coin-op conversion from Tengen.

Domark says " It's all out war on the tracks as players blast their opponents to finish first"

The tactics are simple – ride rough shod over the other cars and use every dirty trick you can to beat your two opponents. The eight different courses are convoluted tracks, tight corners, moving barriers, oil slicks and viaducts where you're driving 'blind' for a short while. Crumbling buildings strew track with rubble and falling power lines "fry" you on contact.

Damaged cars are airlifted out and new cars are replaced by helicopters.

For the first time in any Tengen coin-op conversion, two joystick control options have been included to give players a choice of how they want to steer the cars. Programmed by Teque, London, Badlands is a game for one or two players Price: £19.99

THE IMMORTAL

Electronic Arts has announced the release of The Immortal, created by Will Harvey, whose previous work has included home computer versions of Zany Golf and Marble Madness. The Immortal is claimed to be one of the most realistic fantasy adventures ever seen on 16-bit. A three-quarter perspective, hyper-detailed graphics, joystick-driven combat, fast action and intricate puzzles, Electronic Arts says, lend drama and realism to this plot of sorcery and betrayal.

The player takes the role of a wizard searching for his long-lost teacher, Mordamir. The adventure begins in the antechamber of a dungeon with an image of Mordamir rising from a burning candle and hinting that he is trapped at the bottom of dungeon. The player starts his quest, but quickly discovers that the dungeon is filled with many secrets and a lot of danger. Nasty monsters and traps await the player: goblins, slime, trolls, ingenious floor traps, even huge worms that swallow you whole. However, along the way the player can get hints from special characters and discover items to help him avoid these dangers. Every character has something to tell - every key, note, weapon and magic scroll has a specific use.

Electronic Arts tells us that the viewer's perspective is totally unique. Most adventure games offer an overhead, scrolling or front view of the action. The Immortal uses a threequarter view to give players a fuller view of the character and his surroundings. Fighting takes place in real time - the player must duck and parry when a monster swings, then lunge or chop when it leaves itself open to attack. The Immortal will be available in the Autumn, priced £24 99.

(With Populous, E.A. made you a God. With the forthcoming ' Powermonger' you own a world - and now they are offering immortality. You have got to hand it to Electronic Arts - they think big!)

POWER-MONGER

Electronic Arts has announced the release of PowerMonger the latest production from Bullfrog, 1989's 'Programmers of the year' and the team behind the hit game, Populous.

PowerMonger takes the player to a living world where each individual has a home, an occupation and a level of intelligence - all must be accounted for in an overall strategy. The land is both vividly rendered (through use of 3D vector graphics) and truly alive. Each territory can be viewed from many angles and magnifications. The landscapes are composed of hills and plains, roads, buildings, trees, lakes and even animated waterfalls and streams. Fishermen in boats, farmers, ranchers, cattle, sheep and birds, are amongst the many living characters in the game. The player can even watch a carrier pigeon delivering orders, and the anglels of felled warriors ascending to heaven. Even seasonality is realistic, the onset of winter is seen as snow begins to fall, and prompts the ranchers to bring in their herds, or the birds to migrate.

The player is cast as the leader of a displaced tribe, newly arrived in an uncharted territory. There are 200 territories to conquer before the world is taken, each beginning with a different layout to yield literally billions of different possible games. The land is populated with scattered villages, merchant and fishing communities, and large populated towns. To unite the land under the rule of the player, the allegiance of the people must be won, by force, negotiation, or outright bribery. When the player has the loyalty of his people, they can start work on new technologies, by inventing better weapons or agricultural equipment. Food must be provided for the population, or they will wander off to find it for themselves. As villages fall, village captains align themselves with the player, each having a different personality and requiring different management techniques. Captains can be traded with, bribed, fought, allied or instructed to spy. The computer controls three other PowerMongers, and two or more can compete via modem.

PowerMonger is projected to appear in December, priced £29.99

Microprose's Lightspeed

MicroProse Software is set to launch its first space simulation - LIGHTSPEED - at the end of this year.

Taking place in a future where the Earth has lost its ability to support human life, LIGHTSPEED requires the player to explore a star cluster in search of planets that can serve as a new home for the human race. LIGHTSPEED features elements of simulation and role-playing – and allows the player to control how much of each he wants in the game.

"Players who like the hightech thrill of simulations can choose a plan of action that requires more of those types of sequences," said game designer, Sandy Petersen. "And for role playing fans there's the fun of interacting with all the different aliens that live in each star cluster." Some star clusters, Petersen explained, are more amenable to human habitation than others. By choosing a particular star cluster to explore, the player will also be selecting a difficulty level.

LIGHTSPEED also promises to feature the most impressive 3-D images MicroProse has ever produced as well as multiple sound effects.

DESKTOP VIDEO CONFERENCING

PictureTel Corp. gave users a look at what it is developing for full-motion desktop video conferencing at a recent International Communications Association conference and exhibition in New Orleans. The Peabody, Massachusettes-based supplier of video conferencing systems demonstrated a personal computer that provides conferencing applications similar to those offered by the company's C3000 coder/decoder - but this time right at the desktop.

Using Microsoft Windows, the PC displays color video images normally viewed on a television monitor

Art Beat is Simpatica

Artbeat Computer Graphics have created a single frame rendering system for the Amiga and nine-pin serial video decks. Simpatica features the ability to take animation sequences and static images and edit them into one long render list for fully automatic, unattended, single frame rendering to a range of video decks eg Series 9/95, Betacam, etc.

This hardware/software plug in and go solution, as Artbeat calls it, features a single frame rendering of almost any Amiga graphics/Animations, including Deluxe Paint 3, Video Scape, Scuplt 3D, Sculpt 4D, Pase, Turbo silver and all IFF based software; an image based editing system for sequences with cut, copy, paste, etc., preview sequences direct from disc; on screen deck control with time code support, an on line powerful help system, a video utilities toolbox, and video tagging.

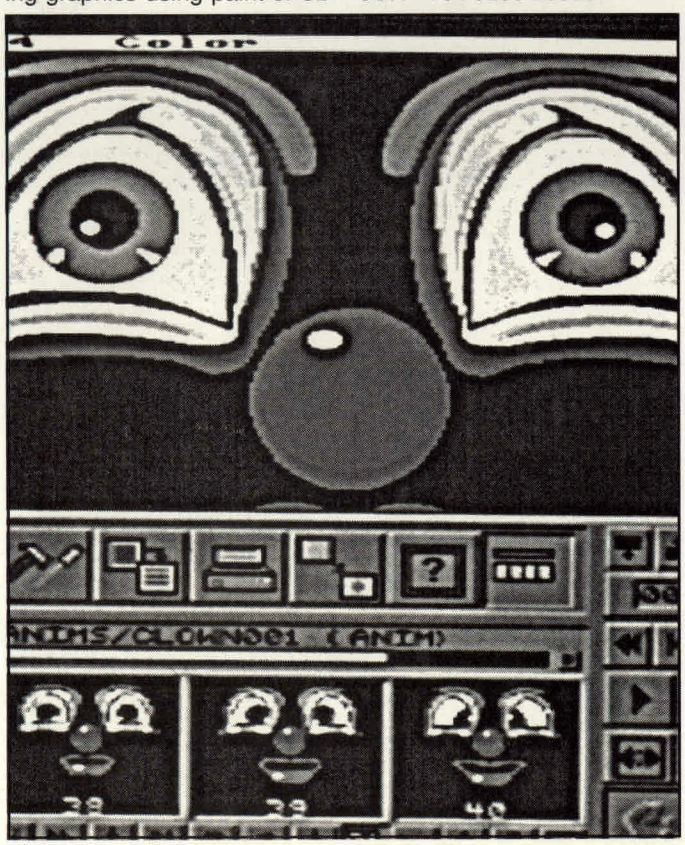
As fast as the Amiga is, it cannot display complicated graphics at the necessary 12 - 25 frames per second. This means that the animations either have to be kept simple or they appear "jerky". Simpatica claims to provide the solution to these problems.

When the computer graphic designer has finished generating graphics using paint or 3D packages and saved them to disk, Simpatica can be used to assemble them into a script. This assembly is via a graphical interface and is similar to working with a long strip of film. Sections of the "film" can be cut out and pasted somewhere else. At any time the designer can "try out" his/her animation using 2 preview modes.

When they are satisfied with the project, a simple click on a screen button will start rendering graphics to the video deck a frame at a time. This achieves a frame rate of 25 frames a second and therefore smooth animation.

The price for this professional tool sounds expensive but at £1750 compares very favourably, Artbeat says, with anything in the field.

Contact. Artbeat Computer Graphics Ltd, 2 Wickham Place,Basildon, Essex SSl 6 5UN Tel. 0268 289384



NEW HORIZONS ENHANCES PROWRITE

New Horizons Software is shipping ProWrite 3.1. This latest upgrade to the popular graphic word processor reflects enhancements to the file requester and the font selection menu and incorporates the addition of a "speak".

"This upgrade will make a lot of users very happy. We've listened to all the suggestions ProWrite users have given us for changes to the file requester and we feel that the result will satisfy everyone. We are confident the users will agree that we now have the best file requester on the market" said Brian N Sarrazin, Vice President, Sales and Marketing.

The file requester now allows users to cycle through mounted devices in two directions. Additionally, path names and file names may be entered into an intelligent string gadget that recognises the difference between a path and a file so that only one string gadget is needed. Also all mounted volumes and assignments may be viewed and the requester can be toggled to show all files or just ProWrite files.

Added at the request of educational users for use in teaching visually impared people, ProWrite now has an option to speak selected text. It offers controls for voice tone, pitch, and rate and works with both phonetic and standard text. The font selection menu item now has a submenu that lists up to 18 fonts. The user may add fonts to or subtract fonts from this submenu using the font requester.

Other enhancements include increased macro command capabilities, enhanced ARexx support, and support for most of the new features in Workbench 2.0 such as the new screen modes and the "Appicon" mechanism that allows the Workbench to operate in place of the "Open" requester. ProWrite has a suggested retail price of $175. Minimum memory of one megabyte is required.

Contact. New Horizons Software, Inc. P.O.Box 43167, Austin, Tx78745, Tel. (512) 328-6650. Fax. (512) 328-1925.

STD DECODER

A new decoder package for STD codes, developed by WSA Consultants, has been launched this month by Action Computer Supplies. The package should be particularly valuable for companies such as market research agencies who wish to select telephone numbers from accurately defined regions. The package will find the location of any telephone number,and also acts a code directory. Containing STD codes for over 6,500 towns and counties, it can be used in conjunction with other application software to maintain and anotate databases holding telephone numbers. The WSA STD code decoder is offered by Action in both 3 1/2 inch and 5 1/4 inch versions at £83.90 with substantial discounts available for large orders.

Contact. Action Computer Supplies, Alperton House, Bridgewater Road, Wembley ,Middlesex. HA0 1EH Tel: 0800 333 333 Fax: 081 903

NEW SAMPLING PACKAGE FOR THE AMIGA

Trilogic have announced that their MK 11 Stereo Sampler is now available as a complete sampling package with the new AUDIOMASTER 111 software. This version incorporates many new features, including a CD player simulator which can play in sequence, up to 20 sound files. Audiomaster III can sample at up to 52.6K samples per second in stereo (a co-processor is needed to sample at this rate) and can use up to 8megs of fast ram. The MK 2 stereo sampler, claims Trilogic, offers the highest quality samples due to the use of an ultra high speed, state of the art sampling chip. It can sample at over lOOk samples per second. It also posses an easily adjustable input level control. The new Audiomaster III and free trilogic MK2 stereo sampler is available at the special offer price of £99.99 which includes VAT and delivery. There is also an Automatic Printer Adaptor which is available at £14.99 if required.
Contact. Trilogic, Unit 1, 253 New Works Road, Bradford, BD12 OQP. Tel. 0274 691115.

BSC's ALF 3

Germany's BSC Bueroautomation have released a new SCSI controller for the A2000, ALF3 - an update on their already well known previous ALFs.

ALF 3 has a controller and hard disk integrated on one card; the input/output operations are taken over by its SCSI-I/0processor, which relieves the Amiga and which - independant of the processor - adjusts to the given environment. The complete Amiga Bus-breadth (16-bit) is used. Any number of controllers can be used at the same time on the Amiga.

The disconnect/reconnect-protocol (2) was transferred to the hardware and can be switched on and off.

The ALF3 has a new slow cable mode. This mode slows down a data transfer for a few nanoseconds (1/1 000 000 000s) to reach a higher data security also with longer cable connections (e.g. external streamer).The slow cable mode is controlled by the ALF3 independently without processor encumbrance and can be switched off when just a short cable distance is used.

The software for the user has not changed a great deal from the ALF2 apart from some of the options. It is easy to use and has a good documentation. As there are several programs here is an example: Using the backup-program ALF-Backup saving from hard disk to floppy, changeable disk or streamer is possible (several drives are supported). With "password" the hard disk or a particular partition is secured. On top of this you can control the switch-on of the Password request with jumper positions, ie the request occurs through booting or by pressing the FI key. If there should appear errors during installation or operation, they are located through the delivered diagnostic and test program.

The "developer-package" enables to program a device driver. A SCSI-printer driver and C9XPrefs" are new. Using C9XPrefs various transfer modi like slow cable mode and reconnect/disconnect can be set and deactivated.

The controller performs using the "Diskperf" (Fish-Disk 187) ALF3 reaches with a Quantum-prodrive 40 S-hard disk a write /read speed of about 280/700 Kbyte/s with a 68030-processor card (A2630 by Commodore, 25 MHz) 510/760 KByte/s. BSC claims that ALF3 belongs to the fastest SCSI-hard disks for the Amiga at the moment. The write/ speed of the changeable disk Syquest SQ-555 (3) in the 68000-mode amounts to 300/520 KBytes/S .and using a 68030-card 410/600 KByte/s. Comparing the results with ALF 2 (320/520 KByte/s) ALF3 reaches - using a changeable disk - the same transfer rates. This results from the "Dual Ported RAM" which can be read and written from the computer as well as from the SCSI side.

Autoboot is possible from Kickstart 1.3. Users of the older kickstart versions have to use a jumper to boot the disk. Using ALF 2 a special EPROM-set is necessary to work with kickstart. An adaptor for the Amiga 500/1000 is planned, which will be plugged into the expansion port. BSC told AUI that it is negotiating with another company to allow ALF3 to connect to an optical drive for the Amiga which is expected to cost about £3000. ALF 3 will cost about 800DM (around £250.00)

Contact:
BSC- Beuroautomation AG,
Lerchenstr.5,
8000 Muenchen 50,
Tel. 089-3544962,
Fax. 089-3510459.

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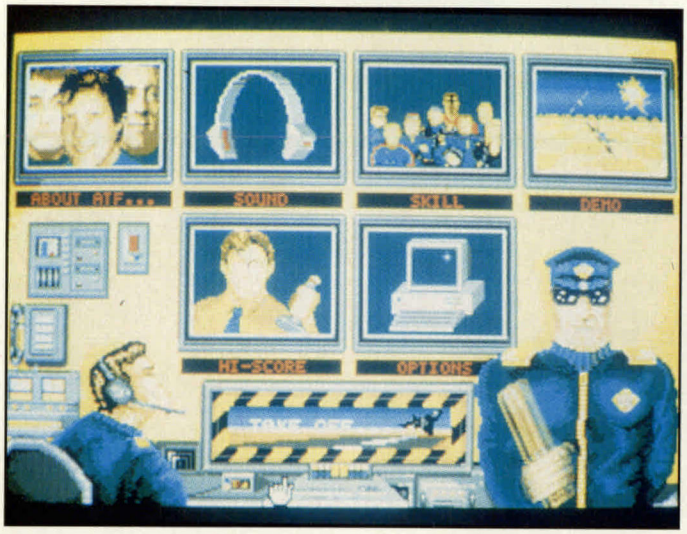
D I's ATF II



In the next game from simulation specialists, Digital Integration, ATF 11, the enemy has set itself the somewhat megalomaniac task of dominating the globe. While the Allies form a significant force, unfortunately for them it is unlikely that they will be able to stop the enemy unless they can call upon something extra.

ATF 11 concerns this something extra. The letters stand for Advanced Tactical Fighter which is based upon the next generation Stealth Fighter. The player must master the control of this craft and then call upon his reflexes, his judgement and strategic ability to shift the balance of power in favour of the Allies, thereby changing the ultimate course of the conflict.

The game really falls into two sections, planning and flying.

Before the player can take off and go into action, he can gather various pieces of information and prepare his aircraft. He can have a look at a map of the world and work out where the enemy is strong and where the Allies are strong. He can choose which weapons to carry and in which quantities and load plenty of fuel. Once in the aircraft, the player can call up information on where enemy targets such as tanks, ships, ground- to -air guns, factories and airfields are and set his course accordingly. The graphics depict a 3D style landscape seen from the ATF. The game, D.F. tells us, is "an unusual combination of arcade and mindbending strategy"

ATF will be available for the Amiga and PC, price £24.99.

Jack Nicklaus' Unlimited Golf and Course Design

(one of the year's most succinct titles!)

With a design based on the system Nicklaus uses to create courses, players can now have "unlimited" golfing fun by not only playing some of the greatest existing golf courses in the world but also by teeing off on self created architectural masterpieces.

Join the Hole-in-One club on a course such as Muirfield – a real life course designed by Nicklaus – or on the one he designed specifically for this product.

As well as enhanced playability the game claims to be more complete and detailed than any other architect product. It includes, says Accolade, a greater selection of trees, buildings, objects, animals and flora as well as instant replay modes and yard makers for more accurate ball positioning. Price £29.99.

Amiga Postscript Driver

PostDriver enables users of PostScript laser printers to use the printer with all their software, including programs that do not by themselves support PostScript laser printers. PostDriver has full support for PostScript fonts and supports all applicable printer commands in addition to its graphics output and support. The driver is fully compatible with preferences. At last, say Soft Service, all users can treat their PostScript printers just like any other Amiga printers.

PostDriver supports printers with different resolutions, different paper sizes etc. It handles both monospaced and proportional fonts as well as all the different text styles (normal, underlined, bold, italics and bolditalics), super- and subscripts and so on. PostDriver also supports the entire Amiga character set. It gives you the choice of using either the Amiga printer device graphics output, or you can use the halftoning machinery built into the printer for higher quality output. Price about £20.

Contact: Soft Service Inc,Electrocity,SF-20520 ABO, Finland.

AMIGA VISION

Calling all Commodore Amiga 3000 owners!

If you own a UK purchased Commodore Amiga 3000 and wish to claim your copy of Amiga Vision, please complete the form below and return it with a copy of proof of purchase, as soon as possible.

Full Name: _____

Address: _____

_____

Date of Purchase: _____ Dealer Name: _____

Town: _____ System Serial Number: _____

Please Return to: Marketing Dept, Commodore Business Machines UK Ltd, Commodore House, The Switchback, Gardner Road, Maidenhead, Berks. SL6 7XA

Commodore

AU1

Quote of the Month

In their legal fight over ownership of the 286 and 386 chips...

"If it were a soap opera, you wouldn't believe it," AMD VP John Greenagel told PC Week, as he described how Intel had set an FBI man on the tail of a former employee who went to AMD, and "made his life a misery for six months before AMD threatened Intel with yet more court action."

Kuma Release K-Spread 3 and 4

Kuma have now released K Spread 3 and 4 to extend their range application software. Both packages load and save DIF,ASCII, Lotus. WKS and .WK1 and Symphony.WRK files and make full use the windows and menus of the Amiga's Intuition operating system. Most commands have mouse and keyboard alternatives, enabling users to operate the program in the way most convenient to them. Over 200 functions are built-in, covering database, financial, logical, statistic, string handling, time and date functions, in additions to these, users can define their own functions and add them to their programs' drop down menus.

Multiple worksheets can be loaded into memory and data can be transferred from one worksheet to another by formulate, whether the other worksheet is in memory or on disk. Files can be combined and the contents added or subtracted. This feature is particularly useful for accounting functions when a separate worksheet is used for each month/week and a summary sheet containing all the figures to date is needed at period or year end. These features provide much of the functionality of a 3D spreadhseet.

K Spread 3 costs £79.95 inc.VAT, K Spread 4 costs £99.95 inc.VAT. Upgrades are available to owners of earlier K Spread versions.

Contact Kuma Computers Ltd, 12 Horshoe Park, Pangbourne, Berks, RG8 7JW Tel. 0734 844335

HANDS ON PRINTING

Oyster have launched what they call 'A new concept in computer peripherals'- a hand held ink jet printer. You just plug it into the RS232 like a conventional printer. To print, simply wipe across the surface - paper, cardboard, even skin. It's simple, ingenious, especially if you can find the right surface. *Contact. Oyster Terminals Ltd, Fairoak House, Church Road, Newport, Gwent NP9 7EJ. Tel. 0633 214147*

Trilogic Video Productions Presents

A 30 minute video aimed at first time AMIGA buyers is, say Trilogic, "without doubt the most useful free accessory that we supply with all our Amigas."

Trilogic knows, from answering customers anxious telephone calls, that first time buyers, particularly, find connecting up and switching on the Amiga for the first time, bewildering. So, in this video, they have intentionally assumed that the viewer is a complete newcomer to computers and has no prior knowledge of the Amiga

A down to earth, step by step approach takes the viewer, in minute detail, through a whole series of actions from showing the Amiga unpacked - with what should be supplied, down to a brief guide to the Amiga's window system.

The video has been produced 'in house' using the sort of equipment serious amateur home video enthusiasts would use, and so acts as a good demo of just what can be achieved without spending thousands on expensive equipment.

The next video in the series will be available shortly, covering more advanced topics in a similarly detailed way, as well as acting as a demo of more of the Amiga's desktop video capacity. The video is also available separately, for £14.99 inc Vat + 75p postage from Trilogic, 329 TONG STREET, BRADFORD, BD4 9QY Tel. 0274 684289.

LONDON UNFIT FOR IT

London could lose its role as an international financial centre if £20bn is not spent on IT infrastructure support in the next five years, according to a report by market researchers Butler Cox.

"In the end, lack of IT infrastructure support threatens London's competitiveness,"said Patrick Murphy, co-author of the report. "Unless companies invest in their buildings' infrastructure now, the cost of doing so later may well put them out of business" he said.

The report sponsored by IBM, Digital, AT&T and British Telecom, surveyed 52 new, old and redeveloped buildings, and compared them with a set of guidelines drawn up in consultation with the Royal institute of British Architects (RIBA).

The guidelines took into account whether IT infrastructure support was planned from the start of the project, and whether designers, architects and developers were told about IT needs.

Only 11 of the 52 buildings met the RIBA standards. These results and the cost of bringing each one up to standard were extrapolated for the rest of London to arrive at the £20bn figure.

Chessmaster 2100

Mindscape tell AUI "We took the Chessmaster 2000 and added to it TEN MAN-YEARS of work by our programmers and graphic artists, and created the now famous Chessmaster 2100. To date only available for IBM PC and C64D, we are delighted to announce the release of Chessmaster 2100 for the AMIGA."

Chessmaster 2100 features unlimited levels of play from Newcomer to Grandmaster, huge opening moves library (over 150,000 positions); take back and replay modes, on screen chess clocks, 2-D, 3-D and War Room board designs and many other interesting ideas including the ability to play blindfold chess! Priced at £29.99.

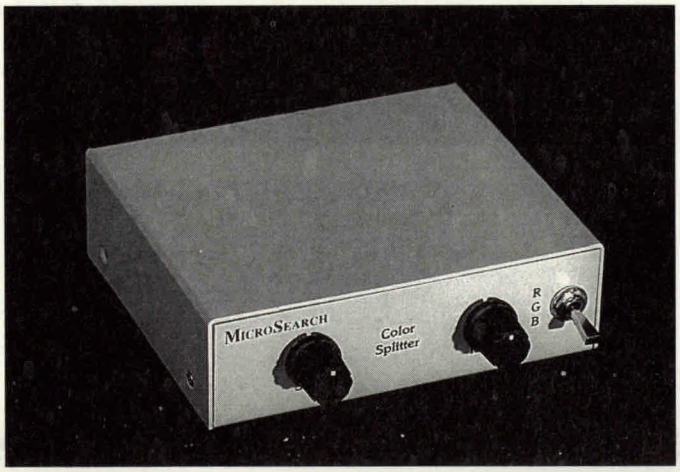
DTP UPS EFFICIENCY

Document Image Processing (DIP) is achieving broad acceptance by companies, according to a survey by the National Computer Council (NCC).

The NCC surveyed 11,000 businesses - of which 8% said they were already using DIP, either in pilot form or as a fully commissioned system. More than 20% thought that they would be using DIP within two years, and 40% within five years. The NCC says that when DIP was first introduced it was thought of as an up-market archiving system. But with a broader applications base and the use of PCs and Networks as the vehicle, observers say it will move further into the workgroup area.

Scanned documents can be retrieved and viewed by a number of users; OCR software will code documents into text form. The commissioned survey said that businesses with DIP achieved, among other benefits, increases in transaction volumes per employee of between 25% and 50%; staff reductions of up to 40%; floor space reductions by up to 80% and reductions in transaction times of up to 90%.

The Electronic Colour Splitter



MicroSearch's Electronic Colour Splitter used in conjunction with the Digi - View or Perfect Vision digitizers, will allow Amiga owners to digitize colour images from any stable composite or S-VHS video source.

This says MicroSearch opens up the world of input from video cameras, camcorders, laser disk players, video-still cameras, digital VCRs and time-base correctors with freeze capability, input from all these video sources without an expensive video capture board.

The Electronic Colour Splitter takes any composite or S - VHS video signal and separates the signal into the red, green and blue components needed by Digi-View to digitise in full colour.

Instead of a black and white camera and a mechanical colour wheel Colour Splitter lets you use the video equipment you already own.

The Electronic Colour Splitter also works with the new video-still cameras. For example (the Canon Still Video reveiwed in AUI in February).

Suggested Retail Price for the Electronic Colour Splitter is $150. Contact. MicroSearch. 9896 Southwest Freeway, Houston, Texas 77058 USA. Tel. (713) 988-2818

NEW HIGH SPEED MODEMS

Two new V32 modems, the Tricom Tornado Quin 42 and the Dacom Fastlane Dial are designed to be compatible with the widest possible range of standards. They offer full duplex transmission at up to 19,200 bps over standard dial-up lines.

The Tornado Quin 42 (left) is a five-speed modem that can be configured via Hayes AT commands or dip switch settings. It offers V32, V22bis, V22, V23 and V21 compatibility. Price is £799.00 (MRP £1099.00).

The fastlane Dial modem offers V32, V22bis, and V22 operating models, an extended AT command set and full autosensing on originate and answer. Available from Action priced at £559.00 (MRP £699.00).

Contact: Action Computer Supplies, Alperton House, Bridgewater Road, Wembley, Middlesex, HAO 1 EH. Tel. 0800 333 333

Altered States

Users of Hi-tech 'Brain Machines' which originate from the United States have discovered a sexy secret about the devices. The machines which are used to combat stress and induce dreamy relaxing states of mind are also used for heightening sexual arousal. It appears that when couples use the machines together they experience a very deep 'bonding' which culminates in increased sexual pleasure for both parties. Reports from the US suggest that they may be helpful in treating couples with sexual problems.

The machines work by the use of synchronised sound and light frequencies to which the brain responds, rather like a tuning fork this in turn puts the user into a deep state of relaxation, and a profound sense of well being is experienced.The machines are marketed in the UK by a company called Cerebral Dynamics (UK) Ltd. Prices vary from £295 - £595.

Contact: London Neuro-Centre, 23 Camden Lock, London NW1 8AF. Tel. 071 284 47692.

AMIGA TO MAINFRAME APL

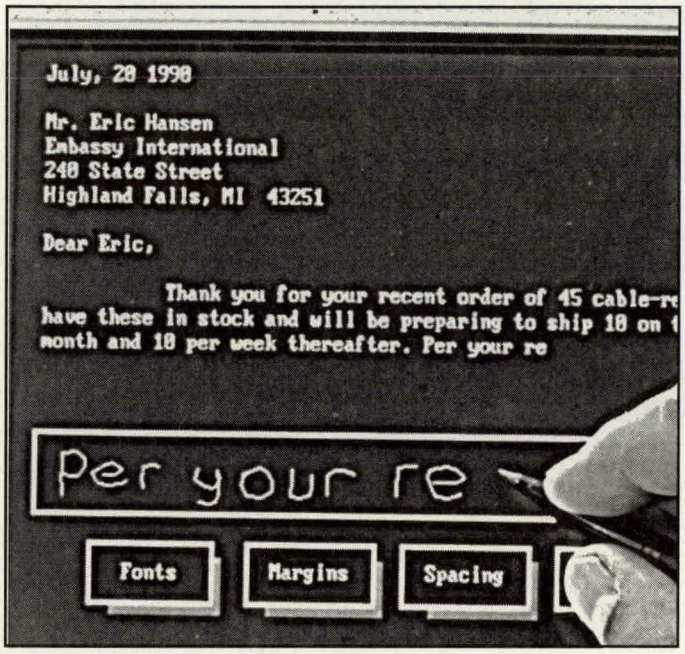
A new version of the APL language has been launched by MicroAPL Ltd, Britain's leading APL specialist supplier. The interpreter, APL.68000 Level 11, is designed for maximum compatibility with IBM's mainframe APL2 product, and runs both on multi-user Unix machines such as the Amiga. Included in the language specification are many advanced features including nested arrays, selective assignment and user-defined operators.

Richard Nabivi, chairman of MicroAPL Ltd, commented to AUI: IBM have stated that their APL2 product is the strategic interactive programming language in the IBM mainframe environment. Now APL.68000 Level 11 allows Amiga users to have access to the same powerful devlopment tool on their machines and they can explore mainframe compatible software on their Amigas.

APL.68000 Level 11 includes many special features that are found in APL.68000 Level 1 - including the windowing interface for the Amiga that made APL.68000 the first APL to come to terms with the modern style of user interface. At the same time, MicroAPL's free runtime policy on these machines continues, encouraging the continuing development of packaged applications written in APL 68000.

Contact: MicroAPL Ltd., South Bank Technopark, 90 London Road, London SE1 6LN Tel.071 922 8866

THE HANDWRITING IS ON THE WALL



Bud Vennos, once punished at school for careless writing, finds a device that may write a new page in computing history.

The computing industry follows fashions. And one that is sweeping the research and development desperate of major manufacturers, is the creation of a technology that lets computers recognise handwriting. It may seem odd but the obvious concomnitent to 'Notebook' computers - such as just launched by IBM is the ability to input data by handwritten notes. A UK firm, MicroTouch, is one of the leaders in the field

It has now brought out an improved version of its ScreenWriter Tablet, a transparent digitizer used for "stylus computing" - the jargon for handwriting. The new model offers improved accuracy, faster point speed and will be available with tempered glass. The ScreenWriter Tablet consists of a glass overlay, controller electronics and stylus and is used by OEM's in portable computers that recognise handwriting , a field that is growing in importance. MicroTouch is the leading supplier of handwriting tablets and supplies the screen used in the GridPad, an "electronic clipboard" introduced by Tandy in 1989.

The new version of ScreenWriter from MicroTouch offers twice the accuracy of the previous model. The sensor is able they say,to locate the stylus with a precision of plus or minus .4%, a distance representing less than the width of half a character on a typical display. This allows users to locate and manipulate specific letters or numbers on screens by pointing directly at them. It also makes writing on the tablet feel more comfortable as users see the electronic "ink" flow directly from the "pen tip".

The new screenWriter also offers a faster digitizing speed of 160 points per second. The improved speed is a distinct advantage , as it allows users to dot an "i" or sign their name without having to slow down their natural signature motion.

Since the introduction of the GridPad in late 1989, handwriting recognition has increasingly gained acceptance as an alternative method of data input to the keyboard. Numerous established companies including IBM are said to be working on such handwriting systems ,as well as a number of venture capital-funded companies, mostly at this stage in the U.S.A.

Harlequin's 16 million Colours

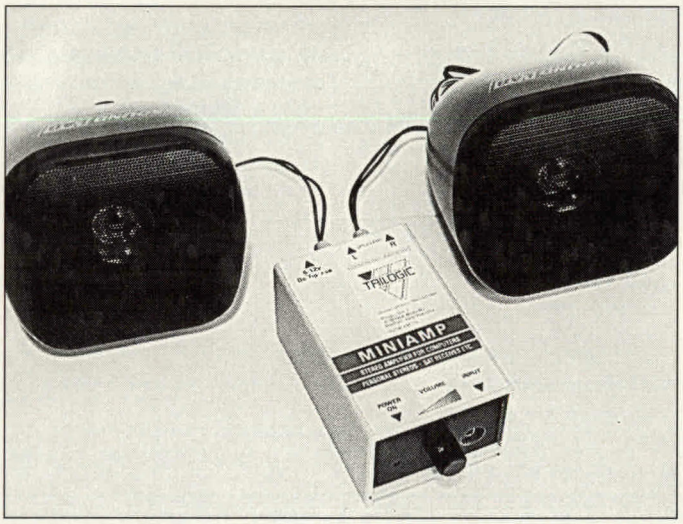
Harlequin is a frame buffer board designed to 100 pin Zorro II specification for internal use in the Amiga 2000 or 3000. There are no plans at present for a A500/1000 version. Since 24 bit image files are over 1MB uncompressed, a Hard disk is recommended. Extra memory could be required for particular software packages and a fast 68030 board with 32 bit memory will considerably enhance performance.

If you only plan to use Harlequin interlace mode, you will need a monitor which accepts RGB analogue 15.625 KHz vertical frequency 50Hz vertically (NTSC - 15.734KHz 60Hz). If you plan to use only non-interlaced mode, you will need an RGB analogue 31.5KHz and, if you plan to use both modes you will need a bysync or multisync monitor.

Harlequin record display directly to video but since Harlequins output is RGB, you will need a suitable encoder. With Harlequin you can overlay/mix Amiga graphics with Harlequins output e.g. titles, however you will need an Amiga Genlock. You can also overlay/mix Harlequins graphics with external video.

Contact. Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh EH1 3RN, Scotland. Tel. 031 557 4242.

IMPROVED MINIAMP 4 STEREO



The latest product from Trilogic is the MINIAMP 4 STEREO SPEAKER SYSTEM for the Amiga.

By using a low distortion 'two chip bridge' design they have, they claim, managed to wring over double the power of the previous model and from the same power supply, boasting a hifi quality 5 watts per chanel output.

Realising that some Miniamp owners preferred to use their existing Hifi speakers, Trilogic 'designed in' standard 2 pin Din loudspeaker sockets in place of the original model's jack socket speaker connector.

Trilogic told AUI that the twin cone speakers are of superior sound quality, and having long connecting leads they can be situated up to 6' apart. Their compact size means that they can be placed close to the computer without taking up much space whilst still giving a much better stereo image than stereo monitors.

The miniamp without the speakers costs £24.99 inc. vat, + £4.99 for the mains unit if required, post free.

Contact: Trilogic, Unit 1 , 253 New Works Road, Bradford BD12 0QP. Tel. 0274 691115.

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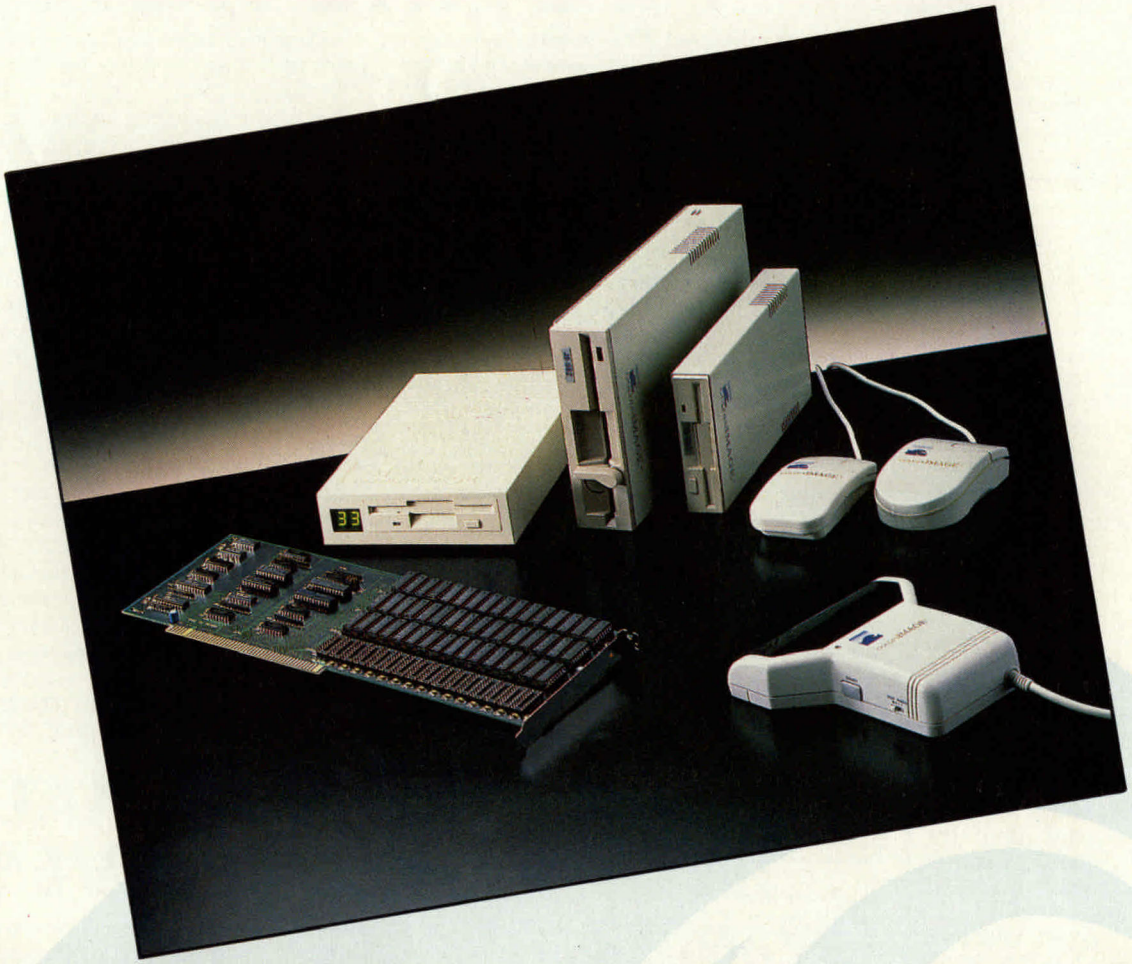

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REMOTE KEYBOARD FOR PC's

With Remote Keybord in the palm of the hand, you can run, alter and manipulate programs on your PC compatible from as far away as 50 feet. Using this new device frees you from sitting at a keyboard. Just point the wireless, hand held Remote Keyboard at your PC's display screen, push a single button and infrared signals allow you control of the PC's program. Remote Keyboard is as easy to use as a television's remote control unit (and gives you a pointer too) Position the small Remote Keyboard in the palm of your hand. It is just 7 inches long 2 1/2 inches wide and 1/2 inch deep, weighing less than 10 ounces, including its Forte-supplied batteries. Then, point it toward the PC screen, touch a button, and you are in control. The IR signals are sent to a receiver plugged into the computer's serial port. Remote Keyboard's diskette-based software includes a pointer, allowing you to call specific attention to portions of a display- again, with the touch of a button.

Remote Keyboard is delivered with just three components - a receiver which plugs into the PC's serial interface; a diskette-based software driver; and the hand held Remote Keyboard itself. The product is UL listed and approved by the FCC. It includes a 1 year limited warranty.

Contact. Azcom, Selborne House, Old Avenue, Weybridge Surrey. KT13 0PQ Tel. 0932 851972.

AZCOM's DOUBLEDISK CONVERTER.

The DoubleDisk (tm) is claimed to allow 1.44MB 3+ inch drive to accept 720 KB disks and use them as 1.44 MB disks. Azcom declares that there is no difference between the media contained in today's 720 KB and 1.44 MB disks. The only difference between the disks is a small rectangular sense hole in the corner of the 1.44 MB disk, opposite the write-protect slider. The DoubleDisk, Azcom told AUI, "punches this sense hole safely, conveniently, and with extreme accuracy".

According to Azcom, they have carefully researched all major brands of Double Sided High Density disks and they claim they obtained specifications from the manufacturers and also subjected disks to independent laboratory analysis. In every case they say they found the media absolutely identical. Price #39.95

Contact Azcom . Selborne House, Old Avenue, Weybridge Surrey. KT 13 0PQ. Tel 0932 851972.

OXXI ANNOUNCES PRO/MOTION

Oxxi have released Pro/Motion, a motion creation system for Aegis VideoScape 3D for the Commodore Amiga. John Houston, Oxxi's president calls it "A breakthrough in 3-D animation technology".

With Pro/Motion, users will now be able to create motions for VideoScape 3D in an interactive graphic environment, eliminating the need to manually type in animation coordinates using a CLI editor and graph paper.

The program will be sold separately for a suggested retail price of $99.95 and will also ship with VideoScape 3D at no charge for an unspecified period of time. Registered users of VideoScape 3D can upgrade to Pro/Motion directly from Oxx1 for $74.95.

Previous to Pro/Motion, users creating animations with VideoScape #D would have to manually type in the X,Y, and Z coordinates of the camera motion (user's viewpoint) and the object motion in the animation.

This process was not only tedious, but required the user to exit VideoScape and use a text editor. Now with Pro/Motion a user can create all the motions for an animation using a simple graphic environment. For instance, to show a jet aircraft landing on a runway, the user merely draws a line from the starting point of the jet to the ending point and then renders the animation using VideoScape.

Pro/Motion also adds features not available in VideoScape such as object shadows, magnetism (an object can attract or repel another object) and wind. The program includes full manipulation of light sources, camera attributes, bank and pitch settings, plus built-in error checking.

"Pro/Motion represents our continued support of the Aegis product line. It shows we are making a considerable investment in becoming the number one supplier of animation and graphic products for the Amiga," Houston said. "I really feel that the combination of VideoScape and Pro/Motion creates the most outstanding 3-D animation combination on the Amiga market. Pro/Motion is a major breakthrough in animation technology."

Houston also hinted at a future version of the program which will add "features altogether unknown to today's animator". He made a point to thank the program's author David Durham, for creating a product that was so necessary for animators.

Contact: Oxxi Inc. P.O. Box 90309, Long Beach, California 90809-0309. Tel. (213) 427-1227.

B&P's The EXPANDER

This board gives 8meg of memory. It automatically detects whether you have a FAT or FATTER AGNUS chip or using 1.2 or 1.3 kickstart. It has a link to the 68000 chip and has switches on the board and it fits inside the trap door of the A500. It will go up in 2 meg increments, the first 2 megs uses the 256K x 4 chips and each 2 meg after that uses 1 meg x 4 Zips. Price £199.00 with 2 megs.

There is also a Junior Expander. A neat idea that you buy as 512K then trade in your chips from 256K x4's to 1 meg by 4's and get 2 meg on the board. Just switch a link and away you go. Definately a nice idea. Price £49.95.

Contact. BYTES AND PIECES (EUROPE) Ltd, 37 Cecil Street, Lytham. Lancashire FY8 5NN. Tel. 0253 734218

TOWARD SMALLER DISK DRIVES

The data storage market already a $15.8 billion market in 1988 will grow to $32 billion in 1995. There is a trend in the data storage and disk drive market towards smaller disk drives. The technology trend that follows is that the pressure to reduce the size of the disk drive is forcing disk drive manufacturers to adapt new techniques for manufacturing the drives , such as reducing the plater sizes , and increasing the number of platters in a drive. These and other findings are revealed in a new 228-page study "World Data Storage Markets", published by Market Intelligence Research Corporation.

Unit shipments of 3.5-inch drives are outstripping shipments of the 5.25-inch drives. The 5.25-inch and 8-14-inch drives will remain in the market for the next several years , due to their higher capacity . But 2 to 2.5-inch drives are gaining acceptance in the market. However it will be at least two years says the report writer before they (2 to 2.5-inch drives) gain significant market share. Currently, disk drive vendors are successfully targeting the fast growing laptop market.

The study says that there will be market expansion in the 1990s in the area of optical drives - due to the introduction of erasable disk drives, and tape drives. Another area of increase is in the next generation of tape drives. The DAT (digital audio tape) drives will make a dent in the market due to their higher capacity and better performance. New technologies such as digital paper will show strong signs of growth in the market.

A market decline is expected in the reel to reel drive market. However tape drives will remain in the market primarily due to their compatibility with microcomputers, midrange computers and mainframes. The report concludes that the disk drive and data storage market has become more price competitive and will be more competitive in the future.

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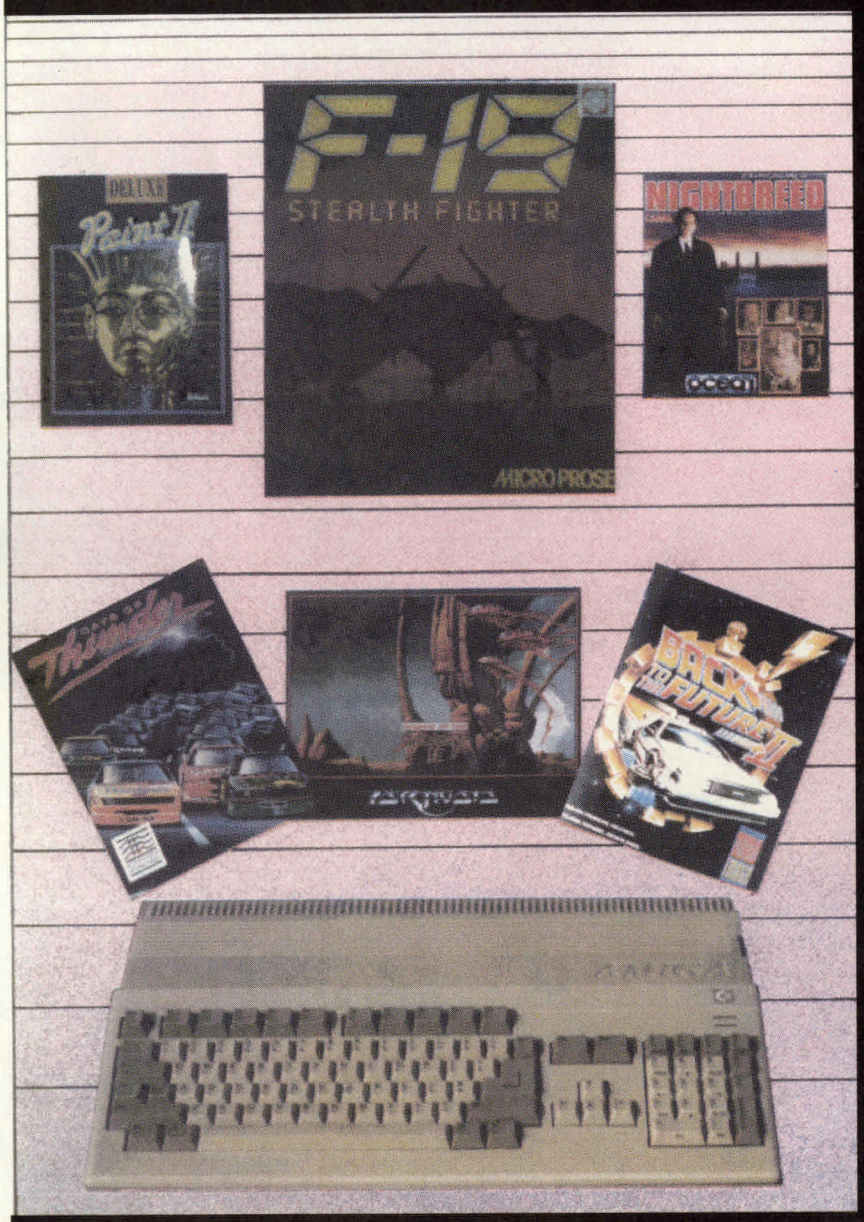

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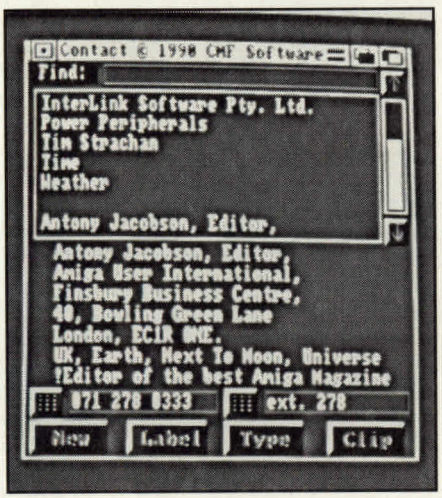
The Phone Book of the 90s?

We are always being pressured to keep in touch by telephone. Perhaps that is why a new program that helps this comes from across the world. Mike Nelson finds it more than just a database

Contact is a computerised address book which stores all your various clients or customers on your trusty Amiga, and will then display the information for you in a Workbench window. Is this just a simplified database, which



could be easily programmed into software such as Organize or Superbase? There are a number of interesting features which set this product apart from the aforementioned databases, and whether they make the program worth forking out for is really a matter of personal choice.

As you may guess, Contact's data storage facilities are pretty rudimentary, but generally adequate. My main grievance with the program is the small, unsizeable window it uses. The Workbench screen is quite large and I would like to have seen a re-sizing gadget so that you could choose to display as much information as you liked. Also there is only scope for six address lines, and while this is usually sufficient, it won't hold the full address of Our Great Leader, the editor. There is provision for two phone numbers, so you could store the fax, or home number of the person, if you wanted. Lastly, you can add a comment to remind you about the contact.

Editing is simplicity itself, with a sort function to put things in alphabetical order. You can then get Contact to print out some or all of your addresses. The program actually supports PostScript, a somewhat strange facility to discover, but nonetheless a bonus for the people who can afford several thousand pounds for a printer. The rest of us are catered for using the Preferences printers in the normal way.

Communication with other programs is highly supported, with a comprehensive ARexx interface which will share the database with software which also sports ARexx. This is becoming increasingly important in the Amiga world, especially since the AmigaDOS 2.0 includes ARexx as standard, and woe betide any new programs which don't support it! For now though, there are alternatives, and Contact has direct support for the Clipboard device, a kind of common data area which programs can use to swap information, but again this is not as universally accepted as it should be. If all else fails, Contact will generate keyboard events and feed them into the input stream so Intuition thinks you have typed the characters yourself. It then will pass them onto your word processor which, in turn, will also be fooled and, as if by magic, the name and address will appear in the document. I'm not too sure about the legality of this in strict programming terms, but it seems to work at least for now, and is immensely useful.

"If all else fails, Contact will generate keyboard events and feed them into the input stream so Intuition thinks you have typed the characters yourself."

Contact is one of these new-fangled programs that loads and stays resident, quietly sleeping until you wake it with a certain key sequence, which, like most of the internal options, is easily definable.

No phone book program would be complete without the capability to dial the numbers automatically for you, and Contact certainly appears to do just that. I say appears because I have no way of testing it, as my modem has yet to materialise in this parallel universe, but I'm working on it.

In summary, I am most impressed by the degree of integration the programmers have included with the Amiga's powerful operating system. This is definitely the way in which all application software should be presented to users who are only now getting comprehensive inter-program communication facilities. These can only serve to increase the Amiga's standing in the PC-orientated business world. If you want a simple, effective way of keeping track of your lists of names and addresses, then maybe you should swap Contact for that battered old Filofax and go boldly into the 1990s.

M.N.

Price:
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Desktop Utilities P.O. Box 3053 Manuka ACT 2603 Australia.

THE MOTOROLA FAMILY AND ITS NEWEST BABY!

What really do the 68010, '20 and the '30 add up to? Chris Wright infiltrates the secretive world of the company that created the 68000 and returns alive and loaded with info about bus snoopers and the amazing 68040

With the launch of the Amiga 3000 with a 68030 CPU and third party 68020's and the later 68030's by CSA, Ronine, GVP, Commodore and others, most will know what is meant by a common term 'accelerator card'. What this really means is that the standard processor in the design of their existing computer is now superseded by the implant of a faster processor but using the existing design of the original machine. Some of these cards have 68000 bus emulators so as to reproduce all of the 68000 bus signals when the 68030 needs to access the Amiga system. When the 68030 is in use and working within its own environment this emulator must hide the access from the Amiga system.

A 680*0 board increases the computers performance in a number of ways. For one thing the higher the chip number the faster it runs so a 68010 runs faster than a 68000 and a 68020 is faster still and so on. They all operate at higher clock speeds but although I have mentioned the 68010 you can forget it. 68020 boards usually run at speeds of 16 to 20 Mhz and has the 68881 co-processor to go with it. This co-pro can clock at 50 Mhz but needs the 68882 to do it. The 68030 runs at anything from 16 to 33 Mhz and sometimes beyond, (GVP have released at 50 Mzh 68030 card but it is having problems due to the very high speed and first reports suggest that the 50 MZh chip is not that reliable yet.) Although putting higher oscillating crystals in a board to run the chip faster than its rated speed is highly debateable (this is called over-clocking). Most boards are asynchronous design but those that use a synchronous design only run in multiples of 7.1 Mhz. By boosting the speed of the chip over the rated speed will usually work with no problems. Where problems usually arise is the sheer heat the chip generates. The faster it is made to run the hotter it gets and these chips can get so hot you could fry an egg on them. You can certainly suffer a slight burn on a chip that has been boosted. Now for the rub. Just increasing the clock speed of the chip will not necessarily make it faster than a lower speed chip. The speed at which the processor can access memory is a limiting factor, so unless the design of the board allows it and your memory chips are very fast (vis 70 nanoseconds) you will not get the full benefit of the faster clock speed. Of course all this is a little academic if the software you are using does not make full use of the extra powerful chip set you have put in the machine.

The 68020 and 030 chips have a 256 byte instruction cache, which allows short program loops to run entirely within the processor's own memory which eliminates the time required to fetch instructions. It also has a 256 bytes data cache, so this allows you to access frequently used data without having to first retrieve it from memory. Use of data caching speeds things up considerably but here is the rub. DMA devices can cause problems because the processor gets confused where the cache is if the DMA device has moved it around to suit itself. On the Amiga the blitter is a DMA device and most boards will have protection built in to prevent errors like this happening. The 68030 has a built in Memory Management Unit, which has been used by many manufacturers of the boards to shadow the Kickstart operating system into 32 bit wide memory for really fast operating systems.

80 Nanoseconds

Just to touch on the 680*0 chips. Some of you will have heard of MC and XC type chips. The difference is that the XC was the first chip Motorola released. A little like a beta release version. The MC is the final version of that chip with any slight modifications that Motorola may have made. In practise and with experience of both chips, there is very little to choose between them. The XC works perfectly well and gives no problems and is quite a bit cheaper. If you really want an MC chip then you will have to pay the extra for it. Personally I don't feel the need for this. Any money saved is most welcome considering that these boards are not cheap by any manner of means.

Whilst on the subject of 32 bit ram, this will speed up the accelerator because there is then no traffic jam of data accessing a 16 bit wide memory. These can be 256 x 4 megabit chips which are quite cheap or the 1024 x 4 rams which are still quite expensive, then there are Static Rams, Page mode, Zips Dips and so on. It all depends which chip the ram board is designed to take. So what is the 0 to 60 time? This can vary and really depends on the application. Programs written especially for the 680*0 family of chips and co-processors will really move. These are Desktop publishing, paint/animations, and multitasking as the Amiga in its native mode is really slow when multi-tasking. However, with the operating system in 32 bit memory and with 32 bit ram on board things really fly and multitasking really does mean just that. Quick and smooth. Your Ram chips should be no slower than 80 nanoseconds. Anything slower and you create a wait state. The more wait states the slower the board. It's your choice.

An A500 with 16 meg of memory running at 33 Mhz with a 50 Mhz co-processor! No this isn't a dream but fact right now. Sculpt 4D renderings that took many hours before now take minutes! That is speed and a heck of a lot of it. So what more could you want? Motorola's latest baby is the answer. It's like getting a fast car. You soon get used to the back jerking acceleration and want more, and so the quest for more speed takes place. We have been hearing rumours of a 68040 but now Motorola has officially unwrapped its newest 32-bit microprocessor. Here are some of the features and what a chip!

Manufactured with 0.8-micron high-speed CMOS technology, the 68040 packs an amazing 1.2 million transistors on a single silicon die. With 900,000 extra transistors to work with over the 300,000 transistors in a 68030 processor. This is

Continued on page 24

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Access

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Continued from page 22.

almost unbelievable power when you think that for most of us a 64K machine was our pride and joy about three to four years ago. 64K? You have to be joking, in fact 1 meg is now proving woefully lacking and those with 3000's will know only too well that with the systems 2 meg standard you frequently run out of memory. The 3000 has the ability to take this faster processor and there is one third party developer now investigating the feasibility of the 68040 in an A500! However, we may soon see a new A500 with 2 meg chip ram as standard and newer custom chips. So what are the features that make this new processor so much faster and even at its current rated 25 Mhz speed it will blow away a 68030 at 33 Mhz? 'Well the 68040's designers added new features and boosted performance.

While retaining object-code compatibility with previous 68000-family processors, the IU (Integer Unit) has been optimized to execute instructions in fewer clock cycles (i.e., run faster). The claimed boost in performance is three times that of a 68030 and those with 68030's will know that that chip is no slouch.

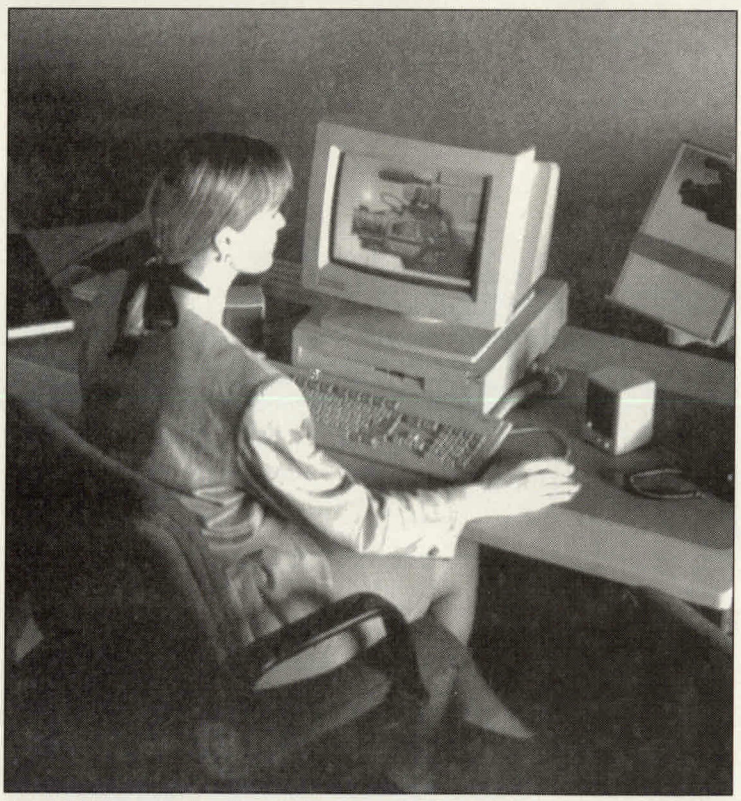
Integral Floating Point Unit for which the 68020 and 68030 require external FPU coprocessor chips to handle floating-point math are now done away with. The 68040 now has an FPU built into it, giving it the power to do serious number crunching. The FPU's data types are compatible with the ANSI/IEEE 754 standard for binary floating-point maths, and its instruction set is object code-compatible with Motorola's 68881/6888 FPUs Like the integer unit, the 68040's on-chip FPU has been optimized to execute frequently used instructions using fewer clock cycles. The claimed performance boost is 10 times that of a 68882 and that is on a 50 MhZ co-pro so that is blindingly fast.

For large caches the processor accesses to the system bus are minimized by storing the most recently used set of instructions or data in on-chip, 4K-byte caches. Both caches operate independently but can be accessed at the same time. Bus snoop logic (a new catch phrase?) is used to maintain cache coherency (i.e., it ensures that the cache's contents match those parts of memory corresponding to the cache). The bus snooper's design is fined-tuned to support multiprocessor systems where one or more bus masters or 68040s might share the same section of memory. That's right, if you spotted it the facility to place multiple 68040's on a board is there. Up to now the use of 68030 multiples on one board has been possible with difficulty.

Separate memory units for instructions and data.

Each memory unit consists of a memory management unit (MMU), a cache controller, and bus snoop logic. The MMUs use a subset of the 68030's MMU instruction set. Both memory units function independently of each other to improve processor throughput.

The 68040 ships with an initial clock speed of 25 MHz; (my sources say that some hardware developers have had these at over 42 MhZ already!) higher speeds are to be available in the future, Motorola says (once the chip has become stable, but even at 25 Mzh it is super fast.). The 68040 comes in a 179-pin grid-array package. With the elimination of coprocessor function lines (now that the MMU and FPU are consolidated onto the processor) and the addition of snoop control lines, the 68040 is not pin-compatible with the 68030. Because of the 68040's software compatibility with its predecessors, it can tap into the existing software base of 68000 applications. It does this not only while eliminating a component (the FPU) from a computer's design, but also while improving performance. In fact, the 68040 executes instructions on the average of nearly once per clock cycle — the same as a RISC processor. (RISC is another topic but we can all breath a sigh of relief that our software will still run).



Amiga 3000

The 68040 was built on the firm foundation of its predecessors. The design team used the experience garnered from developing earlier processors to aid in optimizing the throughput of the 040. The 040 was designed from the ground up, Motorola engineers said. It incorporates a high degree of parallelism using a number of internal buses. An internal Harvard architecture gives the processor full access to both instructions and data. Both the IU and FPU have separate pipelines and can operate concurrently. For example, the FPU can perform floating-point instructions independently of the IU. Each stream (instructions or data) has its own dedicated cache and MU that function independently of each other. A smart bus controller assigns priorities to bus traffic to and from the caches. If Commodore get it right and match-up the new custom chips and update them, an A4000 would be some beast and soon outperform the Intel rivals whilst realising a better performance, due to the custom chips, than even Motorola envisaged. It would be just another child in the family of Amiga Computers.

There were several key areas where Motorola was able to boost performance. The first was in reducing the clock cycles needed to execute certain instructions. The next was to ensure that the processor funnels instructions and data into itself quickly and constantly, lest it stall while waiting on information. The processor then gets its results back into the system without interfering with incoming information. Finally, as if this wasn't enough, the processor stays off the system bus to a greater extent than is the case with other processor designs. This lets DMA transfers and other bus masters have use of it.

The IU was optimized so that high-usage instructions execute in fewer clock cycles, particularly branch instructions. Motorola said it performed thousands of code traces using real-world applications to determine which instructions were used most often. The IU consists of 6 stages: instruction prefetch, decode, effective address calculation, operand fetch, execution, and writeback (i.e., the result is written to either a register or to memory). Each stage works concurrently on the

Continued on page 29

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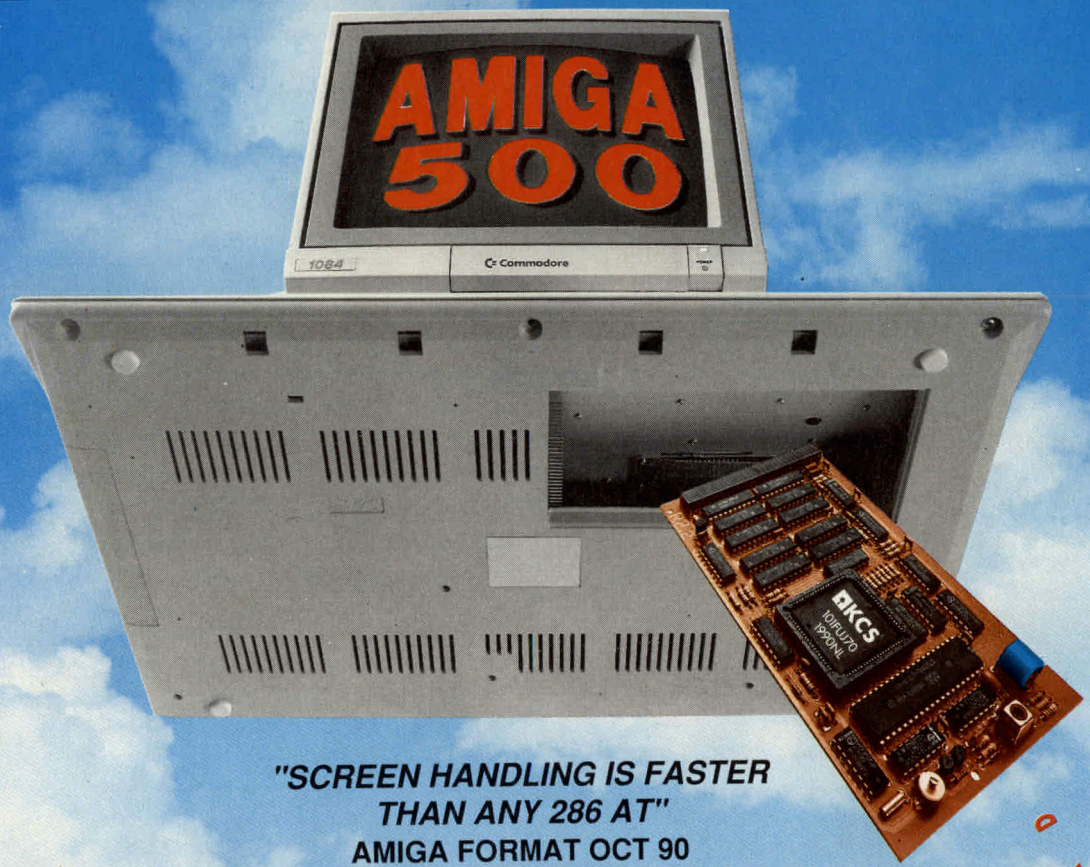

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Continued from page 24

instruction pipeline. Dual prefetch and decode units deal with the branch instructions: One set processes the instruction taken on the branch, and another processes the instruction not taken. In this way, no matter what the outcome, the IU has the net instruction decoded and ready to go without seriously disrupting the pipeline. This complex design has a big payoff: Motorola has determined that the average instruction takes 1.3 clock cycles to execute. The ability to execute an instruction once per clock cycle is the performance edge of RISC processors yet the 68040's IU accomplishes the same goal while executing complex-instruction-set computer (CISC) instructions.

The FPU adds 11 registers to the 68040 register set: Eight of them are 80-bit floating-point registers, and three are status, control, and instruction address registers. The FPU has a three-stage execution unit, and, like the IU, each stage operates concurrently. Load and store instructions (FMOVE) can be performed during other arithmetic operations, and a 64- by 8-bit hardware multiplication unit speeds many calculations. However, the FPU only implements a subset of the 68882 instructions on-chip. The transcendental (trigonometric and exponential) functions are emulated in software via a software trap. But Motorola claims that even these instructions should execute 25% to 100% faster on 25-MHz 68040 than on a 33-MHz 68882 FPU.

Two Page Sizes

In the area of throughput, each stream is managed by a separate memory unit that uses an MMU for logical-to-physical address translations during bus accesses. These MMUs support demand-paged virtual memory. Both MMUs have a four-way set-associative address translation cache (ATC) with 4 entries (versus 22 entries for the 68030). The ATCs reduce processor overhead by storing the most recent address translations. When an address translation is required, the ATC is searched, and if it contains the address, it is used immediately. Otherwise, a combination of high-speed hardware logic and microcode searches the translation tables located in main memory. Like the PU, these MMUs implement a subset of the 68030's MMU instruction set. Gone are the PLOAD and PMOVE instructions, because enhanced existing instructions made them superfluous. Also, only 2 memory page sizes are supported, 4K and 8K bytes, whereas the 68030 MMU supported 8 page sizes ranging from 256 bytes to 32K bytes. A design trade-off was made here: A performance gain was possible by supporting only the 2 most common page sizes. In any case, this change impacts only operating-system code, since MMU instructions aren't normally used by applications.

The two on-chip 4K caches improve processor throughput in 2 ways: They keep the pipelines filled and minimize system bus accesses. To see how this is done, you must examine the structure of the cache. Each is a four-way set-associative cache composed of 64 sets of four lines. A line consists of 4 longwords, or 16 bytes. Cache lines are read or written rapidly using burst-mode access (a type of bus transfer that moves 16 bytes in a minimum of clock cycles) For read operations, this fills the cache efficiently and, at the-same time, loads adjacent instructions or data into the cache that could be used in the near future.

As the cache is accessed and data modified, cache-mode bits in the ATC determine, on a page-by-page basis, the method by which the information is handled. That is, the ATC entry that corresponds to the address in main memory whose contents were copied into the cache decides how the data will be updated. The modes are cacheable writethrough, cacheable copyback, noncacheable, and noncacheable I/O.

In the cacheable write-through mode, an update to the data cache forces a write to main memory. While this generates additional bus activity, this mode is required when working with a portion of memory that other processors share. The copyback mode updates the cache line but without updating main memory. The modified (or "dirty") cache line is copied back into main memory only when absolutely necessary. "Noncacheable" indicates that the data shouldn't be cached, which is typically the situation for shared data structures or for locked accesses (e.g., an operand access or a translation table entry update). Noncacheable I/O indicates that the data can't be cached and must be read or written in the exact order of instruction execution. This mode is for memory-mapped I/O devices (typically a serial device) where the information's order is crucial.

Caches

The bus snooper is used in multiple bus master situations where a noncaching bus master, such as a DMA controller, might modify the memory that is mapped into the 68040's cache. The bus snooper monitors the external bus and updates the cache as required. Cache validity is handled on a line-by-line basis (i.e., a cache miss triggers a burst-mode access that updates 16 bytes either in the cache or main memory). The copyback mode minimizes writes to main memory, and the bus controller priorities each cache's external memory requests. Read requests take priority over writes to ensure that the pipelines remain filled. The caches are critical to the 040's overall throughput. They keep instructions and data moving into the processor while satisfying the apparently contradictory role of minimizing system bus accesses. Motorola estimates that the cache hit rate is about 93 percent for instruction and data reads and about 94 percent for data writes.

The 040 has the power to tackle the jobs with large amounts of information that we will be dealing with regularly soon. Preliminary results have a 68040 weighing in at 20 million instructions per second versus the SPARC's 18 MIPS and the 80486's 15 MIPS , all clocked at 25 MHz. On floating-point operations, the 68040 antes up 3.5 million floating-point operations per second versus the SPARCS's 2.6 MFLOPS and the 80486's 1 MFLOPS. If these numbers are accurate, then the 68040 already outperforms one RISC processor. But the computer industry doesn't stand still. As we move into the new decade, we can expect new RISC processors to once again take the lead in performance.

Still, the 68040 shows that owners of CISC systems (Amiga) can have their cake and eat it, too. They don't have to forsake their software base or settle for mediocre performance. Look at the Amiga 3000 with sockets for a 68040 card to be inserted. It will be a safe bet that either GVP, CSA or one of the others will have one out on the street sometime in 1991 and the beauty of the whole exercise is that the majority of your software will still run. The Amiga started as a 68000 processor and we are already on the 68030 family. The Amiga can run indefinately at this rate and is only restricted by the development of the 860*0 family of chips. And Motorola is already working on the 68050. Wow! Where can I get one?

I would like to go in print with a few predictions. Firstly I feel that within a year we will see an A500 with 2 meg of chip memory as standard. The Amiga 3000 will change specification when it is launched as a 4000 or 5000 in that Commodore will develop more or modify the existing custom chips and we will see the machine able to look at up to 8 megabyte of chip memory and as much fast ram as you want to use. These improvements would allow the Amiga to settle in the two niches it has now cornered. That is the games side and the art/video side. Now if the software houses developed games that ran with 68020/68030 cards the smoothness would really be something. However, not without cost as more and more memory would be needed and after all, most of you will know that even 3 megabyte of memory is proving inadequate now.

I would like to thank Steve Ricker at C.S.A., and a Motorola engineer whom I promised not to name in writing parts of this article. I hope it adds spice and future interest to all reading it. (There are plenty of 'buzz-words' to use amongst your friends such as 'bus-snooper'.) I personally feel that the Amiga with the 68000 is at the crossroads the C64 was at when the Amiga was launched. The A3000 is here, the technology is very new and Commodore, CSA and GVP are working with 040 processors they winkled out of Motorola. All is well with the world.

C.W.

Chris Wright is Managing Director of Bytes and Pieces

Arena Integrated Accounts

Accounting wizard Mark Rose finds some software that adds up to a very useful package.

Accounting systems on the Amiga are a rarity, so when one from Arena Technologies arrived I started wondering whether this might be another step towards the Amiga's possible domination of the business computer market. Was it going to help the Amiga challenge the ubiquitous PC with its abundance of accounting software running under MS DOS?

Alas I think not. With PC prices falling by the week and the growing number of packages offering WINDOWS support the likelihood of purchasing the Amiga as a pure business computer to run accounts is somewhat remote. However that is not to ignore the possibility that there may be a substantial number of Amiga owners who would benefit from using a good solid accounting package running on the "Amiga". Typically small proprietorial business no matter whether incorporated or not might benefit from computerisation especially if they already have an Amiga. (See the AUI's Books page.)

So what does Arena have to offer its prospective customer?

Firstly it was designed for the UK Amiga business user. To this you might say to yourself "So what?" The significance is (a) it conforms to our VAT regulations whereas a number of similar products are imports with Sales Tax calculations instead and (b) as it is not a port from an MS DOS package — it uses requesters, gadgets, windows and a mouse in a familiar manner thus helping to quickly build confidence in its use.

Secondly it is an Integrated Accounting system comprising modules for Sales Invoicing, Sales Ledger, Nominal Ledger and Purchaser Ledger. Integration means that the creation of an entry in one of the modules will automatically update the appropriate accounts in the other applications e.g. the rising of a Sales Invoice to Customer A for Widgets to the value of £100 plus VAT at 15% should reflect thus:-

Sales Ledger Customer A's debt increased by £115

Nominal Ledger Sale Widgets A/C increased by £100

VAT A/C liability increased by £15
Total Debtors A/C Increased by £115

Similarly the recording of an invoice from Supplier X for Product A to the value of £50 plus £7.50 VAT will reflect in Supplier X's Purchase Ledger A/C and in the Nominal Ledger the A/Cs for Purchase of Product A, VAT and Total Creditors.

It should be noted that there is no Stock Control module although I am informed by Arena that this is under consideration. Also to run the system at least 1Mb of RAM is required, a second drive would avoid the necessity of swapping disks but is not essential whilst a printer is.

The System

The system comes as two disks – one with the Programs, the other for Data and a manual. I must compliment Arena on the manual. It is well presented with clear and precise instructions written in a style aimed at the first time or unsophisticated accounts user.

The only minor omission was the lack of any diagrams, screen representation (the 13 Icons used throughout are shown in the Appendices) or examples of reports. A small demonstration system preferably on a separate disk would be a nice idea to enable the user quickly to find his way round the system without fear of doing any damage.

Loading up the system follows the normal pattern of inserting the program disk on start-up (unless you have a 1000 where Kickstart will be required). The Icons shown in the opening window are for (1) the 4 application modules (2) UTILITIES module containing functions that are best kept away from the normal transaction processing e.g. Period and Year End procedures. Company details, set up etc (3) erasing the ledgers and (4) a number of other utilities. Click on 1 and you are presented with the introductory screen which includes a Password protection facility, if you can trust your memory, if not press Return, complete the date and move to the next screen which shows the Main Menu:

SALES LEDGER
PURCHASE LEDGER
NOMINAL LEDGER
SALES INVOICING

From a systems point of view the Nominal Ledger is extremely important in an integrated system as it is in this ledger that the transaction, Double entry processing is maintained. In other words ensuring that the Books balance. Click on NORMAL LEDGER and you are then presented with the NORMAL LEDGER MENU. All the menus in Arena follow the same format; namely all the functions requiring the input of data grouped in columnar format just left of centre and all the reports, listings, enquiries being grouped on the right. The presentation is clear and unambiguous.

The NOMINAL MENU comprises:
ADD/ AMEND ACCOUNT
NOMINAL JOURNAL
JOURNALS
DAYBOOK
LIST OF ACCOUNTS
TRIAL BALANCE
PROFIT AND LOSS ACCOUNT
BALANCE SHEET
ACCOUNT ENQUIRY
VAT RETURN
AUDIT TRAIL
BANK RECONCILIATION
RETURN TO MAIN MENU

Arena provide a Code list of some 80 accounts splitover 8 account types. The first number in each type is 100000 through 800000 in steps of 100000 represented thus:

Type 1	Sales Start No	100000
2	Purchases	200000
3	Direct Expenses	300000
4	Overheads	400000
5	Fixed Assets	600000
7	Current Liabilities	700000
8	Capital	800000

Continued on page 53

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DN16 3RT

Tel : 0724 280222

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SOUTH WOPPING
MIDDX
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437 Anarchy Pack • This is just BRILLIANT
436 Rebels competition megademo
435 Newtek Dynamic Hi-res slideshow
433 Rebels compilation 21 • Lovely stuff
429 DJ disco Leif • Fab music mixup
427 Anarchy floor demo • Nice stuff guyz !
426 Crionics Neverwhere • Very good Mega
425 Digtial Concert 6 • A musical Megamix !
424 Sound of Silents • Great music from JK
423 Cool Fridge • Absolutely Amazing !
417 Pendle Europa 69 • from Manny
416 Pendle Europa 68 • Yummy demos !!!
415 Pendle Europa 67 • Inc. Celtic Prime 90
399 Fantasy Slides • Great ! by Daz of PE
382 Cradle anim • by D.White
327 Darkstar demos 9 • by Red devil
326 Darkstar demo 8 • by Red devil
325 Darkstar demos 7 • by Red devil
314 Mirage Megdemo • Awesome 1 meg
305 Warfaicons Purple • Cool megademo
304 Danish know how • Megademo by Flash
301 Savage Demo 4 • Another Megademo
300 Intuition Megdemo • Nice stuff !
287 End of the century • Prime 90 Megdemo
286 Rebels Megablast • Great music disk
283 Psuedo Cop game • Fab shoot'em up
280 Mechforce • Good Strategy wargame

THE BEST IN AMIGA DEMOS ! CHECK THIS OUT !

133 Bacteria • Brilliant Crusaders music demo
134/135 Divine Visions slideshow • very good
136 Fraxion Horror • Cartoon stlye demo
137/138 Silents Mega slideshow with music
139 The Real 3D slideshow • Ray traced pics
140 Dragons Mega • Great demos
142/143 Start Comp 3 • Coma/Cebit 90 +
149/150 Kefrens Demo 8 • Lots of Vectors !
153 Puggs in space • Dodgy spacee demo !
154/155 Treditors Megademo • A good demo
160/161/162 Alcatraz Megademo • Yeah !
164 Scoopex Mental Hangover • A classic !!!
173/174 Red Sector Megademo • Good one
191 Forgotton Realms • nice fantasy slides
198 The Run • Fab animation by Tobi. 1 Meg
218 Kefrens Jukebox • over 40 great songs !!!
223 Digital concert 3 • music megamix !
224 Digital concert 4 • 4 great songs !
225 Digital concert 5 • The Power,Touch me +
227 Jarre docklands • The master himself !
242 100 C64 songs • This is SUPERB ! 100 songs
246 Adam • M Music 1• No comment .....
251 Silents Megademo • Really cooooool
252/253 Budbrain • with some Brill demos
254 Trip 2 Mars • filled vector space journey
256 Cryptopack 16 • lots of supah demos
257 Crionics Megademo • With Madonna !
394 Unique • impressive filled vector demo
398 Vision Megademo 4 • with nice music !

IF YOU LIKE ANIMATIONS LOOK NO FURTHER !

106 Juggler and El-Gato • Elgato needs 1MB
112 Spaceship Anim • Sculpt 3d demo 1MB
165 Juggette anim • The jugglers wife !
189 Gymnast • Nice spinning animation 1MB
192 Walker demo 1 • Like a movie this is ! 1MB
196 Cool Coogar • Cartoon animation 1MB
201 Indiana Jones Anim • As reviewed ! 1MB
202/203 AGAtron Xwing animation • 1MB+
206 Newtons Cradle and more
207 Luxo Teenager • The lamps 1MB
212 Star Trek Anims • by Tobias Richter !!!
398 Fractal flight • zoom down a valley ! 1MB
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117 Future Composer • Chipsound music !
118 Noisetracker • The ultimate music maker
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123 ST-91 Samples disk
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178 Anylyticalc spreadsheet
180 Wordwright wordprocessor • The best
330 Pendle Utils 7 • lots and lots of utils
331 Pendle Utils 6 • Newzap,SID,and more
332 Pendle Utils 5 • too musch 2 list
333 Darkstar Utils 4 • plenty more utils
356 Fish 327 MessiDos • PC file read/write
357 Fish 315 • Nice 3D surface mapper !
366 DBW render • 3D ray trace prog (CLI)
434 Amibase • Very useful Amiga database

YOU WANT MORE UTILITIES ? OK HERE GOES

377 North C compiler • Yes, the latest version
378/379/380 The C Manual • Get it to Learn C
345/346 Video Applications • Fonts and Utils
347/348 Clip Art • for use in Dpaint and DTP
343 Icons • Lots of em too ! and utilities !
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- Predicts Homes, Aways and Draws
- No fiddly typing in of teams names etc and no redundant databases.
- Instant read-out or Hardcopy if you have a printer.
- Uses scientific formula based on recent form home and away, league position, goals scored etc. It has long been realised that certain combinations of these factors return a much higher than average of draws than the laws of average would expect. POOLSMASTER looks for these factors and analyses their significance to give you the best possible chance of a win.
- Also has a 'Sequence Predictor' option. Many people believe that certain numbers on the coupon come up more often than others, and over a season patterns do seem to develop. The program analyses these patterns and predicts the numbers most likely to come up next. Certainly more scientific than sticking a pin in. or family birthdays etc.

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THE GRAPHOLOGIST

This program is a must for anyone interested in analysing their handwriting, or analysing other peoples. It is also very useful for analysing prospective employees handwriting. To use the program, a sample of handwriting is obtained, perferably in ink. From the main menu of the program you will be prompted and guided to examine each detail of the sample. You will then be taken through deeper and deeper sets of sub menus, all prompting you for relevant details of the writing, and the points to watch for, and add to the file if applicable.

Upon completion you are left with a disk file up to 15 pages long (depending on the depth of detail you choose), this file can then be edited within your word processor to produce a full report for the writer.

Fully experienced Graphologists can charge almost what they like for a full analysis, so this could prove a very lucrative business venture for you.

We must however stress, that unless you are experienced in graphology, then we can in no way guarantee the accuracy of the information that the program provides. If you are an enthusiastic amateur or just curious, then this program could provide hours of entertainment, whilst teaching you the finer art of this fascinating subject.

The text within THE GRAPHOLOGIST was researched and written by a top London graphologist/criminologist James Woodward. The software was written by Martin Evans our consultant software writer.

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- Profit & Loss Statements (Selected accounts & class totals)
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- Items can be Inclusive, Exclusive or Zero VAT or VAT can be just ignored
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VERY SOUND EFFECTS

Mike Nelson turns his Amiga into a phonic workshop to satisfy a theatrical urge

Recently I had cause to use my trusty Amiga in a rather unusual application, and some of the technical difficulties I encountered may be of interest to other Amiga Users. The producer of our annual college charity play asked me if my computer could make a few whistling sounds to simulate the Starship Enterprise in a spoof on Star Trek. "No problem," I thought, just get some bleeps out of Sonix, lay them onto a tape and everyone will be happy. This was where the fun really started as Neil (the producer) got wind of sampling and the Amiga's excellent sound facilities and before long, "a few simple bleeps" turned into a major session which culminated in five and a half megabytes of sample data. The on-stage action called for very tight synchronisation between the sound and acting, and the only means of accomplishing this was to use the Amiga live for each performance, directly hooked into the P.A. system, along with the band ("The Arrhythmias"), microphones and such like. So far, there was still not much of a problem until you start to consider the software and hardware requirements. I needed to use massive samples, some in excess of 700K long, and have access to several samples at once.

Audiomaster 2 will handle huge samples, but has the disadvantage of only allowing one sample in memory at a time. This caused me no end of grief as although Audiomaster was giving me excellent quality samples, and the editing facilities are fantastic, I still had the problem of how to access up to six samples. My original intention was to use Dynamic Drums, a well-known "drum machine" type of program, as this was fully IFF compatible, and could manage ten samples at once, allowing easy access to them via the numeric keypad. This seemed like the ideal option until I discovered that the program gets extremely upset about using large samples (anything over 100K), and invariably Gurued out on me. This kind of instability continues to plague many Amiga programs and really precluded its use, but I was employing an early version so maybe it has been sorted out by now. Mildly perturbed by this, I was nearly ready to give up on the whole idea when I came across an old program (I had a PD version) called Perfect Sound. Hopefully I booted it up, and yes, it could take multiple samples, and did not get too frightened by a couple of my 700K monsters. I was very impressed by Perfect Sound as the program was not surprised by the extra CHIP memory of my computer, despite being written four years ago, before any such luxuries were around. The Intuition interface is a bit ropey but with some accurate mouse moving (difficult in a dark auditorium when you're simultaneously trying to work the rest of the P.A.), the desired effect was achieved, by the last night at least.

"For those newcomers to the weird and wonderful world of the Amiga's different types of memory, the much-vaunted custom chips which control the graphics and sound that make your computer so enviable, were originally only able to access the lowest 512K of the memory map"

So much for the software, but the hardware also caused a few headaches. I have already discussed the problems of huge samples, and luckily Perfect Sound stores its sample data in FAST memory, only using the valuable CHIP RAM for the sample being played. This was absolutely vital, as was the extended 1MB of CHIP memory. For those newcomers to the weird and wonderful world of the Amiga's different types of memory, the much- vaunted custom chips which control the graphics and sound that make your computer so enviable, were originally only able to access the lowest 512K of the memory map. This has recently been doubled to the lowest 1Mb with the advent of the Enhanced Chip Set in newer machines. Without this, to play larger samples was possible, but needed some clever hacking to either load each byte of data with the CPU (tying up the machine) or having some mechanism for dynamically replacing the used data in real time. Either way is messy, so the extended CHIP RAM is a Godsend, and being able to store the samples in FAST memory (i.e. the bit over and above 1 Mb) was crucial to my application. My Amiga is equipped with 3Mb of RAM and has a 40Mb hard disk, another essential component because to load the samples off floppy disks would take forever (although I must admit to a few strategic backups, just in case . . .). The Amiga literature goes on about stereo sound, and while this is pretty innovative, in practice its use is limited, and stereo can be downright annoying. There are four sound channels supported by the hardware, and these come out of the two phono plugs at the back, so they are easy to connect to an amplifier, or cassette deck, as required. The problem is that few programs allow you to specify which channel you want the sound to come out of (Dynamic Drums does, but we've already consigned that to the trashcan), and, unless you are Pink Floyd, there is a good chance that your P.A. system will only support mono output. You need to wire both the outputs from the Amiga into a common input for the amplifier. This is not too much of a problem and a bit of judicious soldering will suffice, but what if you want to make a stereo recording of a mono channel? Programs like Sonix are the biggest source of grief as they seem to play their sound through a different channel every time! A trip to your

That's entertainment! The Nelson Touch with sound drove everyone wild. He is not the one who is second from the right in the short skirt.

local Tandy store will yield some Y-connectors (i.e. two inputs, one output, or vice versa), the required combinations of which I will leave to you to work out!

"Another annoyance is the phenomenon of alias distortion, a kind of high pitched whine you get when the sampling frequency and the source interfere with each other "

Sampling is a relatively straightforward procedure once you play around with the hardware for a while. The difficulty is obtaining a decent source to sample, as if anything, the quality is bound to decrease. As an aside, I must thank Pink Floyd and Hawkwind for being an endless source of weird noises. I used a half-decent cassette deck connected to the sampler, having recorded the various noises (some of which are best left to the imagination, know what I mean?), through a microphone. This gave me the option using Dolby noise reduction if there was a lot of unwanted noise, but this is not stunningly selective and usually half the sample is filtered as well as the hiss. Another annoyance is the phenomenon of alias distortion, a kind of high pitched whine you get when the sampling frequency and the source interfere with each other. I found that the low pass filter built into the computer had the effect of removing the whine and most of the sound, rather like Dolby, but the software mechanism of Audiomaster 2 worked much better. This leads us nicely into the sampling itself.

I used the Sound Trap 3 device from Bytes and Pieces, and found it to provide pretty good samples, especially with Audiomaster. Again the problem of a stereo output (the cassette deck) and mono sampling arose, but one of those Y-connectors soon got things moving. Without going into too much depth on the subject of sampling, it is important to appreciate the trade-off between quality of the end result, and the amount of memory taken up by the sample. Audiomaster provides two sampling rates so you can choose, and since the memory limit was resolved, I used the higher rate of about 20,000 samples per second. The resulting sounds were clear enough to satisfy the director (Emma Spielberg, in case you're wondering), and this was important as several of the samples were of speech. You have to bear in mind that reproduction of the sample over a P.A. will introduce a certain "dullness", particularly when there are lots of people in the way of the sound so my advice is to go for the highest sampling rate your memory or software will allow.

I needed to "weld" together several samples from different sources and this proved troublesome as their sampling frequencies were not the same. (You find that appending a sample will make it assume the frequency of the other one, with a resulting undesired change in pitch). Audiomaster will do the welding, and to get around the frequency problem I found the best way was to record the samples onto tape, and then re-sample them at the required rate, and this seemed to work without any perceptible drop in quality.

"The Amiga is an extremely able system for playing sampled sounds, beating the pants off most keyboards because of the large memory and hard disk drives"

Audiomaster has some very interesting functions to mess around with the waveform; you can edit the sample very precisely to get rid of any glitches like the 'fridge turning on, and also any merging of sounds can be smoothed to get pretty professional results. Playing portions of the sample in a loop can provide some way out sound effects, especially if you alter the playback frequency at the same time. Again, making a recording of this and then re-sampling is a good way of preserving these special effects as Perfect Sound cannot cope with real time changes to the waveform characteristics. The Amiga is an extremely able system for playing sampled sounds, beating the pants off most keyboards because of the large memory and hard disk drives. It is very well endowed with MIDI music packages which do an excellent job of playing tunes, but I have found there is a yawning gap for some software to simply play large samples easily and reliably. None of the programs I used provided anything like an optimal solution. Even though Perfect Sound came close, it only allowed me to use one of the four channels at a time. None of the programs interact properly with the operating system, so multitasking them is out because they all insist on having control over the sound hardware all the time. In short, the usefulness of the Amiga for the purpose of playing samples live seems curtailed by inadequate software, unless anyone knows different.

However the entertainment was a big success and everyone was impressed by the 'professionals' quality of the sound effects. And that's what show business is all about, isn't it?

M.N.

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More Aspects of Amiga Sound

Mike Nelson, ever more stage struck, hears the Amiga helping to make Andrew Lloyd Webber's latest musical a bigger West End hit.

Having described some of the antics with the Amiga when used to generate sound for an amateur production, ***AUI*** can now report on the Amiga in a more professional setting. The hit musical "Aspects of Love", enjoyed by many West-End theatre buffs, relies very heavily on computers in a number of applications. During the course of investigating these, I came across a lowly Amiga A500, buried underneath the stage of the Prince of Wales theatre, almost hidden amongst £350,000 worth of sound system.

Mike Clayton, the sound technician, explained that the Amiga is used to monitor the radio microphones worn by the cast during the show, so that any faults can be dealt with almost instantly. The system was designed by Sennheiser, the German company famous in the Hi-Fi world for its rather nice headphones. They are also a major manufacturer of professional sound equipment, including the radio microphones used in "Aspects" and some of those employed in "Cats", as well. The software was developed by Sennheiser and runs on a basic A500.

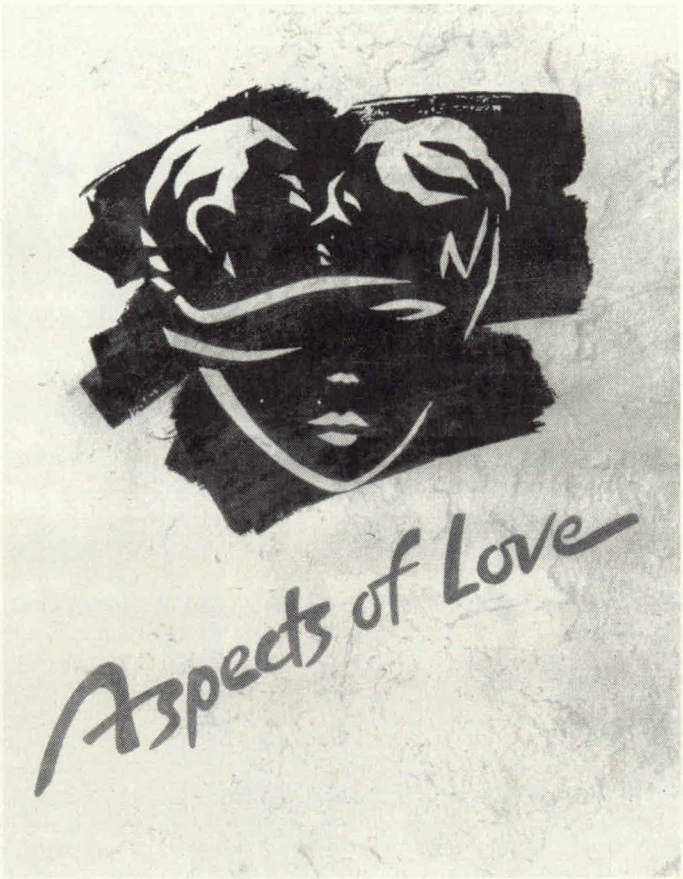
There are 21 microphones used by the cast during the show, although the system is capable of handling more like 27. The microphones themselves are vanishingly small, and so are invisible to the audience. A miniscule transmitter (slightly thinner than the Amiga mouse, in fact), sends the sound of the actor's voice to a receiver under the stage.

This then feeds the sound into the amplification system via the master control desk, in the normal way. The receivers also generate information, which is displayed graphically on the Amiga, about the levels of both the sound and the strength of the radio signal which can vary, depending where on stage you are, for instance. The kind of signal loss on your car radio which you experience when you drive under a bridge can be avoided by careful positioning of the receiver antennae, and also malfunctions can be quickly diagnosed and remedied, hopefully before the audience are aware of a problem. In addition, displayed on the Amiga is the sound level currently being transmitted by the microphone, so adjustments can be rapidly made to keep the overall sound constant.

The display is split three ways, so there is a monitor in the auditorium for Mike to use. Emma, the number two, is backstage and looks after the microphones on the actors (costume changes can cause embarrassing disconnections), so there is a display located in the wings. Lastly, there is a monitor with the computer.

The information is shown in a simple, clear display which has several possible modes of operation. During the performance, all the microphones in use are monitored; the system is fast enough to keep up an impressive refresh rate, as any delay would limit the diagnostic usefulness. Other options include "large gadgets" which displays the data from only four microphones, but in a bigger format, and also a feature which effectively records and shows how the level of one (selectable) microphone varies over a period of time. This could be used to test the signal strength from various parts of the stage. The layout of the display is totally user-definable, allowing the name of the character using a given microphone to be added, and this is then saved onto the disk.

So much for the Amiga, but what about the other computers involved in the show? In fact, there are two IBM PCs used, one in the sound system and the other to control some of the scenery changes. The sound system is extremely complicated (well, it looked complicated, anyway), and a PC is employed to tell the various mixers what they should be doing for each song. The computer has a list of cues which are selected manually, as appropriate, and it sends MIDI information to the mixers to set all the different "reverb" patterns for the



band and actors. (Reverb is a technique for electronically adding depth to the sound). The rapidity of the show and the number of potential changes means that the computer is vital to the sound side of things.

The last PC is used to control eight wooden screens which move around on two linear tracks laid into the stage. These screens are used to alter the shape of the stage throughout the show, and unless you are in the know about what is going on, it is very easy to be totally oblivious to them, such is their subtlety. As well as moving back and forth like the screens about which batsmen seem to get agitated in cricket), they can also rotate on the vertical axis. The computer is pre-programmed with complex movement sequences which are initiated by the operator, Adam.

Information about where and when to move is supplemented by acceleration and braking commands so that movement is very slick and fast. The motors moving the screens send back information to the PC so it knows where each screen is located and how far it has been rotated, and this is all displayed graphically on screen. The computer runs a simulation at the same time as the movement programs, and so minor mishaps and disagreements between the various components about who is where can be quickly brought to Adam's attention. That is not to say accidents do not occur though,
and pile ups with bits of scenery crashing into each other do occasionally happen!

I hope to have illustrated yet more uses for the Amiga, and maybe inspired someone to go out and do something more than annihilating aliens. Oh, and by the way, the show is well worth seeing, too, especially now ***AUI*** has opened the lid on some of its secrets! ***M.N.***

RUNNING MS-DOS by VAN WOLVERTON

(Microsoft Press £19.95/$22.95)

There are many books that try to explain the workings of MS-DOS. The manual that accompanies the program is, like many manuals, comprehensive but sometimes not as easy to understand as one could wish. And every few months, it seems, another how-to-work-it computer book on DOS appears.

However, for the users of MS-DOS there has long been just one definitive aid. It is called 'Running MS-DOS'. Published four years ago it has since sold more than one million copies and is what could be called the 'bible' of PC users.

This edition of 'Running MS-DOS' written, as before, by Van Wolverton, is the fourth. It is completely revised and updated and covers all versions of DOS up to and including 4.01 and the new DOS Shell.

MS-DOS often comes included with other packages and, just as often, is left mouldering on a desk by would-be users who cannot be bothered, or have not been able, to work it. For anyone in that position 'Running MS-DOS' will come as a god-send.

In the acknowledgements, Wolverton remarks that his mother preached the doctrine of clear writing. He has certainly taken her lesson to heart. The book is written in about as clear and as easy-to-read-and-understand format as one can get. As he also says, it is not for programmers. It is not for any one aspiring to become a programmer. It is for the ordinary PC user who wants to use MS-DOS for word processing, spreadsheets, database management, perhaps household accounts, or even just some games.

Part 1 is primarily a tutorial. Getting to know MS-DOS, what it does, why you need it. Part 2 shows how to use it to manage your work on the computer, how to create your own commands and how to tailor the system to your own needs. It also includes a helpful chapter on using EDLIN (the DOS text editor). The final part contains the appendixes which include changing DOS to suit different languages, a glossary for those unfamiliar with computer terms – a particularly useful aid I think, for anyone new to PC's – and a comprehensive reference to DOS and EDLIN commands.

There are innumerable step-by-step examples coupled with the text and, a great help this, the commands to be keyed-in by the user are printed in red so that there is no ambiguity between what should appear on screen (done in normal black print) and what is to be entered via the keyboard.

Although 'Running MS-DOS' is primarily for versions from 4.00 onward it can just as well be used with earlier versions for Wolverton gives instructions for most of them. As an experiment, I tried it with the 3.2 and found it worked with that, too, and although in my early version some of the file names differed slightly it was very easy to adapt the instructions.

One warning. This book is definitely a hands-on tutor. Don't stand in the book-store and leaf through it and wonder 'is it for me?'. For, like many how-to manuals, it's easier to show by example than to merely explain. Just reading the text will not, if you are a comparative novice, be much help. But the many on-screen exercises given will be.

If you can afford the £19.95 or $22.95 that it costs, it will be cash well spent.

Sit in front of your screen, boot up the program, open up 'Running MS-DOS' and I can almost guarantee that in a few hours you will be, if not an expert, at least a reasonably competent and able operator of the system.

D.M.

CygnusEd 2.

ASDG Inc.

A product recommended by the legendary R. J. Mical and Jay Miner cannot fail to impress. Mike Nelson reviews

CygnusEd is not a new program but the recent upgrade to version 2 represents a substantial advance in the product. ASDG claim that CygnusED 2 is arguably the finest program editor available on any computer. AUI couldn't let this modesty go untested and so my mission was to play around with the editor and report back to base on my findings.

First of all, I must stress that CygnusED is NOT a wordprocessor, and is largely intended for programmers to edit their source code, although I am writing this review on it. You may ask what is the difference? In practice, the editor is not geared towards displaying nicely formatted text, with a multitude of different styles (bold, italics, etc), but the essentials of text handling are all there so CygnusED does give a few wordprocessors a run for their money.

When I first received CygnusED, my initial response was something along the lines of "Flipping Heck! Not another editor with eight hundred new key combinations to learn", but after a short period of keyboard bashing, I revised this opinion as CygnusED is really easy to find your way around. This is because it is almost totally Intuition-based, so most of the commands are available in a series of well-designed menus, with appropriate keyboard shortcuts. There is no need to go messing around with "Block Start/Block End" type of commands as in the AmigaDOS "ED", or Lattice's editor, as the authors have recognised that even toughened programmers like to be spoilt with the mouse, once in a while. Moving around large documents is no longer a problem with the scroll bar (which may be positioned on either side of the screen, for your convenience), and text rendering is easily amongst the fastest ever to grace an Amiga screen. You can also use alternative fonts, if you so wish, and this is particularly useful should you happen to be using an interlaced display, and a larger font means that you can actually see what you're typing.

The original release of CygnusED was a pretty comprehensive affair, but the updated version carries with it a number of improvements which certainly go a long way to substantiating the claim of ASDG. It is now appropriate to take a look at some of the advanced features of CygnusED. Multiple "views" are allowed, and this is a system whereby up to 10 autonomous documents may be operated on simultaneously. This means you can easily cut and paste between documents; it's like having 10 copies of the editor running at once.

"There is full access to AmigaDOS commands and you can also launch other programs from within CygnusED, a useful feature augmented by an extensive ARexx interface. So nearly all of CygnusEd's functions can be driven from the growing number of other programs which also use ARexx."

A rather nice feature of this is that you can have two (or more) views of the same document ongoing, so you can be reminded of another part of the text, without constantly having to jump around the file. This is different to the multiple document facility of WordPerfect, for example, as there you must use two copies of the file, the disadvantage being that any changes you make to one document are not updated in the other, unlike in CygnusED. There is a number of options for manipulation of these "views", including various sizing and selection choices.

The "Undo" facility is almost unbelievable; the program remembers almost everything you do, and so you can retrace each of your steps nearly to the time you last went to make a cup of coffee, and then the "Redo" allows you to jump forwards after your "action replay". Macros are also fully supported, even to the extent of moving through requesters. A macro definition assigns a sequence of keypresses, which can include menu selections, to a function key, and if those menus would normally post up a requester (such as "Search & Replace"), you can enter appropriate responses so the requesters are bypassed. This feature greatly increases the power of macros.

There is full access to AmigaDOS commands and you can also launch other programs from within CygnusED, a useful feature augmented by an extensive ARexx interface, so nearly all of CygnusEd's functions can be driven from the growing number of other programs which also use ABexx. This feature could be used to integrate CygnusED with your compiler so the latter receives the in-memory source code from CygnusED. Another use for ARexx is to supplement the macro capa-

Continued on page 40

KCS Power PC Board AMIGA 500

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Dear Sir/Madam

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I am looking forward to the upgrades in software as they are developed. I am looking forward to the hard disk software.

I was a bit apprehensive about importing goods from overseas suppliers but your prompt service is appreciated and I thank you for that. I am looking forward to hearing from you again.

Yours Faithfully
BS

Hay Mills
Birmingham
B25 8NH

Bitcon Devices Ltd
88 Bewick Road
Gateshead
Tyne & Wear
NE8 1RS
England

Dear Sir

I am writing to ask if it would be possible for you to send me a registration form for the PC board, as I seem to have misplaced mine! Otherwise, thanks very much for an absolutely fantastic product, one which has, in the space of only two weeks, proved its worth. Other programs not on the list which work are: Quattro, Fleet Street Publisher and Printmaster Plus. Once again, thanks very much.

Yours sincerely
K Whitchurch

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88 Bewick Road
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Dear Sir/s,

Ref: KCS Power PC Board

As someone who has used the Amiga 500 for both business and pleasure applications and who is aware of the limitations on the availability of suitable business software, I was immediately interested in the above product. It seemed like the ideal solution: no second machine to take up valuable space, retention of the superb graphic and video capabilities of the Amiga, needed for part of my business and the chance to make use of the huge range of business software available for MS-DOS machines.

Too good to be true, I thought, especially as the price is quite a lot less than even a DIY PC-XT alone!

Your advice and assistance on the telephone, prior to placing an order, was certainly of a standard that most companies have long since forgotten and the speedy dispatch of the goods was most impressive.

I fitted the board within 5 minutes and then spent a further 15 minutes reading the manual. A further 30 minutes was then spent on setting up the software to suit my particular requirements. This process was simple and trouble-free.

Hey Presto! – an IBM compatible machine sprang to life. Now for the acid test – the software.

A collegue with many years experience in the PC world had brought his disk collection along and we started the process of trying to make the board fail! No chance – we ran all sorts, amongst the programs tried was Autoroute 1.2, Word Perfect 5.1, Norton Utilities, PC Tools and Flight Simulator 4 (latest version). We also tried many PD and Shareware titles. Everything functioned perfectly, including the disk drives, video and printer ports. We then loaded Procomm, connected a modem and proceeded to download more PD software from various bulletin boards.

All in all, I can only say that I am more than satisfied with this superb product and I would recommend it to anyone who requires MS-DOS on their Amiga 500. You may use this entirely unsolicited letter for any purpose in connection with the promotion of your product.

Yours most sincerely
Nell Bristow

INDEPENDENT EDITORIAL REVIEWS

"Standard XT/AT software runs with no foreseeable problems and 704K at its disposal. All normal PC function keys are also emulated, so you can run through all those bewildering Word Perfect key combinations. . . So, if its a cheap PC you're after, don't buy one. Buy the KCS Power Board instead"

Amiga Format
Oct 1990

Bitcon Devices Ltd, 88 Bewick Road, Gateshead NE8 1RS England
Tel: 091 490 1919/1975 Fax: 091 490 1918 Helpline 091 490 0202

CygnusED 2.

Continued from page 38

bilities of CygnusED, and any facilities which ASDG have neglected to include (there can't be that many), you can write yourself, providing you have ARexx, of course.

I mentioned that CygnusED's primary use is for program development, and to this end there are number of hacker-friendly features. There is a useful "balance bracket" command which you can call to find a corresponding open or close depending on the circumstances. If you position the cursor on a "(" and select "balance", CygnusED will scan forwards, skipping out nested braces, until the corresponding ")" is located and position the cursor for you. This enables you to ensure that sections of code are properly delineated and keeps the compiler happy. The feature also works in reverse; selecting a close brace, ")", will cause CygnusED to scan backwards for the corresponding open. An Auto-Indent mode is available so you can format those endless layers of C statements with a minimum of trouble, as CygnusED remembers how far in from the left margin you are currently working and inserts the appropriate Tabs. Incidentally, you can make CygnusED substitute spaces for Tabs, if, for instance, you were porting your document to another system which disagreed with the Amiga's ideas about what Tabs should look like.

"The manual is over two hundred pages long, but is very well-written and contains a comprehensive index which is almost obligatory for such a program, when you may need to find things in a reasonable time."

When compilers detect the little errors we are all prone to make from time to time, they usually report the line number of the offending code, and CygnusED allows you to jump to a specific line to examine what has gone wrong. Some Modula 2 compilers, however, report the byte value of the error, and tracking down the statement at byte 11,527 is no joke without a jump to byte function, and thankfully, CygnusED includes such an option.

It is worth mentioning some of the miscellaneous features of CygnusED at this point. There is an Auto-save facility which is user definable so that after a pre-determined period of time has elapsed, CygnusED hints that it may be a good idea to save your work. Unless you can type (and think) faster than the speed of light, about fifteen minutes seems to be a reasonable delay.

Almost every internal parameter can be altered, allowing you truly to customise your editing environment, as after all, we are all different so these options are very welcome; you can then save these environments and subsequently re-load them as appropriate. The file requester deserve some kind of design award for being all-encompassing, and is worthy of a screen-shot. I suppose if there had to be an ultimate requester, this would come very close indeed, as all devices are catered for in a scrolling list, even the virtual ones likes DEVS: or FONTS.

The manual is over two hundred pages long, but is very well-written and contains a comprehensive index which is almost obligatory for such a program, when you may need to find things in a reasonable time. There is the usual introductory bit and then a guided tour of all the menus. Also, the ARexx interface is fully explained along with a few of the bugs still surviving inside the Amiga itself.

CygnusED is an excellent product which comes recommended by the likes of R.J. Mical, and Jay Miner, so who can argue with that? If you are looking for a comprehensive editor which seems Guru-resistant, then perhaps CygnusED is for you. It is very fast and easy to use, offering many useful facilities, but the macros and ARexx interface will allow you the flexibility to overcome any problems you may find.

M.N.

Contact: ASDG Incorporated,
925, Stewart Street,
Madison, Wisconsin, 53713.
(608) 273-6585.
or Silica Systems Ltd
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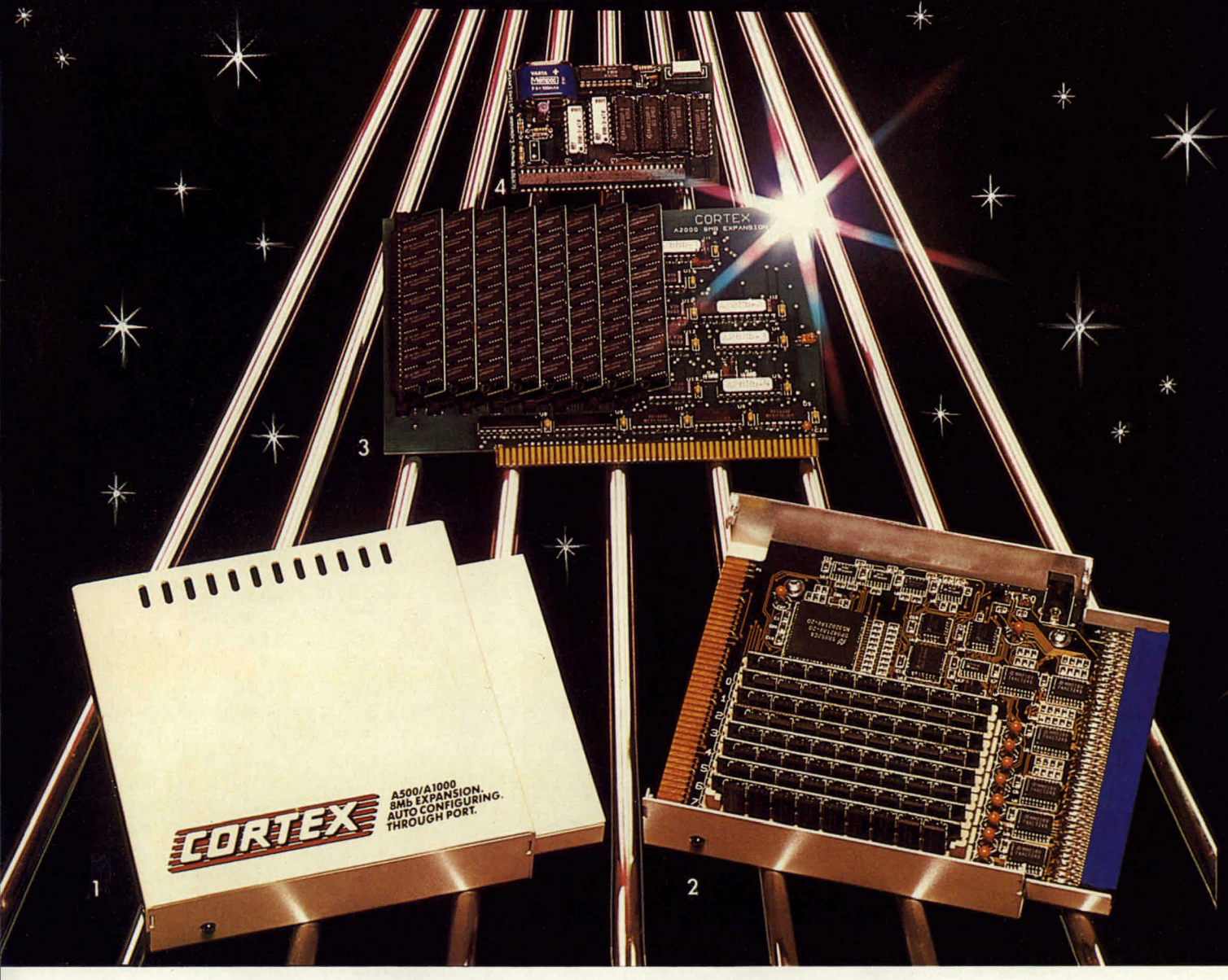

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2. As above, but with the cover removed.

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KCS Power PC Board

It had to happen. A500 users needed a way of obtaining IBM software compatibility without having to resort to Commodore's painfully slow "Transformer" utility. Jonathan Living discovers that not only does this add-on fulfil the role admirably but may also prove to be the most logical upgrade for many Amiga users.

It's all very well owning a supercomputer like the Amiga; we all know of its stunning graphics and sound capabilities. However, ten years ago, a company known as IBM started selling computers which were to eventually monopolise most of the business machine market. Today, IBMs are found in just about every academic and financial institute in the world. This is a very strange state of affairs since the world of MS-DOS is floundering in incompatability; at last count, the number of graphics file formats in the IBM kingdom reached nearly treble figures, for example.

For one reason or another, us Amigans may require software compatibility with the IBM "standard". If you have an Amiga 2000, the answer has always been a Bridgeboard - Commodore's own solution which comes in two flavours - an XT or AT compatible.

Recently, a company called Kolff Computer Supplies developed a similar XT board for the A500. Marketed in the UK by Bitcon Devices Ltd., it promises excellent IBM XT compatibility while allowing internal and external Amiga devices and ports to be used from the PC side of things. Besides the PC board, the package contains MS-DOS 4.01 on 3 disks, complete with "GW BASIC" and "MS-DOS Shell". Also included are 2 KCS-specific disks, one labelled "Amiga" and one "MS-DOS". Manuals are provided for Microsoft's DOS 4.01, their "Shell" user interface software and the KCS board itself.

Surprised "Transformer" users find there is no uncertainty regarding the board's success or otherwise in running even heavyweight XT programs, with operational speeds greatly increased by some 10 times or more."

The board has been designed to plug into the trapdoor expansion slot underneath the A500 - it just fits. Interestingly, the design uses an NEC V30 processor in place of the more usual Intel 8086 type. The reason for this being that the NEC is in fact compatible with its Intel counterpart but operates more quickly, thus adding to the board's overall speed. The female connector on the board is actually two positions longer than the male connector inside your Amiga - a little disconcerting when first installing the board. Due to the design of the PCB, however, the 2 connectors will only mate in one particular way.

Once installed, you can reconnect all your Amiga peripherals and switch on. If you now boot from a standard Workbench 1.2/1.3 disk, the Amiga behaves as normal but total system memory will be around 860K, just as if you had installed an A501 or similar 512K expansion. The real-time clock will not work correctly yet because the PC board's clock cannot be written to and read from using the AmigaDOS "setclock" command - your Workbench disk needs to be altered.

Luckily, KCS provides a disk to do this. Due to the way in which this disk is modified during first-time booting, ALWAYS use a virus free, write enabled COPY. Boot your machine from the backup copy while holding down the left mouse button long enough for the familiar blue/white AmigaDOS screen to appear - then let go. The first time this disk is used, the program will ask you to select the language in which the menus are to be

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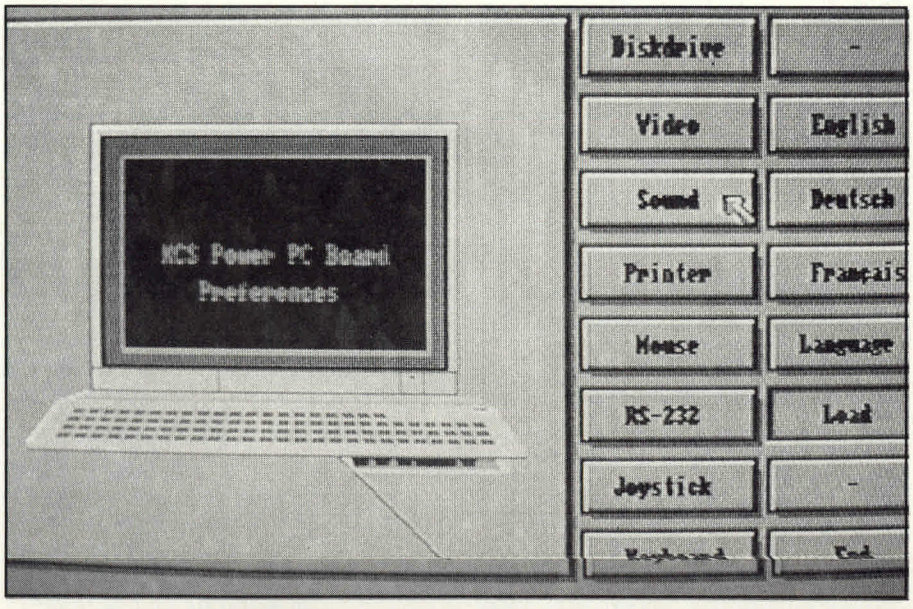


written. The software then displays the message "Thankyou" in the language you have chosen. Eventually, a menu will appear with various choices.

Options 1-4 modify your Workbench disk in order for me real-time clock and/or disk-buffer to function. Hard disk users are left wonderlng how to set up their prize hardware in order to gain the clock and buffer. The answer is simply not to bother. The manual warns against using the disk-buffer with DMA devices like the A590 so this feature seems to be unavailable to harddrive users. The clock can be successfully used by lifting a copy of "PCCLOCK" from the KCS(Amiga) disk and placlng it in your hard-drive's "C" dlrectory. Now simply modify your startup-sequence by removing the line "setclock opt load" and replacing it with "PCCLOCK opt load". Both hard and floppy disk users can set the time and date correctly at first by using the Amiga's preferences program. Then use the command "PCCLOCK opt save" from a DOS Shell to write to the PC board's clock.

Option 5 enables the user to alter the PC board's configuration in PC/XT mode. Read in the default settings using the load icon and then use other icons to make changes. The two most major aspects of me configuration which can be changed are:

1. Disk Drives - You can configure up to 4 Amiga drives as any logical PC device from A to D. 5.25" external drives read, write and format 360K disks, while both internal and external 3.5" drives use the 720K standard. High density disks (1.2MB and 1.44MB respectively) are not catered for by the PC board. The software provides a useful "double-step" option which obviates the need for manual switching of 80-track 5.25" drives to 40= tracks when in PC/XT mode.

2. Video - This enables the graphics card emulation to be set. CGA (Colour Graphlcs Adaptor) glves a screen resolution of up to 640 by 200 pixels in 4 or 8 colours. MGA (Mono Graphics Adaptor) seems to be a "Hercules" compatible system which gives a mono (1 colour) resolution of 720 by 348 pixels and also has 80 column text modes. In any case, the colour(s) available In both CGA and MGA can be set to any of the Amiga's beautiful 4096. CGA has a resolution comparable to that of the Amiga's medium resolution which made it easy for KCS to implement this graphics mode. Unfortunately, KCS have had to resort to using the Amiga's flickering (interlaced) high-res mode to make the Hercules graphics possible. Not only does this make Hercules almost unbearable but also causes around 40 pixels either side of the screen to be missed off. Perhaps KCS could tell me how to use Hercules compatible programs when only 640 pixels of a 720 pixel screen are visible.

Mouse, printer, joystick and keyboard configurations can also be set as desired. The preferences can then be saved by clicking on the "end" icon. Starting the emulator is very simple boot your Amiga from the KCS(Amiga) disk but do not hold down the left move button. Within a few seconds, a HAM title screen appears and your PC/XT bursts into life. The PC now performs a memory check while a bootable disk is loaded into the drive, such as the KCS(MS-DOS) disk supplied. Pressing "Esc" causes the PC to boot from the designated "A" drive.

It 's a tribute to the compatibility of this piece of kit that it actually boots DOS 4.01; Commodore's Transformer software glves up after version 3.30! It is also normal for manufacturers of PC systems to include their own, slightly tweaked version of DOS with their machines, whereas the Power PC board runs Microsoft's original with no complaints. Phoenix's "DOS Help" program, supplied on the KCS(MS-DOS) disk ran perfectly in CGA but refused to work with MGA. Simple BASIC listings from one or two PC magazines designed to demonstrate colour on a CGA system also ran as expected from within "GW BASIC". Microsoft's "DOS Shell" ran in CGA and MGA but could not be used with the mouse option since only the IBM type is supported; the PC board currently emulates just the Mouse Systems mouse standard. Running IBM software on the PC board is almost an anticlimax. Surprised "Transformer" users find there is no uncertainty regarding the board's success or otherwise in running even heavyweight XT programs, with operational speeds greatly increased by some 10 times or more.

"One nice feature is a "Hot Key" function which enables the PC board's preferences to be changed while using it from the PC/XT side."

As a further example of this board's capability, a "Logitech" mouse (made specifically for use with IBM serial ports) was plugged directly into the Amiga's serial connector. The Logitech mouse driver ran successfully, allowing use of the mouse with, amongst other things, Autodesks Autosketch v2.0 software (a cut down, XT-compatible version of their AutoCAD drafting package). Running in CGA, a multicolour drawing was

dumped to a 24pin colour printer connected to the Amiga's parallel port using an ADI (printer) driver. The results were perfect, indicating that the PC board is indeed a very highly compatible device. The use of the "Analyse System" option from within PC Tools v6.0 gave an overall speed reading of 210% of the original IBM XT - quite a healthy figure. PC Tools also managed to report 704K of free memory, the presence of an NEC V30 processor and CGA/MGA graphics cards.

The KCS(MS-DOS) disk also contains the aptly named "CLOCK.EXE" file. Type in "CLOCK" from the DOS prompt and the time and date are loaded from the PC board's real time clock, rather like the "PCCLOCK opt load" command from an AmigaDOS Shell. This update can be made automatically when booting from a disk by including it in your "AUTOEXEC.BAT" file (the MS-DOS equivalent of AmigaDOS' "startupsequence"). To create an AUTOEXEC file, issue the command:

copy con: a:autoexec.bat

Then type

clock

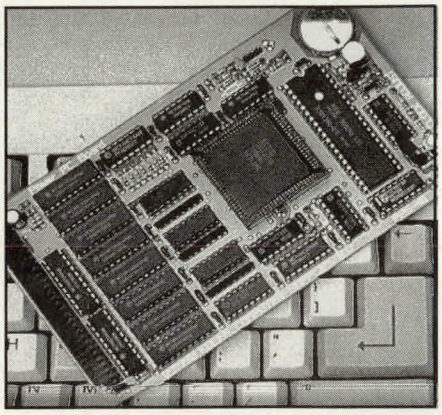
on the next free line and press return. Now use CTRL-Z to make "Z" appear and press retum again. The desired ASCII file will be created. Make sure there is a copy of the "CLOCKEXE" program on all disks with the AUTOEXEC file present.

One nice feature is a "Hot Key" function which enables the PC board's preferences to be changed while using it from the PC/XT side. Pressing the "help" key while holding down the left or right Amiga keys presents the user with a temporary menu from which colours can be changed, Joystidk ports can be swapped, etc. Pressing "Esc" exits this menu and immediately restores the last working screen before the feature was invoked.

The documentation provided by KCS for the board itself has to be one of the few things I can criticise. It is a typical "State the Obvious" manual which fails to draw the users attention to the more subtle points about the product, such as the differing sizes of edge connector on the PC board and Amiga Try reading the section on the mouse preference setting for an example of how ambiguous this manual can be.

One other minor criticism concerns the stability of the real time clock. While I would not dispute that the PC board's clock is as accurate as that in my discarded A501, it seemed to lose time quickly in the first few days of operation and then settle down. Access to the clock-speed trimmer is only possible from the top (component) side of the board, so adjustment necessitates its complete removal from the computer - thanks KCS.

The product overall, however, represents a superb piece of hardware. There is not one other add-on that manages to be quite so Amiga friendly; The board works with any

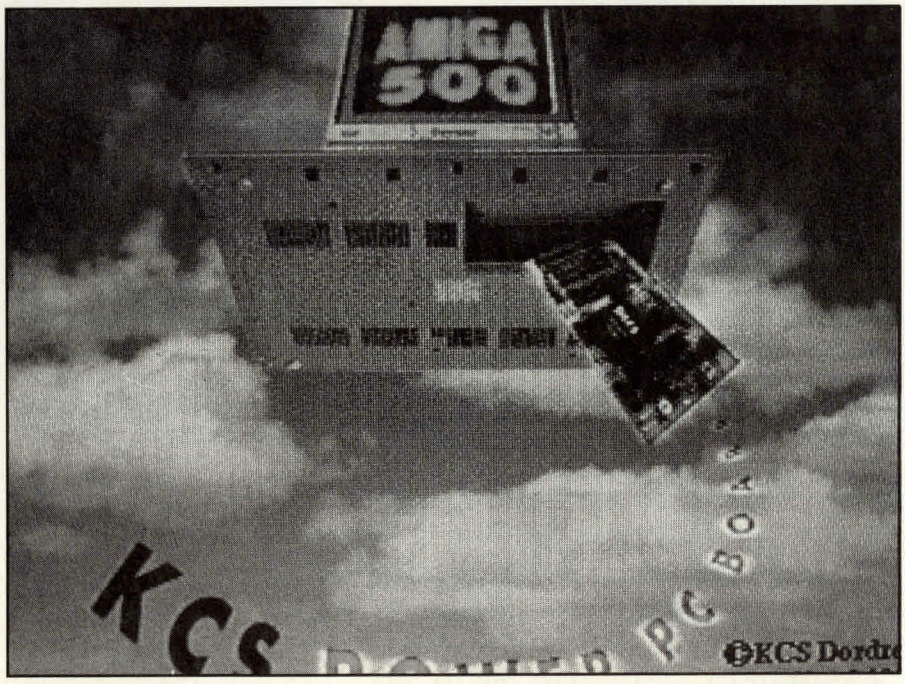


amount of fast ram installed in an A590; it works perfectly with the new 1MB Agnus chip installed (although uncertainty over whether the disk-buffer function works with this chip exists); it works with a TV or monitor and uses all Amiga peripherals.

KCS have also promised some fairly amazing SOFTWARE upgrades for the board. These include upgrades for the use of an A590 hard disk and use of any extra Amiga memory as paged memory on the PC/XT side, this conforming to LIM v4 EMS (Lotus/Intei/Microsoft v4 Expanded Memory System). More advanced upgrades, although still softwue based, include a graphics adaptor emulation upgrade to full VGA (640 by 480 pixels in 16 colours). Whether KCS will implement a reduced palette size with this is unclear (the original IBM specification for VGA gives a palette size of 256,000 colours something the Amiga is incapable of achieving). What KCS have already said is that the new 1MB Agnus, a multi-scan monitor and some extra (A590 installed) memory will all probably be required just to make this particular upgrade remotely possible.

All in all, if you combine a solid product with a development company committed to stretching its capability and a marketing company who, for once, know what they are doing, then you have got an essential Amiga hardware purchase, the KCS Power Board has been available since July.

J.L.



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Thinker 2.0

Poor Person Software

Mike Nelson meditates on the second version of a program that suggests we may not need to believe the shortest path between two points of knowledge is linear

Thinker is a somewhat unusual program which may be classified as an idea processor, combining the basic elements of a traditional word processor and a database. We have reviewed the first version before but this has some worthwhile progress. The concept is neither particularly new, or unique to the Amiga, with the nearest relative being HyperCard on the Apple Macintosh. Thinker's system is called Hyper Text and it seems appropriate to start with a bit of background information about how it all works.

When you read a book or magazine article, even a well-written piece of text can lose you simply by virtue of the fact that you think in a different way to the author. Hyper Text is a way around the problem, utilising the random access facilities of computer filing systems in a kind of automatic on-line help. For instance, the term "random access" is a piece of jargon, familiar to computer buffs but, like most jargon, virtually meaningless to people outside the field. If such a term appeared in a Hyper Text document and was proving a problem you could seek clarification with a simple click on the mouse and the computer would pop up a window with an appropriate definition, which itself may contain references of interest. Thus, a carefully designed document will take all the grafting out of cross referencing other books, looking up definitions in dictionaries, etc. Hyper Text documents therefore do not have to be read in a linear fashion and the reader is free to move around the information in whichever way suits them the best. Repetition of information is avoided and so the documents can be concise.

Putting your ideas across to other people is greatly aided by the use of diagrams and illustration, and to this end Thinker is equipped with options to display IFF files either in a separate screen, or it will try and modify the file to suit the display limitations of the Workbench screen, but this should be unnecessary on any expanded Amiga. You can also display icons in the body of the text.

The basic elements of Thinker are called statements, or branches, and these are referenced by labels (in much the same way that you can label a subroutine in AmigaBASIC). Each statement can then spawn other statements (called sub-ordinates) which are indented from the parent on the screen. You can (in theory) carry on with this spawning process almost indefinitely.

In order to access the statements, via labels, another element called the link is employed and this is illustrated in the following example:-

(label) This is the statement which may contain meaningful (links) to other statements which will clarify uncertain terminology.

When the reader wants more information on links, a simple click inside the angled brackets will cause Thinker to search through all its labels to find "links" and print the statement associated with it. (Note the angled brackets are optional so your text does not have to be cluttered). This is only the start of things, as Thinker will link to one of four possibilities, namely text (as above), an IFF picture file, another Workbench program which you may want to launch from within Thinker, and finally an ARexx port for communication with other programs already up and running.

This is the essence of Thinker and even after brief usage you find the program's potential expanding as you discover more applications. In fact, Thinker is the sort of program which deserves a considerable effort as the more work you put in, the better it gets.

You can use it to plan almost every facet of your life, from work pending, work completed, and half-baked ideas which may never see the cold light of day, to telephone numbers, recipes, and program development.

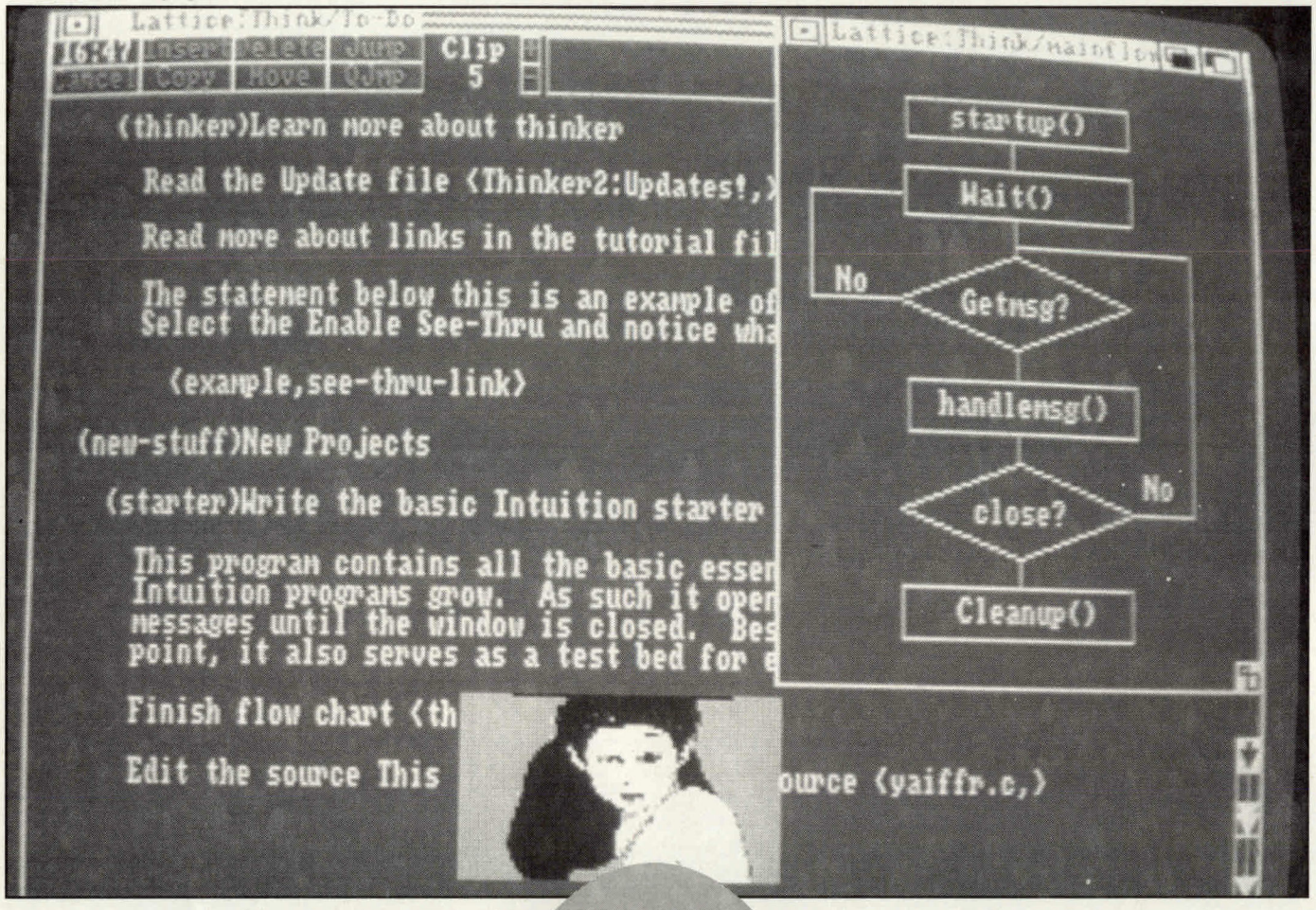
The latter application is augmented (some may say) by a simple object orientated drawing program, one use of which is to draw flowcharts. Then again, grown up programmers tend not to draw flowcharts, but this is another debate again! You need never have to use the backs of envelopes for those wonderful ideas (or at least you can transfer the ideas into Thinker should they hit you at some inopportune time, like in the local drinking establishment, many miles from your Amiga).

"You can use it to plan almost every facet of your life, from work pending, work completed, and half-baked ideas which may never see the cold light of day, to telephone numbers, recipes, and program development."

Thinker also remembers how you are moving around the document, even to the extent of allowing you jump around several different files, and so when you want to return to the previous level, all that is necessary is a quick selection with the mouse. There are many internal options which allow you control

Continued on page 48

Continued from page 47



of the operating environment, and these may be saved and loaded both with the documents and separately. These options include a clever "Clipping Level", whereby you can select how many sub-levels of statements are displayed onscreen. Formatting details may be specified to customise the screen to suit both the document and the user's mood.

From the point of view of the writer, Thinker is well-endowed with useful editing facilities that are extremely comprehensive and user-friendly, with the usual "Cut and Paste" commands, and also an "Undo" for the more undecided author. A fairly basic spell checking facility is also available, and Thinker goes out of its way to make sure you don't accidentally muck up the document with several "Are you Sure" requesters.

The 70-page manual was written using Thinker, and indeed, one of the examples included on the unprotected disk is an introductory tutorial which explains much of the program's terminology, and really you can forget the manual in favour of this. That is not to say that the manual is a waste of trees, as it is a vital reference to really get the most out of Thinker. There is another tutorial and a menu-by-menu approach to explaining how the HyperText system works, and this does give you all the information you need to get stuck in. With a little practice, you could soon be planning your entire life with this one program! The most recent upgrade is version 2.1, and the additional features of this are included in a 20 page booklet.

The educational possibilities are vast; it does not take an excessively vivid imagination to foresee the time when all learning is interactive, and the student is able to choose the direction of the process at his/her own pace.

The screen update is not the fastest in the universe, but a Disk Cache option does speed things up somewhat. Running the program off a hard disk is the next step and a fully-fledged 68030 processor would solve just about all the problems you may have. Unfortunately, "Poor Person Hardware" does not exist (as far as I know), so this upgrade is not what you call the most obvious!

This review has only highlighted some of the more fundamental features of Thinker, and there are many more interesting lines which could be pursued.

The educational possibilities are vast; it does not take an excessively vivid imagination to foresee the time when all learning is interactive, and the student is able to choose the direction of the process at his/her own pace.

Thinker is really a first step in such a direction and the philosophy of "Poor Person Software" is very laudable in that they endeavour to provide quality programs at a low cost, cutting back on the packaging and other such overheads. They are to be congratulated on Thinker, but there is scope for further improvement. The program did Guru on me a couple of times (notably the drawing module, which is unsupported at present), but seemed fairly robust on the whole. I would like to have seen a "diary" type of option so that Thinker could be programmed to inform you of the "when" as well as the "what"; after all Commodore did go to the trouble of including a real time clock. Maybe that way I wouldn't have missed the last deadline . . .

In conclusion, Thinker is what you are prepared to make of it, and a little effort is rewarded with an excellent teaching tool, as well as a personal computerised organiser.

Thinker 2: $80

Contact: Poor Person Software, 3721 Starr King Circle, Palo Alto, California, 94306. (415) 493-7234.

AMOS

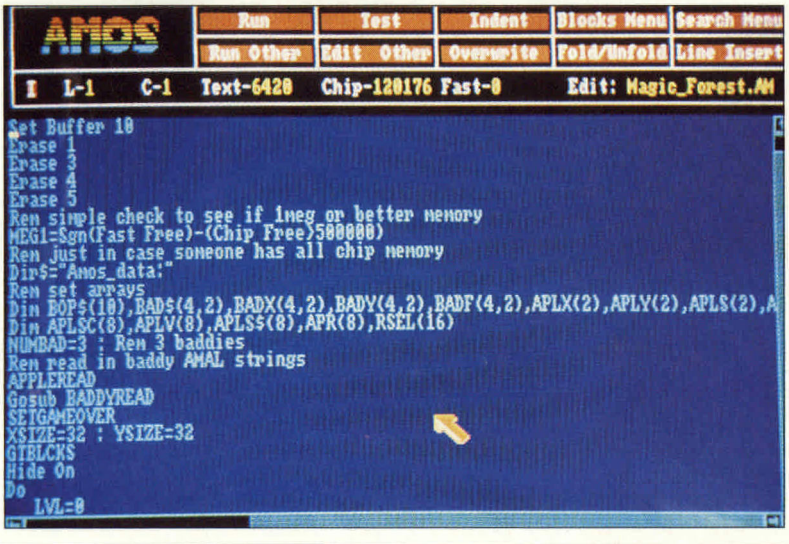
Mandarin

Surprising as it is, I still miss my old Spectrum. Rather than the Amiga's anonymous hand holding a disk, on power-up you were presented with a very attractive BASIC. Once you had learned the basics, knocking up a mini adventure or arcade game was no trouble. When it came to upgrading, C64 BASIC was a nightmare. My machine was close to making a sharp exit through the window on a few occasions of BASIC which allowed access to sprites, scrolling, sound envelopes and more, without a single POKE or PEEK in sight! Now comes the turn of AmigaBasic programmers to be released from the world of 2-bit graphics and Stylophone sound effects. Mandarin's AMOS is here.

Originally subtitled "The Game Creator", AMOS contains all the usual structural commands you would expect to find in a BASIC, along with a cartload of commands for handling sprites, bobs, scrolling and sampled sound. Thanks to this, you can kiss goodbye to your old BASIC, even if you never intend using the more advanced facilities.

AMOS comes on two disks, documented with a 300 page manual. Along with the main editor program, you get four example games written in AMOS, a few sound and graphics files for your own use, and some handy development utilities. Unfortunately the games really are rather poor, although AMOS is capable of far better things. Among the utilities are a sprite designer, a map editor, and a program for converting samples into AMOS format. If you prefer to use Deluxe Paint to design your grahics, there's also a program which allows you to grab sprites or bobs directly from an IFF screen.

The AMOS system itself is very easy to use. It works in two modes: direct and editing. Any miscellaneous calculations, POKES, PEEKS or information you may need during the writing of a program can be sorted out in direct mode. When it comes to editing, all the usual cut, paste and search functions are available. The file requesters can be irritating when they plunge head-long into listing a massive directory that you didn't even want listed, but other than that, the editor is fairly user-friendly.



All BASICs include at least rudimentary maths functions and program structure commands, but it's the graphics-orientated functions that pull AMOS way above the competition. Without confining the user to the strict guidelines encountered in game creators such as SUECK, AMOS asks of you the bare minimum information it needs to transfer what's in your head to the screen. Draw a bob, grab it with the slightly bugged additional software, give it a number, and all that's left to do is tell the computer where to put it. It couldn't be simpler. For more complex animations, like attack waves for example, there's AMAL, mini-language specifically for that task.

Independently scrolling sections of the screen is just as simple. Define the areas and set the speed and direction of the scroll. Now the command "SCROLL 1" is all that's needed to smooth scroll that first area. In line with the rest of the commands, all the complex maths and any other tricks going on behind the scenes are kept neatly out of sight.

One feature guaranteed to raise the tone of your programs when used well, is the rainbow function. Although it's not one of the simplest commands to understand,

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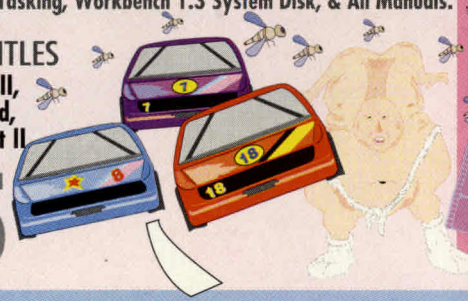

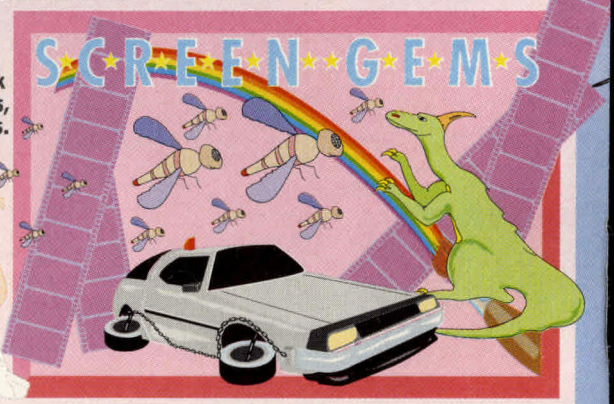

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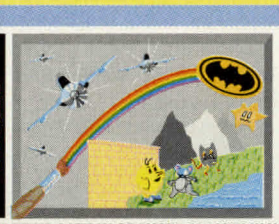

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am to 4pm . . . THAT'S THE MAGIC OF MERLIN

it allows you to include those colour bars seen in so many demos in your programs. Using these, you can come up with some excellent graduated sunset effects, and as far as the computer is concerned, you're only using one colour. With practice you can come up with some excellent pseudo-3D parallax tricks.

On the subject of sound, there are both functions for playing samples and creating your own sounds. If you have the memory to spare, you'll get far better results from using samples. AMOS prefers to reformat samples into "banks", which can then be addressed more conveniently than if they were just dumped end-to-end as raw data. Fortunately the SAM RAW command allows you to load and play back sounds without the conversion process. This is also handy in case you want to mess about with the sample data before saving the sound back to disk.

If you want to include music in your programs, you'll need a copy of the excellent PD program Game Music Creator. Write your soundtracks with GMC, and then convert them with the program included with AMOS, and they can then be played under interrupt while your listing gets on with running the rest of the program. Alternatively you could use Sonix or Soundtracker, and convert your compositions with Mandarin's utility which should have reached the public domain as you read this.

AMOS is definitely not just a game creation language, but games creation is where it scores highest. Although you could program a game with, for example, fifty sprites on screen, with a 64 colour 320x256 pixel scrolling area, backed by a funky soundtrack, it would be unplayable due to lack of speed. AMOS can scroll and move sprites around at fifty frames per second, but get too adventurous and things will slow down. In terms of graphical speed, the program is years ahead of anything else, but if you hope to produce slick and professional-looking games, you'll need to understand its limitations, and work you way around them. Start getting ideas above your station and you'll end up with some dodgy games.

Single screen games are your best bet. Well presented, attractive card games creation is where it scores highest. Although you could program a game with, for example, fifty sprites on screen, with a 64 colour 320x256 pixel scrolling area, backed by a funky soundtrack, it would be unplayable due to lack of speed. AMOS can scroll and move sprites around at fifty frames per second, but get too adventurous and things will slow down. In terms of graphical speed, the program is years ahead of anything else, but if you hope to produce slick and professional-looking games, you'll need to understand its limitations, and work your way around them. Start getting ideas above your station and you'll end up with some dodgy games.

Single screen games are your best bet. Well presented, attractive card games can be put together with a minimum of programming knowledge. Once you're ready for moving graphics, why not try something like that old game Balloon Crazy, a simple but fun game with few sprites and extremely memory-efficient backgrounds. Puzzle games are another area in which you could rate with the assembler programmers. Jumbly, Pipemania and Tetris could all be re-written with AMOS without conceding anything in graphics, size or gameplay. Once you've got your confidence up, why not push the boat out and go for a Super sprint clone, or even something original!

If you've had enough of writing games, AMOS is an excellent way to add interest to your musical creations. Either simple stills or synchronised animated graphics can easily be combined with soundtracks. With a good knowledge of the program you could even come up with something approaching the quality of the brilliant Coma acid-video demo. Presentations for businesses and applications such as video titling are just a couple more of the endless possibilities.

If you are to make full use of AMOS, there are a few extras that would make things a lot easier. Most importantly, a memory of at least 1 megabyte is almost essential, especially if you hope to use samples, HAM screens and other memory-hungry features. Fortunately just about everyone has a copy of Deluxe Paint, which is very handy for graphic design. One of the abovementioned soundtracker programs is essential, unless you intend writing your own music-driver within your programs. If you hope to release your own games, a sampler would be a better alternative to pinching samples from PD disks and existing games. Eve so, if you want to get a few games up and running with decent sound and graphics but without the bother, a freezer cartridge, such as the Nordic Power Cartridge, would give you a morale-boosting headstart.

Attempting to understand AMOS with no previous experience of BASIC is not advisable. While the manual goes some way to explaining the basis of BASIC logic, without having the metaphors of "pigeonholes", "shopping lists" and "chessboards" explained, the whole thing will be completely baffling. However, assuming you do have a fair knowledge of BASIC, once the quirks and operating system of AMOS have been figured out, putting together a simple program is no trouble at all. AMOS could almost have been tailor made for inclusion in an Amiga bundle, and if it were not so professionally put together, I would have guessed it was. It's more expensive than your average game, but if you've the time, imagination and patience to stick with it, you'll get even more out of it. With a bit of ingenuity and a lot of luck, you may even make a few bob from it.

T.H.

Price: £44.95
Contact: Mandarin Software, Europe House, Adlington Park, Adlington, Macclesfield, Cheshire, SK10 4NP

Continued from page 30

The list is comprehensive and well thought out catering for most categories of Income and Expenditure. Some amendments to the Sales and Purchases descriptions may be required to tailor them to individual requirements. This is easily done using the ADD/AMEND function. I must admit I do not see the necessity for a 6 digit nominal code when 4 would be sufficient.

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With regards to the financial reports, the Profit and Loss and Balance Sheet show THIS PERIOD and YEAR TO DATE figures.

Generally I was impressed with the Nominal Ledger which worked in accordance with accounting conventions apart from a small bug in the enquiry program which had no effect on the data — just its presentation.

The Sales and Purchase Ledgers (SL or PL) follow the same conventions as outlined above.

The menus for each are represented:

ADD/AMEND ACCOUNT
POST INVOICES/CREDIT
POST RECEIPTS (SL) PAYMENTS (PL)
DAYBOOK
LIST ACCOUNTS
AGED DEBTORS (SL or CREDITORS (PL)
ACCOUNT ENQUIRY
STATEMENTS (SL) or
REMITTANCE ADVICES (PL)
RETURN TO MENU

Setting up new accounts is easily accomplished using the ADD/AMEND ACCOUNT. The input requirements are

6 character	**A/C code**
25 character	**Name**
4x25 character	**Address lines**
20 characters	**Contact name**
15 characters	**Tel No**
6 characters	**Credit Limit**

The posting programs are clear and informative. A number of helpful features include (1) use of pop-up windows to assist in finding account or code numbers where only a partial input is made because you have forgotten it (2) use of F1 key to replicate the field directly above the cursor (provided) it is not the first input line) (3) automatic VAT calculations either by inputting the Net with calculation to gross or the input of Gross with calaculation to Net. These are the sort of considerations given to a prospective user's ability which show the class of the system.

Nominal Account Listing **02/06/90**

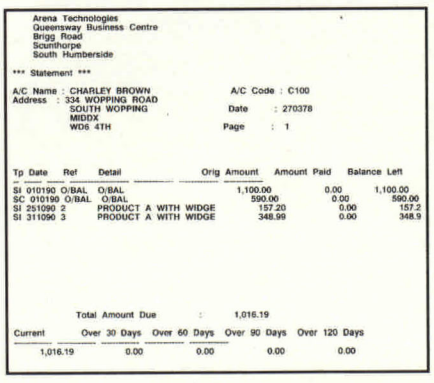
Code	Name
100000	Sales Product A
120000	Sales Product C
199999	Discount Account
210000	Purchases Product A
230000	Purchases Product C
250000	Closing Stock
310000	Direct Labour
400010	Staff Salaries
411000	Rates
421000	Postage
423000	Printed Matter
431000	Cleaning
441000	Accountancy Charges
450000	Insurance
452000	Motor Repairs
454000	Motor Tax and Insurance
456000	Overseas Travelling
460000	Training Costs
462000	Carriage
471000	Electricity
476000	Sales Promotions
480000	Bank Interest
482000	H.P. Interest
486000	Sundries
491000	Bad Debts
500000	Plant and Machinery
510000	Office Furniture
520000	Motor Vehicles
600000	Debtors Control
620000	Petty Cash
640000	Sundry Debtors
660000	Staff Advance
700000	Creditors Control
720000	VAT Liability
740000	P.A.Y.E.
742000	Wages Control
760000	H.P. Account
800000	Share Capital
820000	Bank Loan
840000	Retained Profit/Loss

The last of the modules is SALES INVOICING. In this module the Invoices are generated; the data then being integrated into the SALES and NOMINAL LEDGERS.

The menu comprises:

CREATE INVOICES/CREDITS
LIST INVOICES/CREDITS
PRINT INVOICES/CREDITS
POST INVOICES/CREDITS

Like all the other input programs this one conforms to the familiar feel and format of the others in the suite. However it is the one which could do with a little more attention. Firstly, the manual should bring out the requirements to set up the Product codes and details in the UTILITIES section before commencing input. Secondly there is no provision to include a VAT registration number on the Invoice. Arena tell me they will assist you with incorporating the VAT No. either over the phone or by fixing your disk.



Arena Technologies
Queensway Business Centre
Brigg Road
Scunthorpe
South Humberside

*** Statement ***

A/C Name : CHARLEY BROWN
Address : 334 WOPPING ROAD
SOUTH WOPPING
MIDDX
WD6 4TH

A/C Code : C100
Date : 270378
Page : 1

Tp	Date	Ref	Detail	Orig Amount	Amount Paid	Balance Left
SI	010190	O/BAL	O/BAL	1,100.00	0.00	1,100.00
SC	010190	O/BAL	O/BAL	590.00	0.00	590.00
SI	251090	2	PRODUCT A WITH WIDGE	157.20	0.00	157.2
SI	311090	3	PRODUCT A WITH WIDGE	348.99	0.00	348.9

Total Amount Due : 1,016.19

Current	Over 30 Days	Over 60 Days	Over 90 Days	Over 120 Days
1,016.19	0.00	0.00	0.00	0.00

Surely it would have been easier just to create a VAT REGISTRATION No. field in the Company master record. Thirdly, I do not see why the maximum Invoice Number should be 32767 (2 to the power of 15-1) after all, some businesses like to code their invoices YearMonthNumber e.g start Oct 90 as 901001 or some other variation. These are only gripes and do not detract from an otherwise workmanlike module.

As you will no doubt have gathered from what I have said about the Arena Technologies Integrated Accounting System, I am impressed. It certainly has its faults, mainly minor and deficiencies largely in the reporting of already entered data but these are far outwayed by the professionalism of the package and the thought that has been given to the requirements of the user.

All in all, the best Accounting system I have seen on the Amiga and everything for less that £200. Well done, Arena Technologies.

ClickDOS II

As a follow-up to our last month's 'Shelling Out', Hartmut Schumacher, uncovers a useful PD program

Sure, the Shell is a great improvement upon the bad old CLI. But nobody – except for a few masochists – really likes to type each letter of Shell command.

The Workbench, on the other hand, is very easy to use, but does not provide sufficient possibilities for more sophisticated file manipulations. There are some commercial programmes that successfully try to solve this dilemma – CLImate and DiskMaster for example. But why pay more than necessary when there are enough PD or Shareware based file tools or directory utilities that do the same job as their more expensive commercial relatives.

ClickDOS II is one of these PD file tools. It was programmed by the American, Gary S Yates, who distributes his program as shareware; that means, if you really like and use it, you should send him $15 (about £10). Then your conscience is clear and you will receive updates of the program.

Clicking instead of typing

ClickDOS allows you to perform the thirteen most often used Shell commands with the mouse – you don't have to type them any more and you don't need to remember their (too often too) complicated syntax.

The main part of the ClickDOS window is occupied by two areas, in which the currently selected directories are shown (see picture 1).

Just above each directory area there are eight device gadgets. By clicking on one of them you cause the program to display the root directory of that device.

You can scroll the contents of a directory by seizing and moving the bars on the right side of each directory with the mouse.

To read a subdirectory you click on its name and then either on the Child gadget or with the right mouse button on the name again. The Parent gadget, accordingly, gets you back to the parent directory.

By clicking on a name of a file you select it and with the next click you deselect it. Actions which are chosen will affect all selected files.

The meanings of the thirteen action gadgets above the directory areas are pretty self-explanatory – they all have the same function as their namesakes in the Shell. You can copy files, move them, rename them, delete them, et cetera.

Above the rest

Every directory utility that deserves this name supports these functions. A few features of ClickDOS however have to be emphasized.

In the title bar of the ClickDOS window there is a display which shows you the free Chip and Fast Memory. The message area below it informs you about the currently performed actions and the appearing errors.

The free bytes of a device and the number of selected files in a directory are displayed in the space above the two directory areas.

It is possible to run other programs or Shell commands from within ClickDOS either with or without opening an input/output window. And if this isn't enough for you, ClickDOS allows you to open a window for any kind of Shell you would like to use.

The type gadget does what every type command does – it displays ASCII texts. But in addition to that it has a search function which makes it very easy for example to look for a certain word or word combination in a large document. Even non-printable characters can be handled by the search function. Other key-orientated commands let you move comfortably forward and backward in a displayed text.

Printing texts is made easy by ClickDOS' Spool programme. It stores several selected texts and prints them in succession.

Unfortunately, ClickDOS doesn't support the European PAL-resolution. Due to the American NTSC-System the program only covers three quarters of the monitor screen.

ClickDOS supports the protection bits of AmigaDOS Version 1.3 – with the exception of the "hide" bit; but this is only a minor deficiency. The edit gadget calls your favourite editor – so you don't need to get used to a new editor just because you are using ClickDOS.

The show command is able to display HAM, Extra Half Bright, and (at least partially) Overscan pictures and brushes. This makes ClickDOS the ideal tool to reorganize your picture collection on disk or hard disk.

Very useful to put an overcrowding Workbench screen in order is the Iconify function of ClickDOS. It causes the program's window to shrink to a small icon. In this state, ClickDOS also uses less Chip memory. By clicking again on this icon the normal ClickDOS window reappears.

One of the most powerful features of ClickDOS II is the ability to customize the program. The user may define many of the program's attributes by editing the ASCII file "ClickDOS Startup".

The displayed devices, the co-ordinates of the iconified window, the path to the Spool file, the interlace status, the shell and the editor to be executed by ClickDOS are a few of the attributes that may be changed to the individual needs of each user (see picture 2).

Conclusion

If you are used to DiskMaster then you will probably stick to it, and if you are a real keyboard addict then nobody will succeed in getting you away from your beloved shell.

But if you are looking for a file tool then take a close look at ClickDOS – its one of the best and its price is very reasonable.

H.S.

Quick info

Program name:
ClickDOS II
Program version:
1.10
Author of program:
Gary Scott Yates
Type of program:
File tool
Price:
Shareware, $15 (about £10)
Source:
PD-Dealers
(see advertisements in this issue of ***AUI***)
On PD-Disk: Fish 276

COMPUTERISATION IN BUSINESS
by DAVID ROYALL & MIKE HUGHES
(Pitman Publishing £6.95)

Napoleon once called Britain 'a nation of shopkeepers'. If he were alive today he might be obliged to amend that to a nation of small business people for, high inflation or no, 1989 saw the birth of more small businesses than in any previous year. How many will stay the course is open to question for, conversely, more small business went bankrupt last year than ever before. Computerisation might have helped some of those concerns keep afloat.

When a one-man (or woman) firm starts up, computerisation is often considered an unnecessary expense. But computers can assist in so many aspects of running a business that they can almost pay for themselves in the first year.

David Royall & Mike Hughes 'Computerisation In Business' is one of the volumes produced for what is called the Small Business Bookshelf, created by the National Westminster Bank and Pitman Publishing. This book, and its twelve companions, cover practically everything the newcomer to the marketplace might want to know.

'Computerisation' is a 'How-to' book written in an easily understandable, practical, style. It shows how computers can be an aid in invoicing, stock control, costing, accounting, cash flow projection, and the innumerable other functions needed to enable a business to run efficiently and smoothly.

It begins with a chapter that helps in deciding whether, in fact, computerisation, is for you and your small business. Having resolved that it is, the book gets down to what kind of computer you should buy, how to choose it and which programs will suit you best.

Technical terms are defined (I loved the description of hardware as 'the bits you can feel and kick'!), the importance of staff training is emphasised, databases and spreadsheets are explained and case studies are given so that the potential user can see just how computerisation aids individual, if imaginary, firms.

The sub-headings at the start of each chapter and the summaries at the ends easily enable the reader to refer back, if necessary, to specific points and advice.

The hazards of installing computer systems are not forgotten, either. The authors go into radiation fears, noise control – printers, in particular can be exceptionally annoying if not hooded – cable trunking, and how to deal with malfunctions. Whether, in the beginning, computerisation should be immediate or if a manual and electronic system should run in tandem.

The importance of making regular backups – and it is surprising how many businesses do not – is stressed, even advice on how to choose an easily remembered password. ('Your grandmother's maiden name' is one suggestion). And, when your business is up and running successfully, they advise on how to extend your system.

The authors even give the titles of informative computer magazines. To their shame they do not mention our own publication – but then what they do give are really only general computer titles. And, finally, there is a brief guide to using MS-DOS.

As the 'blurb' on the back cover states, 'This book provides a guide to the uninitiated in an area where a wrong decision can be costly'. Very often blurbs can be ignored as publishers hype but, in this case, I can agree with that statement.

As a guide to what and what not to do, and what and what not to buy, 'Computerisation in Business' is, at £6.95, a book well-worth having not only for the potential new business operator but also for any business man or woman who has not yet taken the computer plunge, for it provides some vital and essential information which should be read by every newcomer thinking of installing any sort of computer aid in a commercial venture.

D.M.

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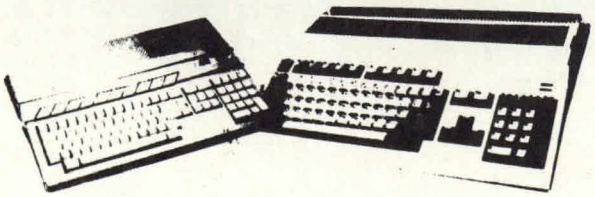

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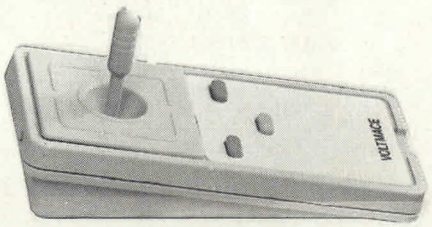

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KYOCERA F-800 LASER PRINTER

For many computer users a laser printer is not just an expensive option, it is a very useful and required peripheral. Pat Kelly has a look at the newest in the Kyocera range of laser printers and finds out that small is beautiful

The F-800 is the latest, and most affordable, of the growing Kyocera range of laser printers. The printer is obviously aimed at the low-end laser printer entry market and has got all of the credentials to make a very solid impact worldwide.

Like many low-end laser printers the F-800 does not support Postscript, but is shipped with a standard emulation of the HP Laserjet Series 2 which is the most popular non-postscript laser printer.

The first apparent feature of the F-800 is it's size. Many of today's laser printers are heavyweights and it is a nice change to see such a well designed and compact unit. Usually, in the field of technological advancement, smaller units mean higher prices, but not so with the F-800.

The printer is supplied with the fragile components packed individually, such is the state of laser technology, so a quick set-up is required. This involves installation of the drum cartridge, the developer unit, the toner cartridge and the fuser cleaning pad. Although this would have put many off a few years ago, you don't need a degree in Computer Science to do this now. The manual is very competent and shows the user step by step illustrated guides in how to do so.

Users who feel awkward with technology and banks of switches and LED's will be pleased to know that there are few exterior controls and connections, a feature which makes the printer simple to use. There are but four switches on the control panel which allow operation of the elementary control functions.

The unit is one of the smallest laser printers that I've seen and it has no sharp or obtrusive edges, a dangerous fault on many of today's designs. The on/off switch, control panel, IC card slot, and the paper feed tray are all very conveniently placed to allow for easy access and ease of use. All in all the printer is very ergonomically designed, compact, and very attractive.

On opening up the F-800 the quality of the build is further endorsed. The many parts which make up the printer are placed in convenient positions and maintenance, and access to the system is not only unmessy but, it is also very easy. It is not hard to see why Kyocera have included free on-site maintenance for the unit.

I was impressed with the presentation and the design of the F-800, but cosmetics alone make not the printer - I delved deeper.

The Kyocera printer outputs text and graphics at 300dpi resolution, which has long been the standard for laser printers, with higher resolution laser printers running into purchase costs of several thousand pounds.

"In fact with PRESCRIBE you can layout pages that could only have been previously created using a DTP application."

The F-800 supports a whole range of emulations of most of the industry standard printers. There is a 'line printer' emulation for data processing users, `IBM-PC graphics printer`, `Diablo 630', `Qume Sprint II', `NEC Spinwriter', `Epson FX-80', and `HP Laserjet series 2' emulators.

The printer emulation modes don't mean that your hi-tec laser printer will start to print out lower quality dot-matrix type, but means that you can drive the F-800 with set-ups and control characters from other printer drivers. This is also useful if you have customised programs, or aplications, which use character codes to control printer output.

PRESCRIBE

The F-800 is initially set-up for the HP Laserjet Series II printers, but whichever printer it is set to emulate, the unique feature of the Kyocera is the PRESCRIBE programming language. This is not a new language specific to the Amiga, but to the Kyocera range of laser printers.

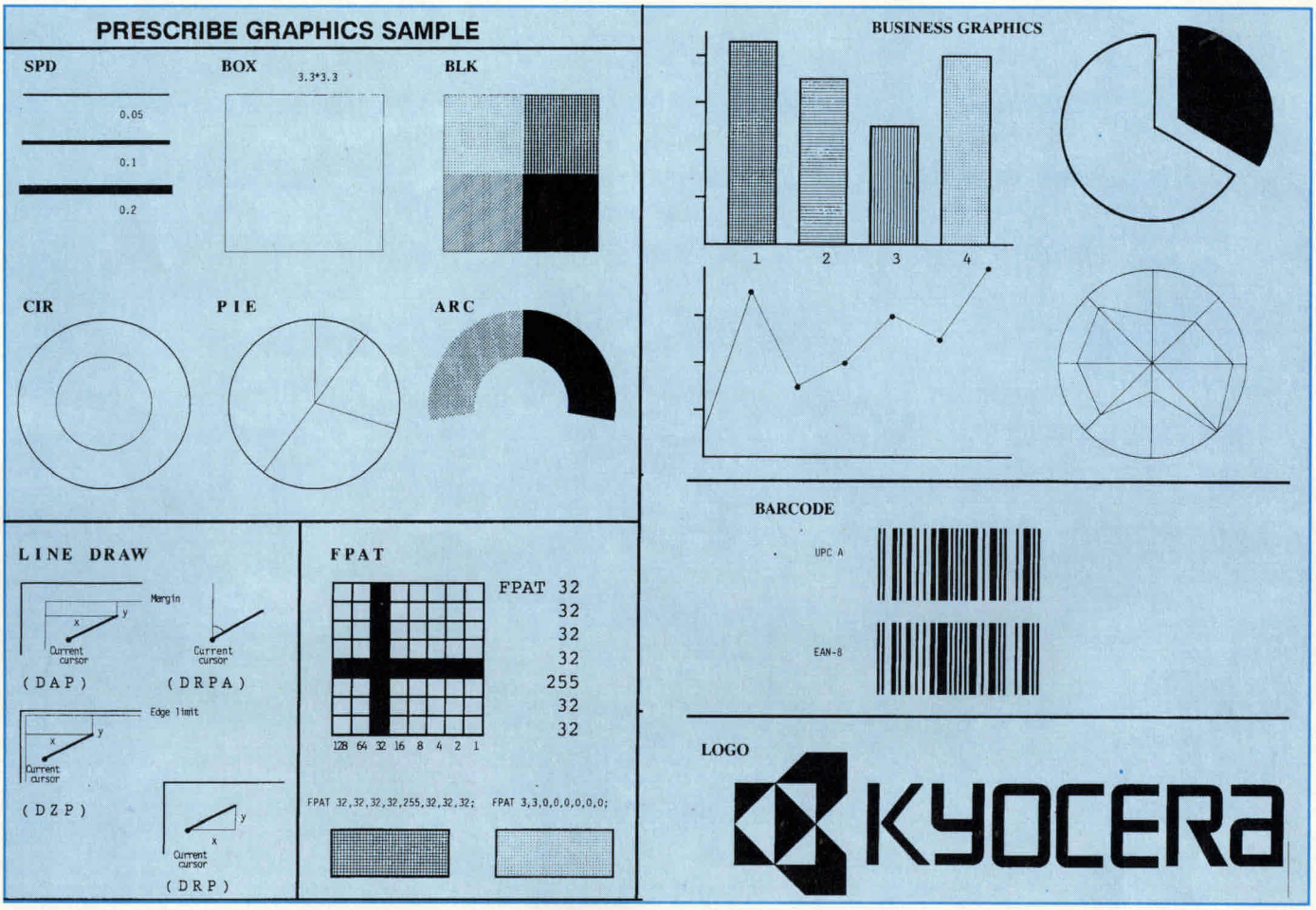
PRESCRIBE is similar to the control characters associated with dot matrix printers, but rather than character ESCAPE sequences setting specific modes, PRESCRIBE is a language which can: draw raster and vector graphics, change the font style, control the page layout, control the spacing and width of fonts, in addition to many more features.

Furthermore, as applications software, such as wordprocessors, set codes which are not readily visible it is difficult to control the output to printer. PRESCRIBE is a visible language which can be changed easily.

The PRESCRIBE program is a list of commands which are entered by the user into an application/document file. Because of this the laser printer must have two operational modes, normal printing mode, and the PRESCRIBE mode.

During normal operational mode the F-800 will happily go about the business of printing out files, graphics, and other data. Application software can control the printer's output the same way as any of the printers it emulates. The user who does not wish to use PRESCRIBE is not obliged to, it is an extra feature which makes use of laser printer technology.

While in PRESCRIBE mode the commands received by the printer will tell it which function the user requires, be it



from changing the font type to drawing boxes or pretty patterns. The printer must know when the user/program wishes to enter into this mode and the command '|R|' represents the F-800's PRESCRIBE mode entry command. Any text between this and the command 'EXIT;' will be regarded by the laser as being a PRESCRIBE command.

Complex business forms, or information leaflets can be created using the PRESCRIBE commands, and these can be saved using the IC card option.

An example of the PRESCRIBE functions use is in an everyday occurrence of printing a wordprocessor document. Using a bog standard printer, the only control you have over the output text is bold, italic, underline, or normal text, though with a laser printer, you will also be able to use a fancy font. Using the F-800 you can doctor your file by using PRESCRIBE commands to change the size of your fonts, box of text, include illustrations such as pie-charts and bar/line graphs, etc. In fact with PRESCRIBE, you can layout pages which could only have been previously created using a DTP application.

Application software can be specially written to exploit the PRESCRIBE printer, in fact there are a number of BASIC program examples in the PRESCRIBE Programming Manual, which is supplied with the printer. These show how users can implement the printer's functions into their own customised programs.

FIRMWARE

The F-800's firmware is also set using PRESCRIBE and is an advance on the older technology of using banks of DIP switches. This allows the firmware settings to be more flexible, allowing for easier and more structured control over the printer.

The firmware settings can be re-programmed using the PRESCRIBE command 'FRPO parameter,value'. The laser printer will remember these settings in memory until they are re-programmed or reset at a later date. There are over 40 parameters, from the setting of the margins and page layout 'A' codes, the font control 'C' codes, the interface control 'H' codes, the emulation control 'P' codes, the paper tray input and memory `R` codes, to the character specific 'U' codes which include the country character sets and emulation code settings.

40 FONTS

There are no less than 46 resident fonts which can be accessed using the PRESCRIBE command 'FONT x;' where x represents the font number. These fonts supply a wide range of choice from Courier, Gothic, to Helvetica, with each type face having fonts at differing sizes, normal, bold, and italic print types.

If that were not enough, and for users who like extra large fonts, there are three types of dynamic fonts. These types are Helvetica, Roman, and Sans-serif. The user can generate any number of customised fonts which may be any size, but must be generated at run-time, and the bigger the font the longer the generating period - which can take several minutes for some of the medium sized fonts. These dynamic fonts can also be orientated in four positions, normal, upside-down, vertically downward, or vertically upward. This function also gives DTP quality output.

And there's more, because Kyocera have included an IC card interface on the front of the printer which can accept cards holding extra fonts. The same port will accept IC cards which allow users to store PRESCRIBE programs which they may use frequently.

Another function worth mentioning is the barcode generator, as I personally know a few people who have to pay to get barcodes for their products. When a company applies for a barcode for their product they are supplied with a digital number. This number must be converted into barcode format and more likely than not the barcode will have to be generated by some third party. The F-800 supports 39 barcode types and as such may come in useful as an extra little function.

Continued on page 64

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ADVENTURE NOW!

with Andy Moss

Welcome one and all to another chronicle of adventure and strategy . Two great games reviewed this month, OPERATION STEALTH from US Gold/Delphine and Sierra's CAMELOT, and all the latest news and views, so sit back and read all about it

ELECTRONIC ARTS

EA have always had strong adventure product, and 90/91 looks like continuing the trend. To complement the excellent Neuromancer from Interplay, there are two newies lined up. **POWERMONGER,** could be called Populous 2, I suppose, created by Bullfrog, the same programming team that produced Populous and featuring once again manipulation in a livimg world. You are a leader of a homeless tribe newly arrived in an uncharted territory. There are 200 territories to conquer before you are crowned ruler of the World, each beginning with a different layout thereby giving you zillions of different possible games. Using 3D vector graphics, there are hills and plains, roads, buildings, trees, lakes, animated waterfalls and streams. Fisherman, farmers, ranchers, cattle, sheep and birds all go about their business as if they were all truly alive; and anything can be viewed from many angles and magnifications. The game in actuality is a state of the art version of the 'kingdoms' genre, where clever control of budgets, people, land and taxes brings you more and more power to control more budgets, people land etc. **THE IMMORTAL** however, is another matter entirely. Created by Will Harvey, whose fabulous graphics we enjoyed in Zany Golf and Marble Madness, the game is supposedly 'one of the most realistic fantasy adventures ever seen on 16 bit'. High praise indeed. Using three quarter perspective, you become a wizard searching for your long lost teacher, who has gone and got himself trapped at the bottom of one of the deepest dungeons known to man. Full of traps, monsters and many devious puzzles, The Immortal uses fighting routines in real time, so no waiting around while you decide what to do next.

Dragon Strike.

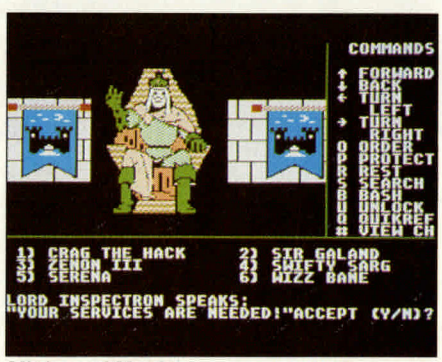
Might and Magic

INFOGRAMMES

With **MURDER IN SPACE**, the sequel to Murder in Venice not far off, the French house have **GENGHIS KHAN** waiting in the wings. Billed as a strategy war game, Khan gives you the option of Khan himself, Richard the Lionheart, a Roman Emperor or a Shogun to build for yourself an Empire to be proud of. The usual strategic decisions are there to be made, keeping your population fed and loyal, fighting your enemies in battle (there is both a long and short mode to accomplish that) making sure your treasury is always full etc. Not unlike Cinemawares Lord of the Rising Sun.We are promised 'superb graphics and detailed animation', and to be fair, Infogrammes normally deliver on both of those fronts.

US GOLD

The big boys from Birmingham are really into adventures and role playing these



Might and Magic

days, and their stand at the show was testimony to this. **TUNNELS AND TROLLS** is first, and for the uninitiated is an RPG game system that is in direct competition to Dungeons and Dragons. It has different rules and spells but is basically the same type of thing. The computer version I suspect will just look like any other RPG as it has a character generater, hit point system and many many different monsters to do battle with. The reason for your quest is to find and awaken the great Wizard Khazan and reinstate him as rightful ruler of the Dragon Continent. **SSI** have some impressive titles for us. **BUCK ROGERS AND THE COUNTDOWN TO DOOMSDAY** is based around the D and D board game and is an interstellar sci fi romp set in the 21st century. Also set in space is **RENEGADE LEGION-INTERCEPTOR**, that has 24 fighter spaceships as standard, or you can design your own in the battle for space supremacy against the dreaded Renegade Legion. **EYE OF THE BEHOLDER** is the first of their new 2nd edition Advanced Legend series. It is 'a quantum leap forward in computer fantasy' that has incredible graphics and a new point and click game interface. **SHADOW SORCERER** is a new concept, the first 'episodic' adventure that tries to emulate the original table top version of D&D. Featuring an isometric 3D playing area for tactical encounters and a hexagonal grid for strategic movement, Shadow Sorcerer's animated miniatures operate in a 100% mouse controlled environment.

DRAGON STRIKE (see pics) has you actually riding your mighty dragon into combat! Set above the land of Ansalon, and viewed in first person format, you have three different orders of Solamnic Knighthood to progress through, and over 20 different missions to master.

MIGHT AND MAGIC II (see pics) is obviously the sequel to MMI, and features many more monsters and even more devious mapping than its predecessor which, for me anyway, warranted a lot more success than it actually ended up with. Hopefully, this sequel will prove to all you disbelievers out there that the Might And Magic series is worth getting. Cos it is.

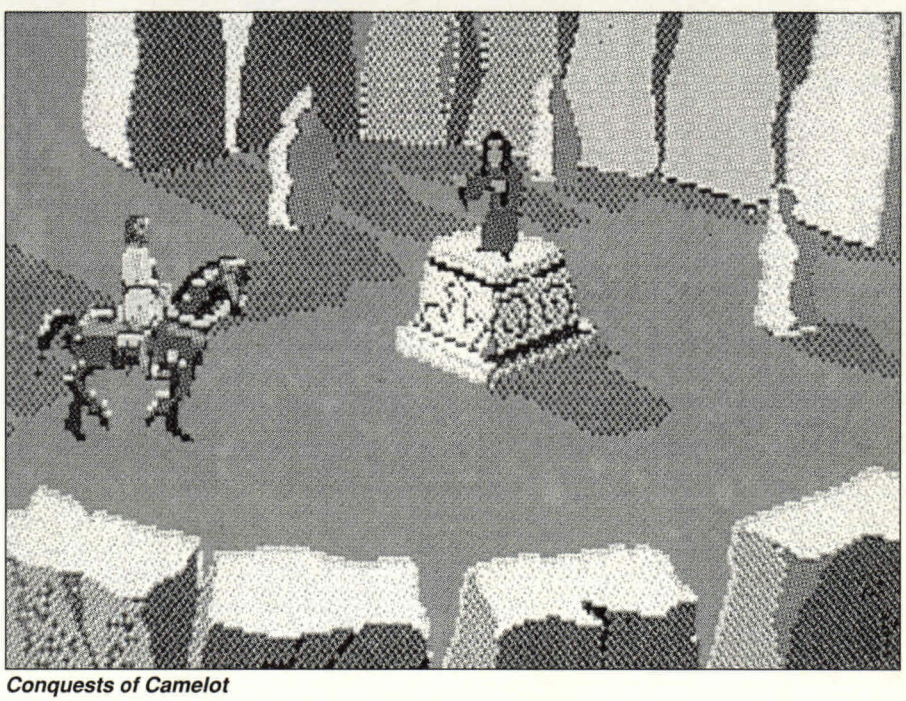
MURDER is US Gold's version of that famous board game Cluedo, and has a staggering 3.5 million possible unique murders that must be solved! You get 2 hours to find out who did it before Scotland Yard barge in and gain all the credit. Set in a pre war Edwardian mansion and featuring an isometric viewpoint of all the rooms, there are 4 levels of difficulty and many clever bits like a note book that automatically cross refrences, personalised characters, and finger print matching. Lastly, there are a number of new Lucasfilm titles in development, the first of which will be **THE SECRET OF MONKEY ISLAND** which is a comedy set in the pirate infested Caribbean in the 1600's. Cinematic storytelling, high res graphics and special animation seem to point to a worthy product. Watch this space for the review

Conquests of Camelot

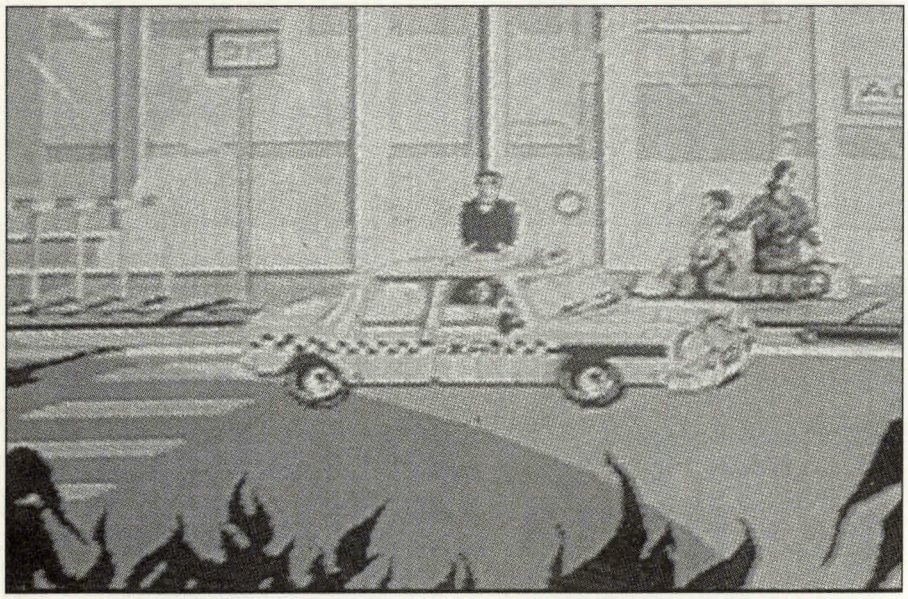
ADVENTURE REVIEWS

CONQUESTS OF CAMELOT
SIERRA 1MEG ONLY

Sierra have really been busy this year. **HEROES QUEST, THE COLONELS BEQUEST, CODENAME ICEMAN and POLICE QUEST II** have all been converted onto Sierras new Amiga interpreter (so no more blocky graphics and weeny sound) and are now available. Reviews on those next month, but for now I want to talk about **CAMELOT, THE SEARCH FOR THE GRAIL**, which is the biggest yet by far, with a staggering six disks! You play the part of King Arthur, on a mission to find the legendary Holy Grail, the cup which Christ himself drank wine from at the Last Supper. This sacred recepticle became the most sought after relic of the Ancient World. It stood for truth and justice, and became the symbol of the trials of the body, mind and spirit that all people face in their search for the meaning of life. Whoever owned the Grail would bring peace and prosperity to his land for ever. Arthur had previously sent out three of his bravest Knights to find it, and after hearing no word from any of them decides to go himself on a quest for not only the Grail but to rescue his beloved Knights. The adventure opens at Camelot, where as Arthur, you have to equip yourself with all the



Conquests of Camelot



Operation Stealth.

things you think you will need on your travels. This is not as easy as it sounds, because once you leave the Castle, you will not be allowed back until the Grail is recovered, so make sure you have everything, especially money, because you need to grease a few more than a few palms along the way. I will give you a hint about the temple in Camelot, make sure you pay and pray to BOTH Gods and both fires are lit before you leave.Once out, you will travel to a few places in Britain before having to charter a boat to take you to Jerusalem. Once in the Holy City, you will need to solve all of the market traders personal problems before proving yourself worthy enough to learn where the Grail is hidden.Constant saving is required, particularly before any arcade sequences (jousting with the Black Knight, fighting the wood boars, traversing the lake of ice, answering the riddles of the flowers etc) because some of them are pretty tricky to overcome.There are some lovely sequences that stick out in my mind, the seductive Fatima and her temptations, Jabir the salesman and the Widershins at Glastonburt Tor. The adventure has all the usual Sierra hallmarks, original music, colourful sweeping graphics and characters that really seem to come to life. There is a downside to all this though, and that is the wait that you have to endure whilst loading most of the latter scenes. A huge amount of disk swapping is needed throughout the game, sometimes up to three times before each screen, and with six disks this all becomes a trite tedious after a while, but if you can bide your time and remain patient, **CAMELOT** will reward you with many hours of entertainment, that reflects the tremendous amount of detail and research that has been done on the project.

PERSONAL RATING.....9

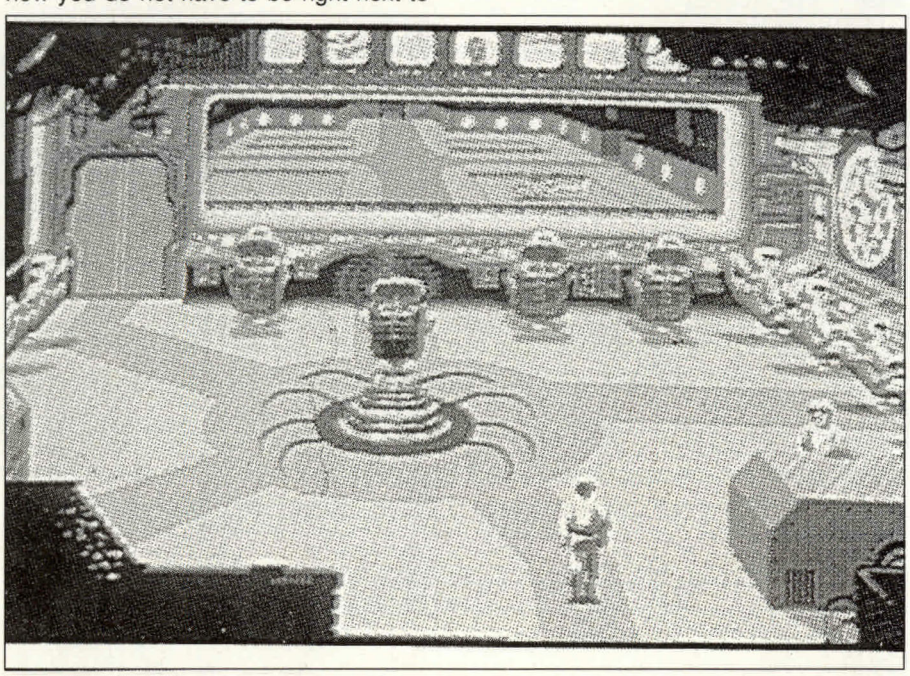
OPERATION STEALTH DELPHINE/US GOLD

Not so long ago I was extolling the virtues of **FUTURE WARS** as one of the best graphic adventures I had ever played. The music was fabulous, the graphics wonderful and the game system so simple a 5 year old could play it. But not finish it cos it was very very devious and difficult. **OPERATION STEALTH** is Delphines follow up, and as in all sequels which one always looks forward to, the reality is a little disappointing, particularly when the original is world beater and you eagerly await the next installment. This is not to say that **STEALTH** is a bad game. No way, it is very good, and thankfully some of the annoying glitches in the original system have been improved. For instance now you do not have to be right next to something to examine it, and the need to point the cursor right on the exact pixel spot on the screen to find something has been removed. But the overall game itself, compared to **FUTURE WARS** is in my view inferior. There are too many arcade maze sequences for instance, why are we expected to battle through no less than nine different mazes being chased by either guards or rats. Surely the talented authors could come up with arcade sequences a bit more original couldn't they?As far as the plot is concerned, you play Secret Agent Glames of the CIA who is given the task of solving the mystery of the disappearance of Americas' secret stealth fighter. It seems somebody has stolen it from a South American country one Sunday afternoon and hasn't given it back. You are dispatched immediately to said South American country, and that is where your adventure starts for real.... in the arrival hall of the Airport no less. A few puzzles later, you are downtown, and trying to meet up with a fellow agent who will hopefully give you some vital info on who might have nabbed the plane.It gets a bit complicated after that, with a variety of different characters being introduced, along with some fine humour as well. Lots of James Bond type gadgets to play with (maybe thats why it is a bit of a let down, with gadgets taking care of puzzles instead of your own brain) and some very tricky arcade sequences. My favourite was trying to undo two sets of ropes and swimming up to freedom whilst holding your breath.Still, a fine game in isolation, but not as great as FUTURE WARS.

PERSONAL RATING.....8

THATS ALL FOR THIS MONTH. MORE SIERRA REVIEWS NEXT ISSUE, ALONG WITH SOME HELPFUL HINTS.

A.M



Operation Stealth.

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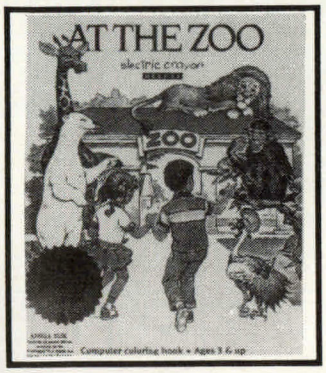

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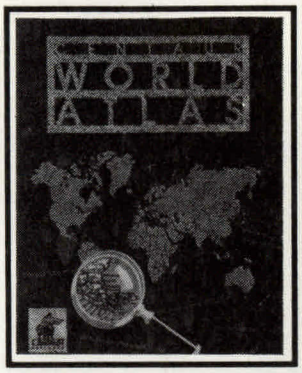

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SOF521 - PSEUDO COP, great game from Pseudo-Ops
SOF530 - SkyFight, Bleed, Shhotout (not v1.37)
FF357 - EMPIRE, new version multi-player game. Keyboard or modem
FF347 - DRIP, arcade style game, dodge the pipes etc. Good!
FF320 - AMIOMEGA, similar to Hack but more complex.
FF312 - CHINACHALLENGE, shanghai game, MOONBASE lunar lander.
FF259 - Escape From Jovi, fast action game, multi-levels.

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SOF183 - BRASSART pictures as above.
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FF247 - ASSEMTOOLS, 140 routines for asembley programmers.
FF140 - StoneyBrook PROLOG - needs both disks (below)
FF141 - Disk two of above.
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SOF160 - GRAND MIX sampled by the Future BroS.
SOF225 - KYLIE MINOGUE and LOCOMOTION
FF349 - MED V2, Musical editor - very good indeed!

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SOF7 - THE PROBE demo, so good was on TV!
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FF228 - JAZZBENCH multi-tasking workbench.
FF210 - CALC, scientific/programmer calculator. Loaded with features.
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SOF17 - Ray Tracing Construction Set
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Continued from page 57

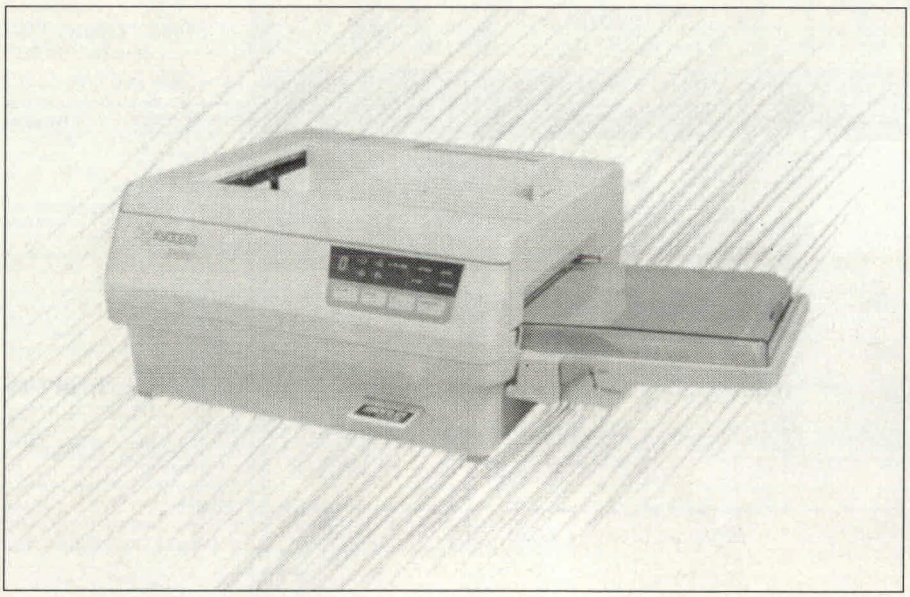
8pp MINUTE

Kyocera claim that the speed of the F-800 is 8 pages per minute, and this is fast compared to the average 6 pages per minute attributed to some more expensive machines. It boasts a massive 1Mb of memory, but that's almost a standard feature in today's laser printers as it takes a lot of memory to reproduce print quality at a reasonable speed.

The machine (it's hard to call it a mere printer!) is quiet compared to the rat-a-tat-tat and squeals general to dot-matrix printers and it is possible to spend time on the telephone while it prints out reams and reams of documents.

The user and PRESCRIBE programming manuals are superb and go through every minute little detail making the product totally user friendly. Some products are damaged by bad documentation, but in this case it could be possible to say that the total reverse is true, that a very good product is enhanced by the accompanying publication.

From first sight it was obvious the the F-800 was a special machine, it is relatively small, has well laid out and simple to use controls, and it won't break the bank balance for the user who is seriously considering a move into laser printing. ***P.K.***



THE COMPANY

Kyocera isn't a name many would automatically associate with computer printers. However, the company have established themselves within the top three laser printer suppliers in the UK. They have been established in Germany for a lot longer though, and claim to be the top supplier of laser printers there. It therefore comes as no surprise that they supply a high quality laser printer for the business/home user market at an accessible price.

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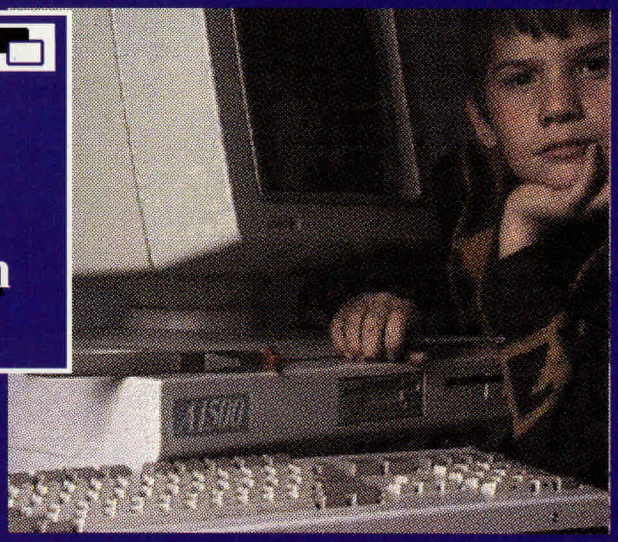

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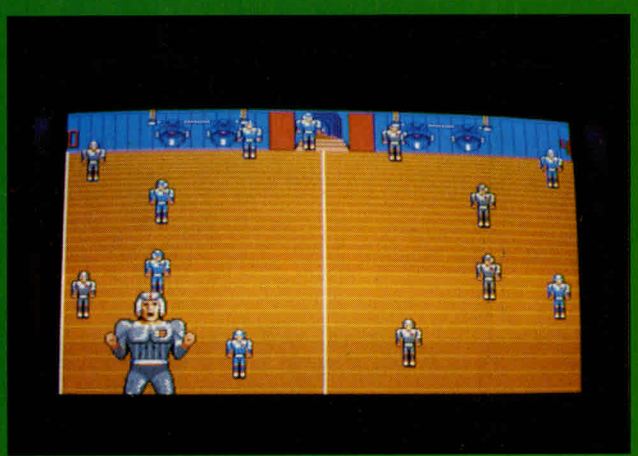
ProSoccer 2190

VULTURE PUBLISHING

Oh dear. Much as I like to see young software houses competing with the established Oceans and US Golds of the industry, newcomer Vulture Publishing hasn't got off on a good foot. On the drawing board, ProSoccer 2190 has all the ingredients for a successful entertainment; football games are always good sellers, and the violent futuristic slant should broaden the appeal further still. The Bitmap Bros did very well out of Speedball, so what went wrong with ProSoccer 2190?

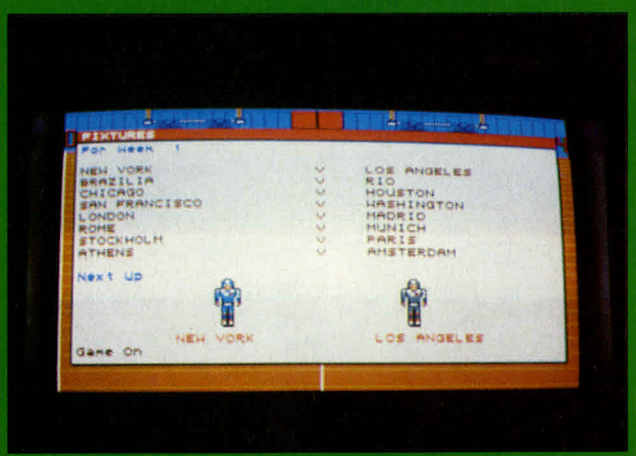
For a start, the awkward menu system could do with a complete overhaul. The game boots up with a league of computer-controlled teams, so first you have to work your way through the menus to select your team. This is pretty pointless, as I can't see anyone giving a toss which team they play as, especially as they're all fictitious. With that sorted out, you can get on with the game.



Both teams come running out of the tunnel looking as if they're all suffering from cramp. Once the stiff-limbed players have taken their positions, the game begins. Played on a horizontally-scrolling pitch, the game is much like indoor five-a-side. Four walls stop the ball going out of play. The goals are cut into the walls at the far ends of the pitch. You take control of one player at a time, highlighted by an arrow above his head. Pressing the fire button changes control to another player. To tackle, you just run in front of the player with the ball. If his relevant skill statistics are lower than your own, you'll win the ball. Exciting stuff eh?

When it comes to kicking the ball, the game stops altogether. Pressing fire when in possession puts your man into "kick mode". A small box appears on the screen, with elevation, swerve and power gauges. You control these with the stick, before letting go of the button and kicking the ball. As you can imagine, this completely interrupts what little flow the game previously had.

Throughout the game, the screen scrolls back and forth in massive steps, with one of the lowest frame-rates you'll ever see. For most of the game, the ball just jumps around from one end of the pitch to the other, occasionally getting stuck between a confused player and the wall. Sound amounts to no more than the odd blip and a coarse crowd roar.



I'll bet my last packet of hickory smoke peanuts that anyone who buys ProSoccer 2190 will be extremely disappointed once they get it home; and I'm not one to wager my nuts lightly. Do yourself a favour, hang on for Speedball II.

T.H.

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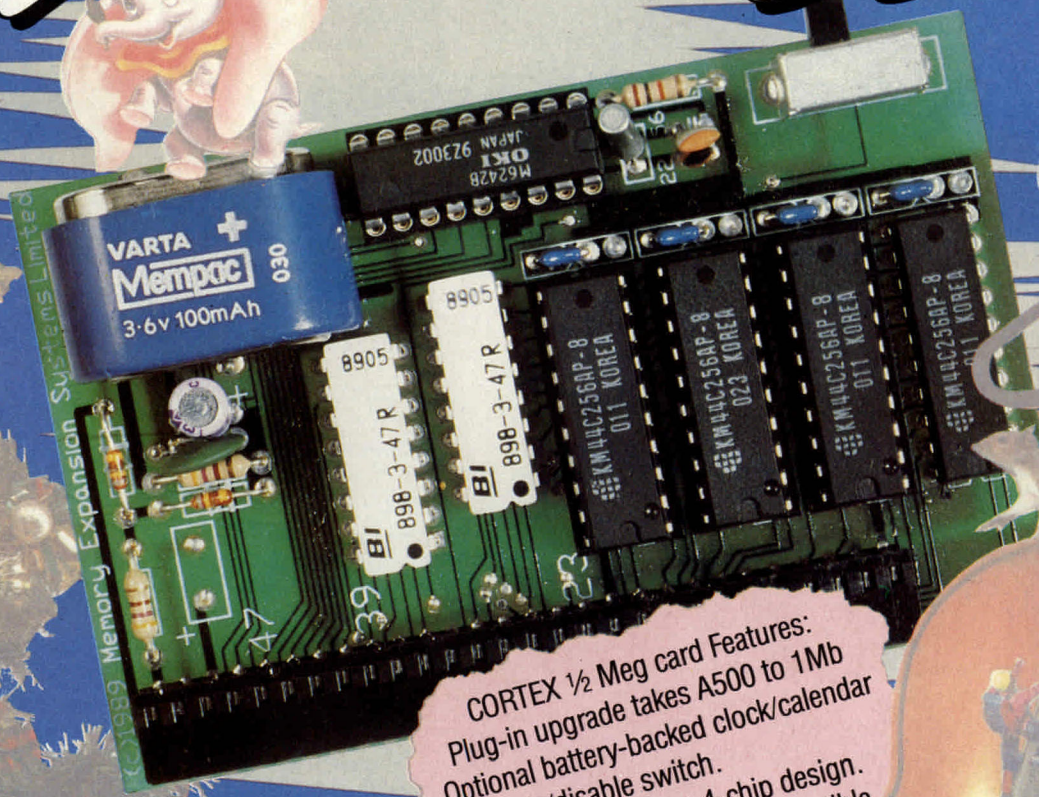

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IMAGE WORKS

CAI

Stagnation is an alien concept to the jet-setting development team the Bitmap Brothers. Sure, sequels are often a simple formula for a fast buck, but when they're as radical as those of Xenon and Speedball, no-one can accuse the Bros of taking the easy route. While the success of those games was almost guaranteed, Cadaver is a relative gamble. Rather than cast you as a 21st century freedom fighter, Cadaver puts you in the role of stocky knight in a spooky fantasy world.

So you thought the isometric 3D adventure was dead? Anyone who played Electronic Zoo's Treasure Trap may well have been convinced of the notion once and for all. I thought I was, until I played Cadaver.

You play Karadoc, a dwarf on a mission. This particular mission is something of an oddity. Previous adventures have chalked your slate with all the usual dragon-slaying, damsel-saving antics you'd dreamed of as a kid. However, this time you're not even sure exactly what you're looking for, let alone what you'll find. Whilst visiting a strange land, you were told of many battles and rebellions that took place in the castle across the swamp. Now the castle's sole inhabitant is said to be Dianos the necromancer, who jealously guards the castle and its treasures that he's claimed as his own. The only way to lift the shroud of evil from the land is to seek out and destroy Dianos, if indeed he does still exist as the people say.

A derelict jetty on the outskirts of the castle is the starting point for the adventure. As you amble around the opening scene, a scaly head breaks the surface of the misty green swamp, burps and disappears again. Immediately you begin to explore, there's a feeling of freedom never before experienced in a 3D adventure game. For the first time you can walk in eight directions rather than just four, cutting out the need to zig-zag around each screen. Together with a big increase in speed over the game's predecessors, this gives you an instant desire to poke your nose into every corner; and you'll need to do just that if you're to get anywhere.

"For the first time you can walk in eight directions rather than just four, cutting out the need to zig-zag around each screen."

The castle may be derelict, but it's still well guarded. Cunning traps and a variety of hideous monsters have been sprinkled throughout the chambers and passages. The old favourite trick of locking all the important doors and discarding the keys is one used by Dianos. However, a key isn't always the solution to a locked door. The game slips you into this idea nicely, with a lever protruding from the wall by a locked door on the second screen.

Before you solve you are first substantial puzzle, you're given free-roam of around ten rooms, just about enough for you to amass a sackfull of useful objects and a few plausible theories on how to venture further. To help you on your way, you'll find various clues from notes and parchments left behind by previous adventurers. Now and again you'll even find the remains of the adventurers themselves,

DAVER

in varying states of decay. Along with these you'll also come across the victims of the necromancer's satanic rituals, plus a few of his victims-to-be.

It's a toss-up as to which is the most repulsive: the stiffs and skeletons, or the monsters that guard them. The "Nessy" look-a-like from the first screen seems quite cuddly after you've had a run-in with some of the more grossly mutated creatures lurking in the dungeons. Not only do they all look pretty disgusting, they sound it too. Gurgles, belches, screams and more all add to the atmosphere. You also get a

load of appropriate clanging and grinding effects as you open doors, jump off ledges, pull levers and so on. Feast yourself on a loaf or take a swig from a bottle and you get a realistically bad-mannered "gulp".

The castle has been well-designed, opening up new areas to explore as you solve the puzzles, without reverting to the extremes of either confining you for too long in a small space, or overwhelming you with a vast expanse of maze-like rooms and corridors. A little frustration is inevitable unless the game is too easy, and Cadaver doesn't quite manage to avoid this at times. When it seems you've tried everything to get past a certain obstacle, you can feel like giving up forever. I always find it's times like these that you need to get a second brain onto the problem. A different train of thought from friend can be a great help.

Innovation on the isometric adventure theme has been almost non-existent until now. Simple things like being able to walk straight up the screen, and the increase in speed make Cadaver far more accessible than its forerunners. Once you get into it, the amazingly detailed locations, which give a lot more scope for interaction than we've previously seen, will keep you at the screen for some lengthy sessions. Surprises are around almost every corner, and thanks to the "save game" feature, you won't been continually working your way through the early screens each time you restart. On top of all that, Cadaver is one of the few games that succeeds in putting across a really spooky atmosphere, shocking the player time after time with more and more grotesque scenes. With its fairly highly developed adventure side, Cadaver is going to appeal to those who like to be absorbed in a good plot, and have the time and patience to do so. Without a doubt the best arcade-adventure to have appeared in ages. Yet another gold star in the Bitmap's copy book.

T.H.

Graphics: 94%. Sound: 90% Playability: 90%

Absolute Value: 89% **Price £24.95**

Nightbreed

Ocean

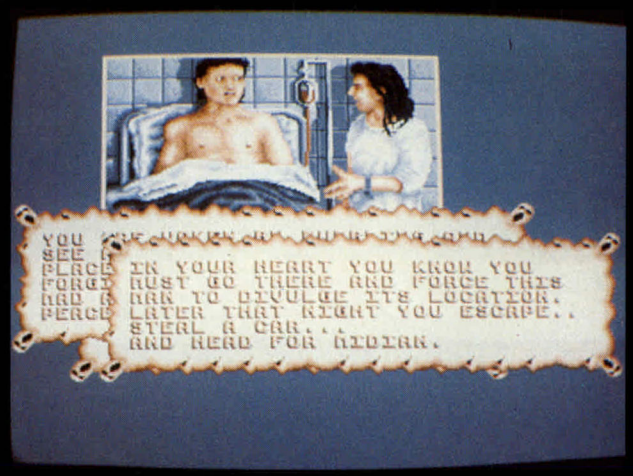
Film tie-ins are a favourite among the Ocean team. Merchandising has taken off in a big way, but that's also meant higher prices for the merchandising rights. Ocean have made sure they get value for money from their Nightbreed licence, producing two games based on the film. First of the two is another of those "interactive movies".

You play the staring role of the film, Aaron Boone. To complete the game you have to work your way through each of its scenes in the same order in which they unfold in the film. A potted version of the story comes with the instructions, concentrated to such an extent that it makes little sense. The trouble is that if it told you much more, it would read like a solution to the game.

Boone is thought to be the man behind a recent series of murders, but is certified insane and put in an asylum. While in the asylum he hears of an underground city called Midian, inhabited by a variety of monsters known as the Nightbreed. Boone hopes he can find refuge in Midian, and so escapes his padded cell and steals a car.

The game begins with your psychiatrist telling you that he thinks you're responsible for the murders, giving you 24 hours to give yourself up to the police before he turns you in. From here it's on to the map screen, from which you can drive to the police station, the asylum or the graveyard. Getting around is a tedious process of clicking the mouse at each junction you approach until you reach your destination. Road blocks are set up at random positions, which you can choose to ram or avoid. Ram too many and you'll run out of petrol due to damage to your car.

Arriving at the graveyard you get three options. Either you choose to look around, enter the graveyard, or enter Midian. Opt to enter Midian or look around and you'll be killed. Walk into the graveyard and you'll come across the first of the Nightbreed, who doesn't hesitate in sinking his teeth into your neck. This encounter is vital, as without his werewolf-style injection, you'll be considered an enemy by the 'breed. Once you've been bitten, you get to play the first of the simple action sequences. By pressing the firebutton in time with Boone's arms, you have to



"Walk into the graveyard and you'll come across the first of the Nightbreed, who doesn't hesitate in sinking his teeth into your neck."

difficult, and will mark the end of the game until you've sussed it out. What makes it so irritating, is that it takes ages to get back to that stage once you've been killed. To avoid a lot of frustration, put your joystick on autofire and you'll zip onto the next scene.

Now one of the Nightbreed yourself, you're gunned down by the police and taken to the mortuary. That night the breed in your blood starts to take effect. Coming back to life, now immortal, you leap through the mortuary window and head for Midian. Affer a brief encounter with "The Mask", who tries to stop you with his large stock of knives, you finally get into Midian.

The core of the following stages is something of a poor man's Dungeon Master. Working your way around a 3D maze, the locations of which all look

the same, you come across the Sons of the Free. Exactly who these people are is not made very clear, but each time you meet one, a short fight follows. These one-on-one battles break no new ground, with slow moving and unresponsive characters. A couple more sub-games also pop up occasionally. One involves dodging a laser sight from a gun, while the other has you either ducking under or jumping over an attacking monster.

Due to the trial and error gameplay of the first sections, and the frustrating sequence in the graveyard, Nightbreed sets off on a bad note. Driving the car around the map is a long-winded process, involving no skill, which seems to have been included to pad out the game. To be thrown back in the asylum affer running out of petrol one move away from your target is maddening! The opening scenes are such a wind up that I almost gave up altogether. Fortunately there's a little more to do once you reach Midian. Even so, all the action sequences are severely under-developed, leading to very little interaction on the player's part. The result is a collection of animations, varying in quality from naff to impressive, gelled together with a handful of token sub-games.

"To be thrown back in the asylum after running out of petrol one move away from your target is maddening!"

The idea of an underworld inhabited by such grotesque creatures as those in the film should have led to a great game. As you only get to see very few of these mutations in the game, a lot of the potential has been thrown away. When Cinemaware's interactive movies were criticed for their lack of interaction, they sat up and took notice, replying with some superb games. Let's hope Ocean do the same.

T.H.

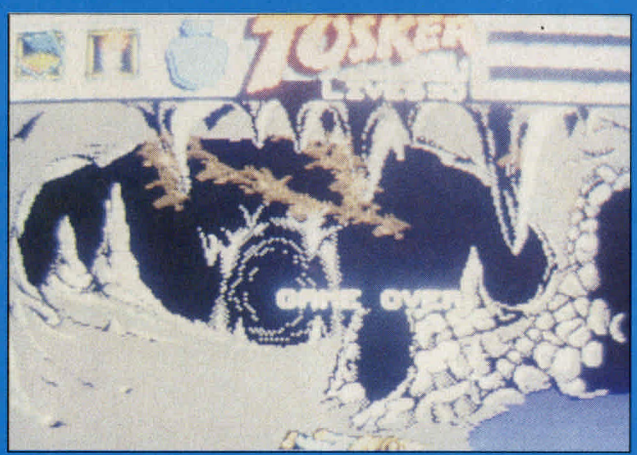
Graphics: 65%. Sound: 40% Playability: 53%

Absolute Value: 50% **Price £24.95**

TUSKER

SYSTEM 3

It's been quite a month for arcade adventures, with Tusker and The Last Ninja 2 from System 3, and Activision's Time Machine following a similar vein. Tusker uses a format very similar to those other two, putting you in the role of an Indiana Jones-style character, whose old man was a bit of an adventurer himself. In fact he was the victim of a particularly nasty attack involving a pair of sharp sticks and a coconut, which unfortunately ended his life-long search for the fabled elephant's graveyard. Undeterred by your dad's run-in with the coconut, you've decided to have a go at finding this graveyard yourself.



Your adventure starts in the dusty heat of a North African desert. A party of vicious Arabs patrol their patch, warning off any intruders with their machetes. Object manipulation is the name of the game, and one of the first objects you find is a gun. The obvious course of action is to shoot the Arabs. However, you've only a limited supply of bullets. Instead it's best to use your skills in unarmed combat, saving your ammo, and your head for later.

Most of the flip-screens house a few dangers. As well as the Arabs, you'll also have to keep an eye out for snakes, bats, and giant hands that pop up from beneath the dunes. Find and use all the objects in the right way, and you'll move on to the next level. Each of the following levels continue in the same style, with different locations and enemies. A step by step guide to completing the first level is included in the instructions, which does a good job of getting you onto the designer's train of thought.

Tusker's scenario has a lot of potential for an action-packed arcade adventure, but it's sad to see so little of it used in the game. The object-orientated gameplay is too limiting. At times you'll be presented with a problem such as opening a chest. With a loaded gun you could shoot the lock, you could try prising it open with a knife,

you could even kick or punch it in an attempt to get it open. You could try all these ideas, but you'd get absolutely nowhere, and the chest would refuse to budge an inch! This is the kind of thing you would expect to see on an 8-bit machine with limited memory, not the Amiga. Both the adventure and arcade elements should have been developed further, and could then have combined to make a really engrossing game.

With very little opportunity for swashbuckling antics, exploring and working out the problems can get rather tedious. There's always the incentive of seeing the next level to spur you on, but even it you only spent an average of half an hour on each level, you'd begin to tire of it all too soon. Tusker has some nice ideas, but the fun-factor seems to have been forgotten. Come on System 3, isn't it time you tried something new?

TH

Graphics: 68%.	Sound: 40%	Playability: 55%
Absolute Value: 55%		Price £24.95

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DEATH TRAP

ANCO

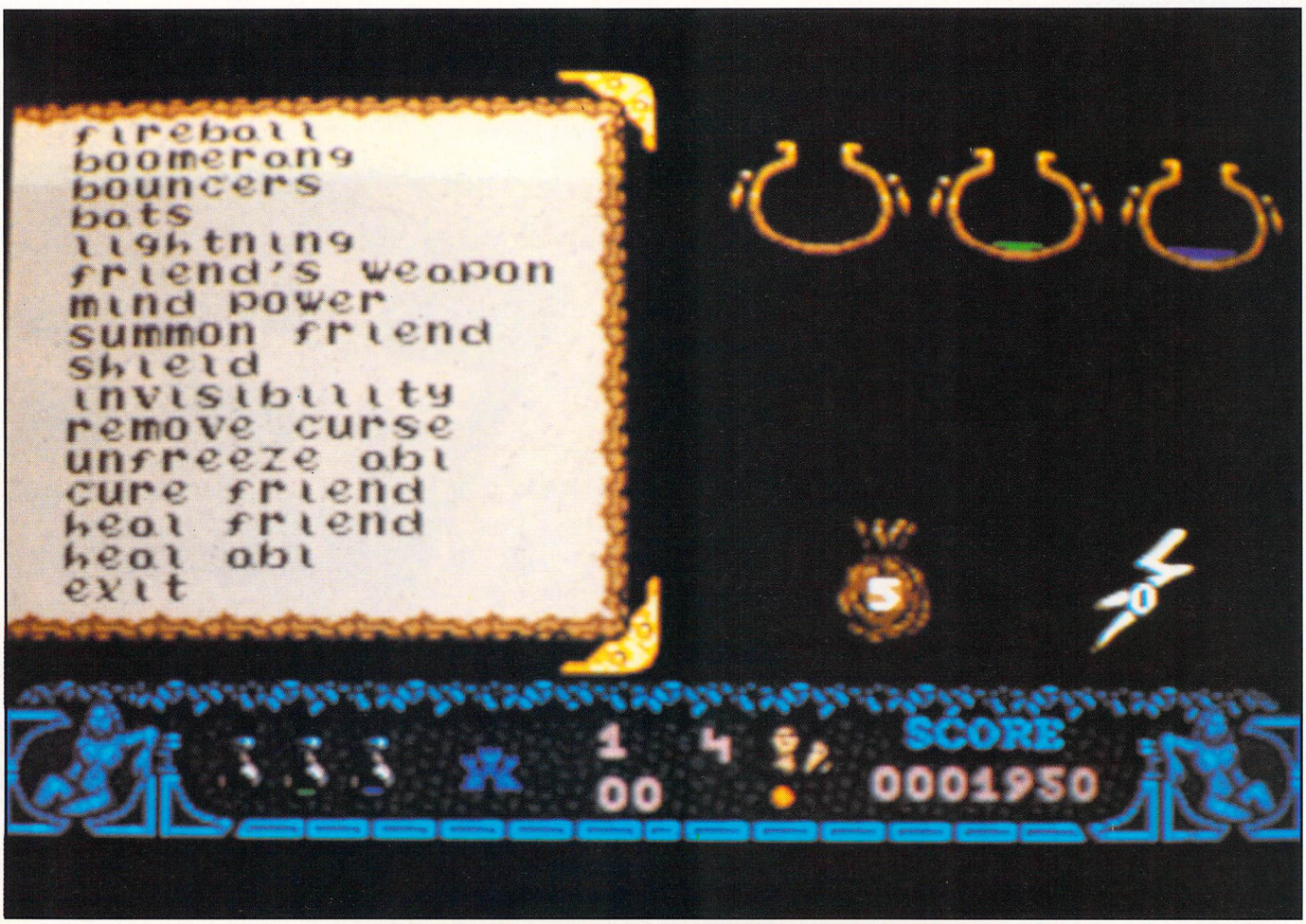
"Death Trap will certainly need a higher level of intelligence to solve than an ordinary blast 'em away would require."

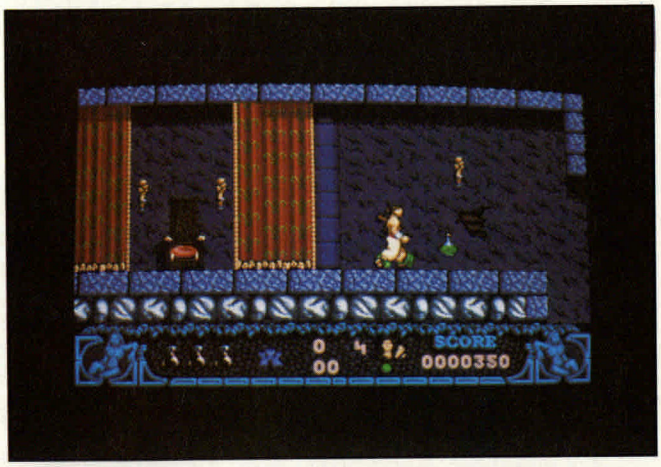
One game took Anco's reputation from that of a small-time software house, to the producers of "the greatest game on earth", and for that the Anil Gupta team deserve our eternal gratitude. That game of course, was Kick Off, which was improved upon earlier this year with Kick Off 2. Expectations are bound to be high for any following releases, and for anyone hoping for Kick Off 2 standards, disappointments would seem likely to prove almost inevitable. And with this, their first game since those smash hit football epics, Anco have wisely chosen to try something completely different. They have moved into the wider field of arcade adventure.

The evil overlord scenario makes up the background plot in this traditional search and shoot platform game. Five labyrinthine levels stand between you, the bright young challenger, and the wicked old scorcerer. Said to be highly trained in the martial arts, your character stalks around the levels in his Ali Baba outfit, initially armed only with a sharp stick. Nasty hunchbacked gremlins patrol the corridors, the first few submitting to a single stab from your weapon. Expired enemies leave behind little potion bottles which are important for you to pick up. These act as credits, to be exchanged for essential weapon upgrades which you certainly need for the aggresssors to come.

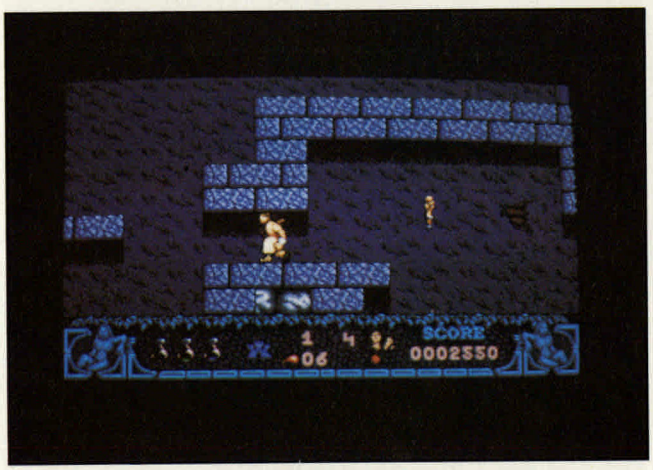
Wizards are some of the most lethal opponents, if you are the slightest instant too slow, transforming you into a heap of gore and guts with a solitary shot from their magical staffs.

More insult, abuse and agression comes from some particularly unpleasant slimy worms, winged insects and ghosts. Along with that lot, there's a string of the eponymous deathtraps laid along your path. Many

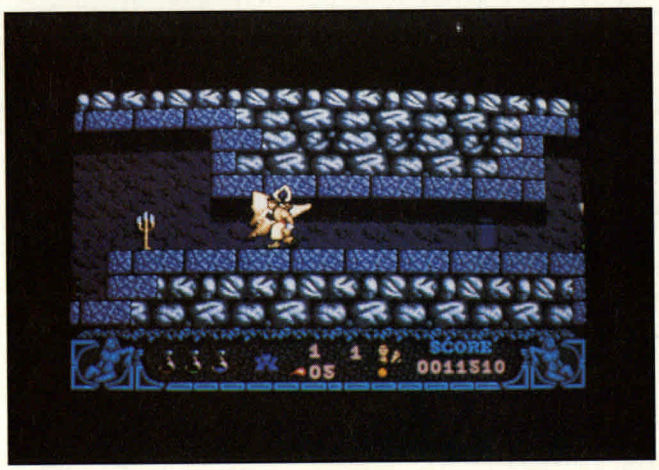




"Your character stalks around the levels in his Ali Baba outfit, initially armed only with a sharp stick."



"More insult, abuse and aggression come from particularly unpleasant slimy worms, winged insects and ghosts."



of these give you little or no warning, so it is very difficult to avoid them when they are first encountered unless you are very sharp indeed. Lightning fast reactions called for here.

The graphics are what can be expected in this kind of game, less significant than the purpose they serve and the way they move. In general the sprites are designed to be fairly small and probably difficult to hit, following in the wake of other recent arcade adventures such as Beast II, Cadaver and Operation Stealth. Death Trap, for anyone brought up on 8 bit games, brings to mind the acuteness required of gameplay on the revered old 64. And plenty of us have fond memories of those days and the sensation of playing something revolutionary again and again. Not too many games on the 16 bit machines have improved that gameplay standard very much, though they have tried to fool us that they have through the Amiga's graphic talents. Anco's Death Trap doesn't try that trick on us.

The adventure elements mostly consist of activating switches and exploring complicated mazes. The joystick action is traditional and not too demanding. Opponents and weapons for the most part will give a

"Death Trap, for anyone brought up on 8 bit games brings to mind the acuteness required of gameplay on the revered old 64."

fair amount of interest in something that is rather more complex than the arcade section and it is clearly designed to make the whole thing a much more challenging game. Death Trap will certainly need a higher level of intelligence to solve than an ordinary blast 'em away would require.

Arcade adventures moved on from the simple format of mazes and locked doors years ago. And though Death Trap is not likely to be a world shaker, it will still tempt lots of gameplayers who like a challenge that is varied and demanding to spend plenty of time in front of their screen. For those who want to try a game with both arcade and adventure elements, Death Trap will certainly be worth checking out at your local store.

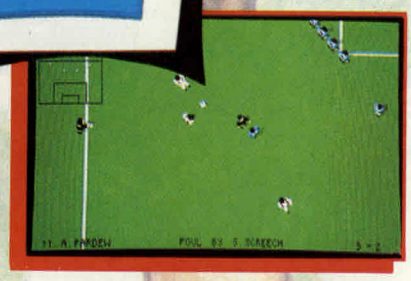
B.V.

Graphics: 65% Sound: 55% Playability: 76%

Absolute Value: 69% Price £24.95

KICK OFF 2

A NEW DI
SOCCER SI



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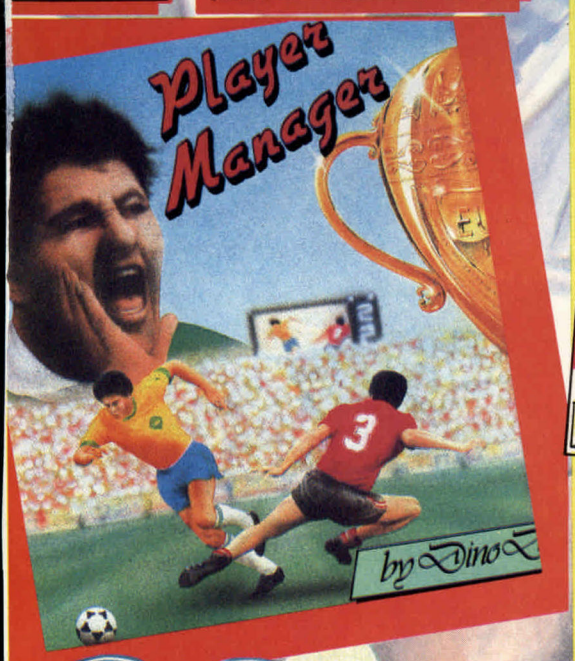

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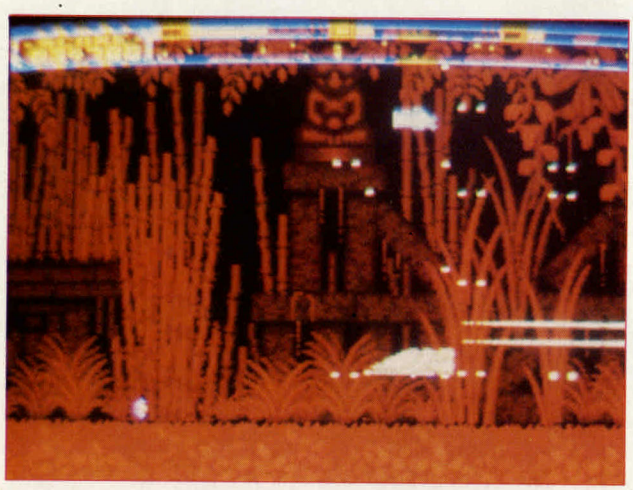
ANARCHY

Psygnosis

They just keep on coming. The appearance of another Defender clone is never far away. A favourite of zappers and programmers around the world, Defender has been unofficially converted to just about every computer you can think of. The Amiga has seen a few classy examples of the game, and now here's another from Psygnosis.

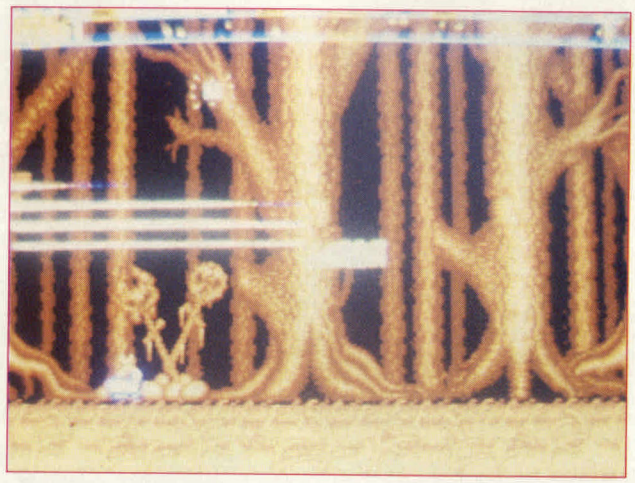
The aim is as always to protect your "pegs" that lie on the planet surface. These are constantly under attack from the invading aliens. These dastardly aliens prey on your pegs like hawks. Hovvering just above their target, they then descend, pick up the peg, and take it to the top of the screen. If they make it that far, the peg is destroyed and the alien transforms into a



far more dangerous mutant. If you can zap the aliens before they scoop up your pegs, you should be able to keep the situation in hand. Failing that, you can rescue a peg as it's being airlifted, by shooting the alien, making sure not to hit the peg. You've then got to catch the falling peg and put it safely back on the ground.

Once all the aliens have been fried, it's on to the next level. If however, the invaders wipe out all your pegs, you'll have to survive a session of hyperspace. Once you get into hyperspace, the screen and the radar fill with mutants, which are joined by even more numerous, even fiercer aliens. Get through that lot and you'll be rewarded with a new peg, while the aliens calm down to their usual pace.

Among the standard aliens are modi-



fied versions of the coin-op's pods and burgers, with a few new enemies thrown in to make up the numbers. Most of these are tiny, somewhat lacking in the character department. Rather than the coin-op's jagged white line on a black background, with Anarchy you get smooth scrolling backdrops that change with the levels. Although the massive amount of sprites on screen can lead to a slight loss of speed, the scrolling is kept at a constant 50 frames per second, conveniently avoiding possible headaches. Weapon power-ups are available from canisters found floating in space. These amount to little more than double lasers, shields and smart bombs, so don't expect an arsenal to rival to rival R-Type.

There's no questioning Defender's classic status, but how many times are we expected to step back in amazement at the same game? Maybe if you've not played Defender for years, or even if you're a complete stranger to the game, Anarchy could prove to be a satisfying diversion. If like me, you think the Public Domain is now the place for revamped oldies, Anarchy seems rather overpriced. T.H.

Graphics: 72%. Sound: 68% Playability: 60%

Absolute Value: 60% Price £19.95

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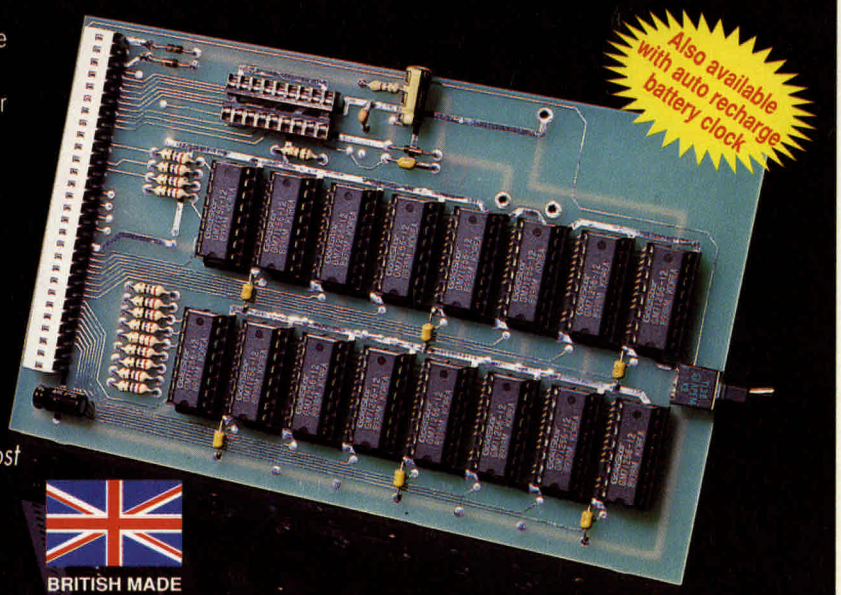

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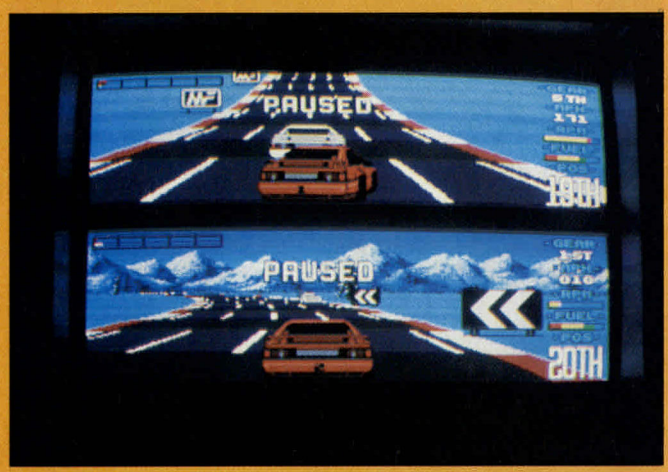
Lotus Esprit

Gremlin

Despite the great number of Pole Position variants on the Amiga, until now, none attempted to recreate the simultaneous two-player modes of the classics Pitstop II and Final Lap. Motor sports are obviously a favourite with programmer Shaun Southern, for whom Lotus Esprit follows hits with Kikstart and its sequel, Super Scramble Simulator and Super Cars. With the help of co-developer Andrew Morris, he's come up with the goods once again.

Your goal is to acquire your Lotus licence. To achieve this you'll have to finish top of the drivers table after racing around each of the game's thirty two tracks. As in real motor racing, only consistently faultless driving is going to get you to the top.

Using the familiar 3D road racing format, the screen is split horizontally into two sections, one for each player. Each race has a field of twenty competitors, tightly packed onto the grid for the start. The green light triggers a frantic jostling from the pack, as each car attempts to get ahead for the first bend. Stuck in the middle of the back-markers, novice drivers can find themselves constantly held back by the closely



grouped computer cars. Once you're out into the upper placings the field begins to open up, giving you a chance to reach the car's top speed of 175mph.

"As in real motor racing, only consistently faultless driving is going to get you to the top."

The first couple of races take place over fairly easy tracks. Soon they're extended to distances too great for the capacity of your fuel tank. A warning bleep tells you when your fuel's running low. This usually gives you enough time to get to the pits and refuel. The longer your pitstop, the more fuel you can take onboard, but time is tight, and a few extra seconds in the pits could put you out of the game. Then again, if you under-estimate the amount of fuel you'll need, you could find yourself petering out with an empty tank, which also puts you out of the race.

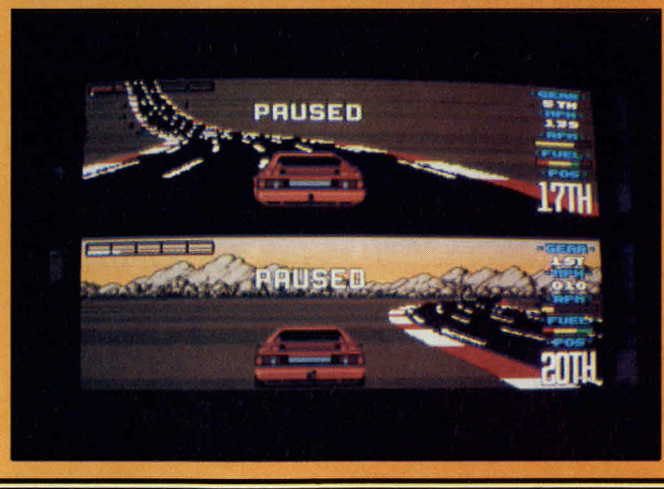
Later tracks introduce hairpin bends, hills with poor visibility, lane closures and other hazards. The road itself is one of the best of any Amiga racer, with convincing hills, dips and bends. The cars are also pretty realistic, with the help of proper 3D sprites instead of the usual flat carboard cut-outs. Played in one-player mode, the game zips along at an impressive 50 frames per second most of the time, making it the smoothest game of its type on

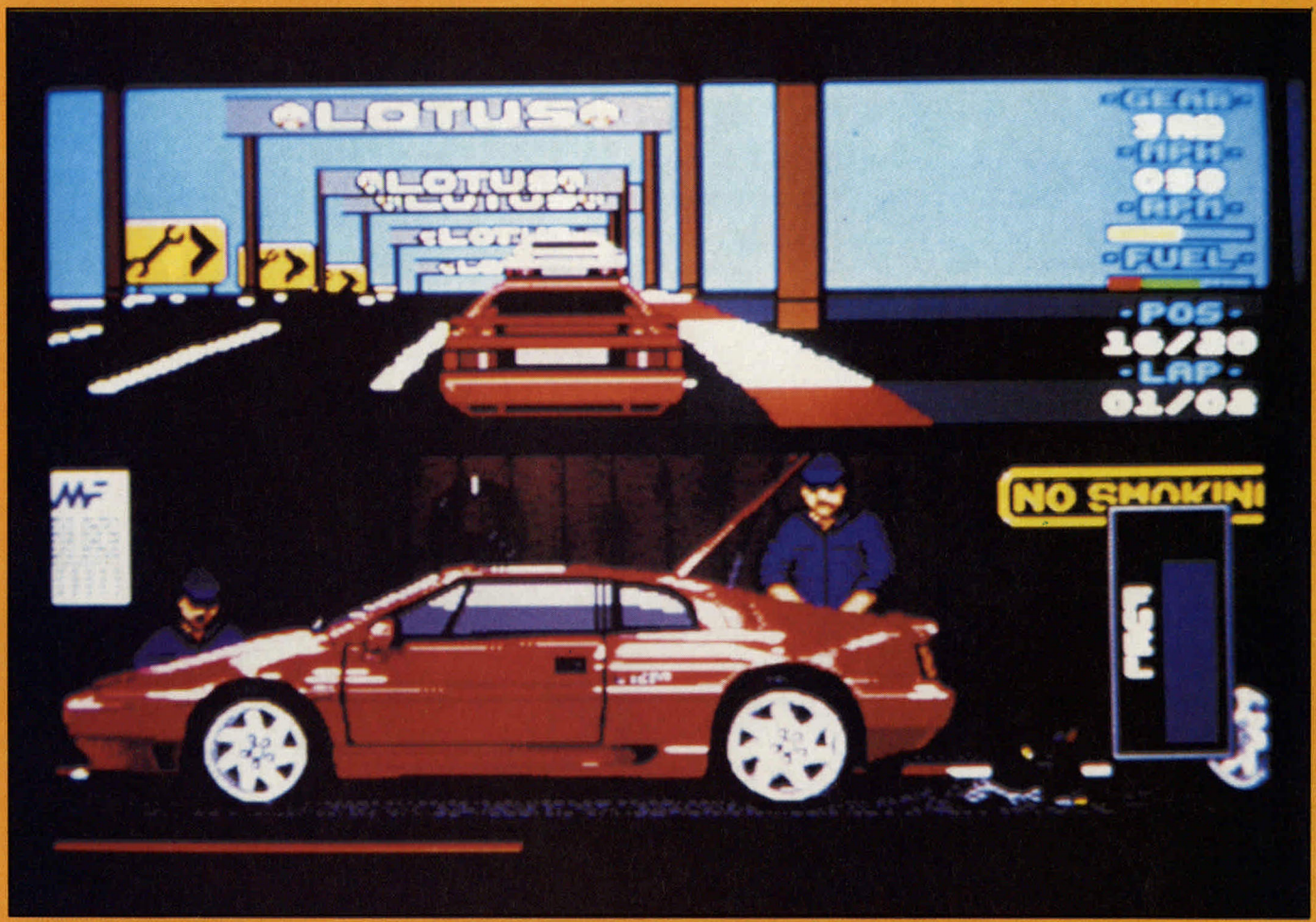
"The game zips along at an impressive 50 frames per seccond most of the time, making it the smoothest game of its type on the Amiga."

the Amiga. Things are a little less silky in the two-player mode, which isn't surprising as the program's having to work twice as hard, but it's still faster than just about any of its rivals.

Pre-game presentation is another high point. A series of superbly-drawn animated title screens get you in the mood. The music selection screen for example, goes one better than that of Outrun, with a digitally-tuning in-car stereo system acting as the options screen.

Although at first the Lotus can be a bit of a handful



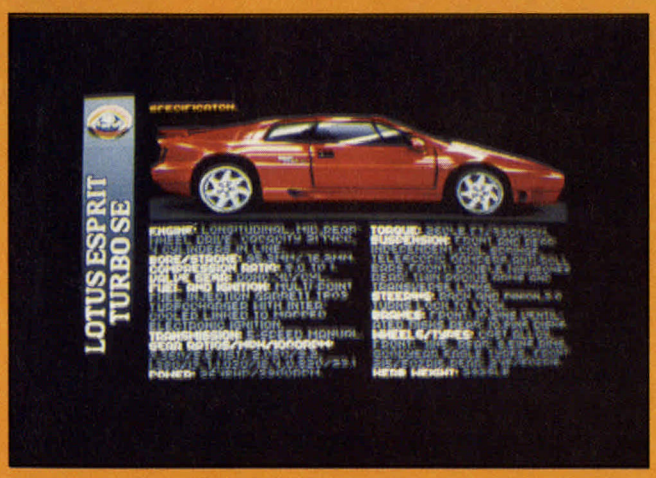


to drive, with the steering feeling a little as if your tyres were flat, a bit of patience and perseverance will have you streaking home in first place before long. The one addition I would have liked to see is some added variety in the races, which tend not to stray too far from the accepted norm. Maybe a more interactive pitstop section, a turbo-boost, tunnels or bridges could have spruced up the single-player mode a little.

Still, as it is, Lotus Esprit ranks among the best of the Amiga's racing sims, far better than the majority of those released last Christmas. The two-player element means it should last longer than most, and with three difficulty levels for solo players there should be enough to keep anyone going for a good while. Get hold of a copy as soon as possible.

T.H.

"A bit of patience and perserverance will have you streaking home in first place before long."



Graphics: 90% **Sound: 68%** **Playability: 89%**

Absolute Value: 86% **Price £24.95**

Wings of Death

Thalion

There's no more unoriginal or over-used game format than the standard vertically scrolling shoot 'em up. Even so, unoriginal and over-used designs account for some of the best games around. With the help of some decent cover art-

work, from the outside Wings of Death looks as if it could be something a bit special.

You get the obligatory bolt-on scenario included in the instructions. It's little more than an explanation as to why the central sprite is a winged beast rather than a spaceship, but I suppose someone somewhere would complain if it were omitted. About all you need to know is that there are seven levels between you and your goal, and anything that reacts to your laser-fire is hostile.

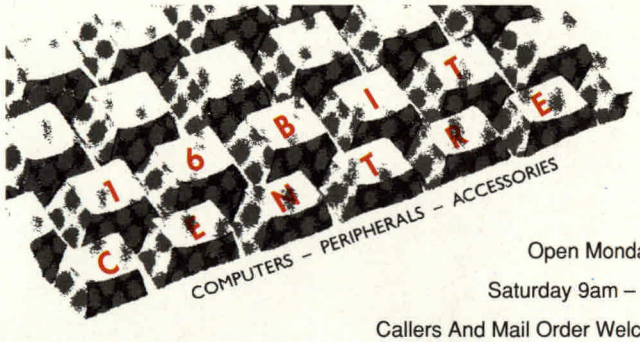
Strange that an eagle-like dragon should be capable of spitting laser fire you may think; maybe it's an attempt to attract the fantasy role-playing audience. Rather than gliding and banking gracefully around the screen, your alter-ego looks more like a deformed bat, with smoothly animated but unrealistic flapping wings. Level one takes place over a predominantly green tiled backdrop, which is sprinkled with an assortment of objects that seem to follow no particular theme. It looks as though the artist couldn't decide whether to use perspective or not, as some features are drawn from directly above, while others have a 3D slant. Ideas must have been in short supply, as the programmers have borrowed the main ship sprite from Xenon II and used it as part of the first level's backdrop. The design of the aliens veers from birds and insects to abstract blobs and indefinable ground installations. Most of these let off slow moving fireballs as they go, and some submit bonus pods when shot. These can be picked up for extra weapons, energy and extra lives. There's always an abundance of these, so you don't have to play through half the game to get a decent weapon, as if often the case in similar games. None of the weapons is particularly remarkable, but it makes a nice change to be tooled up from the start.

One feature I've not seen before is the expanded screen. Although the program uses an NTSC-size screen, it's stretched vertically by the program to fit the whole screen. It's not the ideal method of filling a PAL screen, as you still get NTSC resolution, but it's an improvement over the black bar that usually fills the bottom section.

With nothing particularly exciting, new, original or innovative about it, Wings of Death fails to impress. It would do well priced at a tenner, but otherwise a game like this really needs something extra to justify the high price. You could do worse with your money, but you could also do a lot better. *T.H.*

Graphics: 40%. Sound: 60% Playability: 53%

Absolute Value: 51% **Price £24.95**



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Plotting

OCEAN

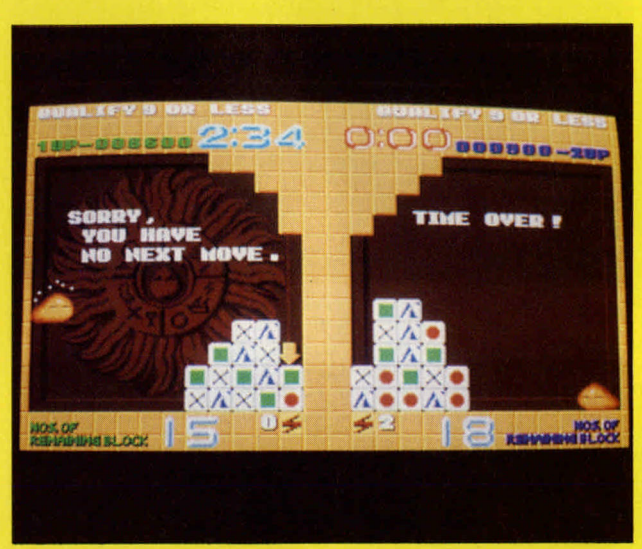
The black sheep of Ocean's recent releases, Plotting disregards the popular themes of ninjas and nuclear warheads. Converted from Taito's coin-op, it offers another dose of block-based arcade puzzling.

Like most puzzle games, the logic behind Plotting is pretty simple. The idea is to clear stacks of tiles from each screen. Each screen has a target number of tiles to be cleared before you can move on to the next. You control an orange blob, who can destroy a tile by knocking it with another tile of the same type. At the start of the game, the screen is stacked up with an assortment of four kinds of tiles.

To get you going, you're given a special "zapper" tile, which destroys the first tile it hits. By pushing this either directly into

the stack, or by bouncing it off the wall into the stack, you destroy the tile it hits, and are thrown back the next tile in the stack. You then have to push this towards a tile of the same type. If you spot a row of identical tiles, you can knock them all out in one go by knocking the first in the sequence. If your tile hits one of a different type, you're given back the old tile again. Lives are lost if you end up holding a tile, whose only match is concealed behind other tiles.

Got that? It's all explained clearly in the instructions, but it's even easier to understand simply by having a go and experimenting. There's a two-player



mode, in which both players race against each other to clear their lot in the fastest time. A construction set is also included for anyone bored with the built-in levels.

Graphics are a little more extravagant than most puzzle games, but won't have you falling off your seat. The programmers have been thoughtful in their decision to allow players to turn off the irritating music. Playing along to the clickety-clack sound of the tiles is far more relaxing.

Although Plotting is one of the most professionally programmed and presented games of its type, there's something missing in the gameplay. I like a bit more satisfaction from a puzzler. Don't ask me why, but there's something strangely satisfying about watching two or three lines fall into place in Tetris, as there was in assembling a picture in the old Spectrum classic Jumbly. Plotting lacks that strong incentive and addiction needed to keep me coming back for more. For those who can't get enough of puzzle games, there's a lot of fun to be had with Plotting, but I'm not so sure it'll win over the fringe puzzlers among us.

T.H.

Graphics: 60%. Sound: 40% Playability: 65%

Absolute Value: 63% Price £24.95

AMIGA BASIC FILES -

Complex Fielding

BASIC may be slow for graphics but for many purposes, including a lot of data handling applications, the sheer convenience of sophisticated file handling outweighs any speed disadvantages. Susan Maxwell gives a glimpse of what can be done...

Amiga Basic supports the use of both sequential files and random access files. Random access files are generally the most useful since you can extract single records from anywhere within the file without having to read all of the preceeding data - but the penalty for being able to do this is that these types of files are a bit more awkward to set up... you have to open the file, set up a 'field' definition, and then move data in and out of the random access file buffer by using LSET/RSET in conjunction with a set of conversion functions. Field variables are always 'strings' so numbers are stored and retrieved using Basic's MKI$(), MKLI$(), MKS$(), MKD$() and equivalent reverse fuctions such as CVI(). It is not in the Basic manual but you can incidentally also use CHR$() and ASC() functions for single byte conversions.

When a random access file is opened its record length is fixed, so you have effectively defined the length of the records which will be contained in the file. To describe the internal arrangement of the records, i.e. the type of fields present within each record, Basic's FIELD statement is used. To open a random access file called "DATA" where each record contains 64 bytes we would use a statement such as OPEN "R", 1, "DATA", 64. The record size itself is now fixed and if we wanted to regard each record as containing a single 64 byte string of characters then it could be FIELDed as...

FIELD #1, 64 AS WHOLE.DETAILS$

If on the other hand we want to regard the record as consisting of 20 byes for a surname, 4 bytes for some initials, and 40 bytes for an address then we would make a declaration something like this....

FIELD #1, 20 AS SURNAME$,4 AS INITIALS$, 40 AS ADDRESS$

It is important to realize that the relationship between a FIELD statement and a given file only exists in the eyes of the program - Amiga Basic will not mind if you create a file using one field arrangement and then choose to read it back under another arrangement, providing of course it makes sense to do so.

Amiga Basic is also quite happy to let you set up and use multiple field definitions and the need to do this often arises if you are dealing with data-files which contain a mixture of record types. Usually it is not a particularly good idea to mix record types within an individual file, but occasionally it is necessary and it is one of these type of situations that we are going to look at.

The following example comes from a project that I was involved with some time ago. A company of consulting analytical chemists were anaylsing about 20,000 samples per year and they wanted the details of their samples and the test results stored on computer so they could perform statistical surveys on their results. The details which had to be stored were these...

SAMPLE NUMBER
consisted of letters and numbers.

HEADER DETAILS
details of the commodity being tested, it's origin and an additional'type'field were required.

RESULTS.....
anything from one to twenty or so tests are carried out on each sample.Each result consists of the name of a test,anumerical value, and a qualifier value to represent such terms as'approximate', 'calculated on the dry basis', 'less than' etc.

This arrangement created two problems: Firstly we were dealing with a lot of data.... 20,000 samples (with say an average of 10 tests per sample) would mean storage space for around two hundred thousand results each year - because we needed fast retrieval of individual record data we could not possibly think of using sequential file arrangements. Secondly, we were never going to know exactly how many tests would be performed on any particular single sample - if we adopted the idea of using fixed size random access records to cater for the maximum number of tests that might be carried out we would end up allocating far more disk space than would really be necessary.

To reduce space requirements we chose to store things such as countries of origin, commodity names etc., as single byte codes - look up tables for these eight bit numerical values were held in separate files. The variable length record difficulties were handled by simulating 'variable length random access files' using six byte record blocks. Here is the format that was adopted...

SAMPLE NUMBER 6 bytes
6 bytes in all

COMMODITY CODE 1 byte
ORIGIN CODE 1 byte
TYPE CODE 1 byte
NUMBER OF TESTS 1 byte
SPARE BYTES 2 bytes
6 bytes in all

TEST CODE 1 byte
OPERATOR BYTE 1 byte
ACTUAL DATA VALUE 4 byte (single precision)
6 bytes used for EACH test result

By adopting this arrangement we were able to create 'variable length' random access records by just taking the appropriate number of six byte blocks from the random access file. Figures 1 and 2 show pictorial representations of the

Continued on page 92

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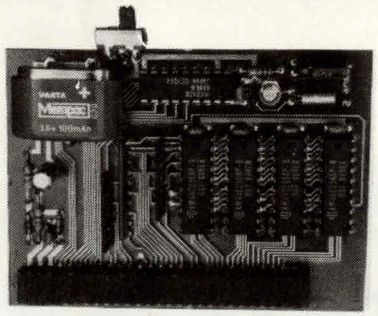

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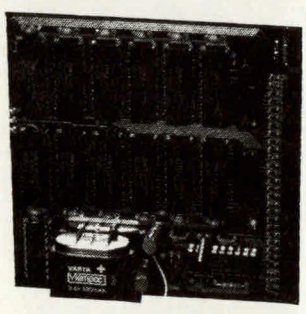

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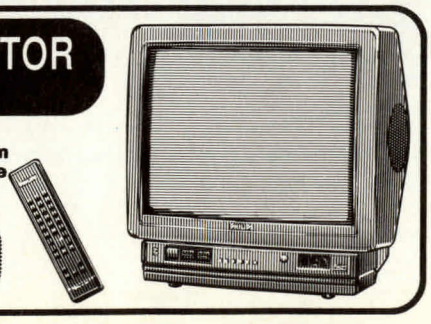

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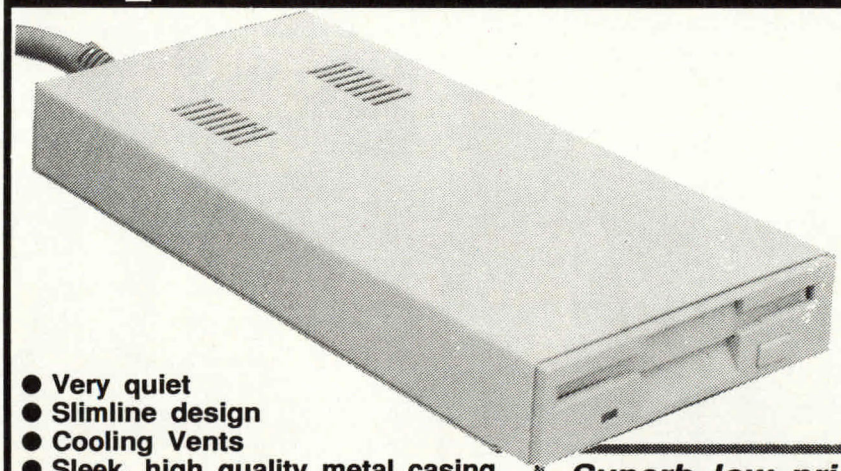

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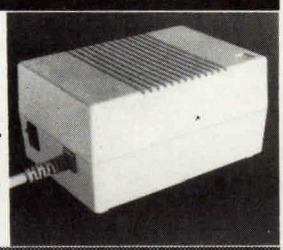

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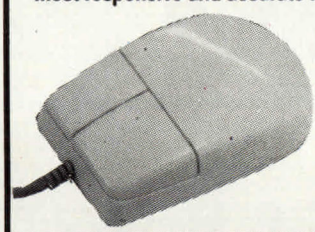

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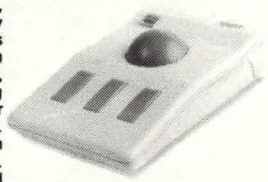

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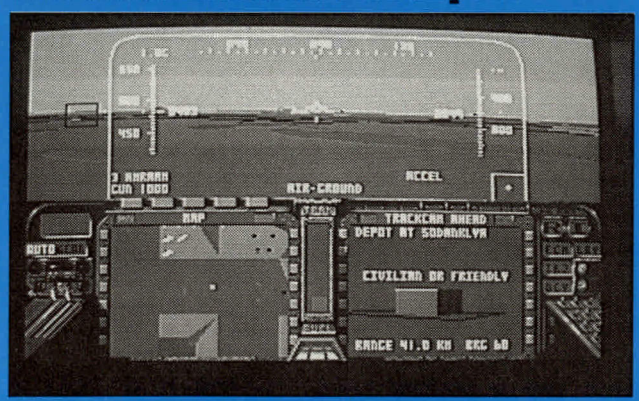
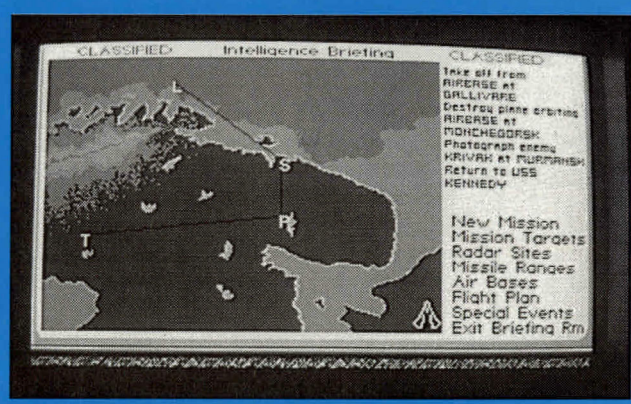
F-19 Stealth Fighter

Microprose

Once a minority interest, flight simulations have moved into the mainstream over the last couple of years, a change highlighted by Ocean's F-29 Retaliator entering the Amiga chart at number one last summer. Good news then for Microprose, who have built their reputation on producing highly technical flight sims. Released a few years ago on the C64, F-19 Stealth Fighter has at last made it to the Amiga.Retaliator came with the minimum of instructions, but even so you could be airborne and shooting down aircraft within minutes. F-19 takes a very different tack, supplying you with a 194 page manual and an assortment of supporting reference cards and maps. Human nature, or mine at least, demands that instructions take a back seat when a new game arrives. Even with a good deal of experience in flight sims under my belt, a glance at the keyboard layout only armed me with enough knowledge to eject as I ploughed into a barn 200 yards from the airstrip. Sometimes you have to admit defeat...Of course you don't have to read the whole manual from cover to cover before you can pilot the plane; picking out relevant sections over a cup of coffee should be enough to get you going.As you might guess from the size of the packaging and documentation, F-19 is a big game. Even before you get off the ground there's a good deal of mission briefing and options screens to get through. Missions can be flown over any one of four regions: Libya, the Persian Gulf, Central Europe and Northern Scandanavia. Rather than having a simple skill level setting, you can alter all sorts of parameters governing the competence of your enemy, the equipment they have available, the realism of landings and so on. Once you've chosen the scenario and other settings, you're given a randomly generated mission.Most missions consist of a number of objectives. For example you may be asked to destroy a weapons dump, shoot down a few aircraft, disable a vital bridge and return to base. To help you in your mission, your cockpit is full of gauges and dials keeping you informed of what's going on. One of the most useful navigation tools is the waypoint marker. Each target in the mission is automatically programmed into the direction finder, which overlays a blip on your compass guiding you from a to b. Most of these locations are a fair way from each other, and as the landscapes are massive,





you tend to spend quite a while just flying from one point to another.This is where the autopilot comes in handy. Combined with the option to jump from real time to accelerated time, you can leave the game alone for a few minutes while you put the kettle on. Although it's more realistic, I still prefer the more concentrated landscapes of Falcon and Retaliator. F-19 is a simulation, but it's also a game, and games are supposed to entertain. Long sessions of

thumb twiddling don't rate as entertainment in my book.Things pick up once you get near your target. Using the trakcam, you get a view of the selected target on the cockpit screen. Remember to press all the right keys and select the correct weapon, and you should lock on to it. Wait a little longer and you'll get a stronger lock. Fire your selected weapon and as long as you're within range, you'll usually score a hit. If all your missiles go astray, there's always the backup from your cannon.

Even with a good deal of experience in flight sims under my belt, a glance at the keyboard layout only armed me with enough knowledge to eject as I ploughed into a barn 200 yards from the airstrip

Once you've completed the mission and touched down at base, you're given a blow-by-blow account of what happened. Your flightpath is superimposed on the map, with miniature illustrations marking when and where you fired your weapons, scored hits and so on. Do well and you'll be awarded a medal. With your log updated you can tackle the next mission on the agenda.There are two definitions of realism when it comes to flight sims. Some would say realism is gained mainly through a load of accurate technical details. Others would say the sensation of speed and a necessity for quick reactions come tops. I find a fast flight sim is far more convincing than one that bombards you with acronyms and hi-tech belss and whistles. although F-19's landscapes are almost always full of ground features, they mainly consist of roads and small rectangular buildings, with the occasional hill here and there. Rather than loads of insignificant features, I'd rather see a few interesting ones. As F-19 is relatively low on speed, it doesn't put across a brilliant sense of flight, and so somewhat separates the player from the action.

However, most gamers with an interest in military aviation will find themselves wrapped up in all the weapons systems, navigation and dogfighting, so much so that the slight lack of speed will fade intothe background. With detailed chapters on bombing techniques, radar evasion, stealth tricks of the F-19, and just about everything else you could ever hope to know about stealth fighting, fight buffs should get there money's worth. F-19 Stealth Fighter is definitely not a beginner's flight sim, but anyone looking for something bigger and more detailed than the competition need look no further.

T.H.

Heard it on the Grapevine

Tony Horgan claims "I'm a Swiss dentist visiting my niece in Paris". Before he is dragged off to the Quiet Room, listen to what his ear to the grapevine has heard.

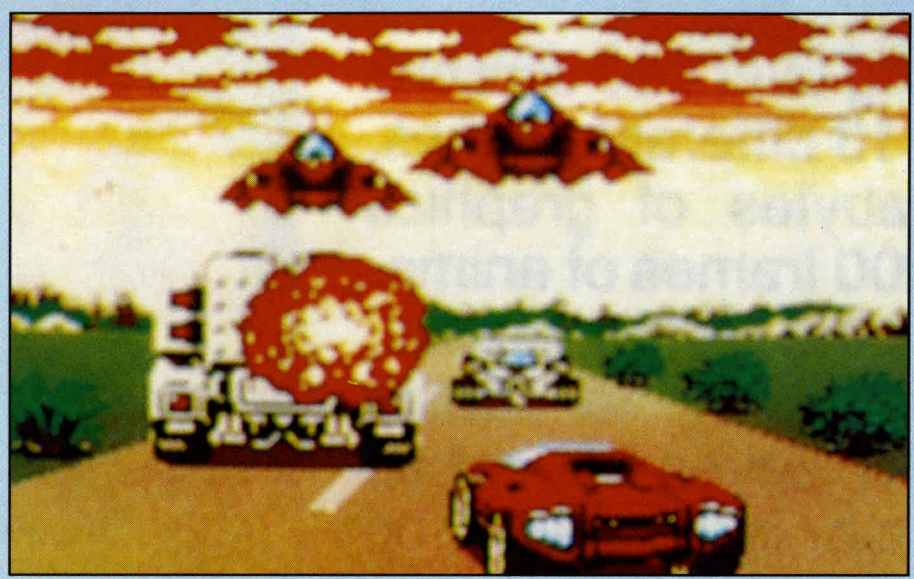
As we were first to report in the September/October issue of AUI, top development team The Bitmap Brothers were rumoured to be going it alone with their own label. The split from their current publishers Mirrorsoft, has now been confirmed. Speedball II, the sequel to their brutal future sport simulation, is already signed up to appear through Mirrorsoft's Image Works division, after which all Bitmap productions will move over to the new Renegade label. The Bros will be taking with them Tom Watson, formerly Mirrorsoft's marketing manager.

Renegade is born from record label Rhythm King, who have served as outlets for Bomb the Bass and S-Express, and are currently enjoying the success of their pop-rap artiste Betty

Racing Drivin'

Boo. Part of the project's strategy is centred on giving the designers and programmers the kind of publicity and credit given to their counterparts in the record industry. The thought of promotional pin-ups of unkempt programmers togged up in sensible knitwear isn't too appealing. Even so, it sounds like a dream come true for the image-concious Bitmaps. Get Bomb the Bass's Tim Simeon onto a few game soundtracks and I'll be convinced.

Back to slightly more immediate matters, and it seems the old favourite car racing theme is back from its extended summer holiday. Domark's promised additional track disks for Hard Drivin' should be with us soon. The Putney publishers are doing their best to increase the demand for the add-ons, with the original game recently re-packaged and bundled into two different compilations. Their Christmas biggie is a conversion of the Atari coin-op S.T.U.N. Runner. Using the technology developed for Hard Drivin', it's a high speed race along futuristic bob-sleigh runs. The graphics have been simplified for the Amiga version in order to retain



Fire and Forget II

Nitro

Secret of Monkey Island

the speed of the coin-op, but the gameplay should remain intact.

A likely candidate for Domark's Christmas 1991 release has just appeared in the arcades. Race Drivin' is Atari's sequel to Hard Drivin', and takes the stunt car theme an enormous leap forward. Whereas in the original, the biggest dangerspot and possibly the highlight of the game was the loop-the-loop, Race Drivin's outrageous tracks include another loop, this time with a gap at the top, and now demand you tackle a corkscrew! In the meantime, Domark have their own follow-up on the way (Hard Drivin' II), boasting four new tracks, a track editor, and an option for linking together two machines for head-to-head races. Also on offer to speed freaks is the forthcoming Fire and Forget II from Titus. My enthusiasm for this one isn't too intense, as Titus' previous 3D racers have tended to look great in still shots, but sacrificed smooth movement for speed with poor results. F&F II looks pretty similar from the stills, but maybe the French programmers have at last learnt from their mistakes.

Using the car-wars scenario in a rather different way, Pysgnosis are soon to release Nitro. Something along the lines of Sega's Hot Rod with machine guns is to be expected. Thirty levels of Mad Max-style racing through day and night stages are promised, which should be enough to keep any Battle Cars addict happy for hours on end.

In a similar vein, Domark are putting the finishing touches to their conversions of Atari's Badlands. A remix of their brilliant, superb and utterly heavenly Super Sprint, it uses the same single-screen multi-player race format, replacing formula one vehicles with turbo-charged armoured cars. The playable previews on display at the CES show suggested the scaling of the sprites to backgrounds needs a little tweaking, but otherwise things seem to be coming along fine.

Probably the best racing game ever to appear on the Amiga, Super Hang On, is soon to be re-released on Ocean's forthcoming 16-bit budget label Hit Squad. This is one game that shouldn't be missed by any Amiga gamer, and will be joined by other hits from the past including R-Type, Nebulus and Operation Wolf.

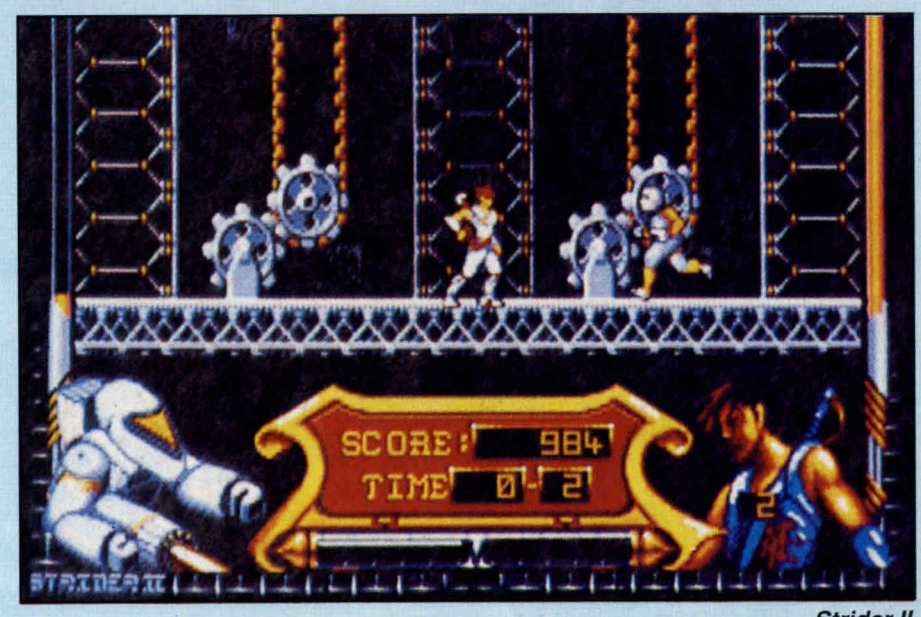
On Ocean's full-priced label, Billy the Kid is soon to make an appearance. A collection of eight arcade sequences will cover the Kid's gun-slinging exploits, including a train hold up, a poker game, a bar-room brawl, cattle rustling, and of course the final showdown. Both would-be heros and villains will be catered for, with the option to play as either Billy or the sheriff. Former adventure game writers Level 9 are handling both the programming and design of the game.

Moving forward from the days of the Wild West, the First World War serves as a basis for Cinemaware's latest "interactive movie". Wings will give flight simulation fans an alternative to the hi-tech long-range dog fights of F-29 Retaliator and company. Piloting prop-driven bi-planes, you'll find yourself battling with the enemy at frighteningly close quarters. Extra variety from bombing runs and other missions, combined with Cinemaware's stunning graphical style make Wings look one of the best Cinemaware games yet.

More wartime drama is on its way from Digital Magic Software. Presented in a similar style to Ocean's The Great Escape, Escape From Colditz is an isometric 3D arcade adventure. Making the best possible use of the many disused rooms and corridors of the makeshift prison, you'll have to come up with a water-tight escape plan, including disguises and forged papers, not forgetting that all important line: "I'm a Swiss dentist visiting my niece in Paris".

Fans of Lucasfilm's graphic adventures will be pleased to hear of their forthcoming Secret of Monkey Island. Using a similar point-and-click adventure format as that seen in Indiana Jones and the Last Crusade, set in the days of pirates and the new worlds, the game has you attempting to unravel the mysteries of a tropical island.

Also to appear through US Gold is Strider II. Tiertex, the team responsible for the conversions of Strider, have come up with their own design for the sequel. Although Capcom weren't planning a sequel in coin-op form, after seeing the brief from Tiertex, they decided to develop a coin-op version. The game continues the acrobatic platform theme of the first, with completely re-designed levels, weapons and enemies. Strider II joins Tetris and Choplifter as one of the very few games to have been developed first on home machines before moving up to coin-op form. Congrats to Tiertex. ***T.H.***



Strider II

Continued from page 85.

6 bytes *********	6 bytes *********	6 bytes *********
Sample Number	Header Details	Result 1

Figure 1: Layout for a sample with only one test result

type of record layouts which were to be created . . .

It is at this stage that the multiple fielding ideas come into play because we now have three different types of records in the same file ! There are records which hold the sample number, records which hold the header details, and lastly the records which hold the actual test details themselves. How do we distinguish them ? Sometimes it is possible to include a special identifying field in each record which has the same format in each of the field definitions - this enables you to make a preliminary check and so determine which fielding statement should be used to interpret the record. This was not a good idea in this case because it would not have solved the problems of actually retrieving the data.

Instead we built a SAMPLE-NUMBER | RECORD NUMBER index so that if we were given a sample number we could look up the random access record number that was the start of the collection of records for that particular sample. This first record was the sample number and once this was available the rest was easy..... the header record was always to follow the sample number and because this included details of the number of related test results we would, when reading the data back always be able to work out how many records to read. In short the first record had to use the SAMPLE NUMBER fielding, the second had to use the HEADER fielding arrangement, and the third and all subsequent reads for a particular set of sample records would need the DATA fielding arrangement.The actual source code for the complete system is large enough to fill several magazines but most of the code was built in self contained sections. The subroutine which created the multiple field definitions that we have been describing is actually quite straightforward and is shown in figure 3...

This routine, as well as setting up the three field definitions, also handles a disk-based 'COUNT' file which was used to keep track of how many separate six byte random access records were being used by the system. Using multiple field definitions is mainly an exercise in chosing the right definition at the right time and with care there are

6 bytes ******	6 bytes ******	6 bytes ******	6 bytes ******	6 bytes ******	6 bytes ******	6 bytes ******
Sample Number	Header Details	Result 1	Result 2	Result 3	Result 4	Result 5

Figure 2: Layout for a sample with 5 test results

```
REM ============================================================
REM      O P E N - S Y S T E M - D A T A - F I L E S
REM ------------------------------------------------------------

SET.UP:

OPEN "R",8,"DATA",6: OPEN "R",9, "COUNT",2

FIELD #8, 6 AS SAMPLE$

FIELD #8, 1 AS RECORD.KEY$(1), 1 AS RECORD.KEY$(2),1 AS RECORD.KEY$(3),
      1 AS NUMBER.OF.DATA.ITEMS$,2 AS SPARE$

FIELD #8, 1 AS RECORD.TESTCODE$, 1 AS RECORD.DATA.OPERATOR$,
      4 AS RECORD.DATA.VALUE$

FIELD #9, 2 AS COUNT$(0)

GET #9, 1:COUNT%(0)=CVI(COUNT$(0))'Set current record count

RETURN

REM ============================================================
```

Figure 3: An example of a multiple field definition

```
REM ============================================================
REM          S T O R E - N E W - D A T A
REM ------------------------------------------------------------
REM First store sample number - note the use of SAMPLE$ fielding
REM and also that we store (PUT) the record immediately !!

STORE:  COUNT%=COUNT%(0)+1:LSET SAMPLE$=SAMPLE.NUMBER$

PUT #8, COUNT%(0): COUNT%(0)=COUNT%(0)+1

REM Now that record's out of the way we can create and store
REM the header record using our second fielding definition.
REM *** Note how I'm using CHR$() to handle single bytes. ***

FOR J%=1 TO 3:LSET RECORD.KEY$(J%)=CHR$(KEY%(J%)):NEXT J%

LSET NUMBER.OF.DATA.ITEMS$=CHR$(RESULTS(0,0))

PUT #8,COUNT%(0)'store this header record

REM Now we can use our third file definition to handle the
REM storage of the actual results. NOTE..... It would take
REM a long time to explain the detailed mechanisms of what is
REM going on, but basically verified data is being transferred from
REM a 'results' matrix into the appropriate field variables - these
REM are then stored record by record as we step through the loop.

FOR J%=1 TO ASC(NUMBER.OF.TESTS$)

  IF RESULTS(J%,0)<>128 THEN LSET
RECORD.TESTCODE$=CHR$(LIMIT(J%,0)):
```

continued page 93

```
        LSET RECORD.DATA.VALUE$=MKS$(RESULTS(J%,1)):

        LSET RECORD.DATA.OPERATOR$=CHR$(RESULTS(J%,0)):

        COUNT%(0)=COUNT%(0)+1:

        PUT #8, COUNT%(0)

NEXT J%

REM All the data has been stored so now we can up-date the
REM systems COUNT record. By doing this last our disk based
REM count is intact right up until the last PUT operation -
REM this is, in general, the safest way to do it !

LSET COUNT$(0)=MKI$(COUNT%(0))

PUT #9,1'new count record

RETURN

REM ============================================================
```

Figure 4: Using the multiple field statements

few problems. Do not forget that although multiple field arrangements can be active at the same time all of the field variables will point into the SAME BUFFER SPACE - so you must of course only read and write data using one set of definitions at a time. You will see an example of how this can be done in figure 4 which shows one of the routines that was used to store data in the example that we have been looking at.

Last Words

Multiple field definitions are a powerful tool for the Basic programmer and the approach that I have illustrated is easily adapted to other uses. It is, for instance, very easy to include a single character 'marker field'as the first field of a record. Doing that allows you to set up as manyas 256 different field statements on a single file and a initial read of the first byte of the record will allow you to identify which field statement should be used to interpret the record.

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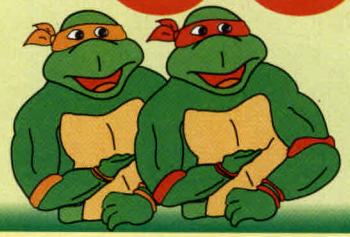

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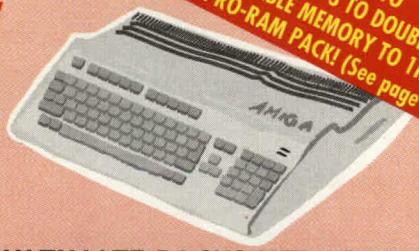

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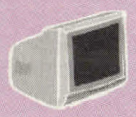

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+

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- ☆ 10 BLANK 3.5" DISKS
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Mirrorsoft's official UK Software Licence, 'Teenage Mutant Hero Turtles' is scheduled for release during Nov. '90. Orders despatched before this release will have the software forwarded the moment it is available.

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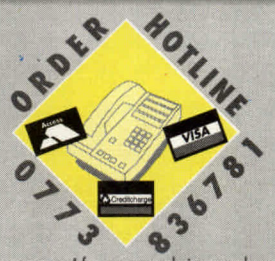
Written quotations available on request.
(Please refer to Page 3)



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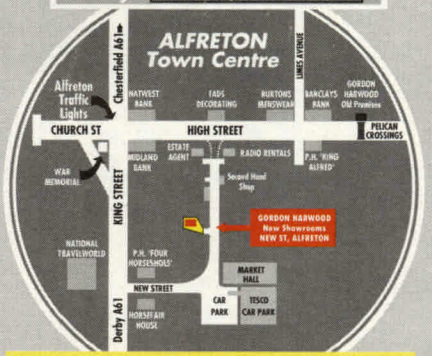

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THE AMIGA AND THE STATE OF THE ART OF VIDEO

Jay Cross, author of The Amiga Desktop Video Workbook, reports from the USA, how the Amiga is playing an increasing role in probably the most important communication medium of the 1990's.

The times aren't the only things that are a-changing. Take the world of video for example. Ready? Brace yourself. Everything you have now is obsolete. All of it. That Acme Model 642 VideoWidget you just got? The one you're leasing for two thousand a month. . . It's obsolete, too. The new Model 642-A is twice as fast, does ten times as much, and costs less than a single lease payment on the old one. The "upgrade path"? Dream on. It's a "path" to the dumpster. Just make out your cheque for the new model to . . .

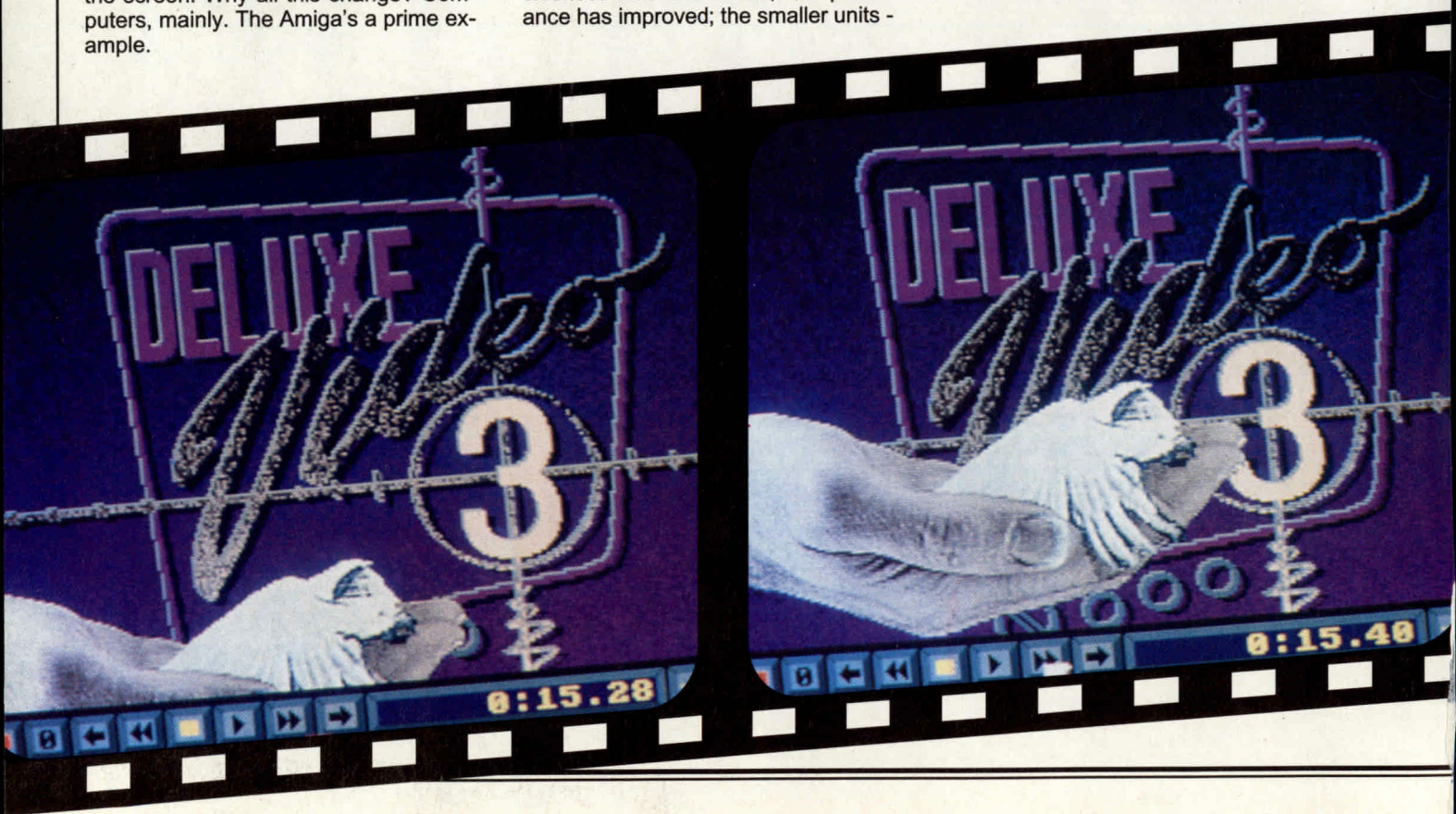
A nightmare? Indeed it is, but this is how things are, and this is how things have been for a very long time, in the video business. If you think the world of computers turns over frequently, you haven't delved into video, where change is even more dramatic, even more rapid, and much more expensive. To say that the video industry is undergoing rapid change is vast understatement. Moreover, the blinking boxes and the hardware doodads aren't all that's changing. The industry is also undergoing a shift in the way it conducts business, as well as the way it makes the pictures that end up on the screen. Why all this change? Computers, mainly. The Amiga's a prime example.

From the top to the bottom, the video industry is moving toward smaller, more affordable equipment. It's also turning control of many of its processes over to digital computers, including the Amiga. Indeed, one of the main directions that the video industry is heading is desktop video, particularly the industrial and professional segments of the industry. Desktops and video work well together. Quite well, thank you, and much of what defines desktop video is epitomized in the Amiga.

In the USA, for example, the CBS Network's Evening News has just switched to a bunch of Amigas equipped with NewTek's Video Toasters. CBS can afford anything made, and they already have some of everything made, most likely. But the Amiga does the news. Now THAT's star billing for the reigning king of desktop video, the Amiga.

Desktopishness isn't really new in video, however; for one thing, the size of the equipment has long been on the decrease. Video tape recorders that once dwarfed washing machines, now park neatly in an equipment rack. Moreover, as the massiveness has decreased, the performance has improved; the smaller units - particularly cameras - deliver the goods better than, and for a fraction of the cost of, the older, bigger units. Nevertheless, while fitting handily on a desk, today's television stations' equipment still won't fit neatly into most people's wallets. There's way too much pricetag left over after the pocketbook's empty. So, "desktop" as applied to video generally has to do more with the price of tea than the size of the leaves. Substitute "affordable" for "desktop" and you get to the meat of the matter in a hurry.

It is this more "affordable" concept of



video, ushered in by the Amiga, that is prospering, and growing so rapidly. Nor does desktop video entail laborious processes that would be easier to accomplish on non-desktop equipment. As video has broadened to accommodate the desktop end of things, it has also had to meet new consumers' demands for simple operation although there's still room for considerably more simplification.

What good is it?

What all this means is that through desktop video, the immense power communication in the visual medium is becoming accessible to non-millionaires, just as desktop publishing brought the power of the press closer to people. What's going on now is a meeting of the two ends of video — desktop and regular — on the common ground of the nice new technology that brings the processes down to within people's reach.

Although this new technology necessitates new equipment in many cases, the video industry is already long accustomed to rapid obsolescence. The industry's built to take it (and pass the high cost along to the clients, along with a tidy profit margin). A more tangible and immediate result of all this change is that opportunities are beginning to open up in video that previously would have been out of reach of most people. Moreover, many of these opportunities are for people who are skilled in operating, in programming, or in doing art and animation on Amigas.

Desktop video is growing rapidly, too. A glance through some of the new consumer-level and even professional video trade magazines will convince you. Most notably, there's an increasing collection of affordable equipment that brings to your own pocketbook the abilities of the big boys' toys. As competition for these boxes heats up, their prices are dropping rapidly, even though the technology is brand-new. An excellent example of this is time base correction "TBC's" in the video lexicon. A time base corrector is a magic box that takes in a none-too-exemplary video signal and puts it out with all of video's extremely critical timing elements forced to correctness, thereby repairing most of what goes wrong with video signals. Once the domain of only the highest-end video production facilities, time base correction is now included in some of the better camcorders and video tape recorders, and for not much more cash invested. The quality you get from time-base-corrected tape units is MUCH nicer, and the images they record are much more acceptable to broadcast studios.

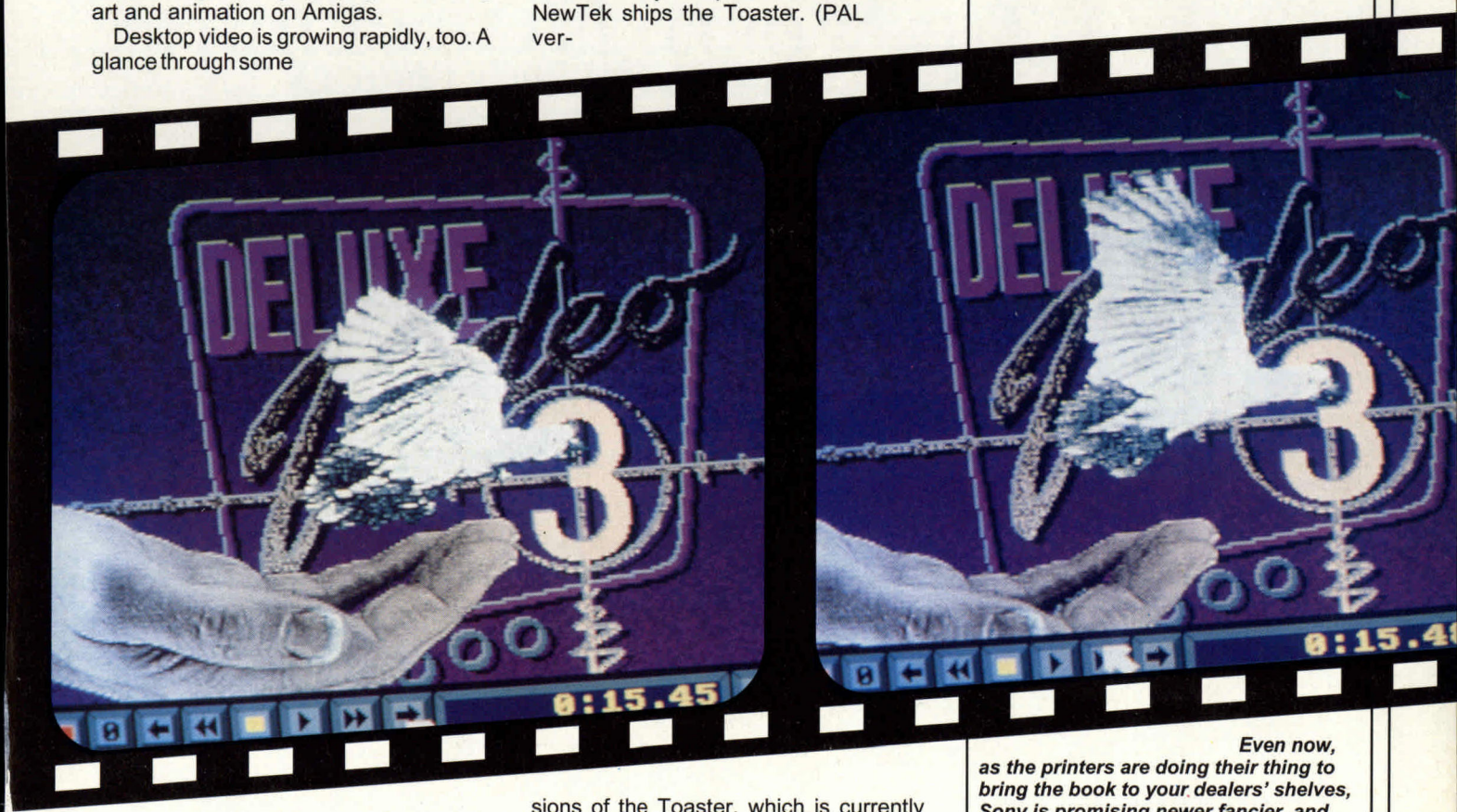
Another example of this new technology is NewTek's Video Toaster. This long-touted board for Amiga 2000 computers requires time base correction on any video tape recorders that feed it, and it requires all video sources that it processes to be externally sync'ed. A few months ago, these requirements would have made the Toaster prohibitively expensive, in spite of the low cost of the board itself However, in six months or so, the cost of these attachments has dropped thirty percent, and will likely be quite affordable when NewTek ships the Toaster. (PAL versions of the Toaster, which is currently NTSC only, are scheduled to ship before the end of 1991.

HOW I WROTE A BOOK ON VIDEO

By Jay Gross

Keeping up with the video business long enough to write a book about it — a period of several months - turned out to be quite an undertaking, and largely because the video business is a rapidly moving target. The Amiga part of it changed around completely during that time, too, and the video industry made such dramatic changes that writing a book about desktop video on the Amiga seemed more like a "report from the front" than a narrative of what's what. So, report from the front it is, all three hundred pages of it, but it turns out that's what's needed, I think. Indeed, people who have been in video for many years are faced with much the same learning curve on the newest technology as the beginners just looking in from the outside, so a report from the front seems quite in order.

At the beginning of the project, my intention was to define and describe "ideal" systems at several levels of expenditure for doing desktop video. In the end, those ideals are discussed only in terms that guide the reader to the goods, not specify what goods to get. The reason is simple. Every time I wrote the specifics in, the manufacturers came out with newer models that did more tricks for less money!



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within the next couple of months. These new boxes, as well as those that will surely follow (or precede!) from other manufacturers, would have dated any specifics I put in the book. In the end, I've settled for describing what features are important, and what aren't worth spending money on, and leaving the selection of specific models to whatever technology is this week's state of the art.

When I began the video book, a lot of things that are now possible on the desktop were still confined to big-ticket control rooms. So much the better for desktop video people, but it made the writing project somewhat tricky. However, I think I've nailed down enough of it to get the readers over the threshhold into the fascinating world of desktop video. And of course, I've sprinkled in a few horrible puns here and there to keep things from being too dull and dry.

THE LINGO

Aside from keeping up with the rapid changes in the industry, the biggest barrier to "getting into desktop video" is the curious language that the industry speaks. It's a foreign tongue, indeed, full of nonsensical syllables like EDL, SEG, and DVE. The first thing you learn in desktop video is the alphabet, it seems. I can't stand acronyms. They're a barrier to communication, for the most part, and they look terrible in print, too. So, in writing The Amiga Desktop Video Workbook, I tried to get rid of as many of them as possible, picking them apart, writing them out, explaining what they mean, and bringing them down to reality. The terms these abbreviations stand for aren't really all that complicated, but having to learn a special jargon to deal with them ends up adding an unnecessary barrier.

Some of the industry's acronyms are staples, however; so, for convenience, I ended up siding with some of them (like NTSC).

Some of them (like RCA connectors), I didn't bother explaining or writing out, because their meanings don't have anything to do with their functions in life.

The point is that I've tried to write about video in English, pure and simple, and I hope the effectiveness of the communication is the better for it. Once the acronyms are stripped out of video's lingo, the processes and concepts are much easier to explain, and I hope easier to understand.

ANY QUESTIONS?

I've always held the opinion that people should be entitled to ask questions. We're born knowing nothing about everything, but by the time we're fifteen years old, we're expected not to ask questions any more, and just osmose information somehow. Maybe there should be National Free Question Day, when everybody is entitled to ask all

Chromakey is yet another example. Chromakeying is coming home to the Amiga, and soon. The new device is now in the manufacturing stage (NTSC versions first, then PAL) at MicroSearch, makers of the Electronic Colour Splitter for digitizing from colour video sources. The European price isn't fixed, yet, but the price in the United States translates to about two hundred pounds, a huge saving over the cost of video switchers that usually do the job. MicroSearch is promising PAL versions of both the Electronic Colour Splitter and Chromakey in the spring.

Chromakeying can be a very creative video tool, and video production studios use chromakey effects a great deal. This is what puts the announcer in front of the weathermap, for example.

What do Amigas do on the desktop that interests video? Good question. The answer is: plenty. If time on one of these systems costs five hundred an hour, you can't afford to diddle around for three or four hours just kicking around ideas. You can, however, afford a roomful of Amigas and artists to run them, to use for prototyping, designing, and working out motions, trajectories, composition, and the like. Then you use the big stuff to make the final pass, to get the benefits of full, video palettes at excruciatingly high resolution. Interestingly, these benefits—large palettes and higher resolutions — are on the verge of plopping themselves onto the Amigas directly, and in fact have already done so to some extent. The new boards and add-ons for the Amiga, include Digital Creations' DC-TV, NewTek's Toaster, Black Belt's Ham-E, and Impulse's Firecracker-24. With these Amiga-contained solutions on the market, will the traditional mega-money video equipment then be obsolete? Yes, but don't tell anyone in the video business. Unless you relish seeing grown men cry.

Aside from their use in prototyping, Amigas are frequently more directly involved in industrial and professional video production. There, you'll find the Amiga displays being used "on line," meaning that the Amiga picture is actually what's laid onto videotape, either by itself or superimposed (as titles, for example) over other video sources. The Amiga's limited resolution and palette is not a problem if you're willing to work within its constraints, and the benefits of doing so are an enormous saving of time and money, not to mention the extra measure of control you get — say, in industrial video — by not having to hire outside services. In fact, the Amiga computer can perform many realtime animated effects for industrial and professional video production that would be impossible to afford on any other system except by the richest of clients.

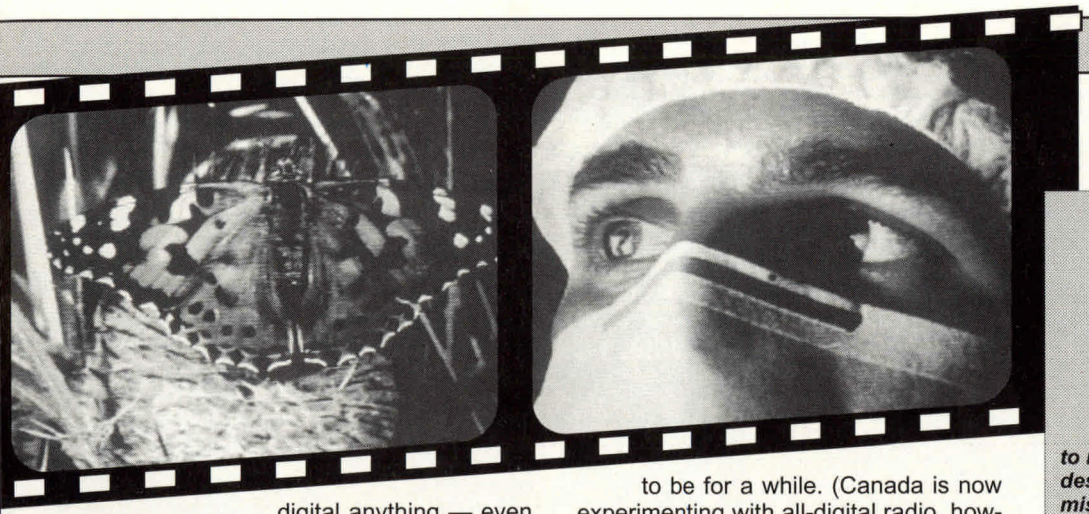
The thankless jobs, too

In some video production facilities, you might find also the Amiga in use as a teleprompter or for controlling single-frame video or off-line (sometimes meaning unattended) editing. If you need a storyboard, what better way that to whip one up on an Amiga, many of whose wordprocessors deal as readily with graphics as text. For screenscripting, too, there's no substitute for ProWrite 3.0, which makes handling the multiple columnar documents easy and intuitive.

In short, the Amiga is busily titling, animating, and computing its way to stardom in the part of the video business that never sees the light of day in front of the cameras. That means, namely, the darkened recesses of the control rooms and the editing rooms, and the bright offices of the brightest scriptwriters, storyboard artists, animators, and directors. And of course, what this means to you is opportunity, if you want it, to move into the world of video on the strength of your Amiga skills. Many's the famous director who moved from scriptwriter to director, for example.

Off to a quick start

For the Amiga, it has been a fast rise to stardom, but the Amiga comes along at a time when the video business is learning to accommodate not just the Amiga, but the very concept of computers. Video has traditionally been an analog world. No cosy binary, no logical on's and off's, no



digital anything — even sound. Now, the push is on in video circles to move toward doing things digitally, and the first to go are sound and titles — the latter being the Amiga's domain. Commodore now claim to have sown up sixty percent of the video titling market with the Amiga. Even if that figure is inflated, it's an impressive accomplishment in the short time the Amiga's been on the market. The reason is simple. Amiga titles are fast, good, and cheap. Easy, too. And all of this is possible largely because the Amiga is digital, like computers, not analog, as video titling equipment has always been. This is only the beginning, though; the move to doing things digitally is on in video. There are new stars of the video recording formats that are all digital, and their strength is growing rapidly, in spite of their high cost. The move to digital sound recording is also gathering steam. It's only a matter of time before video kisses off its analog boxes completely, even though there are still some major obstacles. The broadcast signals are one of them. You can already buy digital television sets, but the broadcast (or cable-transmitted) signals that makes them go are still analog and likely to be for a while. (Canada is now experimenting with all-digital radio, however).

The bottom line

Where is it going? As the industry rolls over and over, discarding last week's state of the art for this week's new stuff, that's a good question. Look for digital stuff, and look for competition to the Amiga (the nerve!) in the desktop video business, too. Many companies have already shown Unix-based applications which rope in video displays to those impressive (and expensive) Unix workstation displays. The Amiga's traditional rivals, too, the MS-DOS boxes and the Macintoshes, are also gearing up ad campaigns and third-party software applications to get in on the desktop video business. The Amiga has a head start, however, and a sizeable one.

The bottom line on all this is that there's much more change to come in the video business, and particularly in the desktop video business, so if you want to keep up, or if you want to get in on it, grab a hold of your Amiga, hang on for dear life, and ride the wave of this new digital technology into the world of video. ***J.G.***

those questions that we'd otherwise be ridiculed for asking. Therefore, in the video book, I've tried to anticipate and answer all the simple questions that people might have, and also to remove any confusion about video things that might have been perpetuated by not asking any questions (or not having them answered). For example, from talking to many people who are interested in desktop video, it seems that the most misunderstood piece of equipment ever shipped is the genlock. Take note, then. A genlock does not prepare breakfast foods. It doesn't record videotape. It doesn't do ANYTHING but mix and match video signals around, and you don't even need one to do some types of video work on the Amiga —you can do fine with an "encoder," instead, which just provides a videotapable signal from the Amiga's monitor display. Well, okay. I'll hop off the soapbox for now. . .

I hope the Amiga Desktop Video Workbook and its accompanying disk are helpful to people who want to know about desktop video and how to do it, have fun with it, or make money with it using their Amiga computers. I hope all the questions are answered, and all the points are covered in enough detail to get people going. And I hope that after reading the book and memorizing the glossary, people can communicate in the video jargon well enough to accomplish whatever they want to. Now, if you'll excuse me, I'll get started writing another book on. . . on. . . Any suggestions?

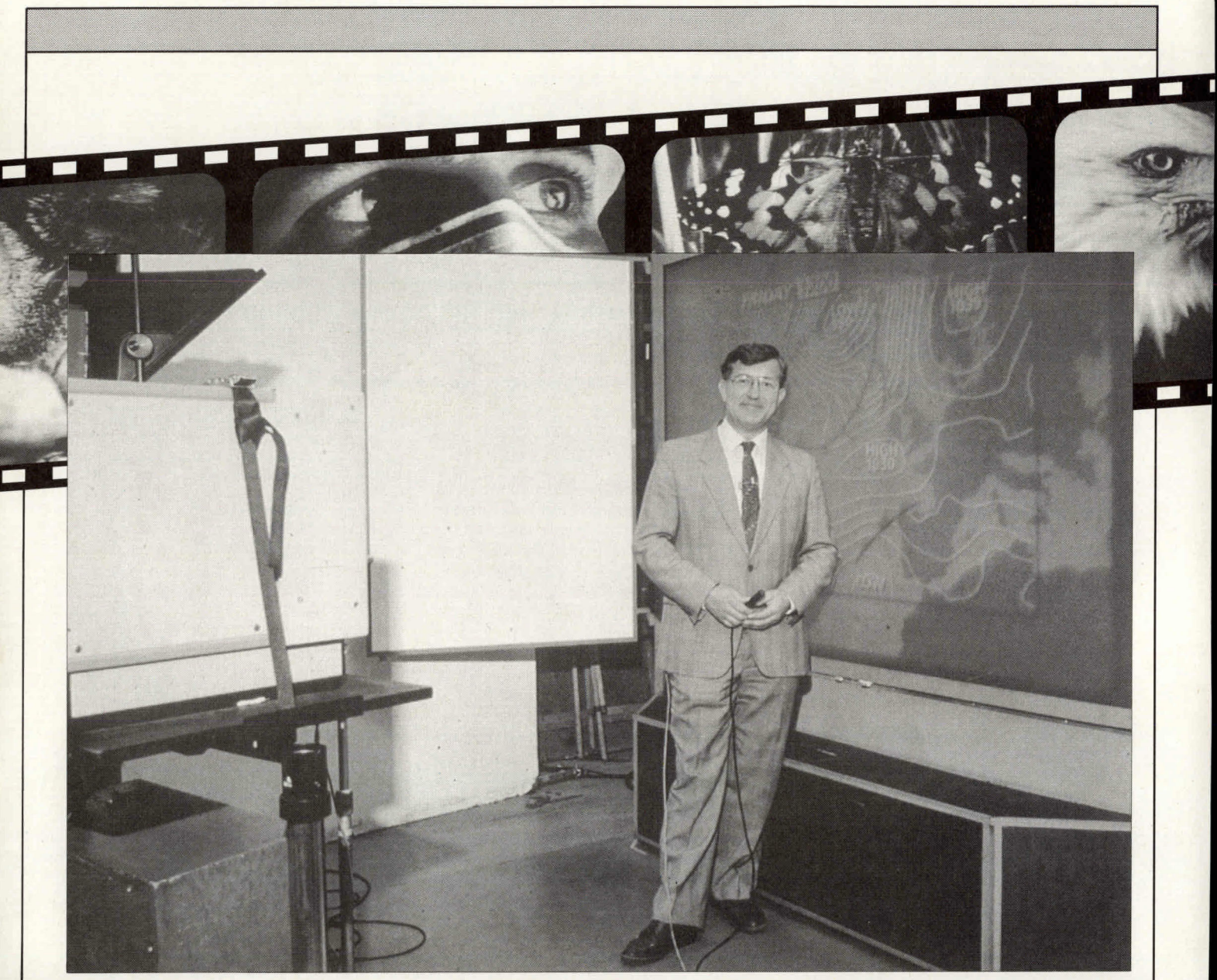
CHROMAKEY:...

Chromakeying is the process of electronically splicing parts of different video sources into one outgoing signal. Film at eleven. No kidding! You can see a demonstration of this effect every evening, when the newscasters do their thing on your television channels. The weather map that the weatherman (ARE there any weatherwomen? Yes, there are in the UK! Ed.) daily forecasts is in reality just a blank wall. The map is a computer graphic (and in many places it is an Amiga graphic, complete with cycling colours for those ubiquitous arrows, rain clouds, etc.). You might also see the weatherperson standing in front of a satellite picture of the planet. Same equipment, different graphic!

What happens is that the weatherman's image and the maps (or whatever else) are joined electronically by a thing called a "keyer," which is a device to put two images together. Keying can happen in shapes (like blocks), halves of a screen (split screen), or chroma. In chroma keying, the two images are joined based on the presence in one of the images of a specific level of colour or grayscale. When you shoot video in front of a surface of the correct colour (generally a sick blue), a special electronic process can swap out that colour and substitute moving video images in the video that goes out to broadcast, or to a recording machine. Of course, if that exact shade of blue occurs anywhere else in the subject you're shooting — the newscaster's tie, perhaps — there will be a hole in it where the blue occurs, and the substitute video will shine through in a usually undesirable way.

Notice that this is the reverse effect from what the Amiga genlocks deliver. The normal Amiga video genlock effect is Amiga graphics over incoming video. Chroma key is video over Amiga graphics.

Chroma keying has many implications for special effects creation. It permits simulating with video things that would be difficult, impossible, or expensive to stage for real. It also permits doing in the studio (inexpensively) what would otherwise necessitate a location shoot. The narrator in a production can talk about penguins while standing on the very edge of a



...WHAT IS IT?

glacier without ever leaving the studio or even putting on his overcoat. Still or moving video images can be joined with live actors and actresses. Backdrops and partial sets can brought into place in order to simulate many different environments and to achieve effects that would be extremely difficult to do otherwise. A shapely model can stand on a freight train without mussing her hairdo by standing on a box painted in the keyed colour. Video magic is then applied to chroma key a picture of a (moving!) freight train into the area of the picture where the box was. Simple.

Chromakey effects can also greatly alter the perception of scale. That freight train, for example, can look like a real one, but actually be a small, HO-scale model. Model trains are considerably easier to get into the video studio than real ones, and they're more cooperative, too.

Chromakeying to Amiga graphics opens up even more opportunities. You can juggle with the Amiga juggler, or knock around in a really far-out, raytraced landscape. The possibilities for combining live action and Amiga animations are endless.

Coming soon to an Amiga near you

Yes, the chroma key capability is on its way to Amigas. MicroSearch, an Amiga hardware developer, is now making an Amiga Chromakey box that adds this capability to the Amiga/genlock combination. The company's Chromakey box will work on all the Amigas, being external to the computers. It does require the addition of one or other of the genlock devices, however. A good one will produce the best results all around. Having shown off the prototypes, the company is proceeding with the manufacturing and packaging now. A PAL version is promised for spring. As currently specified, it will come with a supply of blue-coloured plastic that you can drape over your chair, pin to a wall, or whatever, in order to have the correct colour for the replacement, but that might change, depending on supply. MicroSearch's Chromakey device isn't terribly picky about having the plastic's exact hue, but like any chroma keying effect it yields the best results when things are carefully controlled and contrast between the forground image and the color being replaced is kept under control.

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SCENE GENERATOR

Barry McCarthy, computer artist and teacher, considers a program that uses maths to create repeatable art

Fractal generators seem to be all the rage at the moment. Programs that can produce 'realistic' looking land/sea/skyscapes through the use of complex, fractal mathematics. Programs like this have been around for a long time and even games like the classic 'Koronis Rift' and 'Eidolon' experimented with fractals for a more realistic 3D feel. I always thought it was a shame that this was not pursued further, especially with the advent of computers like the Amiga.

Scene Generator comes on one disk, with a short (12 page) manual. It needs one megabyte of memory and runs on any Amiga.

I hardly needed a manual as the whole thing works from a single set of pull down menus. Everything speaks for itself really. You just set the height of the landscape, the direction of the lighting and then render it in a quick (10 second) preview. If you are happy with your newly created landscape, you can then render it in several higher levels of detail, at the cost of time.

There are a few options that you can play around with, such as the height of water, snow and greenery and whether or not you want clouds.

The pictures it produces are very nice but also pretty unpredictable in composition. In fact, when a picture is saved, it is saved complete with the settings used to produce it.

After the usual, initial 'wow that's neat' reaction, there is not a lot to do. The program feels like it belongs in the PD sector, it is simply too limited.

How about being able to edit a 3D or contour map of the scene. I would like to be able to set the viewer position and a target point. With this approach you could set up a path to create animations of flights or journeys. How about time of day and time of year, also ripe for animation possibilities akin to time-lapse photography?

The interface could do with looking a bit more professional, Work Bench 2 style, with on screen icons?

In the final analysis then, an interesting distraction but there are better programs on the market.

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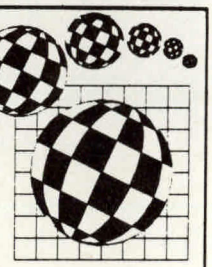

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Amiga Answers

Andy Eskelson searches out the answers to your tough technical questions

Dear AUI,

I'm a proud owner of an Amiga 500. My problem has to do with work. So as it is I'm an electrician and I would like to combine these two if possible. I had the same problem with my C64 but with no success. Now that I've got an A500 I'd like to carry on my quest.

My intention was if possible to steer lights (220 Volts Europe standard) in all kinds of forms, on, off, dim etc. just like in a disco.

I've seen this principle used once in a disco, a computer steering the lights, but now this disco does not exist any more, and nobody in my near neighbourhood that I can ask so that I'm totally left in the dark.

I've tried all kinds of clubs, libraries but nobody can help me.

Now I have heard a rumour that there is something on the market for the A500, just to do the job that I'm looking for, hard and software wise both very important to me.

If this is true, could you please help me, if not could you help in any other way possible.

P. M. Camu
Hanoidreef
Holland

Dear P. M. Camu,

Lighting control is a very specialist area, and I have never heard of anything in that area, sorry.

There might be more information in the specialist trade publications, or even from the lighting industry, both worth checking out.

I'm not going to be of much help here, as I can only talk in very general terms, as I do not know anything about the interfaces that lighting has. However there are two approaches that can be taken. The first is to scrap any existing control equipment and build custom hardware, or try to modify existing control gear to take some form of computer control.

In principal it is a very easy task, but that is easy for me to say, as I am very experienced in interfacing all sorts of equipment to CPU's!

You need some sort of I/O adapter for the micro, there are several about, have a look through Electronic Hobby Mags, and as

Dear AUI,

I have been using my Amiga 500 computer to produce screen shot slides, using Delux Paint III and a DigiPic Digitiser. I am now looking for a software/hardware combination to control my Kodak slide projectors and lighting system. I have heard that there are systems available in Germany, but I have not yet found any UK manufacturers making such equipment.

One option would be to buy an Amiga 2000 + bridge board and use an IBM system, but I feel this is the easy (but expensive) way out. The IBM option also forces me to use a computer system I have rejected in place of the Amiga which as we know has excellent low cost graphics software. I would be grateful for any information you may have on any systems in production or on the drawing board, as I feel that in the trendy world of Multi Media this would be a useful tool for the Amiga user.

Michael Speechley
Maida Vale, 1
London

Dear Michael,

I have not seen or heard of any controllers designed for your requirements. You do not say what interface standard your equipment uses, so I can't even point you in the direction of other control equipment that could be pressed into service with a bit of programming of your own. If your equipment is RS232 then the Amiga can control that easily. If it is simple switch contacts that are required then there are devices that will do that via RS232.

Electronic Mags are the best source of data for that kind of thing. Writing your own program is not too hard, especially with things such as CanDo and Amos on the market!

A ready made system would probably not be viable, unless someone has converted an IBM unit (what standard do they use?) as the market for such devices is very limited.

Dear AUI,

After using PCs for a long while, I am interested in working primarily in a graphics environment and I have been advised by friends to look at the Amiga. So I collected a few issues of AUI and went through them. I have decided to invest in an Amiga for home, but I would like to have an interface with the regular PC (for business applications and tele-communications from home) via a PC bridgeboard. The problem I was facing was in deciding what to buy. In a PC environment one has standards against which one can compare any new buy. In Amiga I do not know any. Can you please advise me what to buy? My needs from an Amiga would be as follows:

1. I should be able to create Amiga Art.
2. I should be able to create animation sequences and integrate my home video films (after titling them) with the animation sequences created on the computer.
3. I should be able to scan pictures, transfer them to the computer and modify them to print cards, brochures etc.
4. I should be able to have a PC environment and be able to run the normal business applications software like Multimate, Lotus, dBase, Foxbase and a few proprietary telecommunication packages.
5. I should be able to do wordprocessing, analysis and database processing on the Amiga side as well.

So what is the hardware and software that I need to buy?

K. Anand Prasad,
Jeddah, Saudi Arabia.

Dear K Anand Prasad,

I think that the best answer I could give is go out and buy everything you can lay your hands on!

Seriously, start slowly and GO and SEE some of the hardware. Hardware, you need an A2000 stuffed with lots of memory! Hard disk, as big as you can afford, 40Mbyts at least.

Bridgeboard, two types available, XT and AT they ARE PCs so will run most software XT is 4.77 MHz and slow, AT is 12 MHz. The BBs have NO serial ports, so get an IO card as well. If you can stand slow screen updates then that is all, however if you want a fast screen you can plug in a PC video board and use a separate monitor.

Genlock, several available, go and LOOK at them, the quality varies! You need Amiga in, Video in and combined video out.

Monitor, get the best you can afford. Multisync and a flicker fixer is nice but expensive.

Continued on page 110

Continued from page 109

Scanner, several out there but as for genlocks GO and LOOK at them.

Digitiser, if you have a camera have a look at Digiview by Newtek. It's a slow process involving three exposures with filters, but it still produces the best results.

Software, lots to choose from here. Start with Photon Paint II that will do most things and has animation as well. However, there are lots of others, Turbo Silver, Fantavision, etc. etc. The Amiga does very well with telecommunications programs, two in the PD are worth looking at, JRcomm and Ncomm.

For wordprocessing, look at The Works! Various editions choose whatever your needs dictate. For power wordprocessing, look at Protext. Options: if you are going to do a lot of ray tracing then a co-processor is NICE, a bit pricey. GET a switchable one so that you can revert back to the standard A2000 without pulling boards out!

Dear AUI,

I am writing to see if you can help my friend and I, who both own Amiga A500s and are interested in a second drive and ram expansion. I have been told it is possible to link our computers to use one as a slave drive. Is it also possible to use the slave computer as a ram expansion? If these tasks are possible how do I achieve the links (which would have to be temporary). I thank you for any help you can give me concerning these matters.

N. Gorton
Portsmouth, Hants.

Dear N. Gorton,

You can link two Amigas together. There is a PD networking program that will connect two Amigas together, so that they can share resources. It is not possible to use one as a ram expansion for the other.

Dear AUI,

I have an Amiga 500 (WB 1.3) with an A501 and a Cumana 3.5 external drive. I am currently writing software to control a radio receiver. The problems are as follows.

I can receive information from the receiver but cannot transmit to it. This seems to be because the receiver transmits data showing its current status to the Amiga every 25 milliseconds, ie, showing what frequency it is tuned to, is the squelch open/closed, received signal strength, etc., therefore I need to be able to toggle the CTS line on the Amiga's serial port to stop it transmitting, so that the Amiga can get a word in edge-ways so to speak. Therefore I need to know how to set the CTS line high or low. This information has so far eluded me, despite searching through the hardware reference manual. Any ideas?

William South
Wareham, Dorset

Dear William,

I spent some time searching through the hardware manual too! The control lines for the serial port are independent of the serial system, and can be programmed by the user, providing you know where to look, and it's NOT in the serial section! Have a look at Appendix F page 330 (revised issue) CIAB (Complex Interface Adapter B) is used to control the handshaking lines, CTS is on line PA4. How did I find this? Well, I cheated and looked at the circuit diagrams. It is clearly marked

Dear AUI,

Could you please give me some advice on printer interfacing. At work I have an ICL OPD (One Per Desk) set up, circa 1986, which I use as a simple word processor and spreadsheet. It is designed around the QL and while not very user friendly it does the job.

At home I have the Amiga 500 with 512K expansion 2nd disk drive and a Citizen 120D printer.

After reading your excellent review in AUI I noticed a distinct similarity between the OPD thermal printer and the Okimate 20 colour printer. On further examination I find that they are one and the same.

My query is, what would I need to operate the OPD printer with my Amiga? At present it is fitted with an RS423 serial interface.

Can I obtain a suitable serial cable or would I need to purchase a complete parallel module and cable?

A. Baggaley
Ellington , Northumberland

Dear A. Baggaley,

No problems here at all. RS423 is an improved RS232 and will work quite happily with the Amiga. You just need a serial cable, and to set up the printer port with the Preferences utility.

Dear AUI,

I have bought an Amiga 500 and I would like to know what books are available to help me learn the BASIC language. I have no previous experience of programming a computer.

Mr P Francis
Kenilworth, Warwickshire.

Dear Mr Francis,

What a question! There are dozens of books about, many are good, some are very good. I think that you will end up with a collection, but I would start with two. The first is a reference book on Amiga Basic. AmigaBASIC Inside and out by Abacus. This is a very good book but it will be over your head for a while. The only book that I can recommend for learning Basic is a basic basic by James S Coan ISBN 0-8104-5106-9. It has nothing in it about the Amiga but it is a good book on Basic. It is very old but it is still quite valid. Your local library should have it available.

Dear AUI,

I have been a C64 user for a long time now and I have been persuaded to go onto the Amiga by my friends in the computing world.

My problem is that I have many programs for the C64 that I cannot get for the Amiga, but I still wish to use them as I use my computer for printing only and not for games.

I have been told of a program that allows the 1541 disk drive to be connected to the Amiga and the programs run that way, but I am also told that the 1541 disk drive would need to be connected to the parallel port, and I already have my printer connected to that.

On top of that I cannot find anyone who has used this program. I do not know if this program would allow me to state which port I was going to use for printing, ie, the serial or parallel as with the Amiga. The printer I am using is the Star LC 10 and although I have an interface that I used when I was using it for my C64 I am told by the local computer shop that it cannot be run from the serial port and the connection is not the same anyway. As I see it I have four options: Make an adapter so that I can plug in two Parallel connectors. Make an adapter for the serial port and fit it to my C64 interface. Keep both computers. Go home and shoot myself.

A. Can the Amiga support both devices on one connector and will they corrupt the i/o to these devices, or if a switchable device was used would this corrupt the program as the C64 uses constant updating from the disk drive when printing.

B. I do not know the pin connections and the interface (super Graphix by Xetec) uses power from the C64 is this compatible with the 12 Volt supply pin 9 or 10 of the serial port or the 5 volt supply of pin 14 on the parallel port?

C. An awkward solution at best.

D. No gun and I am a devote coward!!!

I have gained lots of information and helpful hints from your magazine in the past and hope you can help this time.

J. Fithian-Franks
Stockton-on-Tees, Cleveland

Dear J. Fithian-Franks,

Switch boxes are useful, but they are not automatic. No, you cannot connect two devices together easily.

Forget (B), far too complicated, there is a better way. Would you really be so cruel as to throw out your C64??

(D) Try the head-in-bucket of beer, better than a gun any day! (

Z) Try Readysoft's 64 emulator. That is able to make use of AMIGA printers connected to the parallel port, or the serial port.

It can also do something that will solve the disk drive problem. It allows you to use the Amigas drives as well. So you could plug in the 1541 into the parallel port and transfer your programs to the Amigas drives. Once that was done you could reconnect the printer and start the programs.

A switch box is useful, and saves the connectors. Note that not all programs will run on the emulator. If they are all in Basic then there should not be any problems.

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LACK OF MUSICAL NOTATION SOFTWARE

Amiga is aiming to professional markets. Fine, as the best machine (graphics, sound, multitasking) in its category in the world it certainly earns it.

But, as everyone knows, even the best machine is useless, if you can't find the software you need.

There are good Amiga sequences: KCS (Dr T's Music Software), Bars & Pipes (Blue Ribbon Bakery), Master Tracks Pro (Passport Designs), Music-X (originally by MicroIllusions), Pro 24 (Steinberg) and more.

You can get the editor for your synth, if it's not made in Ogrland by Ogrians.

You can buy music programs for children.

BUT WHERE IS ALL THE MUSICAL NOTATION SOFTWARE?

At this moment, there are only two (!) *almost* professional notation packages, Deluxe Music (Electronic Arts) and The Copyist (Dr T's Music Software). They both are very promising, easy to use and good in their own ways, but also have their limitations and flaws.

Deluxe Music makes bad-looking scores on paper (you can't use PostScript laser printers), tells you you always have the same amount of free memory (no matter, how much added RAM you've got), doesn't allow you to use your own symbols or fonts even though the program is IFF-oriented, calls Guru very often when you quit the program (only then) and — what's worst — Electronic Arts in England have told me they are not going to update DMCS (why, EA?) etc.

The Copyist is not a bit interactive, doesn't directly play the score (you can hear your music via KCS), has some minor bugs (Dr T's MS are working on them), has *very* irritating copy protection (key disk), does not accept international character sets (!!!) (ever heard of vocal music by Bach or Schubert?) and so on.

Some kind of combination of Deluxe Music and The Copyist could be good enough for professional music writers, but who's gonna make it? Nobody?

Being tired for waiting for proper scoring software, I'd be glad to hear some comments from software houses and everyone, who's interested.

Do I really have to sell my Amiga and buy a more modest machine, like Mac, to get what I *need*?

Tapio Säyppö
music teacher, composer
Finland

Dear Tapio,

I can certainly sympathize with you as regards the lack of notation software. The problem, as I'm sure you are aware, is due to the fact that software houses are wary of the serious Amiga music market.

Your frustrations concerning notation software are similar to the frustrations felt by most of the Amiga owners who were searching for decent sequencers a few years ago. That situation has changed for the better, so I'm moderately hopeful that similar changes will occur in other music areas. The trouble is that no-one can predict what will arrive nor when!

At the moment Dr T's Amiga 'Copyist' program is about as good as you'll get for score handling. As more and more users express serious interest in Amiga MIDI/music software (and voice complaints about existing offerings) then software houses will listen. Better still... if they think that they can fill a gap in the market they will, given time, do something about it.

The Amiga is a brilliant machine and there's no doubt that we are only just beginning to see what it's capable of. Better things are to still to come but your problem is whether you can afford to wait. If you desperately need, and can afford, Mac quality software to do a particular job then I'm afraid the only answer is to go out and buy a Mac set up. You won't be disappointed with quality of Mac software, but you may be stunned by the overall cost of a Mac orientated MIDI/music system.

POA

Dear AUI

I don't often write letters to the editor, but in keeping with your international profile, I decided to communicate a few thoughts from a reader down under.

This whole action was precipitated by the sheer exasperation of trying to read an otherwise fine review in the January 1990 issue. I refer to your "full report" on Deluxe Video III. Common fellas get real, your writing about the greatest graphics available on a personal computer, but you make it dam near impossible to read through the use of colours no self respecting graphic designer or artist would choose to set out type. MAGENTA TYPE ON PURPLE BACKGROUND! Give me a break. I had to go to my wordprocessor to rest my eyes and to vent my utter dismay and frustration, I hope your art director tried to read it himself, what a waste of Peter Lees fine effort.

But having gone to this length and trouble, I would like to take the occasion to give credit where its due as well. I look forward to each month's issue (albeit 3 months late) of AUI and with Genlock at work and am therefore particularly interested in news and reviews of DTV related products. Please keep you reviews comprehensive (at least two pages), not like some mags which print a couple of columns of INFO, and call it a review!

Other areas of personal interest MIDI, DTP and WP products. Don't have to much time for games, would like to see AUI concentrate on more serious applications, though you must cater for broad tastes. Please don't go the way some game specific mags, the Amiga is too powerful to be relegated as a "super games" machine.

Finally I hope you appreciate the time that appreciative readers take to express their honest opinions, keep up the good work and high standards.

Serge Golikov
Ermington, California

Dear Serge

You are absolutely right. Magenta type on purple background is not just offensive to designers, which according to your letter heading is what you are, it insults the vision of any normal person. We have to apologies for this utter lack of taste. However, it wasn't entirely our fault. Before the printers get to run AUI off their huge web machines, we have to make up film from which they make plates. Film is made by special companies who create it to our instructions. In this case, the film company fouled it up. (We don't use them any more) We should have done our job better by checking it but lack of time and it must be admitted carelessness, allowed it to pass without being picked up. Once again apologies.

As for your other comments, thank you for your appreciation and the Boss assures me we will not fall into the trap of shortening our reviews just to crowd things in or overloading the serious pages of AUI with floods of game rubbish. Though we will still include enough to enable intelligent Amiga users to make a reasoned purchase. Because, of course, you've hit it right when you say that the Amiga is not just a "super games" machine.

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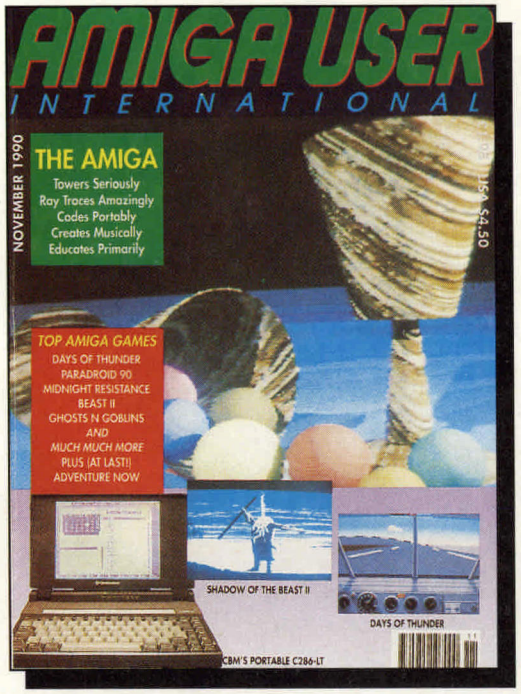

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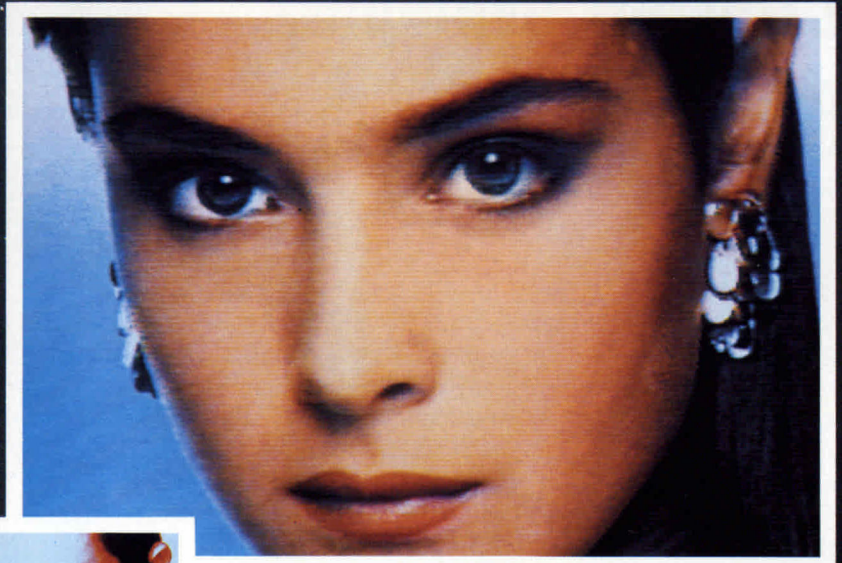

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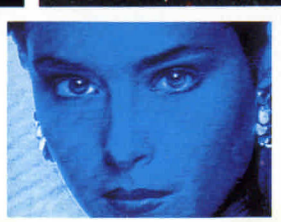

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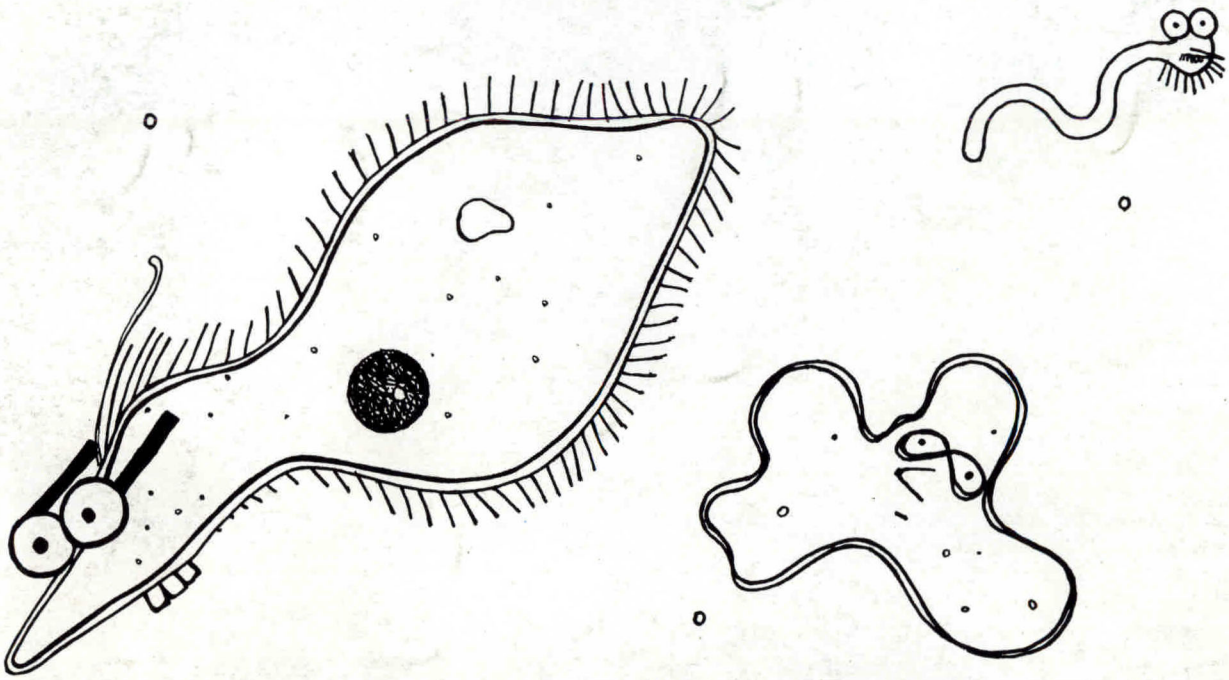

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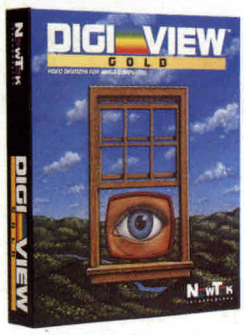

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