AMIGA USER

INTERNATIONAL

Incorporating Commodore Business Magazine

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APRIL 1988

AMIGA

– THE DAZZLING FUTURE

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BLACK SHADOW
KIKSTART II
MERCENARY
STAR WARS

Only the Amiga makes it possible!

THE AMIGA DIMENSION

THE MULTI-PURPOSE COMPUTER

A Commodore Amiga 500, MPS 1200P Printer, 1084 Hi-resolution Colour monitor, Database/Spreadsheet/Word processor and A PC emulator — a great business package for only 699.00 + V.A.T.! Time and time again we have seen Commodore come up with the goods only to be accused of falling at the last hurdle — Marketing. This Amiga package is a further support for the view that the Amiga 500 is a business, especially small business machine. However it is also the best GAMES machine ever built. We could see

an Amiga package containing the Amiga A500, 1084, Joystick and ten bundled games being very successful. Here at Amiga User International we try to cover all aspects of the Amiga. Business, Games, programming, graphics etc. We know we are right because our readers keep telling us. The Amiga is the best all round, multi-purpose computer there is. No-one can pretend that the Amiga is just a business machine. We think ALL of the Amiga's attributes should be promoted — even in the games world — Only the Amiga makes it possible.

On a very positive note Commodore will, we are informed, be showing several new Amiga products at the forthcoming Hanover Fair: a full version of 4.3 Berkeley Unix, an A2000 Turbo card running at 14 mhz with Maths Coprocessor, MMU and 2 MB of 32 bit ram and a hi-resolution 1008 x 800 pixel Black and White monitor, interesting new products for the Amiga range. We of course will be there and will give you a full report in a later issue.

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Page The Oracle — Amiga Style!

Microtext, the company that made Teletext possible on the Commodore 64, have produced a Teletext adaptor for use with the Amiga. It has a built in tuner and allows users to access any of the hundreds of pages available free from Ceefax and Oracle. Apart from all the usual teletext facilities this unit offers the ability to save pages to disk, either as a compact 1K file or in IFF format. These can then be reloaded into applications such as Deluxe Paint. The ability to print out pages of teletext is also provided. The built in speech capabilities of the Amiga are taken advantage of to enable pages of text to be read to you. Another feature which has been included by Microtext is the ability to program a sequence of actions, even an auto start command, so that the system can run itself, speaking pages, printing them or simply saving them to disk. The system will anticipate which pages are probably going to be called up next and will have them instantly available. There is also instant recall of the last sixteen pages received.

Price: £124.80
CONTACT: Microtext, 7 Birdlip Close, Horndean, Hants. Tel: 0705 595694

Animation Stand

Animation Stand can create PAL, overscan and 4096 colour images. It is playback compatible with other Animator products from any input picture in any resolution or graphics mode. A special "interpolative" technique is used to combat the problem of pixelation when zooming in to a picture without losing the intergrity of the pictures detail.

Price: £35
Contact: Amiga Centre Scotland 4 Hart Street Lane Edinburgh EH1 3RN
031 557 4242

PC Virus Vaccine

Sophos, a company specialising in data security, have developed a cure for the current spate of viruses infecting, not the Amiga, but..... the PC. They call the program "Vaccine" which they liken to a 'fingerprinting system'. It is used to detect when a system has been interfered with. Sophos claim that their Vaccine caters for future viruses as well as the ones presently 'doing the rounds'.

Wanted 22,000 Computer Professionals

According to reports from one of Britain's leading employment agencies there exists a real shortage of trained computer personnel. It is estimated that there are in the region of 22,000 vacancies nationwide. With the rapid growth of information technology in the office the demand for suitably educated staff has never been greater. In particular it has been reported that many vacancies existin the area of Unix and C. A recent survey by the printer manufacturers, Brother, suggested that 60% of office workers had received no training in today's technology at all and 40% still preferred to use a typewriter rather than a word processor or computer.

New Releases From Robtek

This month Robtek have released several new games for the Amiga. Among them are: CHAMP — A fast moving and realistic boxing game featuring what Robtek describe as potentially the most spectacular computerised fights ever seen, with incredibly authentic noises and sound. The player is given a choice of four fighters at various weights. Price: £19.95. CRAZY FOOTBALL — is an arcade game in which the player has to kick four footballs out of a tricky maze simultaneously. Robtek warn us that it is almost impossible to master! Price: £19.95. PINBALL — Remember this pre-runner of all arcade games? Robtek claim to have recreated the original American version. Price: £19.95. STARWAYS — is a game which is very similar to Trailblazer except that you are the Trailblazer instead of a ball. PRICE: £19.95. GALAXY FLIGHT — This one is a vertical scrolling 'shoot-em-up' with a great many levels. Price: £9.95. NAKAMOTO — An arcade platform game with 55 levels. The player is a Chinese man with a mission — to pick up as many pieces of junk as possible! It includes a construction set. Price: £9.95.

Mirrorsoft's New Cinemawares

Following their success with Defender of the Crown, SDI, Sinbad, SDI, Defender of the Crown and King of Chicago (now topping the charts in the U.K.), Cinemaware have two more interactive movies in the pipeline.

Rocket Ranger is set in 1940 at the start of the second world war. Meanwhile (?) in the 21st century, the whole world has been under Nazi rule since the war. Scientists from this future age have sent you a Rocket Ranger suit and ray gun, giving you a chance to put a stop to the Nazis. Cinemaware's usual high standard of graphics portray you as Rocket Ranger, rescuing beautiful ladies, zapping Nazis, and the final confrontation with the Nazis on the Moon.
Price £24.99

The Three Stooges once stars of the black and white movies in the 1930's and 40's, are the protagonists of another new Cinemaware game. A little old lady and her three daughters run an orphanage. Enter the baddie: Mr Fleecem is the local banker who threatens to close down the orphanage. Larry, Moe and Curly decide to save the orphanage by raising money themselves, with you taking control the wacky threesome in their fund raising attempts. Digitised graphics and sound from the original footage will be used to recreate the atmosphere of the films.
Price £24.99
Going on past Cinemaware releases, they should be something special, so keep an eye out around early Spring when they are planned for release.

Soft-Logik Has A New Publishing Partner

Soft-Logik Publishing Corporation have announced a new version of their popular desktop publishing program, Publishing Partner Professional, for the Amiga 500, 1000 and 2000 compters. Its features include options such as automatic text flowaround graphic images, automatic hyphenation, spell checking, kerning, grouping and sizing of multiple objects and importation of IFF, Aegis Draw, Encapsulated Postscript, TIFF, HAM and other popular picture formats. Publishing Partner Professional is claimed to take complete advantage of the colour capabilities of the Amiga. Colour pictures are displayed on screen in colour and can be printed in colour overlays or separations. Additional enhancements include support for style sheets using a user definable tag function, rotation of any text or graphic image in one degree increments, ability to slant and twist objects for special effects, six scalable fonts, increased font manipulation such as defining text size in inches, pics, points, centimetres and 1/3600 of an inch increments. The user can even mix point sizes in a single letter to create combinations such as a character which is 15.4 points wide and 10.6 points tall. Publishing Partner Professional supports most dot matrix printers including print drivers for popular 9, 18 and 24 pin printers. It also supports the Hewlett Packard LaserJet+, LaserJet II and all Postscript compatible printers such as the Apple LaserWriter and QMS PS 800 and can even interface with phototypesetting equipment such as the Linotron 100 and 300.
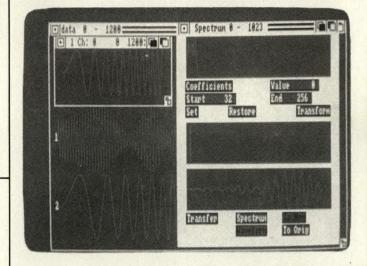Price: $199.95
CONTACT:
Soft-Logik Publishing Corp, 11131 So. Towne Sq. Ste. F, St. Louis, Missouri 63123 (314)894-8608.

Animation Effects

Everyday we see on our televisions complex visual effects created by computer. It is becoming possible to produce similar effects on the Commodore Amiga. Animation Effects from Hash Enterprises creators of Animator Apprentice is being released and allows flips, wipes, fades, title scrolls and spins can be created in an interactive environment. Any IFF picture in any resolution including lo-res, hi-res, HAM and PAL can be manipulated, used as graphics and played back in real-time over a gen-locked background. Scripting of multiple images allows several actions to be performed simultaneously on the screen.

Price: £35
Contact: Amiga Centre Scotland 4 Hart Street Lane Edinburgh EH1 3RN 031 557 4242

Hard Disk Gets Its Backup

MKsoft claim that their LV Backup utility for the Amiga is the fastest and most reliable way to backup valuable data stored on Hard disk, RAM disk, or network device. It can, they say, selectively copy any or all of the files and directories onto floppy disks. All of this data may be stored selectively by file, directory or device. LV Backup uses an advanced file structure designed specifically for archive purposes. This, along with optimized floppy I/O and zero-slack storage methods, puts an effective 30%+ more data on a floppy without the slowdown and data integrity problems found with some data compression techniques. Thus, a disk full of information could be written in as little as 50 seconds. This translates to an average backup time for a full 20Meg hard disk of under 45 minutes. In addition, LV Backup automatically

Digital Signal Processing At A Snip!

Digital Dynamics' new digital signal processing program is called Snip. It was designed to provide a flexible and interactive environment for analyzing signals from a wide range of instrumentation. The program uses 32 bit floating point numbers and a 68881 version is provided on the distribution disk. The entire contents of a data file (up to 20 channels) is plotted on the screen and subsets of the data may then be selected for more detailed displays. The user interface is 'object oriented'. Mouse or keyboard commands are used to define data 'objects'. These are displayed, each in its own window and can be selected from there for data processing. A custom feature is included for users who wish to add their own processing with access to Snip data. The custom interface is designed to be compatible with any of the programming languages available on the Amiga.
CONTACT: Snip, 739 Navy Street, Santa Monica, California 90405

20 Inch Monitor

Thomson Monitors showed off their new 20 inch, high resolution page white monitor at the recent Which Computer Show. The 980W is aimed at users of Desktop publishing. Two pages of A4 text can be viewed side by side on its 20 inch tinted screen, which includes an integral tilt and swivel base. It has been designed for use with Thomson's new Graphics Controller, the GB300. The 980 has a video band width of 110 Mhz and scan frequencies of 48Khz to 65Khz (autoscan) horizontally and 50Hz to 70Hz vertically.
Price: £799 + VAT
CONTACT:
Thomson Monitors, Ringway House, Bell Road, Daneshill, Basingstoke, Hants. RG24 0QG Tel: 0256 843323.

formats, numbers and verifies the data on the floppies. Operation from the CLI or workbench is acheived by typing BACKUP or double-clicking its icon. All features are accessible from standard intuition menus, key-board short-cuts or gadgets. File/Directory selection is made by clicking on the file you want in a split-window, directory-like requester. At the top of this requester is a status line that tells you exactly how many disks will be needed to backup the files and directories currently selected. LV Backup is written in Assembler and C.
CONTACT:
MKSoft development, 2812 Red Fox Trail, Troy, MI 48098.

Supra Modem

Frontier Software have announced the availability of a new 2400 baud modem.

The SupraModem 2400 is about one third the size of the Hayes SmartModem 2400 and supports asynchronous operation at 300, 1200 and 2400 bps. User configuration of the modem is done by issuing simple commands — eliminating the need for troublesome DIP switches. Configurations can then be stored in the modem's non-volatile memory so that they are automatically loaded every time the modem is turned on or reset.

The Supramodem 2400 offers the following features:
*   Asynchronous operaton at 300, 1200 and 2400 bits per second

*   100% Hayes compatibility
*   Bell 103/212A, CCITT V22 and CCITT V22 bis protocols
*   Automatic answer
*   Automatic pulse or tone dial
*   Programmable memory to store the default user configuration and one much-used telephone number
*   Free starter pack to Compuserve and one month's free use of the Online Airline Guide All that's needed to use a SupraModem 2400 is a computer or terminal with an RS-232C interface and a piece of suitable communication's software.
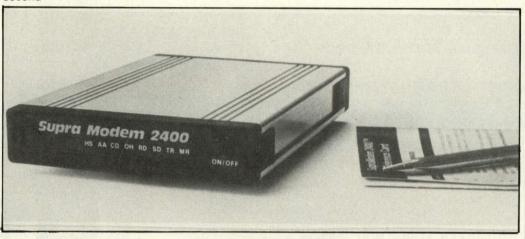
Price: £199 inc VAT
Contact: Frontier Systems
Address: P.O. Box 113 Harrogate North Yorkshire England HG2 0BE

The Ultimate Human Interface

Aminetics describe their "People Meter" as the ultimate Human interface for the Amiga. It will run on the 500, 1000 and 2000 models with 512K of memory and Kickstart 1.2. It is a hardware and software package which measures the user's stress level. Your fingers are connected by means of leads and metallic velcro strips, to the People Meter unit which, in turn, is linked to the Amiga's joystick port. Several programs are included in the package which use the PeopleMeter. One is an arcade-style game, another uses an animated head to show how much stress you are experiencing. Several programs will allow you to monitor your stress levels whilst running other software from workbench. Results are displayed either in bar graph form or on a VU-type analog meter. Some of the programs in the package can be expanded to suit the user's specific needs. For example, Graphic images such as those created with Deluxe Paint or Digi-View can be used to replace the animated head. Source code is also included for the more advanced user.
Price: $59.95
CONTACT: Aminetics, P.O. Box 982-205, Whittier, CA 90608, Tel: (213) 698-6170

Mirrorsoft's File Rescue Plus

The days when a damaged disk or deleted file meant the loss of valuable data are finally over, Mirrorsoft claims, with the launch of its File Rescue Plus. It is an easy-to-use utility package which can both rescue data from damaged floppy disks and recover deleted files.

Consumer tests have shown that text and data files can be rescued successfully from floppy disks which have been stapled, folded, burned with cigarettes, or even soaked with coffee.

This ability to work with severely damaged and non-DOS format disks — for example from dedicated word processing systems — distinguishes File Rescue Plus from other utilities.

Amiga T.V.

A Swedish company called Edit Line AB has produced Timed Transmission Automation. It is primarily aimed at local broadcast T.V. stations and cable services and provides control over up to 64 sources (cameras, incoming feeds, satellite receivers, video tape machines etc.) Using this system, videotape machines can be frame-accurately controlled. Typically, according to Edit Line AB, a new event can be found in thirty seconds. Graphics and videotape can be intermixed. Because of the Amiga's multitasking abilities a graphics program can be run simultaneously with the TTA program. Edit Line's TTA 500

display automation system, based on the A500, is an inexpensive system for the small cable T.V. service to show Amiga graphics and commercial videotapes mixed. Typical users would be hotels, shopping centres, video restaurants etc. The more expensive TTA200 T.V. Automation system, based on the A2000, incorporates a rackframe for machine control electronics. One card is needed for each machine being controlled by the Amiga. This card holds both the control logic and the time code reader. The system can read VTC (Vertical Time Code) and LTC (Longitudinal Time Code). Edit Line have also released an Edit List Compiler which they describe as the missing link beween off-

line and on-line editing. Normally a video editing suite incorporates three very high quality videotape machines plus a lot of other very expensive equipment and can cost up to £600 per hour to hire. Making a master tape in such a system is called on-line editing. Because of the enormous expense involved, as much of the preparation as possible is done before the editing suite stage. This is the off-line editing. Until now, even this off-line editing has been very costly. Edit Line's Edit List Compiler enables a final edit list to be made working with a VHS copy of the original camera tapes. The edit list is built by the ELC 50 from the keyboard entry and edit points may be stored as they occur in the off-line sys-

tem with the ELC 500. The ELC2000 can even retrieve edit points from a VHS master with third generation of VITC and LTC timecodes. The completed edit list can be automatically downloaded to CMX, Sony or Ampex equipment upon arrival in the on-line edit suite.
CONTACT: Samuelson Video equipment sales Ltd. 303-315 Cricklewood Broadway, London NW2 6PQ (01-450 1313).

Merc
The Compendium
Novagen


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LOCATION     ALTITUDE     SPEED

-350
-340
ELEVATION          BENSON G9-CA          30 320 3
                                         COMPASS
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If you have owned a 64, +4, ST or Spectrum in the past, you probably know all about Mercenary. Every version was received with excellent reviews praising its speed and originality. Now, three years after the 64 release, the Amiga gets its own version. What potential is there for a three year old 8-bit game converted for the Amiga? If you are an ex-owner of one of the above mentioned computers, more than you might think.

In Mercenary there you were, taking a leisurely cruise through space, when your guidance system broke down. You are heading straight for the planet Targ at thousands of miles per hour with no way of stopping. The resultant crash landing leaves you stranded in the middle of a deserted city with no immediate means of escape. Luckily, you are not alone. Benson, your in-helmet PC

survived the landing and proves to be a valuable source of information and assistance.

Two races are at war on the planet, the Mechanoids and the Palyars. Surprisingly, this works to your advantage; both are willing to have you on their side and will pay for specific tasks. This may mean destroying all the enemy buildings, or capturing the enemies' leaders. The nearby aircraft lets you explore the city from the sky (a lot quicker than walking). Flying around the city you come across a number of simple structures representing houses, trees, a stadium and a substantial amount of monuments and statues. Most of these structures are simple but the animation of some give them a great deal more realism.

Whilst Mercenary seems at first to be a flight simulator, the majority of the game and explora-

enary

tion takes place in the underground complexes. These are accessed through lifts scattered around the city. The bare rooms and corridors contain aircraft and all sorts of helpful supplies to be used by you, or transported to appropriate locations for a reward. Keys have to be found to unlock doors and teleports provide an interestingly confusing element for the player.

"Keys have to be found to unlock doors and teleports provide an interestingly confusing element for the player"

The way to escape is not simply to find a craft powerful enough and fly off but work out what each object can do and explore every road, and room. Unlike previous versions, the game comes with the Targ survival kit. This contains maps and information on the game, some of which, such as the maps of the complexes, should only be consulted when you are really stuck. Not only are there the complexes and city to explore but also an orbiting complex in the sky to investigate.

If that is all not enough for you, there is an alternative city from which to escape. This has all the same features as the first but is laid out differently, resulting in a harder adventure. Switching between the two cities, attempting to escape from both could be very confusing, so I suggest you take them one at a time.
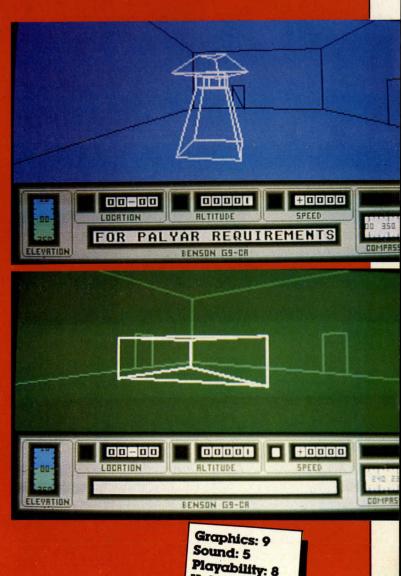
The layout and puzzles in the game are identical to those of the 64 version but the vector graphics have been speeded up immensely. Because of this they give a far more realistic feeling of movement and flight, uncannily close to the sensation given by banking and rolling in real flying. The few sound effects from the original have been reproduced almost identically and are not too impressive.

"It is far superior to the ridiculously feverish stories we got told by the software houses who try to excite with a bit of S.F. instead of a well created game"

The Amiga Mercenary is oddly convincing in giving the feeling of a genuinely outer space dimension, as if the monitor of the computer was really a window in the kind of universe which the plot of Mercenary describes. It is far superior to the ridiculously feverish stories we got told by the software houses who try to excite with a bit of S.F. instead of a well created game. The Amiga Mercenary is in another class altogether. It is certainly a game that needs a lot of time and patience if you are to get the most out of it. If you can't sit down with it for long periods, giving it a lot of thought, it is not going to please you. Afterburner it isn't. On the other hand, if all this exploration sounds like fun, you will find Mercenary easily the best, if not the only game of its kind. Highly recommended for well intelligent Amiga gameplayers.

T.H.
Price: £24.95

Graphics: 9
Sound: 5
Playability: 8
Value 9

PORTS OF CALL

Aegis

Have you ever longed for a life on the ocean wave, running an international shipping company? I can't say I have. Either way, with Ports of Call, you can do just that.

One to four players can take part, on one of four skill levels. Each player enters his name, company name and home port before the game starts. The first thing to do before setting out to sea is buy a ship. There'll be a number of ships on offer with varying sizes, states and prices. A picture of each gives an immediate impression and charts showing price, fuel consumption etc. can be consulted before choosing.

Next you have to decide from a couple of menus what cargo to buy and where to take it. From here you can see how much you'll get for each cargo and the distances to the ports. The next choice is whether to hire some tugs to get you out of port or steer it yourself. Using tugs is safer but steering is much more fun. A throttle and rudder control are used and give a realistic feel. Leaving the port, you select your speed for the journey, taking into account time limits and fuel amounts. The screen switches to the world map screen and all the ships go about their business. A cruise half way round the world takes about five seconds. Arriving at your destination, you chose again between tugs or DIY to get you docked.

That's how most of the game continues, buying cargo and sailing to new ports. At regular points, the mortgage on your ship has to be paid. For this, you need to go to your office, where you can view your bank account and general status. Not visiting your office for a long time could leave it vulnerable to thefts.

Most journeys will be trouble-free but now and again you'll run into a storm. If you're pushed for time you could take a risk and sail through it.

Icebergs are another danger which have to be negotiated in a similar way to docking. There are hefty tolls for using the Suez Canal and running out of fuel in the middle of nowhere can be costly. More risks are there for the taking in the form of deals with illegal goods.

If you choose to employ tugs for docking and leaving ports, Ports of Call takes the form of an initially simple trading game. To start with, it is just a matter of choosing which cargo will fetch the highest price but after a while you learn the best cargos and ports.

"More risks are there for the taking in the form of deals with illegal goods"

The graphics are well drawn throughout the game, although there isn't a great deal of variety in the scenes. One nice point is that each port has its own view from the port hole of the ship. A realistic engine sound adds a touch of conviction but there's little else. Ports of Call is a very neat game, which is easy to get into, without excessive instructions but lacks variety. Docking and sailing to other ports is fun but after a few sessions, it all gets to be the same. If international cargo shipping is one of your hobbies (though you must be fairly unusual!) you'll think it great. Most others who don't come from a shipowning family will probably find it an enjoyable diversion, too.

Price: £24.95   *T.H.*
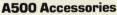

Graphics: 8
Sound: 6
Playability: 7
Value: 6

LONDON'S LARGEST DISPLAY OF PRINTERS MONITORS COMPUTERS AND PERIPHERALS

HI-VOLTAGE

The London ✓AMIGA Centre

SONIX

The Amiga is well renowned for its graphics. It does, however, have another very powerful feature — Sound. Alastair Statham takes a look at a package that puts this feature to good use.
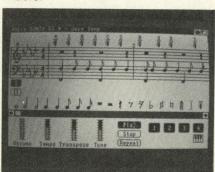
Impressive demonstrations like the bouncing ball and the Juggler have helped to create a reputation for the Amiga as a superb graphics machine. This well deserved acclaim has to a large extent overshadowed another strength of this incredibly versatile piece of computing equipment — its stereo sound and MIDI capability. Sonix is a music program which aims to demonstrate just how powerful a music machine the Amiga can be.

Sonix provides three major functions. The first is the ability to write a piece of music by drawing the notes and musical symbols directly onto a score using the mouse. Secondly, the user can create new instrument sounds in a similar manner to driving a modern synthesizer. Finally, user defined instruments can be played either at the typewriter keyboard or on a proper musical keyboard. Midi is perhaps one of the most useful features provided by Sonix for the serious music-maker/composer.

The 248 page manual provided with Sonix is a very good indication of just how professional a product this is. As an introduction to Sonix the book begins by describing basic music theory, so that even a complete novice can understand the terms used and functions provided. Other sections describe functions such as how to write music using the program, and playing back your composition. Even the description of the relatively complex controls of the synthesizer function is clear and easy to follow. Midi control and working with sampled sounds is also well documented.

Most of the control over Sonix is

achieved by using the mouse and menus. Instrument settings and controls are either by mouse driven sliding bars or clickable gadgets although most controls also have a keyboard equivalent using the left and right Amiga keys. It really is like driving a genuine synth or mixing desk. New scores and instrument definitions are loaded by the now familiar, and expected, file menu window with a scroll-bar and select gadgets. To start you off, there is a good selection of example instruments but it is very easy to build up a sizable library of different sounds. As all scores and sounds are in IFF format they can be freely interchanged with those used by other music packages such as Deluxe Music.
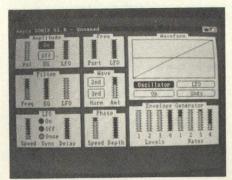

Each of the three major functions have their own main screen. Each of these main screens is directly accessible from the others by selecting a simple menu option. This is very handy as I found that I often wanted to flip from the score editing screen to the instrument definition screen and back again.

The keyboard screen allows you to define which key on the Amiga keyboard will play a given note from the scale. It is possible to set any key

to play any note you wish. The instrument to be played can be selected and loaded from a menu on this screen. All the MIDI parameters are also controlled from here.

"A part of the screen display shows a graphic representation of the shape of the waveform in use by Sonix's oscillators. Simply redrawing the shape wth the mouse will change the sound produced"

The instruments screen controls the modification and definition of instruments. This screen looks like the front panel of a synthesizer with several slide controls and buttons. Synthesizers use inbuilt oscillators to create their custom sounds. A part of the screen display shows a graphic representation of the shape of the waveform in use by Sonix's oscillators. Simply redrawing the shape with the mouse will change the sound produced. The basic waveform can be square, sine, triangle or ramp, and is selected from a pull-down menu. Customised instrument definitions are also saved and loaded using other menus on this screen.

Most of the common synthesizer controls are supported. These include amplitude and filter controls to adjust the volume and frequency range. A portamento (sliding) effect is provided together with a phase control which can be used to create a richer timbre. Wave control adds second and third harmonics to the

sound. The LFO, or low frequency oscillator, has controls for speed, delay and sync. Two sets of four sliders control the levels and rates used by the envelope generator. If all this control is too much for you you can always cheat and use a sampled sound. I just love turning the volume up and blowing the windows out with the sampled pipe organ.

The score screen is used to write music on the grand staff and then play it back. A menu option sets the time signature while notes are selected from a palette and placed on the staff. As you compose you can select new instruments to play the current track. By automatically div-

iding your composition into bars the program lets you concentrate on the music without worrying too much about all the boring rules. Editing control includes cut, paste, copy, clear and repeat. Octave and help-step up and down are also available. Sonix supports eight tracks in two groups of four. The first four can be directed to the stereo audio output and produce a convincing stereo effect by sending two tracks to each of the stereo channels. All eight tracks are accessible through the MIDI interface. Thirty-two MIDI patches may be used over sixteen channels. The Amiga can control up to sixteen Midi instruments and its own internal sounds may be played by a MIDI keyboard. Switching around patches within a score can add variation to the sound.

Once you have perfected your new musical masterpiece you can print it, with optional page breaks, to any printer included in the Amiga preferences menu. A title bar and page number heads each page containing three grand staffs. The finished article is printed very well and should present no problems to

read while playing an instrument. I wish that all of my sheet music was printed as clearly as this.

Sonix is not new. It was originally released by Commodore as Multi-craft and has now been improved by Aegis. But it was for me a wonderful surprise. Initially I did not really believe that it could make the Amiga create as good a sound as my synthesizer, but I soon discovered that I was totally wrong. With the addition of an inexpensive MIDI interface I can now have a pro-grammable music system capable of so much more than just dedicated musical instruments. All I need now is one of those superstar recording contracts. Any offers??

A.S.

Price: £57.50

Contact: Precision Software Ltd, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ. Tel: 01-330 7166.
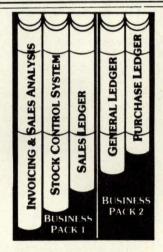
K Spread

O ffice productivity is one of the buzz phrases flying about the computing world these days. It refers to a set of programs that, to a large extent, automate some of the main operations that are performed in an office. Broadly speaking they are; typing, filing and accounting. With the advent of the personal computer it has now become possible to bring to the small office a suite of programs that would previously only be on a large mini-computer, with at a corresponding much higher cost. The three operations all have their equivalent computer programs; Wordprocessors, Databases and Spreadsheets. K Spread is one of the latter.

The concept of a spreadsheet is very simple. It is just a large sheet of paper that has a lot of small boxes drawn on it. Each box can have a comment or a value in it. It is not unlike a standard accounting ledger that has both text and numbers in it. Because the spreadsheet is a computer program, several new features are possible. The main thing is that the sheet can store operations in it, i.e. it can be told that one box is to display the result of adding up a whole column of boxes. Another major function is that the sheet is dynamic. As you modify the data in one box, the sheet is recalculated and updated to take into account the new or modified data that you have just entered.

"You could keep one window open on the row headings while you used another window to move about the sheet — very useful."

K Spread is a simple spreadsheet, not having too many advanced features built into it but this is no disadvantage as it makes the whole thing very easy to set up and use. K Spread can be invoked from the CLI or the Workbench and is fully compatible with Intuition. There are two versions of the program on the

disk, one with graphics and one without for those of you a little tight on memory.
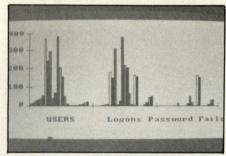
Setting up a spreadsheet is normally the most difficult aspect of using one. K Spread, however, makes it very easy. The user is presented with two windows on entry to the program. One is an edit window and the other is the spreadsheet window itself. You can move about the spreadsheet by a variety of methods — the cursor keys are the more useful when entering data and the mouse and slider bars on the window are useful for moving about a large spreadsheet. Several windows can be opened at once. This does NOT allow the user to work on two different spreadsheets but allows selection of two areas of a large sheet, i.e. you could keep one window open on the row headings while you used another window to move about the sheet — very useful.

The edit window is then used to enter the various functions into each box (cell). There are several types of information that can be stored in cells; Text, Labels, Values, and Formulae. These are selected in a cyclic manner by tapping the tab key. When you want to enter a value into a cell, you simply tap the tab key until the edit window title bar shows "value" and then enter the number and pres return. Selecting cells is also very easy. When in use there are two cursors on the sheet. One is the outline cursor which shows the cell that the edit window will access, the other is the solid cursor. This is the current cursor and is used for several operations. To move the cursors about, the mouse can be used. Simply clicking the mouse will move the solid cursor to the cell that the mouse is pointing at. To move the outline cursor you perform the same operation but you hold down one of the shift keys as well.

Each column is pre set to a width of about 10 characters. If this is not enough you can use the mouse to drag the size of the column to suit your applications. A nice feature of this system is that you do not have to resize every time, you can enter all your text and then resize to suit the longest string. You may enter just about any type of formula into any cell and the full range of trig. and log. functions are supported, so you could use the spreadsheet for scientific purposes. You may also write macros for the spreadsheet. This allows you to define a function and give it a name and from then on you use the macro as if if were a command in its own

right. This is very much like the BASIC DEF FN system of defining a function call but it also has the local variable facility of subprograms mixed in for good measure, making a very powerful facility. Loading and saving spreadsheets is very easy, being activated from drop down menus in the normal way.

One way of presenting any sort of numeric information is in the form of a graph. K Spread provides a limited graphic display function that is very easy to use but only offers Line and Bar type charts (both cluster and stacked). This is a nice feature but there are a few problems. You must specify the range of cells to display and this must be continuous, so you cannot display column B and column D and miss out column C. It is a little annoying but it can be overcome by copying data from one column to another. (A good reason to leave a couple of blank columns in your sheet). Text can also be included so that you can label the axis of your graphs. It is possible to save your data as an IFF file so that it can be accessed by one of the popular graphic programs.

I did experience a few problems with the program. The most irritating was finding my way round the barely adequate handbook. Spiral bindings, yes, but there is no excuse for page widths to vary by 5mm. In using the program, the only problems that I could not resolve were: indexing results in one column against another and getting the sideways and graph dump options to work with my printer (a Canon PW1080A). The standard sheet print worked fine. There may be other limitations but they would probably only be apparent to advanced users and are unlikly to affect the small business/home user.

K Spread is very easy to use and should suit those users who have a need for a spreadsheet. A couple of hours playing with it is more than enough time to set up an application and from then on the setup time should be very short. Apart from the odd problem mentioned I think that many users will find K Spread a useful addition to their program library.

A.E.

Price: £79.95
Contact: The Amiga Centre Scotland
4 Hart Street Lane, Edinburgh EH1
3RN Tel: 031 557 4242.

FANTAVISION

Animation is one of the Amiga's most strongly developing areas. Peter Lee examines Broderbund's FANTAVISION, a new entrant to the field.

I suppose you can blame the Saturday morning picture shows I used to go to as a kid. My love of animation has its roots dug firmly into the front row of my home-town's cinema, where the likes of Tom and Jerry scuttled across the screen.

And though I rationalised the purchase of an A1000 as a legitimate business and entertainment tool, what had really grabbed me was the early demo everyone's seen called Robo City, in which a robot and cat pass on a darkened street.

It was the longing to create computer animation which made my first-ever Amiga purchase Aegis Animator (simple but effective); then came Deluxe Video (difficult and restrictive), then Videosape 3D (much too complex for me).

All very useful. But then came Fantavision, a superb and easy to use animation package with no limits except your imagination.

The program comes on a single disk and will work with any of the Amiga family; it will also take advantage of extra memory if you have it. The first thing you notice about the program once it has loaded is that icon-based menus along all four sides of the display take up around 20% of the screen area in the lowest resolution. However, these menus can easily be removed by pressing the function key associated with their display but as they make selection quicker than even a pull-down menu, I preferred to keep them active.

"The thing every newcomer to the program will want to do is play the demo movies."

The thing every newcomer to the program will want to do is play the demo movies; I should mention that a couple were only really up to kindergarten level,

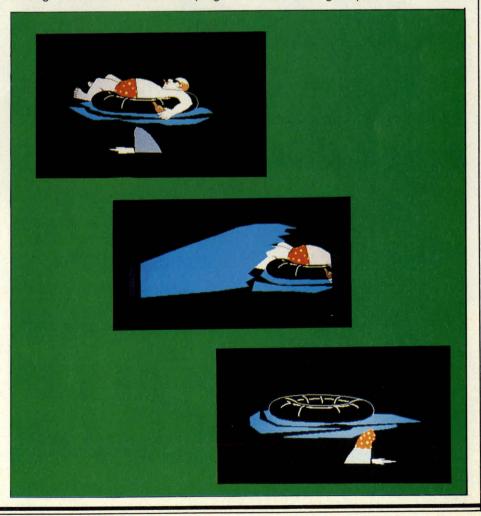though I expect they were included to give nervous users confidence.

Another two examples were simply stunning. The smoothness of animation of a dinosaur gliding through primeval swamps coupled with Fantavision's ace card - sound - made a similar impression on me to my first awe struck sight of Robo City.

Sound is where the program scores. It can load in any IFF sound data file (including instrument data from music prog-

rams) and play it on cue. The sound - either from one of the public domain disks, sampled by yourself or from the library included with Fantavision, can be tweaked to give better tone or echo and edited to suit your needs.

Using these sound FX adds a new destination to the program and although my RGB interface didn't allow sound as well as image transfer to video, this problem is easily overcome by dubbing afterwards.

Movie-making depends on careful

planning. It may be fine to doodle and experiment initially but for any kind of useful work you need to make a storyboard of your intentions. Once this is committed to paper, Fantavision soon makes it a reality.

Shapes are drawn using the mouse pointer, either freehand or by selecting a shape icon from the main menu. The program uses a series of connected lines to make any object you design - a kind of dot-to-dot philosophy which for example means a circle is really composed of an outline of short, straight lines. And by using a technique familiar to computer animators, called tweening (jargonese for in-betweening - the art of doing the tedious work of converting one shape into another), Fantavision will metamorphise one object into another in the twinkling of an eye and so smoothly you can only marvel at its power. To use an outdated example - an egg can be changed into a chicken in just two frames, the program computing around 128 tweens to complete the transformation and display it in its marvelous free-flowing way.

Various tools are provided to manipulate your objects: you can alter their size, slant them, squash and flip them and emulate a 3D effect by seemingly moving them farther away or nearer. Unfortunately for eager animators like myself, these effects cannot be used on bitmap images (portions of a picture saved in a similar way to the brushes in DeluxePaint) which really can only be shunted across the screen in the way Aegis Images works. Nevertheless, perhaps by drawing frame-by-frame movement in Deluxe Paint or even, for the more adventurous, digitising from video and clipping the moving parts - a series of bitmap 'brushes' can be played immediately after each other to give the impression of movement. Careful positioning is essential here.

"There is a wonderful gadget which allows easy scrolling through individual frames."
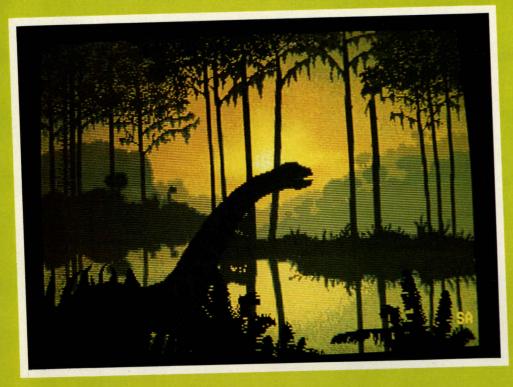
Once each frame is drawn, another one has to be added and there is a wonderful gadget which allows easy scrolling through individual frames, which can be edited, copied or deleted at any time. Whenever an object is selected (by clicking on it with the mouse) a two-part number is displayed showing its unique number and the number of points the program has used to create it. At any time

Fantastic
FANTA

you can call up info on the current session, which gives details of the number of frames in the movie, the number of tweens per frame (which is editable to suit your needs) and playback speed. You can also control the sequence of frame dispaly to the extent that a jump to a specified frame number from the current one can be input. Also under your management are the number of objects per frame, set initially at 16 - usually enough and the number of point per object, 64 to begin with; memory limitations are the chief constraints on these settings. But even when an object is defined you can cut or increase the number of points, depending on how you want the object to change in appearance. Objects can also be brought into the foreground, or sent to the background.
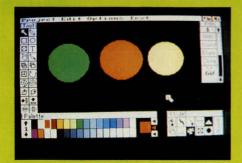
Copying and re-insertign objects is simplified thanks to the use of a clipboard for temporary storage and once finished with an object can be cleared from the frame. Text is entered in frame, using any font you have available and may be moved about like any other object. Al-
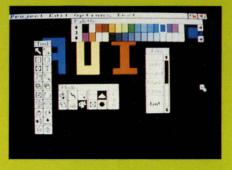
tions of 32 colours - dots and the like. The palette itself can be edited fully, with ranges and shades of colour calculated automatically. Brightness can be altered manually to tone down or heighten the contrast in images. Unfortunately, the requester is so big in the default resolution mode that when the other menus are on the screen you cannot see any of the picture you're altering!

Fantavision supports all the Amiga display modes, which is marvelous news for those users with access to the multimode drawing programs available. Even HAM is supported, though the jittery nature of the amiga monitor makes the menus rather enigmatic! However, keyboard commands duplicate on-screen menus and once learned, speed up a session. The manual accompanying this review copy was a photocopy of the draft book and was well illustrated and included a helpful tutorial and an excellent reference section.

VISION

though the text panel itself behaves like a normal object - to be rotated, scaled or flipped, the test remains exactly the same, which precludes another one of my pet likes, rotating signs showing both the back and front of text. There are a number of animation modes available; the normal one where objects move freely, one which stamps objects on the screen into the background, one which gives flashing effects and trace mode in which objects leave a trail of themselves as they move (very effective in digitised animation).

All this wonderful movement can, of course, be played out against a background of your own choosing; perhaps a piece of artwork or a digitised picture. Portions of the background can be saved as bitmap brushes and moved about the place.

Overlays can be specified which act as reference points for your animation. - they are there temporarily to help you out but are not shown when the frame you used them in is replayed. The colour palette is superficially impressive but consists mainly of patterned combina-

"This animation program seems tailor-made for the Amiga. It uses all the computer's graphic potential."

This animation program seems tailor-made for the Amiga. It uses all the computer's graphic potential to help create wonderful animation, accompanied by sound effects. Unfortunately, the version under test did not support the full screen of the UK's PAL system, so I cannot say it is the answer to a European video animator's prayer. Apart from this it is an excellent tool and one I can recommend to animation enthusiasts wanting to push their creativity a little further than exisitng software allows.

P.L.

Price: £34.95.
Contact: Microdealer (U.K.) Tel 0908 74000.

THE FRENCH AMIGA SCENE

Chris Holmes takes a look at the changing situation in a country where CBM has not always been le dernier cri.

After last month's report on the Amiga scene in Germany, this month we take a look at the third largest computer market in Europe and its outlook toward the Amiga. The French computing community have always seemed to differ from the other major countries in Europe when it comes to their taste in home computers. Ever since the home computer revolution started some twelve years ago, French computer enthusiasts have seemed to ignore the most popular computers in other major European markets. While the Commodore 64 was establishing itself as the number one home computer in Europe in the late 70's and early 80's, it was having a very limited success in the French market. In fact the computer which the French community were to adopt as their national micro is relatively unknown outside of France. The name of the Micro is the Thompson and it can be described as a cross between a Sharp MZ 7700 and a Vic 20 (an unusual combination). The ill-fated Oric was also more to Gallic style than for any other country.

"Among the range of Amiga games promised from Infogrammes are Captain Blood, Altair, Space Ace, Tournament of Death and Crash Garret."

The history of home computers does have an important bearing on the success of the Amiga in France. The computer contingent of the population remember Commodore's lack of investment and lack of interest in their country as a snub to a proud nation. Compared to Commodore Germany, Commodore France doesn't really exist. It is just a small office that handles a limited amount of administrative work. That, however, is an improvement on the past. For CBM now possesses its own French company where until recently it relied on an ineffective independent distribution. On recently speaking to Infogrammes, probably the most successful French software company, Pauline Garsden commented that Commodore's apathy was responsible for the slow sales of the Amiga so far in France. However, she went on to say that French Programmers are very keen on the Amiga and because of the success of the

machine in other countries they would be supporting the machine fully and would be taking advantage of the Amiga's extra hardware features when converting popular games from the ST. Captain Blood promises to be the most prestigious release being, it is claimed, one of the first Amiga games to create a whole new world of abstract and surreal gameplay. It is very similar in implementation to the early LucasFilm games that were so successful on the Commodore 64.

Other French software companies like Ubisoft and Ere Infomatique are also watching the growth of the Amiga market with eager anticipation. Although the Amiga market in France is not as large as that of the ST, Satory, a new programming team have decided to develop all their new titles for both machines with video and audio emphasis clearly being put on the Amiga version. Their first release is a soccer simulation called Hotball that is due to be released any time now. The game is depicted in an overhead manner, similar in style to World Cup in the Arcades, with excellent graphics. Next on the agenda from the company will be The Reporter and Sports in Space. Both promise the same high standard of graphics and the latter looks like being an unusual spoof on the Epyx series. Sports in Space features inter-galactic tennis and space-skating (sounds totally wacky). Satory games will all be released by Active Games in the U.K. A recent interview with Robert Stallibrass of Active suggested that many other development companies existed in France and were programming for the Amiga because it offered them a greater level of personal satisfaction.

With a predicted user upcoming base of about 10,000 Amigas in France and many software companies writing for the machine to accomodate the expanding European market, the Amiga looks set to have a much more prosperous future in France than it seemed to have twelve months ago. If the French programmers' admiration for the machine can be projected towards the consumer then the Amiga may well become the attractive proposition just across the Channel that it is becoming in the rest of Europe.

C.H.

QUAD

"Quick and Dirty" — easy riding on the Amiga trail

This month we are going to touch on the subject of sound reproduction on the Amiga. The Amiga has possibly the best sound chip of all the current 16-bit machines, providing four channel high quality sound. In addition, these four channels can be split into pairs to provide a true stereo output.

Each channel has it's own 8-bit digital to analog converter which converts numbers stored in RAM into the complex analog waveforms which our ears perceive as sounds. The creation of these numbers is left to the user and so they can be in the form of a mathematical function (e.g. a sine wave for which the data is 'poked' into memory) or a sampled sound taken with one of the many sampling devices available.

Programming sound on the Amiga is a rather straightforward affair. Each channel has to be given four pieces of information in order to make a sound:—

1. Where in memory the data that forms the waveform lives (must be word aligned).
2. How long in words the waveform data is.
3. A volume number from 0-64.
4. A period (or frequency) number which controls the note value — the smaller the number, the higher the frequency.

Once the preceding parameters have been set up for the relevant channels we wish to use, then DMA must be enabled for those channels. Bits 0-3 in the master DMA register control the four audio channels. Once enabled, audio DMA will sweep through the waveform data until it has fetched the number of words we have specified and then start again from the beginning. This is the only drawback as far as sound programming on the Amiga is concerned. If we wish to halt the note(s) playing then we have to monitor the length of them and then stop the DMA when the duration has expired.

Turning now to the example program, all it does is to play two scales of C using audio channels 1 and 2, one ascending and the other descending. Please note the warning about re-directing the Level 3 interrupt vector. As I have pointed out this is NOT the way to handle interrupt vectors on the Amiga. An EXEC routine — AddIntServer — is normally used but this series of articles is called Quick and Dirty . . . .

Other than that, the article is fully commented and should prove easy to follow. Try changing the MAX variable to alter the length of the notes but don't use a zero.

Also, note the use of Address Register Indirect with Displacement and Index addressing to scan the frequency tables. This is a very powerful addressing mode which allows us to keep an address register pointing to the base of the table and use a data register as the index into it.

I hope that this example has whet your appetites as far as sound on the Amiga is concerned. See you next time.

G.Z.

```
            OPT C-,D+

CUSTOM EQU  $DFF000  Hardware equates
DMACON EQU  $096
AUD0LCH EQU  $0A0
AUD0LEN EQU  $0A4
AUD0PER EQU  $0A6
AUD0VOL EQU  $0A8
AUD1LCH EQU  $0B0
AUD1LEN EQU  $0B4
AUD1PER EQU  $0B6
AUD1VOL EQU  $0B8


    LEA CUSTOM,A6  ; Initial setup here
    MOVE.L #WAVEFORM1,AUD0LCH(A6) ; Location of data1
    MOVE.L #WAVEFORM2,AUD1LCH(A6) ; Location of data2
    MOVE.W #(WF1_END-WAVEFORM1)/2,AUD0LEN(A6) ; Length1
    MOVE.W #(WF2_END-WAVEFORM2)/2,AUD1LEN(A6) ; Length2
    MOVE.W #64,AUD0VOL(A6)   ; Vol1
    MOVE.W #64,AUD1VOL(A6)   ; Vol2
    MOVE.W #$8003,DMACON(A6) ; DMA enabled for
    ; voices 1 and 2
```

```
;-------------------------------------------------------------
; This next section of code is highly 'illegal' as far as the
; Amiga is concerned - to set up an interrupt server properly
; we should really use an EXEC call; however, there are no
; problems with running this code as long as no attempt is
; made to exit without replacing the vector
;-------------------------------------------------------------

   MOVE.L $6C,OLDIRQ ; Save off Level 3 interrupt
   MOVE.L #NEWIRQ,$6C ; Insert our new server
   BRA MOUSE_WAIT ; Branch always to wait

NEWIRQ  MOVEM.L D0-D7/A0-A6,-(SP) ; Save all regs.
   SUBI.B #$01,TIMER    ; Decrement timer
   BNE PULLREGS     ; Non zero ?
   MOVE.B MAX,TIMER    ; Elapsed - reload
   LEA FREQ_TAB1,A0   ; Index to table 1
   LEA FREQ_TAB2,A1   ; Index to table 2
CLR_REGS MOVEQ #$00,D0     ; Zero out registers
   MOVEQ #$00,D1     ; used for indexing
   MOVE.W (A0)+,D0    ; Move indexes with
   MOVE.W (A1)+,D1    ; post-increment
   CMP.W #$FFFF,(A0,D0)    ; End of table ?
   BNE NO_RESET    ; No - continue
   MOVE.W #$00,-(A0)   ; Else reset
   MOVE.W #$00,-(A1)   ; pointers
   BRA CLR_REGS    ; and go again
NO_RESET LEA CUSTOM,A6    ; Custom chip base
   MOVE.W (A0,D0),AUD0PER(A6) ; Entries from tables
   MOVE.W (A1,D1),AUD1PER(A6) ; to chip FQ regs.
   ADDI.W #$02,-(A0)     ; Bump indexes
   ADDI.W #$02,-(A1)     ; by word
PULLREGS MOVEM.L (SP)+,D0-D7/A0-A6    ; Pull regs.
   DC.W $4EF9       ; 68000 JMP instruction
OLDIRQ  DC.L 0       ; Old vector put here

MOUSE_WAIT ANDI.B #$40,$BFE001 ;Test for left mouse button
   BNE MOUSE_WAIT ; No
   MOVE.W #$03,DMACON(A6) ; Yes - kill Audio
   MOVE.L OLDIRQ,$6C ; Replace old vector
   RTS    ; Done !

TIMER  DC.B 16  ; Initial value
   EVEN
MAX  DC.B 16  ; Maximum value
   EVEN

WAVEFORM1 DC.B -127,-120,-110,-100,-90,-80,-70,-60,-50
   DC.B -40,-30,-20,-15,-10,-5,0
   DC.B 0,5,10,15,20,30,40,50,60,70,80,90,100,110
   DC.B 120,127
WF1_END  DC.B 0
   EVEN

WAVEFORM2 DC.B 10,15,20,30,40,50,60,70,80,90,100
   DC.B 110,120,130,140,150
   DC.B 0,0,0,0,0,0,0,0
   DC.B 0,0,0,0,0,0,0,0
WF2_END  DC.B 0
   EVEN

FREQ_TAB1 DC.W 0
   DC.W 428,381,339,320,285,254,226,214,$FFFF

FREQ_TAB2 DC.W 0
   DC.W 428,452,508,570,640,678,762,856,$FFFF
```

XR35
Anco

Anco have been producing games for the Amiga for a while now, but as largely budget game creators, they have not always been responsible for highly original or impressive games. In the past, their releases have been acceptable for the asking price. Things have changed. Their latest release, XR35, has a highly professional look about it that sets it apart from the bulk of budget software.

Originality may not be the game's hottest point. XR35 is a standard right to left scrolling shoot 'em up, very much in the style of Nemesis and Salamander. The game opens with the familiar starfield background, accompanied by a sampled drum solo. A press of the button loads in the main game. A mothership drops you off at the start of level one, leaving you fearfully alone to face the enemy.

Two planes of colourful bas-relief background scroll in parallax over a starfield. To begin with, alien spaceships come t you in threes firing rotating cubes ahead of them. The easiest way to get past these is just to stay in the middle of the screen and keep firing. This technique is made unnecessary after a while, as new aliens come on the scene. Larger cubes snake around the screen, followed by similar formations of glowing balls. For a short time they get easier, curving directly into your shots. Soon after though, more conventional but far meaner alien ships attack, pumping out batches of missiles to blow you to bits.

Apart from a bug that sometimes leaves your bullets on the screen from when you last got killed, I have only one grumble about XR35, and it is one that is extremely unusual: the difficulty level of this so-called budget game is far too high. We found it so hard, that for a long time no-one at CCI could get further than the first stage, which makes this stunning game all the more frustrating to play. It is a shame that the programmers have made the game so hard. Initially, all our attempts ended in almost exactly the same place. XR35 unquestionably looks superb, all the graphics are very fast and amazingly smooth. The control of the ship could be improved; holding the stick in a direction accelerates the ship, often ending in a collision with the background or an alien.

However unless you're a really good player, you might find XR35 just too hard. On the other hand, anyone in need of a fast, really tough game will have a tremendous time beating this. At the price (£9.95), it is brilliant value, unless of course you never get past that first level! XR35 has to be praised for its graphics and sound quality which are outstanding, but the simple fact that it is so demanding of lightning reflexes is really its only stumbling point. Highly recommended.

T.H.

Graphics: 8
Sound: 8
Playability: 6
Value: 7
Price: £9.95

ROADWARS

Melbourne House

Right then, I'm sure you've read all the previews, new items and general hype surrounding Roadwars, and may well have played the coin-op version. The home Amiga version is now available, so here is the full review.
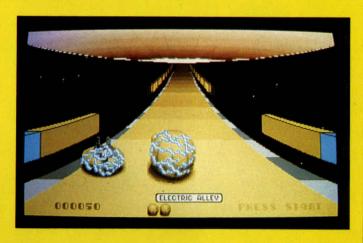
Roadwars is set in the 25th century, where the local moons have been colonised. Orbital roads have been set up which are linked to each other to aid travel between moons. These roads have now become a major danger area, and they need to be cleaned up. Two battle spheres have been given this job, controlled by you and the computer or another player.

Each battle sphere starts with its shields up, in an enclosed ball. Pulling back on the stick opens up the spheres to reveal a rotatable gun turret. The road stretches out in front of the spheres, curving out of sight behind the moon. The idea of the game is just to shoot everything that gets in your way. This includes small red balls, large satellites, and little aliens. Not everything can be shot, such as red and white barriers that have to be dodged. A few of the panels that line the side of the road create sparks that zap the spheres. If you roll through one of these with your shields down, you will be blown to pieces, but you will survive with your shields up. To get to the next level, a blue panel has to be blown away, which opens the exit, down which you can roll to the next road.

"Controlling the spheres is tricky at first, but considering the rotational joystick the coin-op uses, they have done very well"

The game is really quite simple, and does not vary much as you progress. Additional weapons can be

gained by rolling over arrows on the road, and many more nasties crop up later in the game. Continually shooting the aliens could get monotonous, but this nerve-frazzling experience is broken up by the need to keep chaning between shields and cannon mode. Controlling the spheres is tricky at first, but considering the rotational joystick the coin-op uses, they have done very well, not using the keyboard or mouse.

Roadwars is very neat in the graphics department. The road moves flashes past at speed, and the spheres are nicely shaded. The aliens lack a little in detail, but do their job very competently. A very short drum beat plays over and over in the background, with good quality laser and explosion sound effects.

You would expect Roadwars to be most exciting in two player mode, which it is, although there is still a barrel of fun to be had for the solo player. In my opinion, it does not really live up to the hype. which was to be expected, but even so is an excellent game. As far as I'm concerned, the arcade version cannot compete with the likes of Rolling Thunder, Out Run, and Double Dragon — but that is very much a personal view, but for a home game, it fares a lot better and is unquestionably going to be one of the top Amiga action games.

B.V.

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

DREADNOUGHT

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Heard it On the Grapevine . . .

What's the latest buzz on the Amiga games scene? Chris Holmen has been listening to the whispers . . .

Just recently the Amiga shoot em up games scene has picked up dramatically with the releases of Xenon, Roadwards and StarWars but what does the future hold for the Amiga games players? StaRay a stunning new game could be another stepping stone to the Amiga's claim to its rightful position as the games machines for 1990's. It seems that many of the major UK software companies agree. There was an avalanche of offers to the German programmers for the rights to publish the game, amongst the contenders trying to sign the game were Elite, GoDax, Logotron and Telecomsoft we hear that Logotron have won the rights. Just goes to show that the Amiga really has come of age to generate so much enthusiasm over one Amgia game.
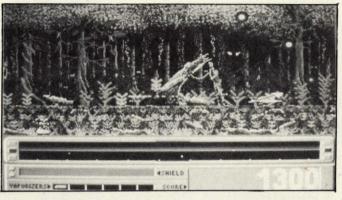
On the subject of Telecomsoft the next few months should see so me interesting new releases from both Rainbird and Firebird. BT scheduled Amiga releases include Starglider 2, Zarch, Carrier Command, Dick Special, Legion of Sword, Enlightenment, Elite and Bubble Bobble.

Starglider 2 could start a whole new trend in the industry by introducing the new ADLS system which allows both the ST and Amiga version to reside on the same disk but at the same time taking advantage of the Amiga's superior hardware. Bubble Bobble is to be converted from the Taito coin-op.

Coin-op conversion are becoming more and more popular on the Amiga as publishers realise that a viable Amiga market does exist for this type of game. One such example was the response Domark has received from the Amiga version of StarWars. A spokeswomen esitmated that the company had received over 7,000 orders for the game in the first

three days of release. (Not bad going for a machine that's only suppose to have 45,000 UK users.) U.S. Gold who seem to have made a slow start on the Amiga are beginning to show much more interest in the machine and have announced that Rolling Thunder, Outrun, Roadblaster, Bionic Commando and Gauntlet will be released on the Amiga between Spring and the Summer.

If Arcade games are not your scene and your interests lie in sports simulations then the next few months could be very exciting indeed. Soccer simulations will soon be in fashion again as the European championship approaches. The first soccer game to appear on the Amiga should be International Soccer from Microdeal. Hot on its heels will be Satory's first venture into the Amiga market, Hotball, Tynesoft, of Winter Olympiad fame, will soon release another Sports simulation, but this time instead of being based on Artic Antics, it will draw on elements from boxing to produce an arcade orientated boxing simuation called Seconds Out.

For something a little more subtle you may be more interested in watching Mirrorsoft. Landing any time now should be the excellent Strikeforce Harrier, followed by the release of the two new Cinemaware titles, Rocket Ranger and The Three Stooges. As good as these packages promise to be, the game that most Amiga owners will be waiting for is the new phantasy game, Dungeon Master that promises to set new standards on the Roleplaying theme.

It's all just beginning really on the Amiga game scene but we are starting to see enough to indicate that the future is going to be incredibly exciting.

C.H.

CINEMAWARE presents
THE THREE STOOGES
MOE LARRY IN CURLY

Las Vegas Anco

Ahh...this takes me back to the good old days of Jackpot, that classic Spectrum fruit machine simulator, which is still available by the way from 22 Percy Road, Isleworth, Middlesex, priced at £2.50. You see Las Vegas is one of those games for people who never have enough change from their kebab to play the fruit machine, or those too broke for a night at the casino.

The object of Las Vegas is to break the bank at the casino. You start on the fruit machine with a few dollars. Most of the features you'd expect are included. After a win, the player can choose to take his win in cash, or exchange it for nudges. If cash is selected, it can be collected or gambled. Choosing nudges respins the reels before giving you the chance of taking or gambling the nudges. Small numbers on the reels light up the letters Las Vegas. Light them all and you get to the next stage.

This will be the favourite part for all fans of Bruce "How's your Toupe?" Forsythe. This has to be played with an audience of OAPs for the right atmosphere, yelling out the higher/lower sequence of five cards. Place your bet, them turn the first card. If you're not happy with it, you can change it once. To continue to the last stage you'll have to make a lot of cash, otherwise you get sent back to the fruit machine.
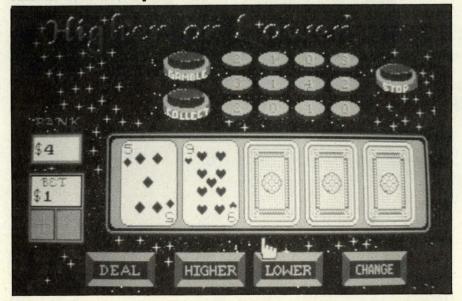
Finally there's blackjack, sometimes known as pontoon. This is played against the computer, the winner being the nearest to a score of 21 without going over. You have the chance to double your bet, or if you're dealt two of the same, split them and play two hands. There's also the choice of insurance at the cost of a quarter of the stake if the dealer gets an ace to start.

Fruit machine and card games on computers have never really appealed to me. The fruit machine doesn't have the same excitement when there's no real cash involved, and doesn't need any skill from the player. The same can be said for the card games, which when played with a computer, lose a lot of their appeal. Anco have done a competent job of converting these games to the Amiga, but they don't have the need for quick reflexes, logical thought, or strategies to be developed. The idea of having to "qualify" for the later stages does give some incentive to keep playing.

Some quality, if standard sampled music starts the game, and the few effects are OK. The graphics are functional, although they could have been jazzed-up a bit, and a few more features on the fruit machine would add to the game. If you've fed all your cash into the real thing, and need a cheaper alternative, this could be a worthwhile investment. On the other hand, spending a tenner on a real machine could be a lot more fun, and who knows, you might even make a profit. _T.H._

Price: £9.95

Graphics: 6
Sound: 7
Playability: 6
Value: 7

JUMPDISK For the AMIGA

For the *AMIGA* MONTHLY MAGAZINE ON A DISK

No. 20
MAR 88
Vol. 3, Issue 3

JUMPDISK

PROGRAMS

ILBM.BAS
Quick Display of IFF Art Via Basic, Concise Tutorial

TALKIES
Easy Utility for Your Own Pictures With Voiceovers

PUBCAT
Precise Cataloguer

POKER-SQUARE
Game of Wit

PATTY'S PROBLEM
Logic Cartoon

YACHT
Shake Those Dice!

NUMGUIST
Number Translator

CUSTOM-POINT
Reshape the Pointer From Within Basic

RGB-SNOWFLAKE
Hue-Setting Utility

COLORSCOPE
Graphics Display

PATHINFO
C-Notes Demo

KENO
Long Odds Dept.

LOTTERY
More Long Odds

DEPARTMENTS

SPEAKALL
Hear or Record Articles in Issue

PRINTALL
Print Articles

READ40
Big TextDisplay

ARTICLES

TALKIES
Documentation for Your Own Talking Art Presentations

BRIDGECARD Review
A-2000 Meets MSDOS

AmiEXPO REPORT
Convention-Crazed Amigans Flock To Los Angeles

JAY MINER PREDICTIONS
Video RAM Is the Future

HARD DRIVE PROJECT
40 Meg for the A-2000 For About $400

AMIGADOS PRIMER Series
Tool Up Directories

CUSTOM POINTER
Make It With Basic

PD DISKS FOR $3 EACH
New: Fish 119-128 Plus Amicus 23-26

NUMGUIST Utility
Handy Number Translator

RGB SNOWFLAKE Utility
Find the Right Color

C-NOTES
'C' Tutorial Series Pathinfo Source Code

SUPERBASE PERSONAL
Review

EDITOR'S TWO CENTS
Program Breakthroughs

READER'S FORUM
Reaction to AmiEXPO

Instructions inside cover.

JUMPDISK published monthly at 1493 Mt. View Ave. Chico, Calif. 95926 Phone: (916) 343-7658

How would you like ....

*A way to make your own slide shows with speech?

*A utility for quick-loading IFF Art Via Basic?

*Instructions for adding a 40-meg hard drive for about $400?

*12 programs, from games to utilities?

*A way to get PD discs for £3 each?

Want to go to my place and see a slide show?

No, thanks. With my Amiga I can write my own shows!!

She has an Amiga, too! Now I have an opening line!

We knew you'd say, "Yes, yes, yes, yes yes!"
It's in this issue: Programs, Articles, Tutorials, Utilities, Reviews, Games Art

See Reverse For Contents

Amiga® is a registered trademark of Commodore-Amiga Inc.

This month sees the arrival of a program that will add a new dimension to your Amiga. At last it's possible to make a slide show of low res IFF pictures narrated by the synthesised Amiga voice. A working example of digitised pics taken at the recent AmiExpo at L.A. and presented by a cartoon character is included.
JUMPDISK is available in the UK & Europe from: George Thompson Services, Dippen Lodge, Dippen Brodick, Arran, Scotland KA27 8RN. Tel: 07708 2 234. Please send a cheque or money order for £8.50 inc. VAT and P.&P. for immediate despatch. ● PUBLIC DOMAIN — Each month we list on these pages the contents of PD discs we have in stock for Amiga Computers. Full details of Fish discs 1–118 are included on the Fish Directory Disc, price £3 inc. Here are details of the latest releases:

FISH 119. MicroEMACS – V3.9e of D. Lawrence's variant of D. Conroy's microemacs. Update to version on Fish 93. Included, for the first time, is extensive documentation in machine readable form. Inc. source.
FISH 120. Amoeba – This clone of Space Invaders is one of the best freely redistributable games for the Amiga to date. **BackGammon** – A graphical Backgammon game. Inc. source. **Bankn** – A complete chequebook system. **EgyptianRun** – Cute little "road race + hazards" type game. **IconImage** – Replace an old icon image with a new image, without affecting icontype drawer data, etc.
FISH 121. BasicStrip – Helps to convert programs written in other forms of Basic to AmigaBASIC. **DataPlot** – Plotting program. **Plot** – 3D graphing program with sample output plots. **Stairs** – Demonstrates a musical illusion. **Uedit** – Nice editor. Has learn mode, a command language, menu customization and other user configurability and customizability features. **WBColors** – Changes the Workbench colours to a predetermined colour set.
FISH 122. Asteriods – Nicely done "blast the asteriods" type game. Unique feature is that all the images and sounds are replaceable by the end user. So instead of ships and rocks, you can have an Amiga against a horde of IBMPC's if you wish. **Iff2Pcs** – An interactive puzzle program that takes any IFF file containing up to 16 colours, and breaks it up into squares to make a puzzle which the can then piece back together again. **Names** – Create and manage mailing lists. **Pr** – Utility to print listings in different formats. **PushOver** – A neat little board strategy game. Inc. source. **PuzzlePro** – Create a puzzle from an IFF picture, which the user can then piece back together again.
FISH 123. Arp – ARP stands for "AmigaDOS Replacement Project". Arp is an effort to replace the current DOS in a compatible fashion, so that current programs will continue to work. **Car** – This animation is one of Allen's entries to the Badge Killer Demo Contest.
FISH 124. Icons – Some sample animated icons. You might find just the icon for that refugee CLI program you've been meaning to make runable from the WorkBench environment. **Tarot** – An AmigaBASIC program as an

environment. **Tarot** – An AmigaBASIC program as an exercise for learning BASIC.
FISH 125. ElGato – This animation is an entry to the Badge Killer Demo Contest.
FISH 126. Colour – A program to manipulate the colours of specific named screens. **Dance** – These two programs, "dancing polygons", are an entry to the B.K.D.C. They demonstrate the range of colours available on the Amiga. **HBHill** – This animation is another entry to the B.K.D.C. It is the first known animation that makes use of the Amiga's "Extra Half Brite" mode. **Iconify** – A subroutine that creates an icon on the Amiga screen that can be subsequently dragged around and double-clicked on. **OnlyAmiga** – This animation was an entry to the B.K.D.C. **Suplib** – The support library needed to rebuild various programs of the author from the source, including DME, DTERM, etc. **VCheck** – V1.2 of virus detection program. This version will test for the presence of a virus in memory, or on specific discs.
FISH 127. Bounce – Entry to B.K.D.C. **Nemesis** – Won fifth place in B.K.D.C. **Ripples** – Entry to B.K.D.C. Unlike most other animations, it shows a fixed object from a moving point of view, rather than a moving object from a fixed point of view.
FISH 128. Dis – A 68000 disassembler, written in 68000 assembler. Inc. source. **DropCloth** – Lets you place a pattern, a 2 bitplane IFF image or a combination of a pattern and image, into the WorkBench backdrop. **LedClock** – Extremely simple clock program, for interlaced screens only. Inc. source. **MRBackUp** – A hard disc backup utility that does a file by file copy of standard AmigaDOS floppy discs. Includes an intuition interface and file compression. V1.3, inc. source. **Paint** – Simple screen painting program, written in 68000 assembler. **PrtDriver** – A printer driver for the Toshiba "3-in-1" printer in its Qume (best) mode. **SDBackUp** – A hard disc backup utility. CLI interface only. Does file compression. **Sed** – A clone of the Unix sed (Stream Editor) program. **wKeys** – A "hot-keys" program that binds keyboard function keys to

window manipulation functions.
AMICUS 24. Moose – A talking Moose! **BMon** – System monitor. **QuickFlix** – Slideshow program. **Daisy** – Example of using translator device. **BoingMachine** – Ray-traced animation of perpetual motion Boing machine. **Monolace** – Resets colours of Preferences. **BNTools** – Three examples of assembly lang. code. **Amibug** – W/B Hack. **CodeDemo** – Converts assembler object files to inline code statements. **Iconize** – Convert IFF brushes to W/B icons. **Sectorama** – Disc sector editor. Recovers files from trashed hard disc. **DGCS** – Stands for Deluxe Grocery Construction Set! **Virus Check** – V2.12, now checks discs and memory.
AMICUS 25. Nemises – Excellent demo with music. **KickPlay** – For those that want to hack the A1000 K/S disc. **KeyBird** – Edit keymaps. **8ColorWB** – Colour up those icons. **BrushIcon** – Converts brushes to icons. **Egraph** – Graphing program. **Keep1.1** – Save online messages to another file. **Kill.fastdir** – Speed up directory access. **LaceWB** – Go between interface and non-interlace without rebooting. **Dodge** – Occasionally moves the W/B screen around. **Softballstats** – Looks after team records. **Mlist** – Mailing list database. **Snow** – Make snowflake designs. **DiskWipe** – Fast remover of files. **Guru** – Prints probable causes of those infuriating messages. **PW_Utility** – For ProWrite users.
AMICUS 26. ImageMaker – Edits C image structures. **Claz2** – Useful for printing IFF images on a laser printer. **SDBackup** – Hard disc backup with compression. **TCB** – Prints inf about processes/tasks in the system. **FunBut** – Use function key instead of left mouse button. **DC** – Switch drive by clicking an icon utility, for 5½ inch drive users. **SystemConfig** – View Scribble in 80 col text. **DicktoRam** – Move Scribble dictionary to and from RAM. **Lexical** – Analyzes a text file. **HexDump** – Display memory locations in hexadecimal. **Tartan** – Design tartans. **DirMaster** – Catalogue discs. **BMP** – Plays sampled sounds as a background task. **ShowPT** – Changes your pointer to another, includes a collection of them.

All Fish and Amicus discs are £3 each or £30 for, 11, inc. 1st class post. We only use SONY DS/DD discs.

★ Program Submission ★
Procedure

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

ALWAYS include your name, address and the date on all material and any disclosures.
    Do not forget to make it clear exactly which computer/s your programme or article is applicable to.

Include Kickstart or Workbench versions wherever they are pertinent.

Number all pages.

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

Never use stables. Use paperclips if necessary.

If possible save programs on disk twice and call the second file "BACKUP".

Remember to label all disks with your name and the title of the programme.

Always ensure that disks are well packaged. They should ideally be sent in a commercial disk mailer or at least packed between two pieces of hardboard or rigid plastic.
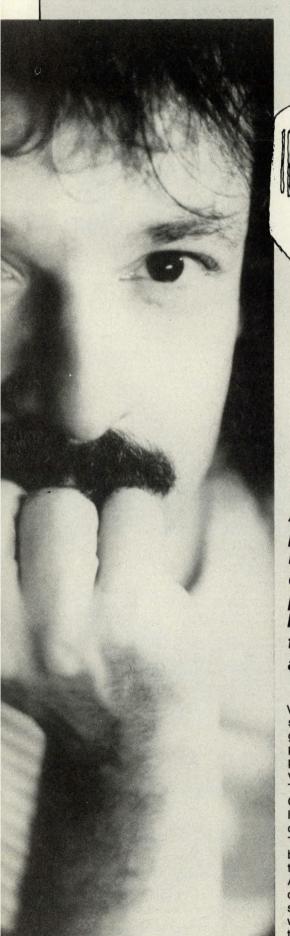
Please allow at least 8 weeks for acknowledgement as all programmes have to be thoroughly tested and made into a suitable format.

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

★ Programming tips ★

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

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

AMIGA ON TV

Anyone who has seen the U.K. Channel 4 Television-programmes, Network 7 and The Chart Show, may well have noticed some of the striking Amiga on-screen graphics they use. Both of these shows are produced by a company called VideoVisuals. Margaret Bennett spoke to KeithMacmillan the executive producer of both The Chart Show and Network 7 and took a look behind the scenes.

Video Visuals are noted for use of on-screen technology. They are part of a group who have spent the past 12 years producing Pop promos, so who better to present a live, up-to-the-minute music, video and current affairs programme? They first started using Amigas on The Chart Show two years ago. Keith MacMillan told me that at that time the choice of computer was, for them, an easy one. They had to have a computer that could be modified to produce a broadcast quality signal and the Amiga fitted the bill. Although the machine itself did not produce a signal that was up to the necessary standard, with a Genlock attached they were able to modify the end result to suit their needs. Of course the exact method of producing the quality graphics on the

shows (including ICON, an on-screen information service giving details about bands, coming events, videos etc.) is a closely guarded secret. Keith MacMillan said that its success is largely due to the fact that they have their own programmer/artists beavering away writing their own dedicated software. However, not all of the programs used on the shows are written by their in-house programmers. They also use a number of commercially written packages such as Deluxe Paint II, Video Show and Digi-View. A frame store is used to capture frames from video tape so that Digi-View can 'grab' as clean an image as possible. A Genlock is just one of many 'black boxes' that the images must pass through on their journey to the video recorder. It is in these boxes that much of

KEITH MACMILLAN, CHIEF EXECUTIVE, SUNDAY PRODUCTIONS.

They first started using Amigas on The Chart Show two years ago.

the magic is worked. The signal coming out of the Genlock is not clean enough for broadcast T.V. so it has to be suitably 'sanitised' before it can be used.

The Amiga is the only computer Video Visuals use for actual on-screen graphics and five were used on the last series of Network 7. In total the company use eight A1000s with as much memory expansion as they can possibly connect. I asked him about the help, financial and otherwise, he received from Commodore before buying the systems. "Commodore were helpful-ish but, bearing in mind that we were going to be using the machines on-

lent value for money. He tells me it is the nearest thing he can get to broadcast quality without having to spend about a hundred thousand pounds. Obviously, no one is suggesting that the Amiga can do as much as these more expensive boxes but for a company like Video Visuals, who do not require anti-aliasing or some of the other expensive processes, it is ideal. Video Visuals are not interested in a Quantel Paintbox or any similar device because, whilst Keith MacMillan agrees they have their uses, Video Visuals like their graphics to look as though they were created on a computer.

air for three hours every week and would be therefore exposing their product to the public eye, I was very surprised at the lack of interest from Commodore themselves. Other manufacturers were far more helpful but I don't think that is unusual, is it? It's a pity because I think their rather laid back approach to P.R. and publicity has enabled Atari to overtake them in some areas". Video Visuals eventually bought their machines, not directly from Commodore but from a High Street store.

For the coming series of Television programmes Video Visuals are considering other computers, including the new Archimedes but I am told it is 80% certain that the Amiga will again win the day. This is partly due to the impressive amount of software that is available for this, now firmly established, machine. As far as broadcast Television is concerned, Keith MacMillan feels that the Amiga is excel-

Obviously there is no shortage of Amigas at Video Visuals but a computer is only as good as its programmers and here they have a problem. The company is looking for a number of artist/programmers, which they admit are hard to come by. Keith MacMillan told me, "Most programmers are not very good artists and most artists wouldn't know how to program something if it hit them on the head. The difficulty is in finding the unique combination of someone who is genuinely talented at drawing and visuals but who doesn't get frightened by programming." The vacancies are being widely advertised but are proving difficult to fill. If you think you might fit the bill then Video Visuals would love to hear from you. The person to contact is Shelley O'Neil at Video Visuals, 300, Fulham Road, London SW10 9EP.

M.B.

Shadowgate

Mirrorsoft

The wind whistles shrilly through the halls as you step gingerly over the threshold, and your legs turn to jelly when you here a terrible laugh of such utter evil that you have second thoughts about venturing further. Only the thought that your quest will save thousand of lives keeps you going. You have just entered Shadowgate, a once shining fortress, now an evil, dark, mouldering ruin. Within its bowels lies the lynchpin of the netherworld, the mightly titan Behemoth, whom the Warlock Lord means to raise from the dead to destroy the land. Can you, the last of an ancient line of Kings defeat the many deadly soldiers of Behemoth and ensure he is destroyed for ever, or will the forces of darkness win out?

This is the setting for Mindscape's new Icom Simulations adventure, following the success of their last two releases Déja Vu and The Uninvited. We reviewed these products last year, and found the innovative style of icon and cursor only command very appealing indeed. These games originated on the Apple but with the conversion to the might Amiga their graphic qualities have fully matured.

For those of you not familiar with the Mindscape style of operation, let me explain. On screen are five sections, the largest is for the location graphic, which includes many clues and useful objects. The rest of the sections are used for the text scrolling,

inventory information (in graphic form), all available exits, and lastly the vocabulary window. This is the heart of the system, and comprises eight key words, EXAMINE-OPEN-CLOSE-SPEAK-OPERATE-GO-HIT-CONSUME. To communicate with your Amiga, all you do is move the cursor over the word you need and click the left mouse button. This word will now light up. Now move the cursor across to the graphics window and click on an object. It could be a door, for instance, or a chest, now if you highlighted say EXAMINE, you would get a read out in the text window of a description of the door or the chest. It is as simple as that. Putting things in your inventory is handled exactly the same way except you just keep the button pressed while on an object and literally slide it over into your inventory box!

What Shadowgate does have that Déja Vu and Uninvited did not, is moving graphics and quite a lot

more sampled sound. Creaking doors, evil laughing and horrendous screams are but a few of the choice sounds to be had, and I would recommend playing this in a dark room to really benefit from the atmosphere that's if you want to be scared!

If I were to find something to moan about, it would be the numerous times you can be killed off without too much advance warning, which can tend to become a mite tedious. However, once you know the right paths to take, you will avoid these nasty hiccups. As an adventure, Shadowgate succeeds in bringing over D and D in a simpler form than working through complex spells and trying to raise your experience class by one battle after another. In this game all you do is HIT, and hope.

Indeed, waiting for your to stumble across them are a whole host of N'er-do-wells including dragons, demons, wizards, trolls, wraiths, monsters and other assorted mayhem, along with a few riddles and some quite devious puzzles.

I heartily recommend Shadowgate as a worthy addition to the Mindscape range, and warn you that this little baby will take you many horrific days and nights to crack but I suppose that a hefty reward from a grateful King and the rescue of untold thousands from eternal darkness are good enough reasons for me. Highly recommended.

A.M.

Graphics:	7
Sound:	6
Playability:	7
Value:	7
Price:	£34.95
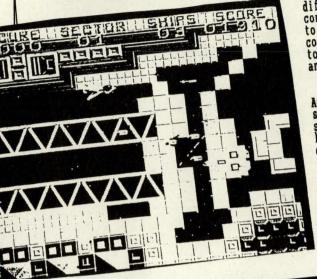
XR35 CHALLENGE

AUI reviewers found Anco's new arcade-style XR35 one of the most difficult games ever on the Amiga. It needed a whole lot of time and concerted effort even to get past the first level. It is a shoot-em up to challenge the hottest Amiga shot. You need a speed of reflex and co-ordination of eye and hand that are lightning fast and real stamina to resist the mindblowing sequence of attackers of all shapes, sizes and colours.

So we think there ought to be an Anco XR35 Challenge for the real Amiga hot shots. We want anyone who completes this testing game to send AUI a photograph, print or slide, clear enough to read the final screen or your highest score. Write your name, address and age on the back of the print or attach it to the slide. We don't think we are going to be buried in photos! XR35 is too tough a game for that.

The top eleven scores get the prizes. The outright winner will receive an Amiga disk drive. The other ten will get one of the very first copies of the next - still unnamed - game by Anco's brilliant UK programmer P. Baroni who created XR35. They tell us the next game should be out within three months.

Photos, names etc. must reach AUI - addressed to *Amiga User International*'s XR35 Challenge - by May 31st 1988.

STRIP POKER PREVIEW

One of the early successes on the Amiga was the classic computer Strip Poker released by Anco. The Amiga's sharp graphic qualities, of course, made the game more explicit than any previous computer version and Strip Poker, featuring attractive German girls, achieved so much popularity that Anco were besieged with eager buyers wanting a second try at beating Anco girls at poker and getting the totally revealing reward.

So Anco are releasing the sequel called - yes, you guessed it - Strip Poker II. This time the girls are English. However we can authoratively deny that Anco's ex-model marketing boss Karen Graham is one of them. Though the rumour is that she might be one of the beauties on the forthcoming Strip Poker Data Disks that will offer more Anco lovelies for skilled poker players to bet their pants against.

Strip Poker II will sell at £14.95 and the Data Disks - you will need the main Strip Poker disk to play them - at £9.95 each.

We have also heard whispers that Karen is personally selecting good-looking guys for an Anco male stripper version for the Amiga. If you think you qualify, buy the Strip Poker II first and see if you are as attractive to the girls as Anco's sexy poker players are likely to be to the average male.

ACQUISITION

Databases are amongst the most sophisticated and versatile programs in common use today. This often means they are sometimes the most complicated to use. Paul Andreas Overaa takes a look at what happens when a very powerful relational database is combined with the user friendliness of the Intuition interface.

Taurus Impex

Acquisition, from Taurus Impex Ltd., is a database package designed specifically for the Amiga. The original aim of the development team was to provide a user friendly, powerful and sophisticated database package that was capable of supporting the creation and use of 'relational' models in a way that made full use of the Amiga's more novel features. The objectives thus included the ability to store pictures and sound as well as to have the program fully integrated into the Amiga's very friendly user interface 'Intuition'.
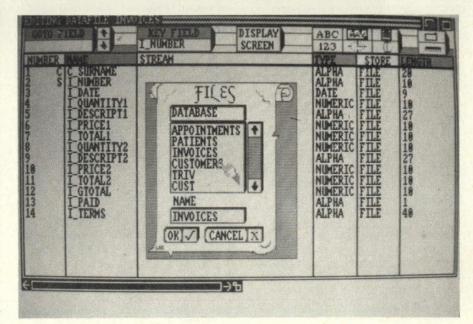
Acquisition will, for most applications, run happily under the basic 512K of memory but it does require two disk drives. Our review was carried out using a twin drive 1 meg Amiga 2000. Like almost every other Amiga package, Acquisition has had certain 'teething' problems. This is not surprising because the Amiga environment, although potentially capable of truly great things, is both complex and new — it has presented program designers with more than a few headaches. The latest update (release 1.3F) is the result of user feedback on the earlier versions and includes various speed and specification enhancements together with fairly extensive manual revisions. The package, as supplied to a new purchaser, consists of two system disks and an examples disk together with a fairly comprehensive manual and its current revisions. Unlike earlier versions there is no dongle protection on the 1.3F release.

The Acquisition Manual begins with a short 'Quickstart' tutorial that takes you through some basic facilities. You create a couple of record definitions, produce a link between them, enter some data and then retrieve it etc. If you are familiar with the concepts and use of relational databases then you will find the tutorial straightforward. For beginners,however,

the approach is less useful simply because they are unlikely to appreciate what they are actually doing. Sophisticated database programs are rarely easy for novices to master and Acquisition is no exception. Registered users of Acquisition will soon be able to obtain a fairly substantial 'tutorial book' (free of charge) by writing to Taurus Impex. I've seen the pre-publication form and it looks good.

The remainder of the manual is divided into sections that, with the exception of the section on Acquisition's 'Acom' programming language, correspond roughly to the various 'modules' present within Acquisition. Each section is reasonably well laid out and, as a reference manual, it is as good as most.

Acquisition regards a collection of records of a single type as a 'database' file. Field length is dynamic and multiple database files may exist — each with their own individual record structures. Sixteen such files are allowed to be open and accessible in a given single application. To define these initial file structures a module called 'Creating' is used. This enables you to define the fields present in a record and specify field attributes such as the 'data type' (numeric, alphanumeric, data, time, IFF format or custom) and the visible screen lengths of the fields. During these operations we must also specify which field will be used to uniquely identify each record. At this time a limited amount of screen formating of

continued

ACQUISITION
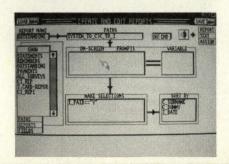
the data entry layout is possible and selecting a reasonably spaced preliminary field layout can help simplify later editing.

"Having outlined a record definition (and saved it) Acquisition will create an associated project which holds information about the database file and its display characteristics."

Acquisition contains a macro language 'Acom' which can be used to automate the processing of data files. We will look at this later but at this point we should mention that it is possible to add a sequence of Acom commands to any chosen field. This is called a 'stream' and once in place such commands can be performed automatically. In practice this can be used to implement some useful 'data vetting' facilities in addition to allowing you to force selected fields into particular formats — you can, for instance, easily arrange to 'translate' a name field into upper case irrespective of the upper/lower case arrangement actually typed by the user. When you include IFF based fields for picture and sound storage the field prompt will include a clipboard 'icon strip' which, in final applications, gives users icon based access to their picture and sound data. Having outlined a record definition (and saved it) Acquisition will create an associated project which holds information about the database file and its display characteristics. The Creating module is easy to use and very effective.

For all but the most elementary uses it is necessary to create links between the database files that you design. Acquisition contains a 'Bridging' module that allows you to specify pathways between your defined data items. I spent some time playing around with this module because in earlier releases I had been told that it was prone to crashing and causing file damage. It is certainly possible to produce the famous Amiga 'Software Failure' crashes but having now used the module and been impressed with it, I suspect that some of the horror stories I have heard about are NOT the fault of Acquisition but of the users. The process of creating and using relational links with packages, such as Acquisition, which allow you to create and modify a relational model is fraught with difficulties for many people. The problem is simple — there are a lot of people around who quite simply do not know how to look at a potential

application, analyse it, represent their solution in 'normalised' form and translate their 'logical pictures' into the equivalent Acquisition relations. If you buy a car you do not expect the dealer to teach you how to drive. It is therefore a little unfair to expect Taurus Impex to teach you how, in general, to create robust logical models. The fact remains however that, without a proper understanding of the principles involved, much of Acquisition's power will be wasted.

One of the most powerful features of Acquisition's relational characteristics is that master record definitions are logically separate from any applications view you care to create. The view of your records that you wish to present to a user can be modified by using another editing module known as the 'Pasting' module. This module gives control over what the database user will actually 'see' on the screen. It allows use of the relational pathways (created with the bridging module) and allows you to add icon activated links to multiple datafiles. The form creation facilities available from within 'Pasting' are quite adequate and include the setting up of multiple page forms but there are one or two minor bugs present. You can, for instance, pick up and wipe out the window edge accidentally when marking out deletion areas close to form edges. Essentially the facilities are functional and straightforward to use. Most importantly they include the movement of fields and field names. The graphics facilities, the box/line drawing, inclusion of additional text etc., are rather primitive but luckily this does not matter because the screen forms are stored as IFF files. With the exception of moving Acquisition's data fields about you can therefore edit and embellish your screen layouts using programs such as DPaint very easily. This combination of Acquisition's Pasting module field movement control, coupled with any of the sophisticated drawing programs available means that, in practice, you can very easily produce excellent display layouts. The 'Pasting' module is not just a 'form design' type of

module. It has numerous other features that help you to 'customize' the user interface — you can attach speech prompts to selected fields, add icon activated macro facilities to your interface, protect fields against data entry (i.e. make them 'display only') and much more. In short the Pasting module enables you to provide a particular 'view' of your data/application i.e., to decide what 'records' will look like to the user and how they will be used. The end results can be so good they really do have to be seen to be believed.

Having created Master file record definitions, forged the links between your defined data items and pieced together a particular application 'view' then you are in a position to enter data. The module that allows you to do this is called, not surprisingly, the 'Filing' module. The module allows you to load projects, add, edit and delete data and search your databases. It is a straightforward module to use and has all the usual conditional search facilities that one would expect (namely AND, OR, NOT, ==, <>, >=, <=, >, and <). One nice practical feature of the module is that it allows the use of short key sequences for common data entry operations instead of pull down menu of icon operations. Pressing right Amiga Key — S to save a record, for example, is actually much faster than getting to an icon or a menu item.

One thing that did initially surprise me is that the Filing module offers the user facilities for rearranging the displayed page layout. I was not sure why this option was provided — since it seemed to me that firstly the display layout should be the sole responsibility of the Pasting module and secondly once a particular view and layout of the data had been chosen it should be offered to those who enter (or use) the data via the Filing module on a strictly 'no change' basis! As it happens my worries turned out to be unfounded because it is now possible by using the Acom programming language, to control exactly which facilities are made available to those who type in, or use the databases. Most applications will tend to access the databases via programs written in Acom and such an approach makes it easier to restrict what users can and cannot do.

Before we look at Acquisition's Acom language we should mention the other two modules present within the system. Firstly there is a 'Settings' module which allows you to customise system parameters and control backup, deletion, copying and file housekeeping operations. One important feature is that this

module allows you to import and export data (and incidentally control the field and record delimiters). The control over such transfer is flexible and straightforward. Because exported file format and associated contents are well defined this facility offers the link that advanced users might need to pass data between Acquisition and both other software packages and other machines (transfer e.g. via the RS232 port) etc.

The ability to easily extract information and produce reports from data held within the database is, in practice, very important. Acquisition's Reporting module is designed to offer a flexible means of achieving this. It is quite easy to use and provides an excellent framework for producing reports based on the results of interrogating the data held in your databases. Acom commands can be used within report definitions and these, together with some useful formatting commands, enable even complex report structures to be designed and produced quite easily.

"It is possible now to prevent users from breaking into programs by disabling the ESCape key."

Acquisition, as mentioned earlier, includes its own programming language called Acom. This is a high level 'Amiga Basic' type of language which enables you to automate file processing, reporting, incorporate password control and in general restrict and control the level of user interaction. There is no doubt that Acom is both easy to use and powerful although, since it is an interpreted language, it might well suffer from slowness with large database applications. The 1.3F version of Acom has some significant changes over earlier versions. A few rather 'dangerous' commands have been deleted and several new commands including those for playing sounds and displaying pictures have been added. It is possible now to prevent users from breaking into programs by disabling the ESCape key. Also now included, probably by 'popular request', is a MENU command which allows you to control (disable, enable or execute) specific menu functions present in the Filing module. This later addition is important because it enables you to supress selectively such things as field movement and it should therefore allow the creation of more secure application programs — a necessity if inexperienced users are inputting data or interrogating the databases.

Conclusions

Acquisition claims to be a 'relational' package. The short answer is that there are NO packages that provide a perfect RDBMS environment for the implementation of all possible relational models.

For a package that runs on the Amiga one simply needs to ask whether the main criteria of a relational database system are supported. I was interested in testing the 'independence' of the relational view of the data provided by the Pasting module under the conditions whereby the master record definitions are edited. I defined a selection of database record formats, linked them using the Bridging module and then produced a particular view of the data using the Pasting module. After entering some data into the existing databases I went back to the Creating module, loaded my database record definitions and edited them. With some records fields were deleted, with others new fields were incorporated. In all cases Acquisition behaved very well. There is no doubt that particular 'views' of the data created by the Pasting module are well isolated from the effects of changing requirements in the master record definitions.
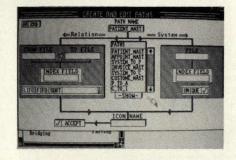
One possible cause for concern is that Acquisition has no inherent facilities for creating relations involving multiple (i.e. concatenated) keys (Figure 2 shows an example entity relation diagram in which the entity 'ANALYSIS-RESULT' would require such a key). As with most relational packages approaches such as model reshaping and controlled redundancy via the creation of an additional single concatenated field are well able to provide suitable solutions. In practice this turns out not to be a particularly serious shortcoming. The current release of Acquisition supports unidirectional relationships only and again in practice this is rarely likely to cause any serious problems.

Amiga software, in general, is still only in its 'infancy' and it is in the area of business applications software that this is most apparent. With a database program that is used to manage important data it is absolutely essential that the data itself is protected from software failure damage. Robustness is a weak point for almost all 'business application type' Amiga software and I am afraid to say Acquistion is no exception. During the week I used it for testing I was able to cause it to crash several times, once destroying my datafiles. In my case I have a reasonable grasp of how a relational database such as Acquisition should be used, I suspect therefore that a novice user might well hit far more problems than those I encountered.

As far as the use of Acquisition in a business environment goes, my concern is not that Acquisition can be crashed by doing silly things at the time you are creating an application, — it is whether it is possible, once an application has been created, to place sufficient restriction (primarily via Acom programs) on what an 'idiot' can do to prevent anything other than foolproof data entry, database

interrogation and report production taking place. The new facilities available in the 1.3F version of the Acom language will no doubt simplify such tasks.

Acquisition is definitely powerful enough to be used for serious business applications. Large applications would need a hard disk since you cannot define models which access data across different diskettes. Its ability to handle IFF format pictures and sound and to assist the user in implementing a logically independent WIMP based application view of the data held within the databases is superb. I believe that Acquisition may be too sophisticated and possibly too expensive for novices and users who wish only to develop simple applications, e.g. lists of names and addresses and very little else. There are far cheaper and simpler to use alternatives. For the serious user, or the company with an Amiga sitting in the corner, however, Acquisition is potentially an excellent tool providing someone is available to properly set up a suitable 'Acquisition compatible' relational model.

If you like, as I do, the idea of properly vetting your data BEFORE it is added to a large database then Acquisition is quite capable of being able to generate its own 'intelligent' front end data-vet program for maintaining temporary files, producing error reports showing abnormal data items and generally providing all the usual data-vet facilities. This application alone would make Acquisition a worthwhile investment for most Companies.

Robustness, or the lack of it, will no doubt be a major concern to hard disk users. The problem of systematic back up should never be neglected, even with provenly robust software — with Amiga software in its current state it becomes absolutely essential. Be a pessimist and take the view that most mainframe users take — assume that sooner or later a catastrophic crash WILL occur. The Acom language as it now stands is sufficiently powerful to implement various recovery and security procedures. Under normal circumstances I would not recommend software that could be crashed to business users but Acquisition is an exception and it is potentially so good it deserves to be used.

P.A.O.

MICROFICHE FILER

The Graphic Database
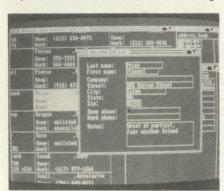
One of the constraints on the implementation of the paperless office has been the presence of pictures or handwritten items. These cover pictures of employees for personnel records and signatures on legal documents. The mass storage with fast access time for this type of information has been handled by the use of micro-fiche. These minute photographs of documents being most evident in the parts department of car manufacturers. Micro-fiche are also used for the storage of mass historical information, most often seen in banks for customer transaction records.

The latest release of database software, Microfiche Filer from Software Visions, brings the features of micro-fiche to the Commodore Amiga. Using Microfiche Filer the user can store on one disk both text and pictorial information. The microfiche concept is taken further by the way in which data can be accessed on a database file. Part of the screen shows a micro-fiche view of the data, over which a magnifying glass area can be dragged via the use of the mouse, until the required item is located. This provides a much easier access method than databases which require the use of commands or menus.

After selecting the database to be accessed (several are provided as examples) the program displays three windows. The top right corner shows the "Fiche Window" view of the data. This may not be all the data held, depending on the size of the database file. Access to the rest is by the usual sliding bar arrangement on window. This part is, of course, unreadable but the left two thirds of the screen show the "Magnification Window". This is the area of the fiche which equates to the magnifying area. The bottom right hand corner shows the "Form List Window" which partly overlays the "Magnification Window". This window contains all the "Forms" by which the database can be accessed. In addition it is via these forms that the database is organised.

All the data fields held on the database file are described in the "Data Definition" and it is from this that the various "Forms" are derived. A form is basically a group of

fields which are part of the main Data Definition and have been put together in a way suited to the purpose of the user. For example, given a Name and Address database which holds the fields; Last Name, First Name, Address, Home Phone, Work Phone, Company and Notes, it is possible that a number of Forms could be set up, "Names and Address", "Names and Phones" or "Names and Company" it all depends on what use the data is to be put to. Once set up there are various tasks that the Forms can be assigned, other that the screen display. All are listed in the Forms List Window and are: Print Title, Print Totals, Print Record, Sort Form, Edit Form, and finally, as mentioned, the Display Form. The Print items, as their name suggests, are only used when the required data is to be output to a Printer. The three different types are used to supply details of the report heading, any totals that are to be accumulated and printed and the fields required from each record that is to be reported. The Sort Form and Edit Form respectively are use to sequence and amend the database. The Edit Form, depending on the fields selected, can be used to restrict which fields can be amended. When a change is required to any of the above, the required Form e.g.

"Names and Phones" can be dragged, using the mouse, to the required usage slot e.g. Sort Form. This would have the effect of sorting the database into phone number within name sequence. Any changes made in this way, with the exception of the Edit Form, are carried out immediately.

The most unique feature of Microfiche Filer is its ability to store pictures as database record entries. The only restriction on this is that they cannot be amended. Any pictures can be used that are in IFF format, which can be from a digitising or paint program. In addition Icon (.Info files) can also be stored. To save on space a preference is set in the software, on loading, to Squeeze. This has the effect of only displaying the top left corner of the picture which changed to allow all the picture to be displayed. Pictures can also be displayed in two or four colours, which is again a preference setting. The reading of pictures from the disk does take some time. On the sample provided it took thirty seconds for three pictures. Microfiche Filer also provides an Export facility so that stored pictures can be re-used in their original environment.

Microfiche Filer has an interesting approach to changes in the database details. In some cases it can be done by copying the original and then amending as required, thus creating a new entry. This method applies to both Forms or Data. When creating a new database the software provides a skeleton which is then amended to the user's requirements. However, it does suggest in the manual that one of the samples is copied and then amended.

It is very difficult to do justice to Microfiche Filer in this description of its features. It is an extremely versatile piece of software that is also very easy to use. The package comes with a very well written 100 page manual. Its only restriction is that the database is held in memory whilst it is worked on and this will reduce the number of records that can be stored. The total number will, however, depend on the size and number of fields that are held. The software will take advantage of any extensions that have been made to the memory of your Amiga. The programming is excellent and makes great use of the window features of the Amiga, which should meet all the storage requirements of the user.

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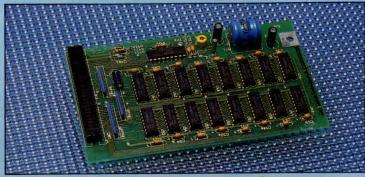
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Winter Olympiad 88

Tynesoft

With the growing popularity of skiing, and the recent Winter Olympics, it was odds on that someone would release a game to make use of the topicality, and Tynesoft have done just that with Winter Olympiad 88.

The game takes a similar form to Epyx Games series, with one to six players competing over five events. From a couple of attractive screens, the players sign up and choose a country to represent, although there are no anthems for the winners after the events (thank goodness!).If you get bored with a particular event, it can be left out when you choose which to play.

The Downhill is the first, and one of the best events. A big, well drawn skier is seen flashing down the mountain in Pole Position style 3D. A forest of small trees lies between you and the finish, and to add to this, logs, rocks and posts litter the course. Jumping and swerving between the obstacles, the skier's animation is very smooth. This event works well due to the convincing 3D effect and colourful graphics, making it good fun to play.

Another 3D viewpoint starts the ski-jump. Looking down from the top of the jump, the skier glides down until you launch him with a press of the button. To avoid a crash landing, bent legs, crossed skis and balance have to be corrected in just the same way as Epyx' Winter Games.

The Biathlon is a mix of cross-country skiing and rifle shooting. This it would seem (coincidentally, of course!) copied from the Epyx version, and takes place over a few well drawn snowy backgrounds. Moving the stick left and right controls the skier's legs, but a more rhythmic motion rather than the waggle technique is called for. There's a realistic feel to the gun, and the whole thing is well done except for the badly jerky animation of the sprite.

A more conventional ski event than the first comes next: the slalom. Simply weave in and out of the gates, avoiding the sides of the course. Although it plays well enough, the sprite turns rather unrealistically. Another gripe is that the background is very repetitive, something there is no excuse for with half a megabyte to play with.

The games draw to a close with the bob sleigh. Waggle the stick to build speed on the run-up before jumping in at the optimum moment. The view is from behind the bob, with movement simulated by cycling colour bands that could be smoother, but give the desired effect. Control of the bob is by steering left and right and limited use of the brake to avoid riding too high on the bends.This is a well created and entertaining event.

Winter Olympiad can hardly be said to be original, some parts being seemingly almost exactly those from Winter Games (minus that special Epyx touch), but I was surprised at the high standard of the game. On the whole, the graphics are very good. The sound effects are as you would expect: lots of snowy swishes. A few pieces of Ski Sunday music play between the events, setting the scene. A booklet with an introduction written by David Vine comes with the game. Whether that's a point for or against it I'll leave for you to decide. Winter Olympiad because it is following a style rather than reaching out for originality will not amaze like some earlier multi-event sport games, but it undoubtedly makes the grade as a highly topical and entertaining bit of fun.

B.V.
Price: £19.95

Graphics: 8
Sound: 7
Playability: 8
Value: 8

Dear AUI,

Your reply to Mr. John Gray in Feb's issue is not totally correct.

Whilst I agree that Deluxe Paint is protected it is still possible to copy it, which I have done for my own use, and had no problems.

Second there is no need to copy preferences to the disk as it already exists. At the > prompt on booting the disk, type PREFERENCES <CR>, and you will be presented with the normal preferences screen, where you have all the normal options to change default settings. There are indeed several Epson printer drivers supplied, so he should have no problem getting his printer to work. That is, providing of course, that he has the correct type of cable.

Yours sincerely
P. Stewart

Dear Mr Stewart

You are, of course, correct.

My answer to John Gray's letter was based on my profound belief that the original and only copy of a precious program should never be write-enabled, and my presumption that most of our readers would not have managed to make a working copy of their "Deluxe Paint" disk.

Is your copy of "Deluxe Paint" all your own work — in which case, congratulations — or are you just an owner of "Hacker", "Marauder", "Mirror" or "Quick Nibble"?

Dear AUI,

I need some advice on a problem. Is there a sound box or a special amplifier for the A500 because running it through my TV/monitor (Hitachi CTV 1444), the volume output is quite low and unadjustable. I have also tried sending the signal through two different radio cassette players via a phono-jack lead but although this worked, the signal from the Amiga seems too weak. Consequently, any sounds just seem to break up. Do you think there could be a fault on my Amiga or is a radio cassette player not the best thing to use?

Any help or advice would be a great help.

Yours sincerely
Gary Hunt

Dear Gary

I presume that you get full volume control when using your Hitachi as a TV, and have established that the fault is not in its volume conrol or amplifier circuitry.

The A500 does not need a pre-amplifier when used with a suitable monitor (e.g. Commodore A1081 or A1084, Philips 8833 or 8852). Try connecting your A500 to one of these monitors: either find a friend with one, or go back to the dealer who sold the computer.

Alternatively, find a friend with a stereo system and connect the Amiga's two audio output sockets to the two 'aux' input sockets on the amplifier.

This will determine whether there is a fault in your computer, or just an incompatibility between its output and the Hitachi's expected input.

Audio inputs are categorised as low impedance or high impedance. Low is anything under 600 ohms: high anything over 2000 ohms. The Amiga's audio needs to be fed into a high impedance input. Assuming there is nothing wrong with your A500, it appears as if your Hitachi (and your radio cassette player) has a low-impedance input.

Dear AUI,

I own a Commodore 128 and 1541 disk drive together with a large collection of games.

I am thinking of upgrading to an Amiga I saw the new 1581 disk drive and was wondering if it is possible to transfer my 5¼" games to 3½" format.

I have also heard about 64 emulator for the Amiga and wondered if the disk transfer is OK then I can use the 3½" games in 64 mode on the Amiga and its built in disk drive.

I would be most grateful if you could see any problem in this.

Yours sincerely
Matthew Attwood

Dear Matthew

3.5" is merely the physical size of the media used in Amiga drives and in the new 1581 drive for the C64 and C128: it is not a format. A format is the physical organisation of where and how data is recorded onto a disk — at a low level in terms of tracks and sectors, and at a higher level in terms of where certain critical information is put (e.g. the block availability map, the beginning of the directory, the code needed to boot the operating system).

AmigaDOS formats a disk surface with 80 tracks each containing 11 512-byte sectors. Commodore DOS in the 1581 formats a disk surface with 80 tracks each containing 10 512-byte sectors. One sector less per track is an obvious difference: there are other, subtler ones too (e.g. the structure of sector header information).

Therefore, AmigaDOS cannot directly read a Commodore DOS disk (and vice versa). This is why "The 64 Emulator" offers an optional cable for connecting

Commodore serial devices (such as the 1581) to the Amiga. The Emulator can also use the Amiga's own drive, but this is still under the control of the standard AmigaDOS handler. The Emulator merely communicates with the drive handler in the same way as any Amiga program would.

For more information on "The 64 Emulator" see the items in our past two issues referred to in the Answer given to Gareth Davies.

Dear AUI

I am the owner and great lover of our friendly home computer of the year, Amiga 500. I am the new one in this line but I am a bit worried about my Amiga. Here in Yugoslavia we (I mean hackers, not pirates) are very much in loss of information, so I need one and I need advice too.

The point is that I heard from some programme which destroys flexi discs and datas on them. That's all I know about it. It is not much so I beg you for ten minutes of your precious time to write me a few sentences about those software infection.

If it is possible, I would like to know how to keep out of it, how to protect my Amiga of it and if it happens what to do to save my computer.

I'm not writing just in my name, but in name of thousand or may be more than thousand Amiga users all over Yugoslavia. I asked "My micro", computer magazine for advice and they gave to me your address.

Please, don't let my letter to finish in the manure-basket because it is a cry for advice, perhaps in the last moment, and we already had two cases with unknown source and origin.

As you can see the situation is not naive at all, so I beg you once more to answer me, please.

If you are interested in our Yugoslav software market I shall write to you everything you want to know.

I am deeply thankful to you for your attention and understanding.

Your admirer
Stevan Josimovic

Dear Stevan

We've sent you a copy of the March issue of AUI which covers the virus in depth! Please pass on the word to all your friends in Yugoslavia and I can assur you that none of our readers letters end up in a manure basket!

Quote of the month

When you look at where we are now the notion of a small stand-alone machine which sits on a desktop and owns the whole world no longer applies. The notion of a machine that looks at a single application at a time no longer applies. The notion of a user who is totally dedicated to a single task no longer applies.

BOB UTLEY PC USER

AMIGA PROGRAMMING

Understanding IFF Files

Drawing programs such as Deluxe Paint are not just for artists and 'doodlers'. They are, or can be, useful program development tools — e.g. they can be used for creating static displays and building sets of image data to be used in your own programs. To be able to use the files that the various proprietary programs produce it is necessary to understand the file structures. Fortunately almost all of the Amiga packages conform closely to a standard devised by Electronic Arts and adopted by Commodore called the Interchange File Format (IFF for short). Although the IFF standard covers several classes of data (including animation, text and music) this introduction is going to concentrate exclusively on the part relating to the storage of two dimensional raster graphics images, i.e. pictures.

Two dimensional raster images are stored using a form known as the interleaved bit map. The data is usually compressed using a technique called ByteRunl compression and this compressed data, together with other IFF data items, constitutes the picture file that you find stored on disk. The various file sections are known, in IFF parlance, as 'chunks'. Programs that read IFF data look for and use chunks that they recognise and ignore those chunks that they cannot or do not wish to handle. It is possible therefore to take an IFF 'colour cycling' picture and read it into your prgram as a static display just by ignoring the appropriate 'colour cycling' chunk.

Electronic Arts/Commodore have released a substantial amount of information for those wishing to produce applications programs that read and write IFF data. They have also produced public domain utility software to help. To carry out any substantial amount of IFF programming this material is essential reading.

In some cases you can avoid using the 'fully fledged' generalised IFF routines, especially if your application has specific and limited use of IFF data formats. If you have never seen an IFF file before it is well worth displaying one 'on screen'. You can easily identify the chunks present by examining such files in Hex/ASCII form. If you have a single disk system it is probably best to copy a few AmigaDOS commands from the system disk into rams. Here is what is required:

I: Load the WorkBench and open a CLI window.

II: type MAKEDIR RAM:C to create a ram disk with a C directory.

II: copy the AmigaDOS commands DIR and TYPE into ram by typing
COPY SYS:C/DIR TO RAM:C
COPY SYS:C/TYPE TO RAM:C

IV: type CD RAM:C so that the current directory is now RAM:C

If you now place a disk with some IFF pictures in DF0: you can use DIR and TYPE to examine them. Once you have found a suitable picture file you can display it in Hex/ASCII form by typing TYPE DF0:path/filename OPT H.

As soon as the data starts being displayed press the space bar. This will pause the display before you lose the early data off the top of the window. When you are ready to restart the display just press the return key. If you have chosen an IFF picture file you will be looking at a Hex/ASCII output similar to that shown in figure 1:

All IFF chunks start with a four character identifier followed by a four byte (signed 32 bit) count giving the size of the chunk's data (termed the 'chunksize'). Following this is the data itself and, if the chunksize is an odd number, a zero pad byte at the end of the data. The overall physical size of the chunk is therefore given by the formula:

size in bytes=chunksize + 8 (+1 if chunksize is odd).

As a C structure definition a Chunk can be described like this:

```
typedef struct {
LONG chunkID;
LONG chunksize;
UBYTE chunkdata [/*size given by
                        chunksize */];
          } Chunk;
```

Our Hex/ASCII dump starts with the four letters FORM. This is a keyword that tells us that the datafile 'chunk', i.e. the file itself, describes a self contained IFF data section. In our example case the FORM type is ILBM (the chunk identifier for an interleaved but map image with colour map), so the first twelve bytes announce the fact that we are dealing with an IFF file which contains a data section, gives the overall size of the chunk relating to this section

and identifies the data as being ILBM type. Although our interest is in picture data it is worth mentioning that these ILBM chunks can have several purposes. They can specify a picture in terms of size, resolution, colour etc. They can specify an image to be merged into a larger picture (this is how DPaint's 'Brushes' are stored), or they can be used just to store colour information.

The BitMapHeader

An ILBM chunk will have various 'property' chunks embedded within it. One of these property chunks is called the bit map header. It is an IFF 'required property' — it MUST be present. The bit map header (chunk identifier BMHD) describes the dimensions and the encoding of the image data to follow later. In figure 1 you can see the four character chunk identifier as the 13th, 14th, 15th and 16th bytes of the ASCII dump. Following this is the 32 bit chunksize 00000014hex. This tells us that the BitMapHeader's 'chunksize' is 20 bytes. If we consider the IFF bit map header chunk as a C structure you will be able to see exactly what those 20 bytes of header data are telling us.

```
struct {
UWORD    width,height;
     /*width and height of raster in pixels*/
WORD     xpos,ypos;
     /*pixel position for this image*/
UBYTE    planes;
     /*number of bit planes in image*/
UBYTE    masking;
     /*indicates masking technique in use*/
UBYTE    compression;
     /*indicates the compression technique*/
UBYTE    padbyte;
     /*unused at present — should be zero*/
UWORD    transparentColour;
     /*"transparent colour number"*/
UBYTE    xAxpect,yAspect;
     /*pixel width:height ratio*/
WORD     pageWidth,pageHeight;
     /*source page size in pixels*/
     } BitMapHeader;
```

The first word (two bytes) give the image width, the second gives its height. In our example the values are — 0140hex (320 decimal) and 00C8hex (200 decimal) indicating a 320 to 200 pixel image. The next two words specify the x/y position of the image on the screen (zeros in our example). Following this is an 8 bit unsigned value which tells

continued

```
/* =============================================================== */
/* Title:          UnPackRow() version 0.0                         */
/* Disk Ref:       UnPackRow[v0.0]                                 */
/* Date:           1st September 1987                              */
/* Programmer:     Paul Andreas Overaa                             */
/* --------------------------------------------------------------- */
/* Routine is used to expand data that has been encoded using Electronic */
/* Art's standard 'cmpByteRun1' run compression technique.         */
/* --------------------------------------------------------------- */

£define GetByte()    (*source++)           /* MACRO DEFINITIONS */
£define PutByte(c)   (*dest++ = (c))

BOOL UnPackRow(source_p,dest_p,rowSize)
BYTE **source_p, **dest_p; WORD rowSize;
{
register BYTE *source=*source_p;
register BYTE *dest=*dest_p;
register WORD n; register BYTE c;
WORD length=0;
BOOL error_flag=FALSE;
WORD minus128=-128;      /* get compiler to generate this at compile time */

do {

    n=GetByte();
                              /* copy next  (n+1)  bytes  literally */
    if(n>=0) {                /* but... must check that we will not */
             n+=1;length+=n;  /* exceed rowSize before sending data */

        if(length>rowSize) {error_flag=TRUE;}

            else          { /*  OK to send data to destination    */
                          do{PutByte(GetByte());} while(--n>0);
                          }
            }

    else   {
           if(n!=minus128)    /* duplicate the next data byte (n+1) */
                             /* times if the 'rowSize' check is OK */
                {n=-n+1;length+=n;

                if(length>rowSize) {error_flag=TRUE;}

                    else { /*  OK to send data to destination    */
                         c=GetByte();do{PutByte(c);} while(--n>0);
                         }
                }
           }

    }while(length<rowSize);

*source_p=source;*dest_p=dest;      /* update contents of pointers    */

return(error_flag);

}

/* =============================================================== */
```

```
<-------- Hex data dump ----------->   <- Equivalent ->  <- my notes ->
(16 bytes {i.e. 10 hex} bytes per row)  ASCII character
                                        form

                                                          Start of the
0000: 464F524D 000019AE 494C424D 424D4844   FORM....ILBMBMHD  <-- BitMapHeader
0010: 00000014 014000C8 00000000 05020100   .....@..........
0020: 00000A0B 014000C8 434D4150 00000060   .....@..CMAP...`  <-- Colour Map
0030: 000000E0 C0A0E000 00A00000 D08000F0   ................      chunk starts
0040: E00080F0 00008000 00B06000 D0D000A0   ................      here
0050: F00070C0 0000F070 00F0C000 E0C00080   ..p....p........
0060: 602000E0 5020A050 20F0C0A0 30303040   ..P .P ...000@
0070: 40405050 50606060 70707080 80809090   @@PPP```ppp.....
0080: 90A0A0A0 C0C0C0D0 D0D0E0E0 E0F0F0F0   ................
0090: 44505056 00000068 00000000 00000000   DPPV...h........
00A0: 01680000 014000C8 0002005A 00020000   .h...@.....Z....
00B0: 00020000 00020000 00000000 00000000   ................
00C0: 00000000 00000000 00000000 00000000   ................
00D0: 00000000 00000000 00000000 00010002   ................
00E0: 00000000 00000000 00000000 00010002   ................
00F0: 00000000 00000000 00000000 00010002   ................
0100: 43524E47 00000008 00000AAA 0001141F   CRNG............  <--Deluxe Paint
0110: 43524E47 00000008 00000AAA 00010307   CRNG............     colour range
0120: 43524E47 00000008 00000AAA 00010000   CRNG............     chunks
0130: 43524E47 00000008 00000AAA 00010000   CRNG............
0140: 424F4459 0000186E D900D900 D9FFD9FF   BODY...n........  <--This is where
0150: D900D900 D900D9FF D9FFD900 D900D900   ................     the pixel data
0160: 01FFFEDB FF01FFFE DBFFD900 D900D900   ................     starts
0170: D9FFD9FF D900D900 D90001FF FDDBFF01   ................
0180: FFFDDBFF D900D900 D900D9FF D9FFD900   ................
0190: D900D900 D9FFD9FF D900D900 D900D9FF   ................
01A0: D9FFD900 01007FDC FF0080D9 00D9FF01   ................
01B0: FF80DC00 007FD900 01007FDC FF0080D9   ................
01C0: 00D9FF01 FF80DC00 007FD900 01007FDC   ................
01D0: FF0080D9 00D9FF01 FF80DC00 007FD900   ................
01E0: 01007FDC FF0080D9 00D9FF01 FF80DC00   ................
0E40: 0780D900 D9FF01FF 87DDFF01 F87FD900   ................
```

Figure 1: Hex ASCII dump of part of a typical IFF ILBM file.

(obtained using AmigaDos's TYPE command with OPT H)

us how many bitplanes the image contains.

The 'masking' value identifies one of four types of mask being used. There are currently four possibilities:

0   indicates no mask.
1   indicates that a mask is interleaved with the bit plane data.
2   indicates that parts of the image are to be regarded as transparent.
3   indicates a MacPaint 'lasso' type mask.

(A 'mask' is an optional bitplane that tells us whether or not to move pixel data to a destination. Every bit in the mask thus identifies a pixel position in each of the real bitplanes. Where the mask bitplane pixel is 'set' we copy the corresponding picture pixel data to the destination. Where the equivalent mask bit is not set we leave the destination pixels alone.)

The unsigned byte which follows the mask byte identifies the type of algorithm that has been used to compress the data. If the value is zero it indicates that the data is not compressed. If the value is one it indicates that Electronic Arts standard compression algorithm has been used. Values greater than unity are rarely seen and mean that some other compression technique has been employed (in these cases the algorithm must be known to the reader program before the data can be interpreted). The padbyte in the header is not used at present. The 'transparentColour' word specifies which bit pattern is to be considered as transparent and is only relevant if the mask flag is set to a value greater than unity. Bytes 15 and 16 are the x/y aspect ratio and are available to help programs account for the different physical pixel width/height characteristics of not only the various Amiga screen types but different machine types as well (IFF data, in most cases, is NOT Amiga specific). The last two fields give the pixel size of the original source page.

Colour Map Data
The chunk identifier CMAP identifies an optional colour map property chunk. As should be expected it starts with its chunk identifier followed by the chunk-size. The data itself is provided as byte triplets of red, green and blue intensity values. On the Amiga we use the upper four bits of each of the triplet bytes to set up the machines colour registers.

Other Properties
Other property chunks are often found embedded in a FORM ILBM. Here are the most important ones . . .

GRAB identifies a handle or 'hotspot' within an image

DEST describes how to merge bit-plane data into an existing picture that has more bitplanes available than the image data in question.

SPRT defines a sprite image.

continued

CAMG is an Amiga specific chunk related to special display modes including Hold and Modify mode. CRNG/CCRT provide 'colour cycling' information.

Picking out and using the various property chunks is not too difficult providing you can identify the chunks in the first place. Using the pixel data itself (which is stored in the BODY chunk) is a bit more difficult because the bitplane data is 'interleaved' and usually compressed. Look now at the overall arrangement.

The BODY chunk

The picture data itself is stored as a series of data items representing the video 'scanlines'. Each scanline consists of the data from each of the bitplanes possibly followed by an additional 'pseudo-plane', defining the masking. Figure 2 should give you the basic idea.

```
1st Video Scanline
  <——1st row of bitplane 1 data ——>
  <——1st row of bitplane 2 data ——>
  <——. . . .                     ——>
  <——1st row of bitplane n data ——>
  <—[1st row of mask plane if used]—>

2nd Video Scanline
  <——2nd row of bitplane 1 data ——>
```

```
  <——2nd row of bitplane 2 data ——>
  <——. . . .                     ——>
  <——2nd row of bitplane n data ——>
  <—[2nd row of mask plane if used]—>

xth Video Scanline
  <——xth row of bitplane 1 data ——>
  <——xth row of bitplane 2 data ——>
  <——. . . .                     ——>
  <——xth row of bitplane n data ——>
  <—[xth row of mask plane if used]—>
```

Figure 2: Layout for x video scanlines of n bitplanes as stored in the ILBM's BODY chunk.

This interleaved approach ensures that all of the data needed to produce a given scanline is kept together — this is often convenient. Providing you are aware of this arrangement you can use the data simply by reading the rows of pixel data and copying them into the appropriate bitplane memory locations of your application program's screen.

ByteRunl Compression

Most programs that produce IFF picture files compress each row of their BODY chunk data using a scheme that in IFF literature is called the 'ByteRunl' compression. To use such data it has to be decompressed. This is what you must do to EACH ROW of data to get it back to it's original form . . . Read the first byte of the row (let's call it 'n') then perform one of the following actions:

Value of n	Action to be performed
0 ——▶ 127	copy literally the next (n+1) bytes of data.
−1 ——▶ −127	duplicate the next byte of data (−n+1) times.
−128	regard this as a 'no-operation' (i.e. just skip over that byte).

You then read the next available byte of the compressed data and do the same thing again, continuing until one row of data has been produced. The procedure is then repeated for each bitplane by which time the data for the first video scanline has been produced. The same process is then applied to the second scanline etc. (Note: the 'row size', in bytes, can be deduced from the field in the BitMapHeader which provides the pixel width of the picture.)

The public domain decompression routine, called 'UnPacker', was written by Jerry Morrison and Steve Shaw of Electronic Arts and is available on various public domain disks. For those of you that want to see the type of C code needed to perform the ByteRunl decompression I've included this month a listing of the routine which I am currently using. **P.A.O.**

ANIMATOR: APPRENTICE

Hash Enterprises

John Walker felt his name gave him the right start for reviewing a new program to make moving images on the Amiga

Walt Disney did it the hard way, with pencil and paper, paints and painstaking photography. It should not be too long before we can do it the easy way — by using computers to produce effective cartoon-style animations. That time has not yet arrived. Computer animation requires massive processing power beyond the capabilities of micros. But the Amiga is making it possible for users to experience some of the possibilities of computer cartoons.

From the first, such programs as Aegis Animator and Electronic Arts' Deluxe Video showed that you could create short moving pictures without too much trouble. Now there is a new generation of programs on the way that let you create not just moving shapes but animations in three dimensions, which is a far more complex task.

The first to arrive and establish itself is Martin Hash's Animator: Apprentice, which consists of seven linked programs aimed at producing what he calls "organic animations" — that is, those involving characters of one sort or another, from people to animals.

It is a good program, although it has its defects. It does simplify the extremely involved task of creating three-dimensional animations but don't expect it to be easy. You will still need to put in a lot of hard work to produce attractive results and they will still be inferior to animations produced by traditional methods.

Animator: Apprentice (which I'll call AA from here-on) breaks the process of animation down into a series of small, linked steps but it still needs a lot of power — and storage space. A frame of an animation, saved in compressed form, will take up around 10K of disk space, which means that one disk will hold no more than 6 seconds or so of animation.

"Its animations are designed to be displayed against a background provided by a genlock device, which allows images from a TV or video recorder to be mixed with Amiga graphics"

The program itself needs a minimum of 1 Megabyte of RAM in which to run. You'll also need a paint program that produces IFF-files, such as Deluxe Paint. A video digitiser would also be useful, particularly for those whose artistic skills are limited.

It is difficult to know who AA is aimed at. Its market is presumably professional or semi-professional users since its animations are designed to be displayed against a background provided by a genlock device, which allows images from a TV or video recorder to be mixed with Amiga graphics.

You cannot put the animations against any other background, such as an IFF-compatible drawing or painting created with a graphics program. If you do not have a genlock, then you are limited to a plain background.

The results you can obtain, while good when judged by most other microcomputer anmimations, are not of a standard that would satisfy many professionals. The approach used by Disney's animators or by Chuck "Bugs Bunny" Jones and others depends upon exaggeration for its effect. Movements may be based upon a close study of the way humans and animals move but they are drawn out of all proportion. In cartoons, when anyone is surprised, their eyes literally pop out of their heads.

It is precisely this larger-than-life style that cannot easily be recreated with AA. But then, even the Disney Studios, experimenting with cartoons produced using powerful mainframe computers, is having trouble transferring its house style to a more mechanical environment.

Using traditional methods, an animator draws the characters in their key positions, showing their actions at the beginning and end of their movements. Then lesser artists fill in the gaps between these key frames, a process known as "in-betweening". With computer animation, the micro should handle such in-betweening automatically.

AA does not perform in-betweening, although it does use an economical method of animating figures. It also allows you to change the speed of animations. Its great strength lies in the way it differs from the pencil and paper method for it separates the animation of a specific action from the character to whom the action applies. You animate such actions as walking or talking on their own and then attach these animations to a character.

Thus, once the action of walking has been defined you can then use that action to make any character walk, whether it be a tall man, a short man, a woman or a child. In this way you can build up a library

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continued

ANIMATOR: APPRENTICE

of actions which can be used over and over again for different animations.

The more you use the program, the easier it becomes to create complex animations. Martin Hash plans to sell library disks created by the program's users which — if the idea is successful — will be a great help in using it more effectively.

Hash's approach — which he calls "hashnique" — has weaknesses of its own, of course. Unless you define different styles of walking, all your characters will walk in the same way. One of the joys of traditional animation is the individuality of movement. Think of Popeye's rolling sailor's swagger or Goofy's splay-pawed lollop. Such ideosyncratic motion is hard to achieve with AA, although there are ways of disguising its lack.

> *"These isolated actions can then be saved so that you can build up a library, a whole repertoire of actions, to be used with different characters"*

Sound effects and music play a vital part in cartoon animations. You cannot add sound within AA. As it is intended to be used in conjunction with a video-recorder, no doubt you are expected to dub in the sound after. In traditional animation, of course, the soundtrack usually comes first, with the visuals being matched to it.

With AA, you first design your character as a stick figure — each segment of a limb or other moving part, such as lips or eyes, is defined in Hashspeak as a "bone". You not only create the bones, but indicate the

way they are joined together. So the right foot-bone is connected to the right leg-bone, which is connected to the right thigh-bone . . . and, yes, those bones are gonna dance around when you've finished.

You then animate a specific action, such as walking. The action is dealt with in isolation. It is not walking from one point to another but the act of walking itself: of bending and raising one leg, swinging an arm, bending and raising the other leg and so on.These isolated actions can then be saved so that you can build up a library, a whole repertoire of actions, to be used with different characters.

You animate the stick figure by moving its bones to a new position with the mouse and entering the angle of motion into a requester box that pops up on-screen. You can play back this animation and view it from the front, back, top, bottom, or left or right side until it satisfies you. The various stages of the movement form different frames of the animation.

You can exercise considerable control, for you can add sub-movements to the main movement — say, the way the head tilts when a leg is raised. You can also

specify "ease", which adds acceleration and deceleration to actions, such as an arm swinging back and forth.

The disadvantage of this approach is that you are working on a small, simple figure that lacks any detail. It's sometimes hard to decide whether an action that will eventually be seen in three dimensions looks right when performed by a tiny match-stick man.And if you wanted to put in detail, such as handkerchief bobbing up in a pocket with each step your character took, you'd need to define that as a separ-

ate animation to be added at a later stage.

Next you choreograph the actual movement of your stick figure on a stage-like arena. You can put more than one character on-stage at the same time. The movements across the stage are saved as more frames of action.

Three other controls can alter the appearance of the animation, using film techniques. You need to imagine your animation as an actor being filmed. You can move your camera, tilting it or panning it to give a different view of the action. You can also change the focal length of the camera's lens, altering the perspective of the scene and you can alter the intensity and angle of the light illuminating it.

The animation can then be viewed in its entirety, still showing a stick figure, but with the perspective and movement, of figure and camera, that you choreographed.

The hardest part comes with the Sculpt program in which you turn the bones of entirety, still showing a stick figure but acter of three dimensions. The task is not made easier by the way information about it is presented, divided between AA's manual and its appendices.

> *"As usually happens when a manual is written by the programmer, too much is left unexplained"*

Indeed, the manual is an amateurish production, consisting of photocopied, typewritten, unnumbered A4-sized pages in a ring binder. Each of the seven programs is dealt with in turn but there is no index. As usually happens when a manual is written by the programmer, too much is left unexplained; the confusion is compounded by spelling mistakes.
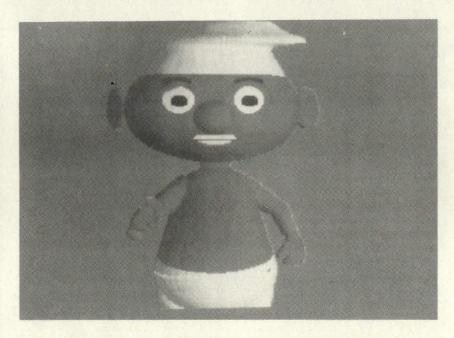
At one point Hash defines a collection of certain types of bones as a "brach". Why a brach — a word that has, up to now, been used to describe a hound that hunts by scent?

Early on, when defining each part of your animation, you are confronted by a requester box in which you have to enter numbers between 0 and 100 for its diffuse reflection and its specular reflection.

And what are they?

Hash's sole explanation is that they refer to shading characteristics and that "highly reflective surfaces will have higher values which range from 0 to 100 per cent. Normally, organic surfaces have a very small diffuse component and a high specular component." That is no help at all.

The manual is at its most incoherent when dealing with the Sculpt module. This

ANIMATOR: APPRENTICE

involves several steps, beginning with using a graphic program such as Deluxe Paint to create a detailed drawing for each segment or bone of the stick figure.

Each segment requires several drawings of its different aspects. The manual advises you to plan your character and its various segments on graph paper first. I am always unhappy with programs that force you to use graph paper — the point of computers is to free us from such calculations.

The program first creates a featureless three-dimensional shape onto which the detailed drawings are then mapped. The final process of turning the stick figure animation into a finished 3-D version is automatic. But you will probably need to stick a blank, formatted disk in the Amiga's internal drive and leave it working away overnight.

It takes an average of 10 minutes to complete a frame and sometimes the duration can be nearer half-an-hour. An animation will contain around 60 frames, which are unlikely to be computed in under six hours. The resulting animation can then be shown in real time, at varying speeds, or played back one frame at a time for recording on film or with video-recorder.

There is no doubt that Animator:

Apprentice is an extremely clever program that makes it easier to create 3-D animations. It has great potential, once you come to grips with it but you have to work harder at that than you should.

"The Amiga Centre, Scotland, who distribute the program in the UK also sell, at £25, a two-hour video"

I found that the results lacked the exaggerated appeal of traditional animations. The program's inability to put any background behind the animations other than with a genlock also limits its usefulness.

The Amiga Centre, Scotland, who distribute the program in the UK also sell, at £25, a two-hour video made by Martin Hash in which he explains the program step-by-step. I have not seen it but it may well be an improvement over the manual. Also available, at £7, are disks containing demo animations. Any potential purchaser would do well to get hold of the video or the demos first, so that he, or she, can make up their own minds whether the results justify the considerable expenditure.

Contact: Hash Enterprises, 14201 SE 16th Circle, Vancouver, WA 98684.
Phone: (206) 256-8567.
British distributor: Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh EH1 3RN.
Phone: (031) 557 4242.

Price: £195.

The Desktop Guide to Desktop Publishing

by
John Walker
(Glentop Press Ltd. £8.50)

Desktop Publishing — or DTP for short — is going to change the face of the publishing world, or so they tell us. All those 'little' magazines, the church newsletters, the club posters, even brochures and invitations, are now within the printing capabilities of anyone who possesses a computer and a modicum of commonsense.

As with all new programs, though, the thought of wading through the manuals that accompany them is, to many people, a daunting prospect. Fear not. John Walker's book, 'The Desktop Guide to Desktop Publishing', (Glentop Press Ltd., £8.50), is here to help. It could well be sub-titled 'The DTP Beginners Best Friend' for it contains a wealth of information, not only on how to use your DTP to its best advantage, but on which program is the right one for your computer and what to look out before you buy the software.

John Walker knows where of he speaks. He is a journalist with executive experience on national newspapers and magazines and he wrote, typeset, designed and printed the original manuscript — or should it be computerscript? — using a 512K Commodore Amiga 1000 running Gold Disk's *PageSetter and PageSetter LaserScript* software. He is also a regular contributor to *Amiga User International Magazine.* He has my unbounded admiration. As I am myself at present, fighting my way through a DTP manual/program his book has come like manna from heaven.

Included in his DTP Guide are chapters on layout, graphics, design, style, and if grammar is not your strong point he helps with that, too. If you are not sure which type of printing is best for the publication you are hoping to produce he gives you many illustrations, showing what different kinds of layout look like and what, and what not, to do when designing a page.

One of the best pieces of advice he gives to the 'amateur' is 'don't try and compete with the professional on the printed quality of your work'. What you can do, however, with the help of this book, is to produce work that is original and individual, fun to do and a pleasure to read.

Until recently the only DTP package for the 64 was *Newsroom* John Walker says fairly good results can be obtained with it. He is also impressed with the word processor that forms part of *GEOS*, the window/icon-based operating environment which has the advantage of speeding up the 64's disk drive and giving it a new lease of life. The GEOS material increasing all the time, is also available for the 128 in different version. Advanced Memory Systems, *Stop Press* is (a recent CCI Special offer) is also sited as a useful addition to the DTP armoury of the 64/128 range.

The 'DTP Guide' is recommended for one other thing, too. It is written clearly and simply in language that the average layman-or-woman can understand. No complicated printers' jargon or publishers' technospeak here either; there is a full glossary explaining all the terms you may happen to have seen elsewhere.

Amiga Programmers Guide.

Compute books have a reputation for high quality goods. Their latest offering, the Amiga Programmers Guide is up to the same standard. This book is a little unusual in being a joint effort and has no less than nine authors. I often find that books of this type suffer from a lack of consistency but happily the Amiga Programmers Guide has avoided this problem and has been very ably edited by Stephen Levy. It is almost impossible to cover every aspect of the Amiga in one book. This should be borne in mind when examining any book about the Amiga.

The Amiga Programmers Guide consists of 458 pages divided into 8 chapters, 8 appendices and an index. The book is half spiral bound in the manner that is unique to Compute! books.

The eight chapters are:

1. Introduction. Give a quick overview of the Amiga and some of its facilities.

2. Basic Programming. A nice introduction to Amiga Basic with some very good explanations of the commands, and lots of short examples to illustrate the command in question.

3. Getting started with Amiga-Dos. Gives a basic introduction to AmigaDos and the conventions for file names and paths.

4. AmigaDos Batch Files. A very short chapter (10 pages) that very briefly describes the use of batch files and how to create/edit them with ED, mainly concentrate on the startup sequence.

5. Graphics. This is a good description of the graphic capabilities of the Amiga and how to use them. Some of the graphic library calls are described along with windows, patterns objects etc.

6. Programming Amiga Sound. A solid introduction to the basic principles of producing sound with the WAVE and SOUND commands with an aside into the speech synthesiser.

7. C Programming. This is a heavy chapter, and does not profess to teach you how to program in C, but it lays down the rules of how to program the Amiga in C. This chapter describes the data structures that the Amiga uses, and how to access the library functions. Graphics, I/O and math functions are all covered with many examples.

8. Machine Language. Regardless of what many people say, as far as I am concerned, nobody can call himself a programmer unless he knows how to use machine code. The problem with the Amiga is that it is a complex beast to master, but when working at machine level the rewards in terms of speed and efficiency are worth the effort. So I was very pleased to see a chapter devoted to machine code, an it does answer a lot of questions about the Amiga operating system and how to access it. There are also many examples listed explaining the techniques used. Enough information is presented here that will allow the machine code programmer to become familiar enough with the Amiga system to write routines that can be integrated with the Amiga system.

It may not be THE best Amiga book about but it is almost certainly one of the most useful. Both the novice and experienced programmer alike should find it full of useful information to make programming the Amiga easier. It makes a very good reference guide and should suit just about everybody. Well worth keeping a copy at hand.

The appendices and the index are comprehensive. A 'Style Book' lists fonts and typestyles that should be used to achieve consistency in your publications. (Important if you want to keep your *readers* 'user-friendly'). There is also a guide to the software available, not just for the 64, but for other computers around. In addition there is a helpful list of the names and addresses of the leading distributors and/or publishers who produce them.

DTP has been called the biggest revolution in printing and publishing for 500 years. If you want to be part of that revolution and to know exactly how to *use* your part of it to the best advantage, then this is certainly the book for you.

D.M.

INSIDE AMIGA GRAPHICS

A new book just published gives you the key to the 'secret' world of the Amiga's dazzling graphics.

At last! One full year of trying, reference to the heavy Amiga technical manuals (you know the ones — size of telephone directories and about as useful to the novice) and finally a book which actually lets you tell your Amiga what to do.

It seems it's always been the other way around. Endless rude messages like "You MUST replace volume so-and-so in drive DF1:", and the oh-so-familiar Guru ramblings. Nice of them to be printed in red. As if you weren't in enough panic...

But author Sheldon Leeman has obviously been there too an now in his latest book for Compute! Books (available U.K. from Rochdale-based 16 Bit Software) he unlocks the secrets of how to do something useful yourself on the Amiga instead of relying on those annoyingly brilliant programmers.

He unravels the mysteries of the machine's capabilities and does a thorough job of guiding the user through the intricacies of making the computer monitor show more than an "Insert Workbench" screen.

Set at intermediate/advanced level (it assumes some knowledge of programming in Amiga BASIC or the C language) it is a gentle guide ito how to use the Amiga's powerful display characteristics— from using bobs (blitter objects) and sprites, to designing your own custom screens and controlling Intuition routines.

Accompanying the tutorials and reference guides are working examples to type in and learn from — and it's these which will help free you from always being the prisoner fo someone else's program.

The book, which is produced as a nice spiral-boud thick manual, will really do all the groundwork for you, laying the foundatons for future development. Once you actually know how to control a bob it's up to you how you use the information. The information contained in the book is enough to exploit the whole range of Amiga graphics capabilities.

As yet I am in the early stages of coming to grips with C, so I welcomed the numerous comment lines explaining precisely what was being done. Similarly the BASIC code is well documented so you're not actually working blind.

The book is crammed with advice and information — from flood filling to drawing shapes; it tells you neat little things such as how to change the mouse pointer into a different shape and takes you into the highly complex world of dashing sprites and bobs around your display.

I would say this book is the single most important work I have read on the Amiga outside the invaluable AmigaDos manual.

In one volume it lifts the veil which has made the Amiga's power unattainable for so long. It is written in a friendly style with clearly stated advice and information.

The Amiga's secrets are out at last — and everyone can benefit. Unreservedly a 'must' for anyone seriously wanting to program the Amiga's graphics.

Price: £14.95
Contact: 16 Bit Software
TELEPHONE 0706 43519

KIKSTART II

Mastertronic

When Mastertronic started producing budget games, the quality of their games was pretty bad. The game that restored my hope on decent cheap games was Kikstart; it was the first Mastertronic game I played that was worth playing more than once. That was followed by the sequel which was even better. Amiga owners will be glad to hear that they too can now take to the controls of a dirt bike, and take the rough with the smooth.

One or two players can race over a choice of 24 courses, five at a time. The idea is to complete the courses on a faster time than your opponent. All the obstacles I would expect to find in trials riding are there, ramps, bunny hops, bumpy ground, mud, water, logs and oil drums, and also some more out of the ordinary obstacles, such as springs, ski-jumps, picnic tables and fire.

Each player has his own view of the game which scrolls along with the bike. To negotiate the hazards, you can accelerate, brake, wheelie and jump. Getting the right speed at the right time,

and timing your jumps is how you'll win. Watching the speedo helps gauge your speed on gates and logs that have to be taken slowly, obstacles that need to be ridden slowly, makes it more than just a matter of who can jump the furthest, as you are always watching your speed. Playing against the computer is fun, but of course it is more enjoyable with a friend.

To add some variation, there is a construction kit in the program that allows you to redesign any of the tracks and save them to disk for use in the future. This is easy enough to use, and of course you can make the courses as easy or

hard as you like. If you are into ski-jumps, why not have a whole track of the things? Using this, you could design tracks for a younger player who might find the ones included too hard.

During the conversion, the graphics and sound have beeen improved slightly, although the game is the same. The bike controls are a little slow to react, and instead of being zapped by the fire as in the 64 version, the rider merely falls off, but apart from these minor points, it is all being considerably improved.

A couple of tunes play in the game, which can get a little boring. All the scrolling is smooth, and the backgrounds and sprites are drawn and coloured well.

Kikstart II keeps all the playability of the original, but it has to be said that it does little to push the Amiga's hardware. But this is what budget software should be about, not just cheap rubbish that sells on the basis that it has BMX or Ninja in the title. Kikstart II is a well presented fun game that should be near the top of your shopping list.

T.H.

| Graphics: 7 |
| Sound: 6 |
| Playability: 8 |
| Value: 8 |
| Price: £9.95 |

Star Wars

Domark

Icannot say that Star Wars was ever one of my favourite coin-ops, but is has to be credited for introducing a very original game style that has since been the inspiration for a good many home computer games. At last, it has appeared on the Amiga, and it has to be praised for certainly keeping up the high standard of the few Amiga coin-op conversions we have so far had the pleasure of playing.
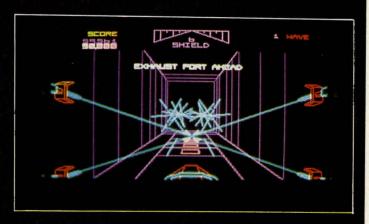
Three of the most exciting scenes from the film have been recreated with you playing the part of Luke Skywalker. Your mission to destroy the Deathstar begins after selecting one of three skill levels, the harder ones giving higher bonuses. From the cockpit of your X-wing fighter you can see the Deathstar in the distance, guarded by fleets of Darth Vader's minions. Throughout the game, the view is in 3D vector graphics, moving far smoother than the plodding 64 version. A flight path to the Deathstar is automatically controlled, leaving you to sort out the baddies. Taking out their fireball missiles are your first concern, but the ships should also be blown away at the first opportunity. Reaching the Deathstar takes you to the second stage.

Anyone not familiar with the coin-op could be forgiven for thinking this was copied from Starglider, but it was in fact the other way round for Star Wars appeared in the arcades well before the 'Glider' made its appearance on the home series.

Swooping low over the surface of the artificial star, the ground rushes below you while a multitude of

towers loom up towards you. Once again, it is a matter of surviving the enemy's attacks. Fireballs need to be fought off, and shooting the tops of the towers earns you more points. The graphics are very effective, especially as your ship sharply banks left and right giving you a very realistic feeling that you are actually there.

The final scene takes place in the trench encircling the Deathstar. Once again, fireballs threaten to wear down your shields. Catwalks stretch across the trench at differing levels, and combine with vertical barriers restricting your movement. To a lesser extent than the second stage, the vectors provide a convincing and exciting environment. The climax of the game comes as you put a shot into the exhaust port at the end of the trench, blowing up the Deathstar. A disappointing explosion follows, accompanied by some speech sampled from the film, before the whole thing starts again.

A few more sampled voices do well to enhance the atmosphere, as do also the powerful sound effects. The graphics are simple, but at least they are fast, as they should be on the Amiga. Star Wars is great for a quick game, but once you've played through it few times, I am not sure that its appeal will last tremendously long. Nevertheless if you are a fan of the original, coin-op or movie, you will love this and the frighteningly fast excitement it provides. At last, Domark have come up with a game that you will have more fun playing than chucking in the bin.

T.H.
Price: £19.95

Graphics 7
Sound: 9
Playability: 8
Value: 8

BLACK SHADOW

CRL

A mistake made far too often by programmers of shoot 'em ups is making them too demanding and thus frustrating for the average player. Unfortunately, this is the case with CRL's Black Shadow. It is certainly true that an easy game can get monotonous if it is completed quickly. But it seems in an attempt to give Black Shadow longer lasting appeal, this game's difficulty level has been increased, which may result in the same monotony if after playing many games the player still gets nowhere. In this case, the problem is not the need to respond to quality but that the programmers seem to have thrown everything they can think of onto the screen at the same time with a consequent confusion and extreme difficulty in reaching the required standard.

Taking elements from Slap Fight, Xevious and Uridium, Black Shadow can be played by one or two players. Each can choose one of a few characters from a selection of neatly digitised faces. Mouse or joystick controls are chosen before the game starts. In two player mode, both players are on screen at once, a plus for anyone with a friend to hand.

As the vehicles are launched from the mothership, the slow-scrolling screen brings into view a flat world seemingly suspended in space. This green and somewhat unpleasant land has a mass of aliens mysteriously floating above the ground. Black Shadow abides by the first law of space shoot 'em ups which states that all ships and aliens will fly at exactly the same height as each other. With the large amount of aliens and missiles on the screen, collisions occur all too often; not only are there aliens to watch out for, but tall buildings á la Uridium block your way.

Your ship is armed with a twin-shot cannon and air-to-ground missiles. Missiles are launched by pressing fire and pulling the joystick back, not an ideal method but easier to use than the space bar. One trouble with the game is its lack of speed. It relies mainly on the huge quantity of on-screen hazards and the slow moving vehicle for the problems it sets you rather than the more usual high speed and quick reactions. Many will say the latter would make for a far more enjoyable game.

Black Shadow graphics are very colourful, but not up to the high standard of Xenon, for instance. The backgrounds are more detailed, but scroll very slowly so each level is rather short. Some good effects of glowing furnaces and aliens make use of the Amiga's many colours, adding interest here and there. A continuous drone can be heard in the background, with a few sampled explosions over the top.
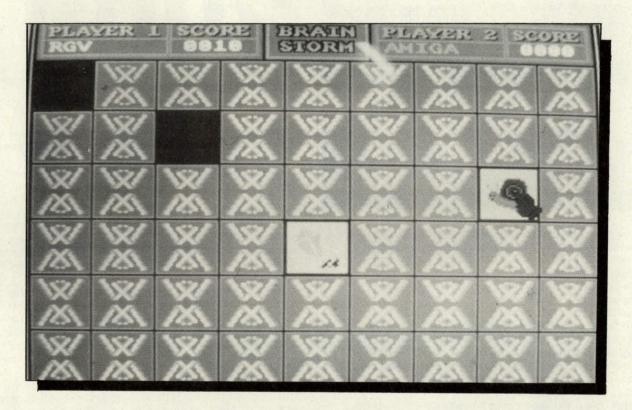
As a first 16-bit release from CRL, Black Shadow is not to be despised. They have decided to go for an easily recognissable theme which is understandable. However to compete with the likes of Insanity Fight and Xenon, any similar games will have to be of a very high standard. Black Shadow, whilst being a respectable release, just is not really in terms of graphics or gameplay in the same league as these.

B.V.

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

BRAIN STORM

KING SIZE

With the price of many Amiga games at £20 upward, it's good to see games being released at a more reasonable price. Mastertronic have got the idea, releasing quality games like Ninja Mission and Space Ranger that are as good as a lot of full priced games. Unfortunately, Brain Storm does not seem to reach the same high standard.

Anyone who has ever played the card game "pairs" will be familiar with the object of Brain Storm. 54 cards are laid face down on the screen. Each of these have an identical card somewhere else on the screen. Turning two cards at a time, the object is to find each card's pair. When this has been done, the cards disappear from the screen until no cards are left.

The game can be played against a computer opponent, another human, or solo. When playing against the computer, nine skill levels can be chosen from. Six sets of cards are included for a bit of variation.

That's all there is to it. As you'd expect, it gets somewhat boring very quickly. Does anyone really enjoy these games? I suppose young children might find it fun for a short while, but because it's so uneventful. I can't see it holding their attention for long. As for older players, they may not be bored but they probably won't be driven mad with excitement either.

Yes, Brain Storm is certainly cheap, but this does nothing even to scratch the surface of the possibilities of the Amiga. Graphics, sound and gameplay are very simple and could be recreated just as well on just about any other computer. If you (or your children) enjoy a game of pairs, and have an Amiga handy, Brain Storm could be worth a shot, but definitely not otherwise.

Price: £9.95

T.H.

Graphics: 3
Sound: 2
Playability: 3
Value: 4

ROADWAR 2000

The great plague that struck down most of the USA in the year 1999 left the country's defence systems wide open to nuclear attack. As a result, strategic cities across the US have suffered nuclear strikes and much of the population is dying either from radiation or the plague.

In such a situation, anarchy inevitably begins to reign and in many of the cities, violent gangs have taken over. Armed with an assortment of weapons and equipped with transport and supplies, these gangs have taken to the roads in an unprecedented outbreak of civil war in a nuclear-crippled and disease-rife country.

In this latest strategy game from Strategic Simulations Inc., you take the role of the leader of one such gang. Your prime objective is to stay alive.

The game is played out over an on-screen map on which the position of your vehicle is marked. The first vehicle I was given did not stand out too clearly against the roads (too similar a colour) and I was straining my eyes a bit to see just where I was.

Incidents and events are shown as text or statistical outputs while full tactical combat is displayed on a separate screen.

Each move on the overland map represents travel of about 50 to 75 miles and can take you across a variety of terrain (although much of the time you might wish to stick with the roads). The terrain includes plains, swamp (not hospitable to wheeled vehicles), cities, water, woods, desert, farmland, mountains and various nuclear-devastated areas. The latter are often over-run with mutants who represent a constant danger while the oil fields are usually a regular site for battles between road gangs over the abundant fuel supplies to be found there.

There are a variety of vehicles available ranging from motorcycles, sidecars and tractors to limousines, trailers and flatbed trucks. Each vehicle has a number of attributes such as capacity, weight, maximum speed, braking, acceleration, missile firing, missile protection and crew capacity. Some of these attributes can be modified during play (a vehicle status report is available to check at any time) by finding certain special locations while looting or by capturing improved vehicles from other gangs.

Structural damage may be sustained during combat but may be repaired at body shops. Burst tyres can only be replaced if you are carrying spares.

Gang members have different ratings to reflect their abilities — arms-master, bodyguard, commando, dragoon and escort. Members are recruited by sending out envoys or searching. The higher the quality, the less likely a gang member is to join your gang. Other specially skilled people are called Cronies — these are doctors, drill sergeants or politicians and you may recruit only one (one politician is enough for anyone, wouldn't you say!).

During your travels, you are likely to encounter agents, scientists, healers and residents. The residents are a real mixed bag - they include lawful or renegade national guardsmen, gangsters, bureaucrats, survivalists and satanists. Each type must be dealt with in a way that takes into account their individual characteristics.

In addition, you will have to handle mutants, road gangs and foot gangs (mercenaries, street gangsters, armed rabble, the needy and cannibals) - nice place, this!

In dealing with foot gangs, you can send out envoys (dangerous), fire a volley (might cause bad feelings!), wait or leave (both regarded as a sign of weakness).

In road combat, you can choose between quick and tactical combat, the latter giving a more detailed control and representation of the battle. You can deploy your vehicles, change speed, manoeuvre, ram, fire and board. There are two types of projectile weapons available — crossbow and guns - and two volleys may be fired by each vehicle. Combat follows the usual movement and fire phase arrangement.

In such a short review as this, I have only managed to skim the surface of the gameplay in Roadwar 2000. Graphically, the game is quite good - the map is well presented although movement is jerky. Sound is minimal. As with all these types of game, it is the depth of gameplay that is of prime importance and this one certainly has a lot to it.

The variety of vehicles, inhabitants, terrain and combat options combined with the futuristic and anarchic nuclear plus plague scenario definitely make Roadwar 2000 one of the more absorbing strategy games. Highly recommended.

B.C.

Graphics: 7
Sound: 5
Playability: 7
Value: 6
Price: £24.99

KARTING GRAND PRIX

Anco Software

Now that the Amiga 500 is rapidly being established as the new generation home computer, more and more software companies are responding to the Amiga challenge and producing games for Commodore's state-of-the-art computer.

One company, however, have supported the Amiga ever since Day One. That company is, of course, Anco and while some of their initial releases were inconsistent, just recently they have settled down to bring out a range of highly competent games at a more than realistic price.
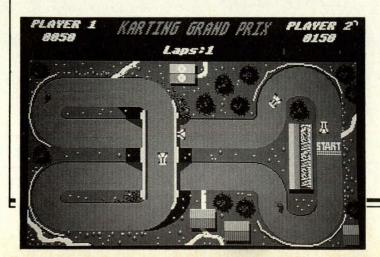
Anco's latest offering, Karting Grand Prix continues this trend and once more shows that good, playable Amiga games can be produced for under £10. As its name aptly suggests Karting Grand Prix is a game based on the thrills and spills of Go Kart racing. What thrills and spills? You may be thinking to yourself. Go Kart racing doesn't really evoke too many ideas of hurtling round bends at speeds in excess of 200 mph. The programmers, not to be deterred by the unusual subject matter for a race game, have concentrated on the overhead racing style as used in the Arcade game Supersprint as being the games major appeal.

On loading the game, you may be slightly confused by the extensive list of options that allows the player to change many of the ingame features. In this part of the game a certain amount of strategy must be used by the player as he/she can effectively change the speed of the Go Kart, conditions of the track and the strength of the tyres.

When you've finally decided on all the appropriate options you're off to the venue of your choice to compete against another two Go Karts. As I have mentioned, the game's action is depicted in an overhead manner. For those of you unfamiliar with the Arcade classic the objective of the game is simply to complete the designated amount of laps before the other racers. Unlike the Arcade, however, there are

no extra features like spanners and oil to assist the racer in the completion of a circuit.

"The added two player facility will definitely mean that the games playing life is significantly extended"

The overall visual effects of the game are simple, yet still very effective. The scenery and backgrounds are well drawn but by no means stunning for Amiga graphics. The small sprites are a minor disappointment but at least they are well animated. Although the graphics are nothing exceptional, the sound and spot effects are excellent and probably the game's major forte. The game is played by joystick and initially the control method is quite difficult to get to grips with but once mastered it soon becomes second nature and in no time at all, you'll be hurtling round tracks in record times. As a one player game, Karting Grand Prix may probably start to lose its appeal after a few weeks but the added two player facility will definitely mean that the games playing life is significantly extended as you try to be the first to cross the winning post in a head to head confrontation with a friend.

Karting Grand Prix is another very respectable release from the Anco stable. It combines simple yet very effective graphics with atmospheric spot effects to produce a stimulating sidekick of the Arcade classic Supersprint. It's certainly not going to set the Amiga gaming world on fire but nevertheless if you're an Amiga gamester who likes his/her race action fast and furious, you could do a great deal worse than purchase a copy of Karting Grand Prix.

Price: £9.95.   **C.H.**

OKIMATE-20

The Amiga is capable of producing some of the most stunning graphics ever seen on a micro. However, unless you can transfer these images to a more permanent medium their use may be a little restricted. Alastair Statham takes a look at a budget COLOUR printer that will let you release your talents from the monitor.

A printer is regarded by most computer users as a natural add-on to be acquired as seen as possible. The Amiga's colour capability would seem to make a black and white printer less than suitable. But the price of recent colour printers in the obstacle. The Okimate seems to have solved that problem.

The Okimate-20 is a thermal transfer printer. It works by melting a wax-like ink onto the paper. The ink is carried on a thin plastic ribbon housed in a convenient easy-load cassette. Ribbons are available in either colour or plain black. The life of a colour ribbon is about thirty-five thousand characters. It is made up of a series of eight and a half inch long red, blue and yellow sections separated by a black marker. It takes more than two feet of ribbon to print each line in three passes. The instruction book says that each ribbon is long enough to print ten screen shots but in practice I have been getting at least fifteen colour pictures from each cartridge. Black ribbons have a life of around a hundred and twenty thousand characters which should be enough for over seventy-five average A4 pages of text. A ribbon saving feature stops the black ribbon from advancing when multiple spaces are printed. If you are prepared to use thermal paper you can use the Okimate 20 without a ribbon at all but using a ribbon produces a bright and glossy

image that looks as though it came from a magazine.

Single sheet, continuous roll or tractor feed paper can be used. A release lever disengages the paper advancing mechanism to allow easy loading and manual paper advance is via a simple thumb-wheel. Paper can be between five and ten inches wide. There is a paper-out detector and a 'skip over perforation' feature for fanfold paper. Although most types of paper will work I have found that thin shiny paper gives the best results. The best type I have found so far is called 'Art Gloss' which is relatively cheap and available from most high street copy shops. Thin acetate sheet also works well.

The twenty-four pin print-head is easily removed for cleaning or replacement as it simply snaps into position. The dot size produced by each pin varies according to the print speed selected and the setting of a slide switch called the darkness control. Correspondence quality is produced using fourteen by fourteen dot characters at a speed of forty characters per second. By dropping the horizontal resolution to seven dots a draft quality speed of eighty characters per second is possible. Normal graphics are printed at sixty characters per second compared to

From black and

forty for full resolution twenty-four pin graphics. In this mode the resolution is 120 by 144 dots per inch.

Three basic character pitches are provided as standard. Pica prints at ten characters per inch (CPI) allowing eighty characters per line (CPL). Elite allows twelve CPI and ninety-six CPL while fine print gives just over seventeen CPI and a fits a full one hundred and thirty-two characters on a single line. Each of these styles is also available in a double width mode. Italics and underlining may be used to highlight text. Bold text is printed in correspondence quality and is therefore printed no differently from the normal text in this mode. Superscript and subscript modes allow accurate printing of items such as chemical or mathema-tical formulae. Although the sub and superscript characters are quite tiny they are always perfectly readable.

The Okimate-20 is a very neat little printer. It is less than two and a half inches high and has a footprint only just larger than a sheet of A4 paper. The controls are well laid out and easy to use. The printer is mains powered with no external transformer. A green rectangular LED on the top panel of the printer lights

white... to *COLOUR!*

when the power is on. This LED also doubles as a warning light by flashing when an out of paper or end of ribbon condition occurs or when pause mode is selected. An adjacent select button allows the user to pause and restart printing. The darkness control comprises a five position slider switch and is on the same control panel. The paper advance thumb-wheel and release lever are located on either side of the paper window which is hinged at the back of the printer. This transparent cover incorporates two small rollers and a partly serrated tearing edge for splitting continuous stationery. With this cover open both the print head and ribbon compartment are easily accessible. The ribbon cover hinges forward to reveal a mechanism reminiscent of a domestic cassette recorder.

As with many of today's printers the Okimate's interface is provided by a plug-in personality card. The

duces are nearly glossy graphics are superb a ter to shame. It is p uch does not represen rome text printer. L emedied form-feed pro kable value for money.

Example of Okimate text

Amiga model has an 8K printer buffer and comes with a Centronics interface. The card used to provide this interface on my model was in fact designed for use with an IBM PC but has had the driver ROM replaced by an AMIGA version. The manual supplied was really intended for use with the IBM PC but this did not detract from its usefulness. The manual is about A5 size with over ninety pages. The instructions are clear and easy to follow with a number of helpful diagrams. The topics covered include the controls, specifications, special control characters and information about advanced programming for graphics and
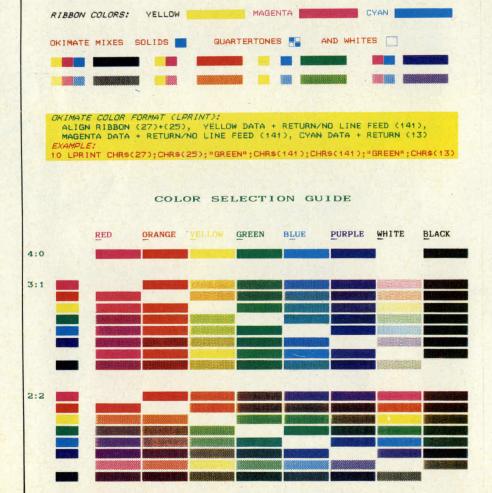
custom character sets. A full description of the cable requirements is given together with details of a group of switches on the personality card. These switches control such settings as the default print quality, form length, line feed and character pitch. My version also came with an additional A4 sheet of instructions describing the Amiga parallel port pin-out and other details specific to the Amiga.

"A one or two dot overlap is not nearly as noticeable and prevents any white gaps being left."

The main difference between the IBM and AMIGA versions of the ROM is in the control code commands and line-feed movement. With the Amiga version DIP switch five on the interface card sets the line-feed to either 23/144 or 24/144 of an inch. This control enables the user to minimize any gaps left between the lines when printing graphics. The only weak point of this printer seems to by the accuracy of its form-feed. It is probably no worse than most other printers in its price range but with large blocks of glossy colour a thin white space left between lines is more noticeable. The solution is to arrange the line-feed so that the lines slightly overlap. A one or two dot overlap is not nearly as noticeable and prevents any white gaps being left. In the Okimate-20 driver supplied with Workbench 1.2 the graphics form-feed is controlled by two instances of the control command "1B3324". I used the public domain Filezap utility to change each of these commands to read "1B3322" and thus reduced the line-feed to 34/216 of an inch compared to the original 36/216. This has completely cured the problem.

I am extremely pleased with my Okimate-20. The colour pictures it produces are almost glossy magazine quality. Even in monochrome its graphics are superb and the quality of the text puts my typewriter to shame. It is primarily a colour graphics printer and as such does not represent as good value if all you need is a monochrome text printer. Despite the price of ribbons and the easily remedied form-feed problem, I believe this printer represents remarkable value for money.

HOW OKIMATE 20" PRINTS COLORS

RIBBON COLORS: YELLOW MAGENTA CYAN

OKIMATE MIXES SOLIDS ■ QUARTERTONES ▧ AND WHITES ☐

OKIMATE COLOR FORMAT (LPRINT):
  ALIGN RIBBON (27)+(25), YELLOW DATA + RETURN/NO LINE FEED (141),
  MAGENTA DATA + RETURN/NO LINE FEED (141), CYAN DATA + RETURN (13)
EXAMPLE:
10 LPRINT CHR$(27);CHR$(25);"GREEN";CHR$(141);CHR$(141);"GREEN";CHR$(13)

COLOR SELECTION GUIDE

	RED	ORANGE	YELLOW	GREEN	BLUE	PURPLE	WHITE	BLACK
4:0								
3:1								
2:2								

SOFTWARE AND PERIPHERALS
LATEST AVAILABILITY LIST

This latest availability list shows the growing quantity of software and peripherals for the AMIGA. It has been compiled by AMIGA User with the valuable collaboration of leading distributors. Consult your dealer for price confirmation.

Product	Company	Price
1. Communications		
BBS PC	MicroSystems	£69.95
Dialtext Comms Pack	Talbot	£29.50
Diga!	Aegis	£65.00
Digital Link	Digital Creations	£69.95
Maxicomm	Maxisoft	£49.95
Online!	MicroSystems	£69.95
Ruby-Comm	Y2	£90.00
WS 4000 Modem	Miracle Technology	£189.00
2. Publishing/Printing		
Deluxe Print	Electronic Arts	£79.00
Home Publisher	Hi Tec	£24.95
Move Over Mac	Brown	£149.95
Page Setter	Gold Disk	£149.95
Pro-Write	New Horizons	£99.95
Publisher	Vision Technology	£99.95
3. Graphics and Video		
Analytical Art	Crystal Rose	£69.95
Animator Apprentice		£195.00
Animator With Images	Aegis	£119.95
Artpak	Aegis	£44.95
Calligrapher	Interactive Softworks	£55.00
Deluxe Paint	Electronic Arts	£69.00
Deluxe Paint Art & Utility Disk	Electronic Arts	£29.95
Deluxe Paint II	Electronic Arts	£129.00
Deluxe Video Construction Set	Electronic Arts	£99.00
Digi-paint	NewTek	£59.95
Digipic	Precision Software	£299.00
Digi-View 2.0	NewTek	£170.00
Express Paint	PAR Software	£58.00
Fantavision	Broderbund Software	£34.95
Forms in Flight	Micro Magic	£60.00
Grabbit	Discovery	£29.95
Images	Aegis	£69.95
Impact	Aegis	£73.00
Page Flipper	Mindware	£46.00
Photon Paint	Microillusions	£99.95
Pixmate	Prog. Peripherials	£49.95
Sculpt 3D	Byte	£79.95
The Director	The Right Answers Group	£47.00
TV*Show	Zuma Group	£99.95
TV*Text	Zuma Group	£99.95
Impact	Aegis	£169.95

4. Leisure		
Aaargh	Melbourne House	£19.99
A Mind Forever Voyaging	Infocom	£34.95
Archon	Ariolasoft	£29.95
Arcticfox	Ariolasoft	£29.95
Arena Sports Simulation	Psygnosis	£29.95
Arkanoid	Discovery	£19.95
Army Moves	Imagine	£24.95
Bad Cat	Euro Gold	£24.95
Backlash	Novagen	£19.95
Balance Of Power	Mindscape	£34.95
Ball Raider	Diamond	£19.95
Bally Hoo	Infocom	£29.95
Barbarian	Psygnosis	£24.95
Blackjack Academy	Microillusions	£29.95
Black Shadow	CRL	£19.95
Blasterball	Mastertronic	£9.99
Borrowed Time	Activision	£24.95
Brainstorm	Diamond Games	£??.??
Bratticus	Psygnosis	£34.95
Bureaucracy	Infocom	£34.95
Chessmaster 2000	Software Country	£29.95
Crazy Cars	Titus	£24.95
Dark Castle	Mirrorsoft	£24.99
Deep Space	Psygnosis	£34.95
Defender Of The Crown	Cinemaware	£29.95
Deja Vu	Mindscape	£29.95
Delta Patrol	Other Valley	£24.95
Demolition	Anco	£9.95
Diablo	Unicorn	£24.95
Dreadnought	Melbourne House	£19.99
Dr. Fruit	Anco	£9.95
Dungeon Construction	Microillusions	£39.95
Earl Weaver	Electronic Arts	£29.95
Ebonstar	Microillusions	£39.95
ECO	Ocean	£24.95
Emerald Mine	Anco	£9.95
Faery Tale	Microillusions	£29.95
Ferrari Formula One	Electronic Arts	£24.95
Feud	Mastertronic	£9.99
Final Trip	Anco	£9.95
Financial Cookbook	Electronic Arts	£49.95
Fire Power	Microillusions	£24.95
Flight Simulator II	Sublogic	£59.95
Galactic Invasion	Microillusions	£24.95
GFL Championship Football	Gamestar	£24.99
Golden Path	Firebird	£19.95
Goldrunner	Microdeal	£24.95
Grid Start	Anco	£9.95
Guild of Thieves	Rainbird	£24.95
Gunship	Microprose	£39.95
Hacker	Activision	£24.95
Hacker II	Activision	£24.95
Hitchikers Guide To The Galaxy	Infocom	£29.95

Hollywood Hijinks	Infocom	£34.95	Vader	Anco	£9.95
Hollywood Poker	Diamond Games	£19.95	Video Vegas	Baudville	£29.85
Impact	Audiogenic	£14.95	Winnie The Pooh	Sierra On-Line	£49.95
Insanity Fight	Microdeal	£24.95	Winter Games	Epyx	£29.95
Into The Eagles Nest	Pandora	£19.95	Winter Olympiad	Tynesoft	£19.95
Karate Kid II	Microdeal	£24.95	Wishbringer	Infocom	£29.95
Karate King	Anco	£9.95	Wizball	Ocean	£24.95
Karting Grand Prix	Anco	£9.95	Wordplex	H.B. Marketing	£34.95
Kikstart II	Mastertronic	£9.99	World Darts	Mastertronic	£9.99
King of Chicago	Mirror Soft	£29.95	World Games	Activision	£24.95
Kings Quest	Sierra	£29.95	Xenon	Melbourne House	£19.99
Knight Orc	Rainbird	£19.95	XR35	Anco	£9.95
Land of Legends	Microillusions	£49.95	Zork I	Infocom	£29.95
Las Vegas	Anco	£9.95	Zork II	Infocom	£29.95
Leader Board	Access	£39.95	Zork III	Infocom	£29.95
Leather Goddesses Of Phoebus	Infocom	£34.95			
Little Computer People	Activision	£34.95	**5. Business**		
Marble Madness	Electronic Arts	£29.95			
Mercenary	Novagen	£24.95	A Filer	Megasoft	£49.95
Metallica	Mastertronic	£9.99	Acquisition	Taurus Impex	£299.95
Metropolis	Melbourne House	£19.99	Amiga Accounts	Total Office	£149.95
Micro League Baseball	Micro League	£59.95	AmigaCalc	Commodore	£79.95
Mindshadow	Activision	£24.95	Analyse! Graphics	Micro-Systems	£49.95
Moebius	Origin	£25.95	Analyze!	Micro-Systems	£99.00
Moon Mist	Infocom	£29.95	B.E.S.T. Business Management	Business Electronics	£399.00
Ninja Mission	Mastertronic	£9.99	Businessware	Panmead	£145.00
Ogre	Origin Systems	£24.95	DataRetrieve	Abacus	£49.95
One On One	Ariolasoft	£29.95	Dynamic Word	Microillusions	£199.95
Pawn	Rainbird	£24.95	Hippo Word	Hippo	£189.95
Phalarx	Anco	£9.95	Integrated Accounts	Eidersoft	£114.95
Pinball Wizard	Kingsoft	£19.95	KSpread	Kuma	£79.95
Planetfall	Infocom	£29.95	Logistix	Grafox	£99.00
Pool	Mastertronic	£9.99	Maxidesk	Maxisoft	£69.95
Portal	Activision	£24.95	Maxiplan	Oxxi Inc.	£129.95
Ports of Call	Aegis	£24.95	Maxiplan 500	Oxxi Inc.	£99.95
Power Play	Arcana	£19.95	Maxiplan Plus	Oxxi Inc.	£149.95
Q Ball	English Software	£19.95	MiAmiga File	Softwood	£99.95
Racter	Mindscape	£36.00	Office	Interlex	£49.95
Revenge II	Mastertronic	£9.99	Organise	Micro-Systems	£99.95
Roadwars	Melbourne House	£19.99	Promise	Nobtek	£39.95
Roadwars 2000	S.S.I.	£29.00	Scribble With Mail Merge & Spellcheck	Micro-Systems	£60.00
Rockford	Melbourne House	£19.99	Superbase	Precision	£99.95
Rogue	Epyx	£27.00	Talker Word Processor	Finally	£42.15
Romantic Encounters at the Dome	Microillusions	£39.95	Textcraft	Commodore	£59.00
S.D.I.	Cinemaware	£49.95	The Works	Micro-Systems	£149.95
Seven Cities Of Gold	Ariolasoft	£29.95	Unicalc	Lattice	£65.00
Shadowgate	Mindscape	£24.00	VIP Professional (1-2-3 Clone)	Ditek	£149.95
Sidewinder	Mastertronic	£9.99	Vizawrite (Desktop)	Viza Software	£99.95
Silent Service	Microprose	£39.95	Wordperfect	Sentinel Software	£249.95
Sinbad	Cinemaware	£29.95	Write & File	Softwood	£99.95
Sky Fighter	Anco	£14.95			
Skyfox	Electronic Arts	£29.95	**6. Utilities and Languages**		
Slap Fight	Imagine	£24.95			
Space Battle	Anco	£9.95	64 Emulator	ReadySoft	£69.95
Space Quest	Sierra	£29.95	A/C Basic	Absoft	£195.00
Space Ranger	Mastertronic	£9.90	A/C Fortran 77	Absoft	£235.00
Star League Baseball	Gamestar	£29.95	APL Programming Language	Micro APL	£230.00
Star Wars	Domark	£?.??	Aztec C	Manx	£260.00
Super Huey	Cosmi	£19.95	Benchmark Modula-2	Oxxi Inc	£199.95
Temple Of Apshai Trilogy	Epyx	£39.95	CLImate	Prog. Peripherals	£30.39
Terramex	Grand Slam	£19.95	Cambridge Lisp	Metacomco	£149.95
Terrorpods	Psygnosis	£24.95	dBase III ISAM Package	Lattice	£115.00
Test Drive	Electronic Arts	£24.95	Dev Pac	Hi Soft	£49.95
Thai Boxing	Anco	£9.95	Explorer Dissassembling Debug Monitor	I.A.N	£49.95
The Haley Project	Epyx	£44.95	FACC II	ASDG	£34.50
The Hunt For Red October	Grand Slam	£24.95	Gizmos	Digital Creations	£49.95
The Pawn	Rainbird	£24.95	GOMF	Hypertek	$34.95
The Surgeon	Amisung	£49.95	ISO Pascal	Metacomco	£89.95
Time Bandit	Microdeal	£24.95	K Seka Assembler	Kuma	£49.95
Trinity	Infocom	£34.95	Language Plus Runtime System	True Software	£249.94
Uninvited	Mindscape	£29.95	Lattice C 3.1 Fast Compiler	Lattice	£165.00

Lattice C 3.1 Professional	Lattice	£270.00
Lattice C Compiler	Lattice	£129.95
Lattice C 4.0 (Standard)	Lattice	£189.95
Lattice C 4.0 (Developers)	Lattice	£299.95
Lint	Graymatter	£110.00
Macro Assembler	Metacomco	£60.82
Marauder 2	Discovery	£30.00
MCC Toolkit With Multi-user Utility	Metacomco	£39.95
Metascope Debugger	Lattice	£75.00
Modula-2	Modula-2	£99.95
Modula-2 Developers Version	Modula-2	£149.95
MS DOS-C Cross Compiler 3.1	Lattice	£325.00
Multi Forth	Creative Solutions	£179.00
Panel Screen Design	Lattice	£145.00
RAM Disc	MicroForge	£24.99
Screen Editor	Lattice	£75.00
Shell Enhanced CLI	Metacomco	£49.95
Text Utilities	Lattice	£55.00
True Basic Language	True Software	£149.95
True Basic Runtime System	True Software	£149.95
UBZ Forth	UBZ Software	£85.00
Unix Compatible Make	Lattice	£75.00
USCD Pascal - The Power System	Pecan	£79.95
Zing!	Meridian	£54.19

7. Music

AudioMaster	Aegis	£49.95
Deluxe Music Construction Set	Electronic Arts	£99.95
Drum Studio	Hi Tec	£39.95
Dynamic Drums	New Wave Software	£69.95
Future Sound	Applied Visions	£170.00
Instant Music	Electronic Arts	£29.95
It's Only Rock And Roll	Electronic Arts	£29.95
Music Student I	ACS	£49.95
Music Student II	ACS	£49.95
Music Studio	Activision	£34.95
Music X	Microillusions	£299.95
Sonix (was Musicraft)	Aegis	£79.95
Soundscape MIDI Interface	Mimetics	£59.00
Soundscape Pro MIDI Studio	Mimetics	£184.99
Soundscape Sound Sampler/Digitiser	Mimetics	£124.99

8. CAD/CAM/Drawing

Aegis Draw	Aegis	£169.95
Dynamic CAD	Microillusions	£495.00
Introcad	Prog. Peripherals	£59.95
PCB Layout	Soft Circuits	£499.00
PCB Logicworks	Capilano	£99.95
X-CAD	Taurus	£450.00

9. Other

Business Statistics	Lionheart	£145.95
Decision Analysis	Lionheart	£110.95
Demonstrator	Meridian	£69.95
Discovery	Microillusions	£39.95
Flow Ideas Processor	New Horizons	£99.95
Galileo	Infinity	£55.00
Home Control System Starter Pack	MDR	£375.00
Isgur Portfolio	Batteries Inc.	£249.95
Multi-Variate Analysis	Lionheart	£145.95

10. Peripherals and Accessories

2 Mbyte RAM Expansion	Comspec	£595.00
32 Bit Turbo Amiga System	CSA	£5,475.00

68020 14 Mhz CPU Board	CSA	£975.00
68020/68881 Fast/maths Piggyback Board	CSA	£1,480.00
A3 Graphics Tablet	Cherry	£550.00
A4 Graphics Tablet	Anakin	£499.00
Alegra 512K Memory Expansion Board	Access Associates	£230.00
Amiga Dust Cover (500)	Amiga User	£7.99
Amiga Dust Cover (1000)	Amiga User	£16.45
Digiclear (captures from video/camera)	Busbyte	£79.00
Genlock With Software Utilities	Interactive	£430.00
H.A.M. 4096 Colour Digitiser	Digiview	£179.00
Hawk Scanner	Burocare Systems	£,1350.00
High Resolution Flicker Free Monitor	Mitsubishi	£799.00
Jitter Rid For 1081 Monitor	Ideas Created	£19.95
Kickstart Eliminator	Supra	£179.00
Modem Leads	Various	£19.95
Perfect Sound Sampler	SunRize Industries	£70.00
Polaroid Palette And Interface System	Burocare Systems	£1,550.00
Printlink	Trilogic	£30.00
Real Time Clock	Busbyte	£59.90
Sidecar (provides IBM compatibility)	Commodore	£399.00

11. Printers

7 Colour Ink Jet Printer	Canon	£449.00
A3 4 Colour Pen Plotter	Hitachi 672	£599.00
A3 6 Colour Pen Plotter	Sektronic SPL 430	£899.00
A4 4 Colour Pen Plotter	Epson H180	£399.00
High Quality Colour Printer	Mitsubishi	£4,135.00
High Quality Ink Jet Printer	Xerox	£1,195.00
Juki 5510 180cps/NLQ/DQ Matrix Printer	Juki	£260.00
Laser Printer 300 dpi	Canon LPB8-A1	£2,600.00
Laser Printer 300 dpi	QMS	£1,995.00
Laser Printer 300 dpi Vector Graphics	Canon LPB8-B1	£3,799.00
Okimate 20 Printer With Amiga ROM	Okimate	£199.99
Printer Cable	Busbyte	£19.95
Toner Cartridge (black, brown, blue)	Canon	£86.00
Xerox 4020 Colour Printer	Precision Software	£1250.00

12. Disk Drives and Storage

20 Mbyte Hard Card (needs Sidecar)	XTech	£695.00
30 Mbyte Hard Card (needs Sidecar)	XTech	£995.00
3M 3.5in Disks, DS, DD, Box 10	3M	£47.00
3M 5.2in Disks, DS, DD, Box 10	3M	£37.00
Disk Box, 40 x 3.5in Disk Capacity	Mform	£19.95
External 3.5" Disk Drive	Cumana	£114.95
Supra 20 Mbyte Hard Disk With Clock	Supra	£793.35
Supra 60 Mbyte Hard Disk With Clock	Supra	£1,608.85

13. Books

Advanced Amiga Basic	Compute!	£14.95
Amiga DOS Manual	Bantam	£24.95
Amiga Programmers Guide	Compute!	£14.95
AmigaDOS Reference Guide	Compute!	£12.95
Beginners Guide	Compute!	£14.95
Elementary Amiga Basic	Compute!	£12.95
Hardware Reference Manual	Addison Wesley	£23.70
Intuition Reference Manual	Addison Wesley	£23.70
Modula-2 Seafarers Guide/Shipyard Man	Addison Wesley	£16.30
Presenting The Amiga	First Publishing	£9.95
Programmers Handbook	Sybex	£24.95
ROM Kernal Reference Manual I Exec	Addison Wesley	£23.70
ROM Kernal Reference Manual II	Addison Wesley	£33.20
The Amiga Handbook	Sunshine	£7.95
The Amiga System	Precision	£9.95

PIXMATE

Image processing techniques used by NASA helped man understand the universe. Can they help you create a masterpiece? Peter Lee probes their effects in a new graphics program.

I f you've ever seen an un-retouched picture sent back from space, you'll know they resemble nothing more than a box Brownie camera snap taken on a rainy day on the beach when the tide is out.

Hardly surprising when you consider the weak radio signal containing the data has to beam its fragile way from the outer limits to a small radio antenna on Earth.

The miracle is that they ever reach us at all. However, then the image processing experts get to work; They turn a grey mass into the stunning landscape of Jupiter's moon Io, or after a few day's work actually discover volcanos erupting on the surface or in that very interesting probe sequence in March A.U.I.

Well PIXmate from Progressive Peripherals & Software probably will not allow you to discover any new planets — but it will spice up your artwork and give you the chance to experiment on graphics until you achieve the effect you're striving for.

The program comes on an easily backed-up disk, accompanied by a thorough manual which spares noth-

ing in its description of the varied and exciting functions available.

It works on all the Amiga models with a minimum 512K RAM, though some processing activities take such a heavy toll on memory that at least 1Meg of RAM is advised.

Maintaining the space-age feel of the program, some of the demonstration pictures are NASA's own, including a stunning shot of the Earth from space and an astronaut on the moon (both of which, ironically, would I think have needed no enhancement by the labs on Earth).

The program is akin to the established Butcher graphics manipulation utility and although they offer superficial similaries, to my mind PIXmate is by far the more potent of the two.

It is also very easy to control (though not quite as simple to master) thanks to a wide selection of pull-down menus...and the inclusion of keyboard short-cuts for some functions.

There is a tutorial section which begins the manual and this gently guides the user through some of the program's aspects using a beautifully

digitised picture of Abe Lincoln from an American bill.

> **"As users of DigiView will know, even the best shots you grab need a little massaging to even out interference patches or noise"**
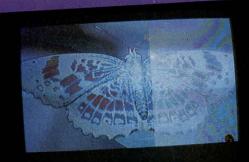
In fact PIXmate really comes into its own when it is being used on digitised screens. As users of DigiView will know, even the best shots you grab need a little massaging to even out interference patches or noise.

PIXmate allows you to do this so cleverly and with such precision that I would recommend it for anyone using a digitiser. The picture manipulation works in colour or monochrome, with the rider that HAM images of 4096 colours, being the bizarre beast they are, are tricky to cope with. Trial and error is the best advice here.

All the Amiga's display modes are
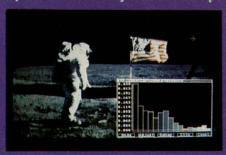
catered for, from interlace and HAM to low res, the program configuring itself to match the type of IFF file you load. On top of that you can load in pictures digitised with early versions of DigiView (non-IFF) and even Atari Neochrome files if you have them as AmigaDOS files.

PIXmate also allows quick and efficient storage by utilising the Amiga's Raw format; this saves a binary ASCII dump of each bitplane followed by the red, green and blue settings. Raw saves are fast and take up lots less memory than IFF dumps

The Histographic Equalizer

— and so it is ideal for making quick backups of screens to a RAM: disk. Even more impressive than this, you can grab an active DeluxePaint screen into PIXmate; which means, provided you have the memory, you can run DPaint simultaneously with PIXmate, draw your screen and move directly into the enhancement program to start processing the image. Unfortunately it is not possible to switch the screens back as swiftly: you need to store the PIXmate screen and re-load it back into DPaint if you have any drawing additions to make.

Many special effects can be created using the Pixmate logic operations.

Talking of memory, even with my 2Meg expansion I still found myself prevented from carrying out some complex imaging techniques from time to time because of the way the Amiga itself works; some effects are restricted to using the computer's chip memory (512K on the A1000) and though you may have spare bytes in fast memory, they are no good to you whatsoever in this instance. Such problems only arose while I was using Dpaint at the same time and, in any event, there are dodges to overcome this (for instance halting PIXmate's 'Undo' function temporarily to free chip RAM). It is even possible to run multi-PIXmates at once so you can work on separate images independently.

What exactly does the program do? Really, it's only limited by your imagination. Anyone who loves computer graphics for their own sake will be able to experiment and push their creativity ever-onwards.

"You really do not need to understand the actual mechanics of ANDing or ORing pixels to gain good results from their use; PIXmate provokes experimentation and rewards a minimum of effort amply"

PIXmate is not a drawing program — it only works on existing images. I can't think of anything the program overlooks in screen manipulation — from converting one type of format to another (ie HAM to medium res) to altering the contrast globally on a screen to bring out highlights. An interesting option presents itself in the ability to convert HAM images to the Amiga Extra-halfbrite mode, allowing 64 colours on screen at once. This produces conversions of higher quality than the standard 32 colour mode but some very early A1000s do not support this feature. Colour can be controlled precisely, with the screen's actual colour components sifted out and edited, or on a simple level you can convert a full colour image to a 16-shade grey-scale in a second — ideal for owners of desktop-publishing packages with black and white printers.

The heart of PIXmate is the Image Processor; it is here that you can revolutionise your display in three main ways: Logical, Pixel and Matrix operations, each controlled and selected from a window containing around two dozen options. Trial and error is really the only way to master the complex nature of the commands; a wide variety of effects an be achieved, the computer executing up to 6 million computations to achieve one effect and the blitter being used to good effect. So obviously an effect can take a minute or so to accomplish and to speed things along you can toggle the screen display off. Other enhancements take a second or so and all can be undone if the resulting picture isn't what you expected.

You really do not need to understand the actual mechanics of ANDing or ORing pixels to gain good results from their use; PIXmate provokes experimentation and rewards a minimum of effort amply.

Flipping screens, expanding or shrinking them, enhancing features by either colour or contrast, processing pixels to achieve a wealth of effects — even edge detection — can be undertaken confidently.

The program claims some 3,000 effects which can be called on to manipulate your graphics — and there is such a wealth of features I can well believe it; there is bound to be something of interest to even the most modest artist.

CONCLUSION

PIXmate is the kind of program you can't begin to appreciate until you have actually used. On paper it may seem hard to justify a graphics program which in itself can not draw a stroke but I found it an excellent addition to my library of art programs and digitised screens. However it does contain among its wealth of functions, features which simply made my screens look like a positively sickening mess; on the other hand it turned some average renderings into innovative and novel artwork. Maybe not up to NASA standards but still pretty far out . . .
P.L.

Price: £49.95
Contact: Precision (U.K.)
Tel: 01-330 7166

NEWTEK

Tim Jenison, Chairman and Paul Montgomery, Marketing Director

"**W**hen I first heard of the Amiga I wanted to work on it. I had been working on an idea for a low cost digitizer. When I saw that the Amiga had a hold and modify mode I got one as quickly as I could but had to use another computer to write the software for it because I couldn't get an assembler for the Amiga. So I was sitting in my garage day after day working on the digitizer and when I finally started to see some pictures in HAM mode I knew it would be a successful product. And I remember very clearly the first night I saw a magazine cover displayed on the screen. At first there were fits and starts and a lot of confetti and checkerboards on the screen. I made a few last changes and I saw this beautiful colour image come up on the screen. I could hardly believe it myself and I had to run out, run around the garage a couple of times just to burn off the excitement . . . It took about a month from when I started to when I got a picture on the screen then I started to enhance so that it would reliably display the colour image. When I first started it would take about 10 minutes of adjustment to get the colour right and to get a nice looking image. But I made the software automate that function. But it took a considerable time. There are some fairly intelligent algorhythms in there that adjust the colour and so on. When I finally got the development right it took some time to adapt the software to use the pull-down menus and so on and make it save IFF files . . . I got my computer in October or November '85 and shipped Digiview in May '86.

I've always been an electronics nut and I've always been interested in video. And I always wanted to get into electronics since I was four or five years old. My father was an electrical engineer and I picked up a lot of his stuff simply by being associated with him. As a kid I always fantasised about computers . . . I was a science fiction buff. An uncle of mine worked for IBM and he would bring me stuff from IBM. I read as much as I could about computers and learned the Fortran language without actually having a computer to run the programs on. So as micros became available, I built some micros in the early days about '75 or '76. When I thought of computers I would always think of them in terms of graphics, bringing images on the screen and that's always been one of my big interests.
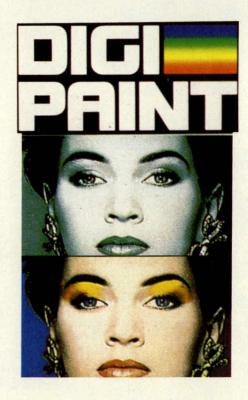
The earliest computers we had could just display characters mostly. There were some ways to get graphics on the screen but basically it was a memory problem, memory was very expensive at that time. You need a lot of memory for graphics but as the personal computer, the microcomputer evolved, memory started to get cheaper and cheaper and the graphics got better and better.

For example, on the Tandy colour computer you had 640 bytes of display RAM so you could put up a bitmap image, either black or white pixels 256 x 192 resolution and similar for other machines at the time. On the CBM 64 too you could put up very limited resolution images and the digitizers of the time would give you a sort of abstraction of a photograph. At some distance from the screen, it would start to look like a photograph but up close it would look like a bunch of blocks, a sort of optical illusion . . . With the Amiga you could, for the first time, get a colour photograph of a person on the screen. The earliest video digitizer I did . . . I was designing a product that had to have graphics on the screen that were arbitary shapes. I was busy drawing these things on graph paper, and then translating them into binary numbers and then typing them into the computer. After doing this for several days I said, "If I had a video digitizer it would be a lot easier". I didn't get a video digitizer designed for that project but it did start me going and a couple of months later, I had the first digitizer going. That would be in '83 or '84.

I used the Tandy colour computer as a development system, originally I had a 68000 assembler running on that. Then I wrote a little program in Amiga Basic on the Amiga that would pull in the program in machine language from the parallel port and I would test the software and then I would go back to the Tandy and make changes in the mode. Of course, once I got my development system, things went much faster. So we shipped the 1.0 software in May. 1.0 software . . . I wasn't satisfied with it. It was good enough to use and we were getting very good images from it. But I started immediately working on the 2.0 software and that came out some months later." Tim Jenison

Tim Jenison, Chairman

"Everybody's got one"

T.J. A video digitizer has traditionally been a tecchy sort of product. If you sold four or five hundred that was a great success . . . The image was very abstract . . . it didn't look like a photograph. The Amiga made the difference. The Hold and Modify mode lets you put a high quality photgraph on the screen for the first time. Digiview, because it captures an RGB image, with red, green and blue filters, is able to display a very sharp, photographic quality image. It's really shocking to see that on a screen. It's got a lot of impact because in some ways it is sharper than a broadcast image.

P.M. "We have sold millions of dollars worth. We have sold the same number of Digiviews — hardware — as some of the hot software products. Many thousands we're up in the six zeros area . . . Sales have speeded up.

T.J. Amiga is the graphics computer because of Digiview and also because of Deluxepaint . . . In the early days you could quite easily go out and buy an Amiga, a Digiview and a Deluxepaint and have a graphics workstation and turn out graphics based on photographs that you couldn't do on a $20,000 system . . . The word went through the grapevine among graphic artists, advertising people and so

A senior employee of Newtek told us Newtek has its own video arcade on the premises with six or seven video games to choose from. They also play Lasertag and cause quite a sensation at their headquarters in Topeka, Kansas, a quiet, conservative, Midwest town, where they rollerskate en masse through its streets. They take the company on trips. Last September Newtek flew the whole company to Pajaro Dunes, a beach community in North California and everyone had a great time. They also have a movie theatre with 200 laser-disk movies, $6000 worth of stereo equipment, as $6000 video projector and we play Amiga games on it or racing simulators or watch movies.

Working at Newtek is kind of like what kids dream of a job when they grow up. We all work ten-fifteen hour days but people don't want to leave. We have people sleeping here. We couldn't ask for a better situation. They supply all the pop. So all the pop you can drink is there. We eat popcorn all the time. We run up and downstairs. We have a big 6000 square foot office. And we have couches where people sleep. It's just a tremendously fun place to work and people who visit there never want to leave and everyone I know wants a job there . . . We are about 30 people and it's just going on growing. We have developers in-house and developers in the field. Probably more designers and engineers work for Newtek per employee that any company I'm familiar with because the President is a programmer, an engineer and likes that type of people. In less than two years . . . And the Amiga is the only machine we support. We got into it because we saw the potential. We're going to continue to tap it as long as it is there . . .

on . . . the Amiga has really got a grassroots base now.
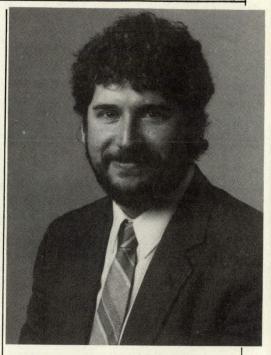
I don't think anybody could compete with the image quality of Digiview. We took a lot of trouble to design that circuitry so that it would give the maximum possible resolution and lowest noise and we are capturing far more data, when you scan an image than you can display on the screen. For example at hi-res 640 x 400, we actually capture more than a megabyte of data. You can't see it when it's displayed on the screen but it's there . . . two million colours . . .21 bits per pixel and that's about 2.2 million colours and then we process that information to get it on the screen.

P.M. We take the 2 million colours that are in memory and mix the 4000 colours on screen to approximate the 2 million colours in memory. And that's why when you look at a Digiview image, although there are 4096 colours, that's much closer to two or three hundred thousand apparent colours to the eye, because there is so much more in memory. And that's the advantage of the Digiview technique.

T.J. The future of Digiview? We're always developing and improving products. 2.0 was a major improvement and that was a software upgrade. We're working on new techniques all the time. The Video Toaster is an extension of the Digiview philosophy . . . The next logical extension is 3.0 and that's already in the works. That's a software upgrade to the existing owner. So if someone has a Digiview or buys a Digiview tomorrow, after they register they will be able to upgrade to it. And we'll add some improvements like Overscan and a couple of other things but we're never satisfied. After we ship a product, we go "Gosh, there's a lot of things we can add . . ."

People were ecstatic when they got 1.0 but I was very dissatisfied with it. I was working the day after it shipped on the 2.0. Customer feedback is very important too and as a result of that the new software revenue will meet the needs of a lot of people and so I've come up with a few tricks for Digiview that increase the quality of the image even more and in a future version, you'll have that . . .

We intended Digipaint as a paint program for Hold and Modify and it works great with the Digiview images. You can doctor photographs very easily and that's one of the most fun things to do on Digipaint but it can also do free-form drawings and paintings that are not possible on other paint programs. It's been a great success because artists really run into that 32 colour limit-break quickly and they are frustrated by it and Digipaint really struck a chord when they saw the shading functions and so they could have colour washed onto the surface and still see what was underneath

Paul Montgomery, Marketing Director

and that sort of thing . . .the transparent colours . . . and when we shipped Digipaint we kept working. There will be a future version of that . . .

P.M. We scan in red, green and blue because that is the best way to get high resolution colour. We had a filter wheel that you had to turn by hand. Now we have just released the Digidroid that hooks into the second mouse port and automatically advances the filter wheel through software control. So you can have the Digiview on another location and hit "Auto" and get the image scanned.

T.J. It's a lazy man's product — that's why I made it for myself. It's not a necessity . . . it's a frill but it's so convenient, especially if your camera is located some distance from the computer. It also makes Digiview that much easier to use .

P.M. With DigiFX, we had the same problem that drove us to do Digipaint. Then they said "We have these great HAM images, how do I paint on them?" Now we had the same request "I have these great Hold And Modify slides. How do I make them do things?" It was a customer-driven product. They called us and said "I really want to put these in video". They couldn't manipulate them, so we brought this in to meet those needs. DigiFX will do some things on the Amiga you've never seen on the Amiga like geometric things . . . make very powerful presentations. It's what I believe to be the first presentation graphics program on the Amiga — that really uses the features on the Amiga like the Blitter and the HAM mode . . .

T.J. It can achieve a lot of the effects that would have taken thousands of dol-

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continued

lars worth of equipment to do . . . people have become spoiled by what they have seen on TV. If it doesn't have the sizzle of a high quality production, they're not going to watch it in many cases. It is for advertising. It is for educational uses too. Students have become jaded — they want the sizzle . . . Anytime you can add flair to your presentation, you're going to keep the customer's attention longer. Our goal was to have TV quality effects. We didn't want to do anything that would run slowly. We want to keep that frame-rate up. You have to have at least 30 frames per second for realistic motion . . . to give you the ability to have little videos within your presentation . . . not too many computers can pull this off . . . because the Amiga has seperate sound circuits and the Blitter to move graphic images around, we can run all these things at the same time and the processor can keep up with it. If you were trying to do this on an IBM for example the processor would immediately bog down trying to move all the pixels — and forget about sound, you can't make that stereo come out of a little 3 speaker that can only "Beep!"

P.M. DigiFX should sell for under $100 and what I think is important you'll see for the first time the video compression that Newtek has been working with. I think will really set a lot of people on their ear. They'll be very impressed and very excited as it's now possible to get maybe 50 or 100 Hold and Modify images on one disk. It will increase the usefulness of HAM photographs . . . before, they took up so much memory but by using our new video compression techniques, you'll be able to get an awful lot of data on just one or two disks and put together 8 to 20 minute presentations with music that don't need to repeat themselves — for under $100 . . .

We take a lot of the money we make and have made from the beginning and put it back into R&D. We put that extra effort to make sure we have that neat feature, that fast feed or that quality processing to give our products that edge. We're always working hard to make sure

we never lose that . . . we never get complacent or lazy . . .

T.J. The Video Toaster? Well, Paul and I are both frustrated film makers and we primarily make products we enjoy using. If we can't afford to buy a $30,000 special effects unit, we'll design one. That's about the way it works out. We fantasised about a little box that would allow us to

Tim Jenison – on TOPEKA, KANSAS

We'd like to stay there. It is a nice place to work. You don't have the beaches of Silicon Valley . . . It is clean . . . There aren't a lot of distractions. There aren't a lot of fellow programmers dropping in to distract you. There aren't a lot of people telling you that they tried that last week and it is not possible. . . The only drawback is that we are away from the hotbed of computer technology and programmers and we're a growing company and it can be a little difficult to find people . . . the intellectual talent has to be there when you grow. So far, we've been very lucky in recruiting people from different places and they like it when they get there. I don't know what's going to happen in five years, that situation may force us to look elsewhere . . . I think from the U.K. possibly you are not so fine-tuned to Topeka as most people. In most places when you look up "backwoods", there's a picture of Topeka in the dictionary . . . You see cows walking around occasionally . . . You have to swerve to miss them. . . It's kind of like the ultimate in Nowheresville for the rest of the country but we're the biggest game in town . . . Some guy in the university is maybe putting in a Cray, they'll call us "You guys know about computers! What can you tell us about hooking up this cray?" We know everything! So we're the big fish in the small pond and that's a lot of fun!

take video tapes and allow us to make a finished production with no compromises. As I started to get some ideas about this, I realised it was possible and the Video Toaster was formed. I had the germ of the idea — it's an unusual design — about a year ago or so. It's based on some unusual concepts. I started talking with Brad Carvey, the logic designer, and the two of us sort of beat it into shape. We made a prototype to prove the comcept would work. When we realised the concept was valid, we went ahead and made a semi-finished product. It's been through a couple of revisions . . . a couple more revisions and it should be ready for shipping.

The basic thing it does is take in live video, 60 frames per second, 60 fields per second, so it's a digitiser. It digitises the video signal coming in . . . puts it in memory and there's a sort of warping machine that can bend the picture, texture map it, in real time which means 60 times a second and then there's a frame

buffer that actually displays that memory on the TV screen. So it's then converted back to a positive video signal. To make that work you also need genlocks, so it's also got that built in . . . It's quite complicated . . . It's really an unusual design . . . It's hard for me to be objective but it's really a breakthrough . . . These machines cost literally more than $10,000 and that's just an entry level system to do these video effects . . . the Video Toaster at less than $1,000 has aroused incredible interest from video professionals but we'd really like to get it into the hands of just serious amateurs and industrial video producers who want low budget . . .

We come up with a lot of crazy ideas in the course of a day but we always send them through the reality filter before we do anything with them . . . The bottom line is that we have to sell a lot of these products, if it doesn't serve a useful function there is not much point to it. . . the Video Toaster has a lot of immediate applications just in video production but there are many, many applications and the cost alone should ensure we sell quite a few units and then as we move along and flesh out the entire Video Toaster system, we see the potential and new market for "Desk Top Video Publishing", analagous to Desktop Publishing, where people who really didn't know they wanted to produce videotapes, now find it indispensable that they produce videotapes.

P.M. The goal of this is to come up with an interface that any end user can use much the same as Deluxepaint, Digipaint or Digiview. We are not doing "Toaster" for the professionals who are used to typing in for half an hour to get the effects. We'll have an icon-based system that will be very easy, very much what people are used to in good quality main products. And what comes next? We have a series of exciting ideas on the drawing board. At Newtek, we get bored very easily so we're jaded Amiga developers . . .

T.J. The Toaster system will let these two frustrated film makers have their fantasy. Everything we've done so far is connected with graphics and sound. When we finally use the Toaster to create our million selling blockbuster motion-picture, I guess we'll have to move onto time machines or something . . .

Where will computers be in five years? There's optical storage. There's new, more dense, more cheap RAM chips, faster processors. We're always running up against a limit of some sort. Whether it is processor speed, memory-size, cost of memory, cost of mass storage . . . the sky's the limit, as those barriers fall . . . That's what's exciting about the computer business, it always gets better, it always gets cheaper. There's no other business like that in the world.

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