AMIGA USER INTERNATIONAL

August 1991 £2.95

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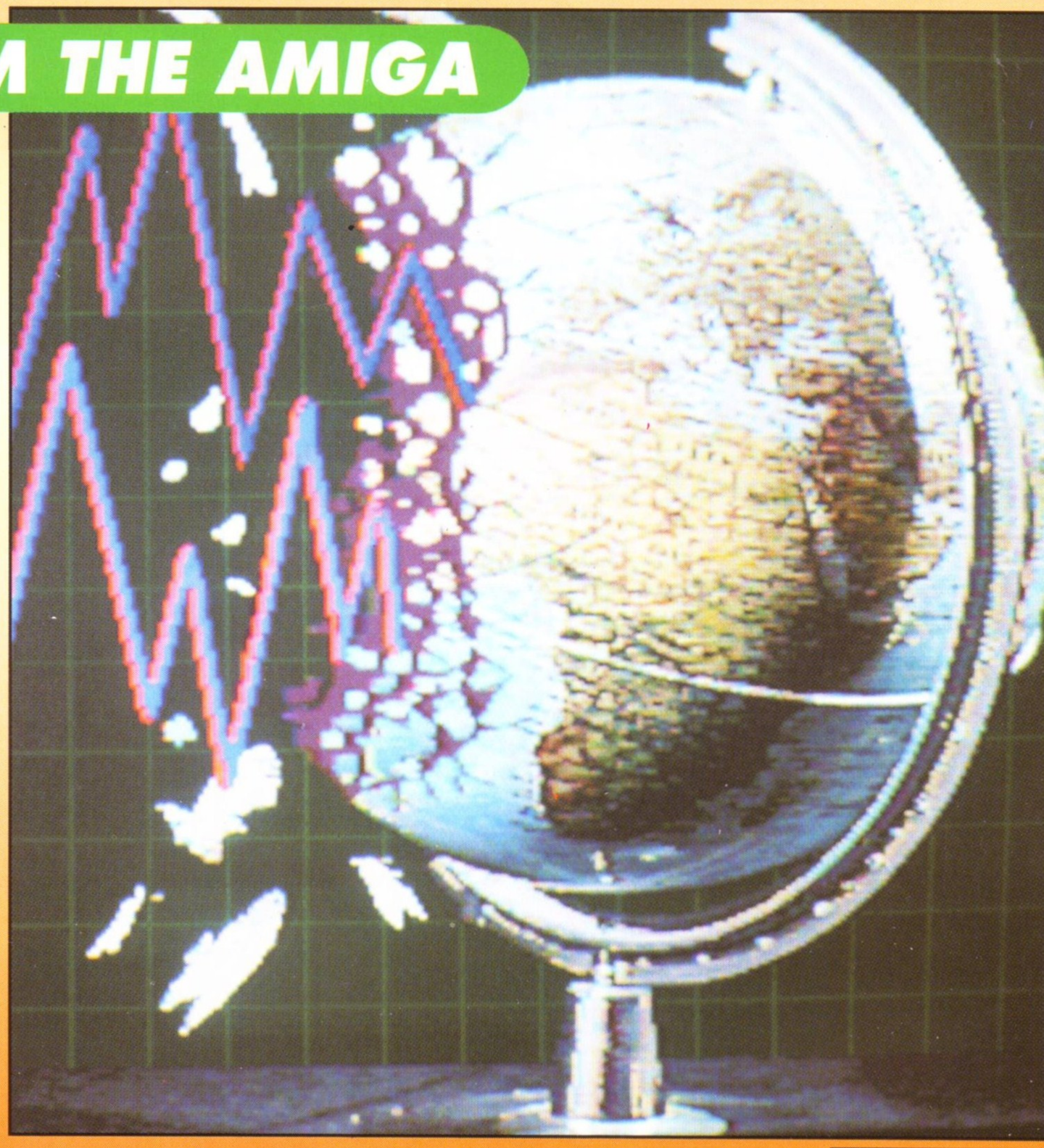
Ham-E, Sequencer One, Wordworth, SAS/C, Minix, GVP Hard Drive, MSDos Handler

Special Reports . . .

CD-Rom on Show, Amiga in Deutschland

Understanding the Amiga . . .

CLI and the Video World



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Wonderland, Centurion, Chuck Rock, 3-D Construction Kit, Shadow Dancer, Predator 2

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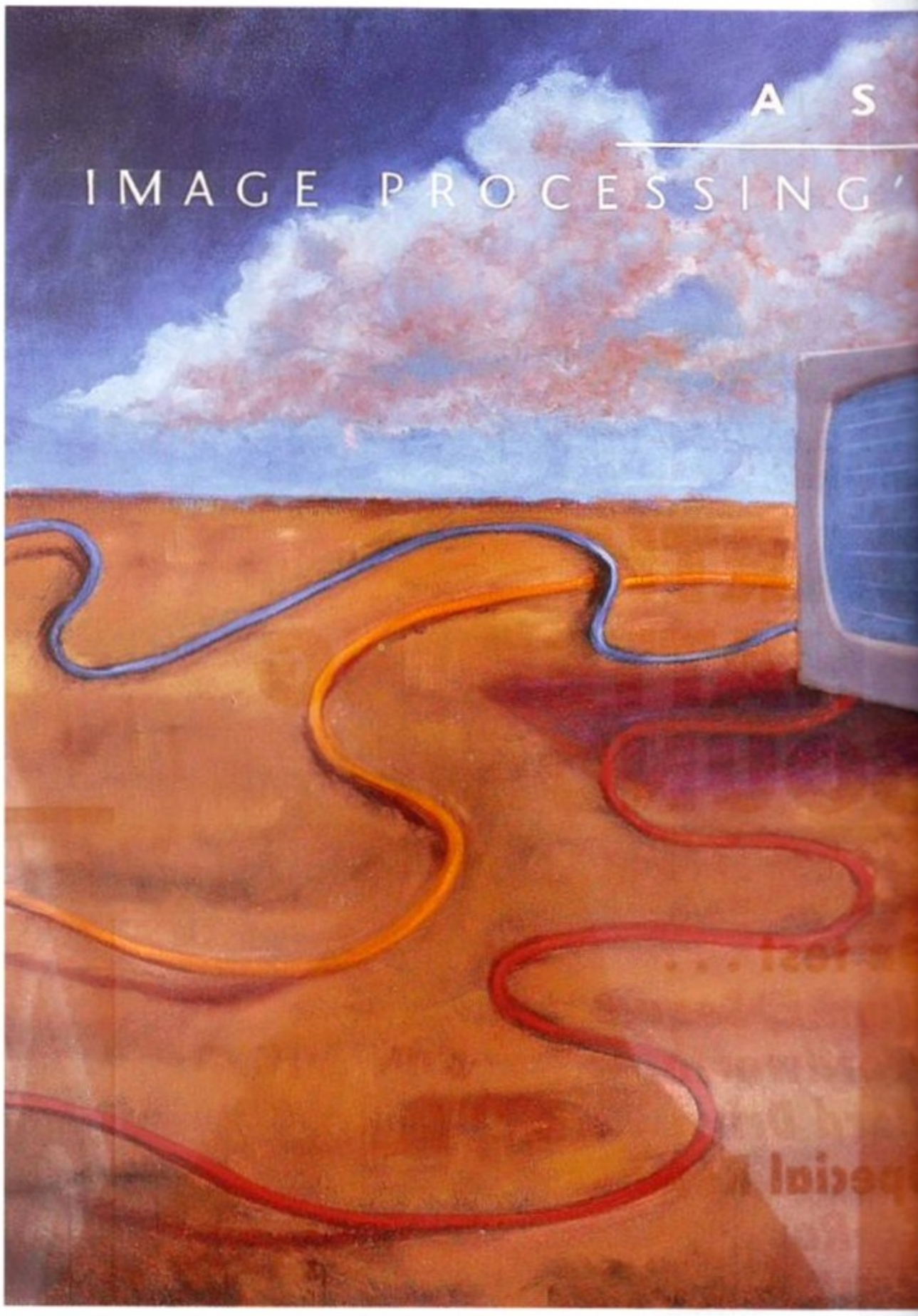

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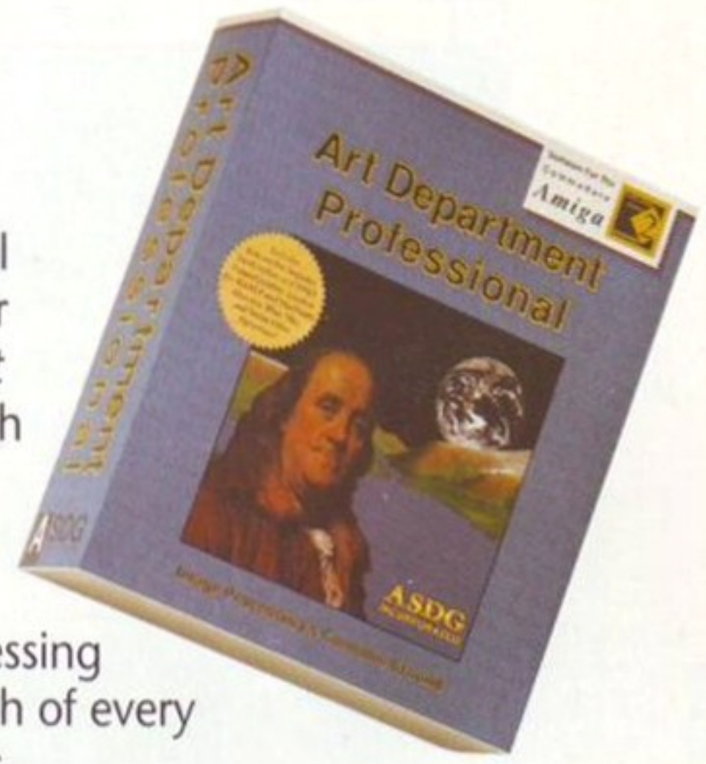

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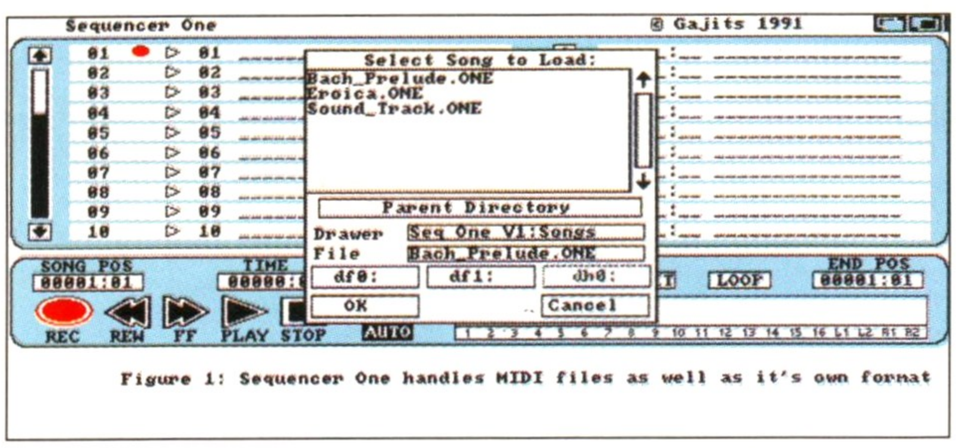

Figure 1: Sequencer One handles MIDI files as well as it's own format

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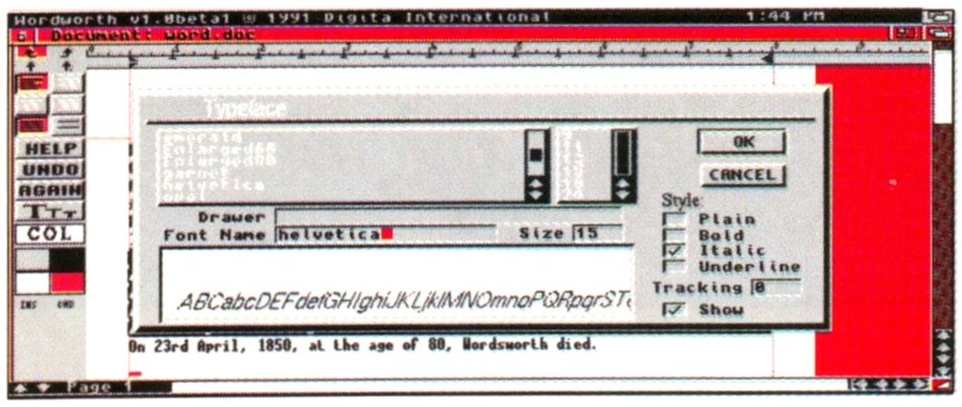

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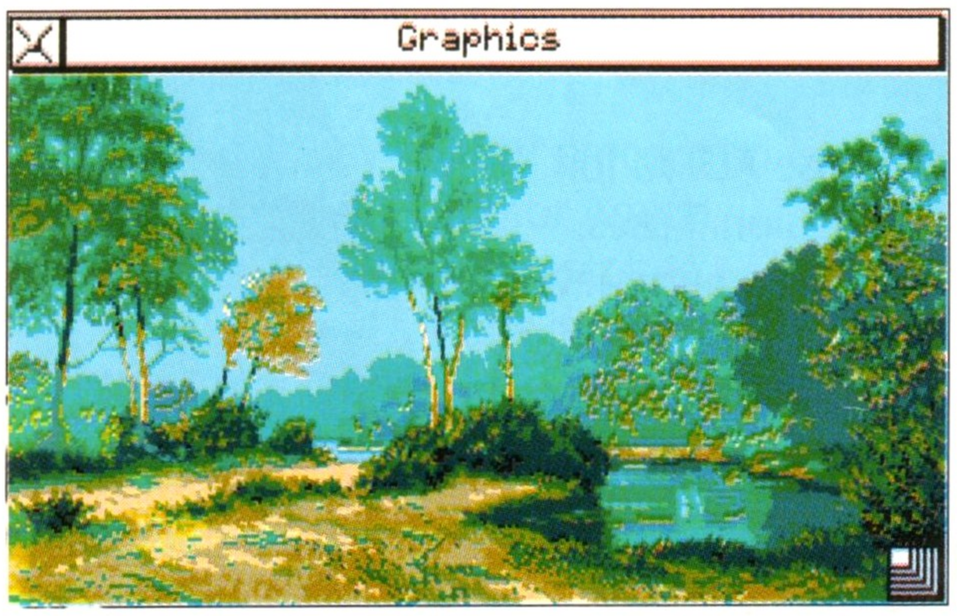

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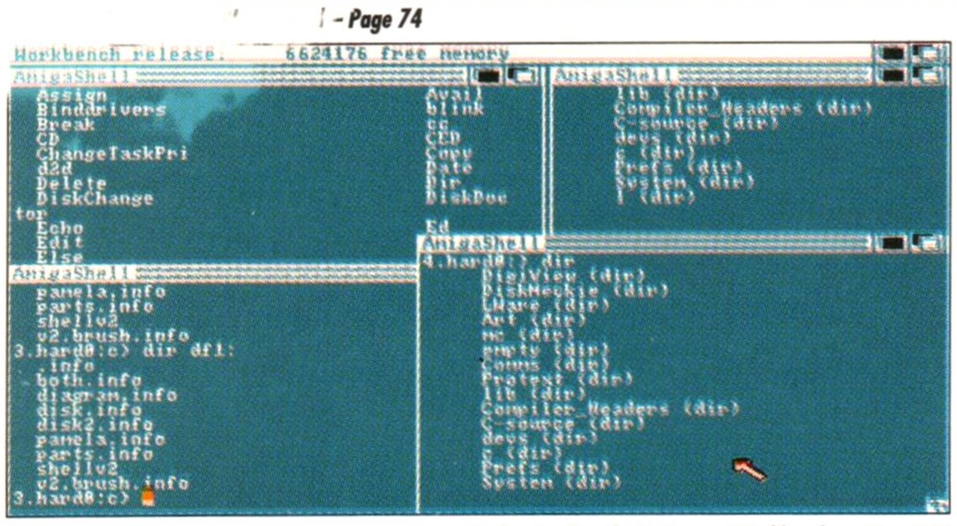

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EARTH SHATTERING SOUNDS

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FIELD REPORTS

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USER PORT

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112 Programming: John Kennedy exposes some useful practices while programming in BASIC.

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TEST DRIVE

104 SAS/C: SAS is the parent company for Lattice, so was Mike Nelson surprised when this turned out to be the latest version of Lattice C?

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SPECIAL OFFERS

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COMPETITION

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AMIGA DIMENSION

*Dear **AUI** Reader,*

I am a longtime collector of comments on technology: pointed sayings like "GIGO" — garbage in, garbage out; or "To err is human but really to cock it up you need a computer" delight me. I think they are worthily joined by our "Quote of the Month" in this issue. Its sharp wit in relating disaster to technology — and sex — is very agreeably French.

It reminds me of the other comment that in technology, and life itself, we all tread a knife edge between triumph and disaster, especially when we are trying something new.

Technological companies, such as CBM, have all the time to be innovative. But today lead times gained by novel products are becoming shorter and shorter. Yet to survive and prosper technology companies must be constantly inventive.

Commodore has a very good record with the PET, VIC20, the everlasting C64 and the Amiga. These are achievements in consumer electronics of which anyone could be proud. Now the innovative CDTV is coming. I say "coming" because it is being reported to us that most of the heralded software is simply not yet available. (Longtime readers will remember that was how the Amiga started too.)

To make a success of CDTV, Commodore will need large amounts of persistence, courage and luck. They have major companies like Philips with CDI and Intel with DVI up against them, as we report in this *AUI*. However, innovation — and the guts to go against the conventional wisdom — can pay off. Also in this *AUI*, we report that Trip Hawkins, the popular founder of Electronics Arts, has announced that his company how has a turnover of more than $100 million a year and very healthy profits to go with it. As the inventors of Deluxe Paint and other excellent products, E.A. have built their success on bright new ideas, quality products and clever marketing. And by breaking conservative business rules. Trip Hawkins once told me that he liked being a pioneer, which, of course, is against most conventional wisdom. We ourselves, at *AUI*, are trying to incorporate the drive for innovation and quality into every aspect of *AUI*. We don't think it is necessary to make our magazine just like all the others. Though some of them seem intent on immediately copying what we do. Nor do we think that because *AUI* is a computer magazine our readers are not interested in or aware of quality in this or other areas of life. From the response we have had to the recent changes in the magazine and to the *AUI* Hyperdisk, we seem to be getting somewhere toward pleasing most of you. If we are offering you the innovative, quality publication you want, I'm happy to hear from you — and if we are not, let me know that too.

Yours sincerely,
Antony Jacobson
Managing Editor

USED FOR THIS MONTH'S *AUI*

Arnor's Protext 5.0, ASDG's Art Department Professional and Cygnus Ed, Canon's RC-260 Still Video Camera, CCS's Dos-2-Dos, Electronic Art's Deluxe Paint III, Fujitsu's RX7100P Laser Printer, Gold Disk's Hyperbook, GVP's Series II FaaastROM Hard Disk Controller Card fitted with 8Mb SIMM expansion memory and a 105Mb Quantum 11ms Hard Drive, HAM-E, Hisoft's Devpac, Microsystem's Scribble!, Amiganut's (PD) MED V3.0, Newtek's DigiView Gold 4.0, Supra's 500XP Hard Disk Drive Controller Car, Nordic's Power Cartridge, Oxxi's SpectraColor, Precision's Superbase Professional 4, and last, but not least, Nik William's PictureWare.

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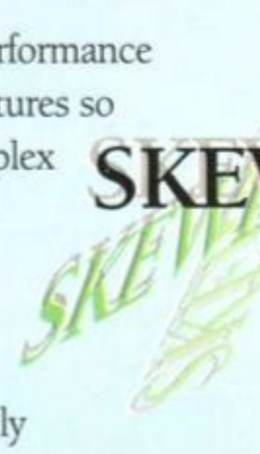

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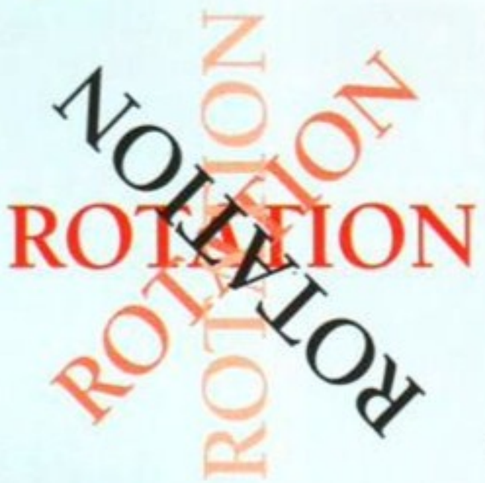

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SAMPLE
A sound that has been loaded into a computer, and is represented by numbers (digital) rather than noises (analogue).

SAMPLER
Usually a small cartridge that allows you to take sounds from a microphone (with amplification), tape, CD etc and record (digitize) them into your computers memory. Once in the memory a sample (sound) can be changed using the sampling software.

SAMPLING SOFTWARE
Allows you to alter sounds that have been digitized by the SAMPLER. Normal functions with sampling software include loading and saving a sample to disk, altering the sample by cutting, speeding up/down, fading in/out, joining to other samples and much much more.

SEQUENCER
A sequencer allows you to take samples and play them back in an order (sequence) that you determine. For example, if you sampled a piano note, a sequencer would allow you to play that note back at different pitches and in a sequence you decide. Your one note loaded into a sequencer can become a complete piece of piano music.

·A·M·A·S·

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Cartridge, software & manual £99.95

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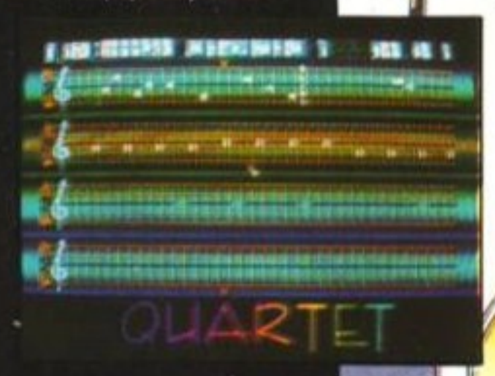

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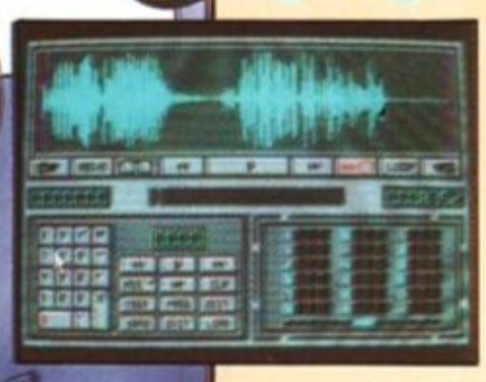

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AUI USERDI

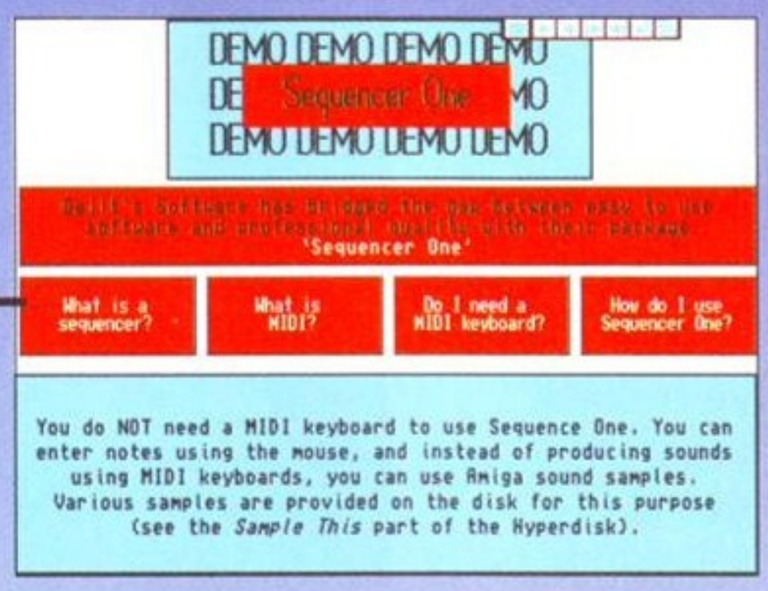
The adventure continues! The World of Hypermedia is here and simply by inserting the auto-booting disk into your Amiga you can be part of it. From the main contents scree you can browse through the many pages of the *AUI* HYPERDISK, exploring a multitude of sounds, images and programs.

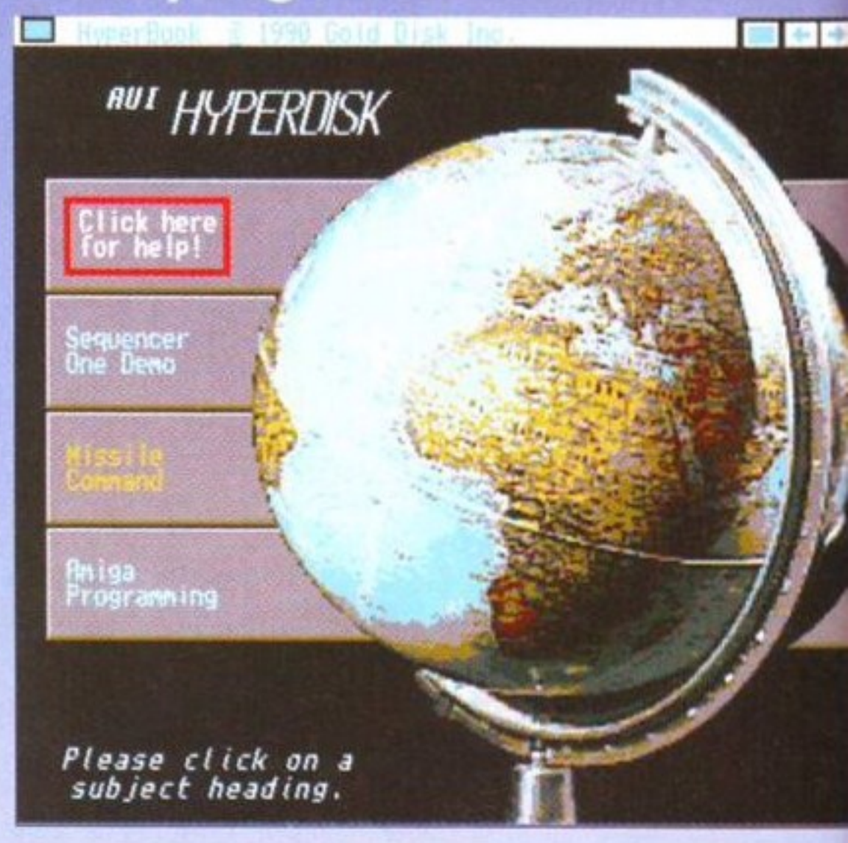
Help

Don't be embarrassed if you need a little advice. Click here for full instructions on how to use the HYPERDISK.

Sequencer One

Here's a demo of the music package everyone is talking about. Click here for information and you'll soon be a MIDI maestro.





Missile Command – The Game!

More classic arcade action with a machine code version of Missile Command from the exceptionally odd Max Bithead.

There is a fully useable version of Sequencer One on the ***AUI*** Userdisk. However, because space on the disk was so tight. We had to leave off a certain file which is needed if you intend to use Sequencer One with any MIDI equipment.

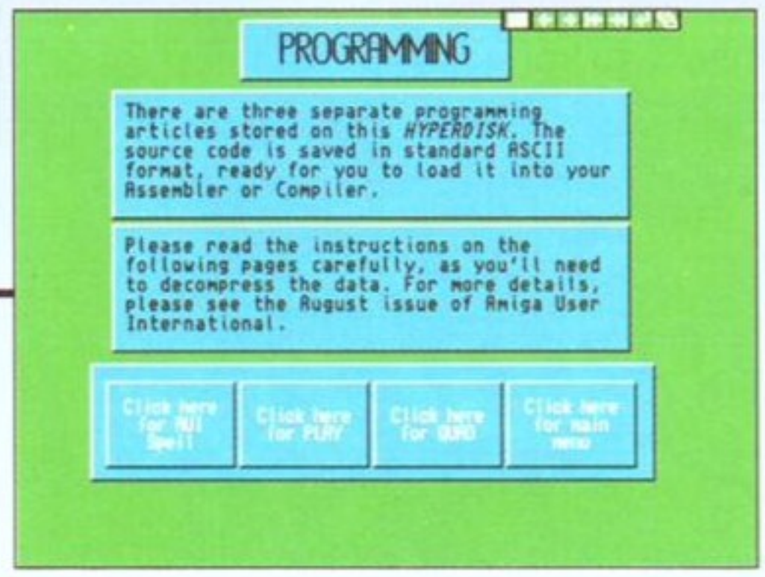
If you intend to use Sequencer One with MIDI, please follow these instructions:

1. Boot from your normal Workbench Disk – not the Userdisk.
2. Insert the Userdisk, find the SeqOne icon inside its drawer, and double click on it.
3. You'll be asked to swap disks – do so!

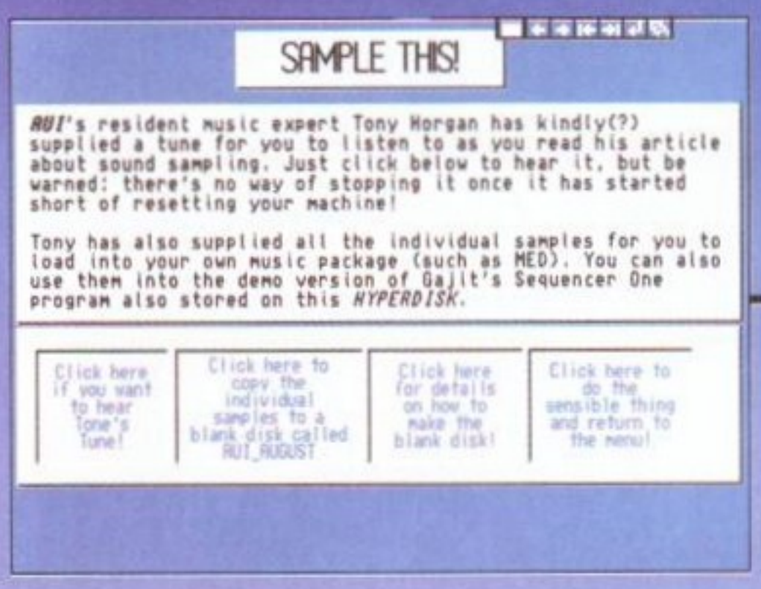
If you wish to make your own Sequencer One disk, make sure you put the Devs drawer (available on the standard Workbench disk) on the same disk.

Programming

Here is the source code for three ***AUI*** programming articles: ***AUI*** Spell, Sound and QUAD. No more lonely late night typing sessions!



SK No. 3



Sample This!

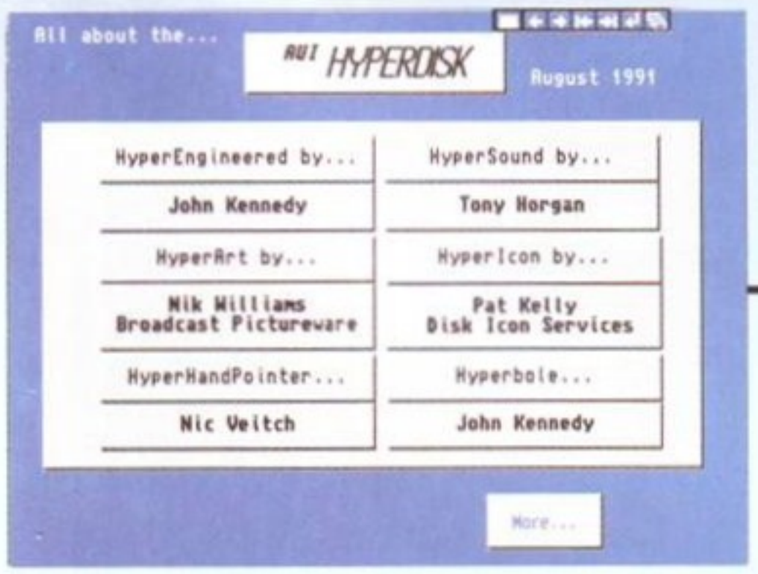
Cover your ears - Tony Horgan has been let loose with MED. We've included the tune *and* the samples so you can remix everything yourself.

Graphics

Here are some superb examples of digitised graphics, supplied by Nik Williams from his Pictureware Library. Not only do they look great, but you can load them into Deluxe Paint to perform your own artistic alterations.

Wanted

Here's your chance to let the world know what a talented person you are! Send in your Amiga work and you could be up here with the best of them.



All About

In case you thought we were too modest...
Who did what with what software.

Faulty Disk?

In the event that your Userdisk fails to load, please return it to the address below for a free of charge replacement, and allow 28 days for delivery:

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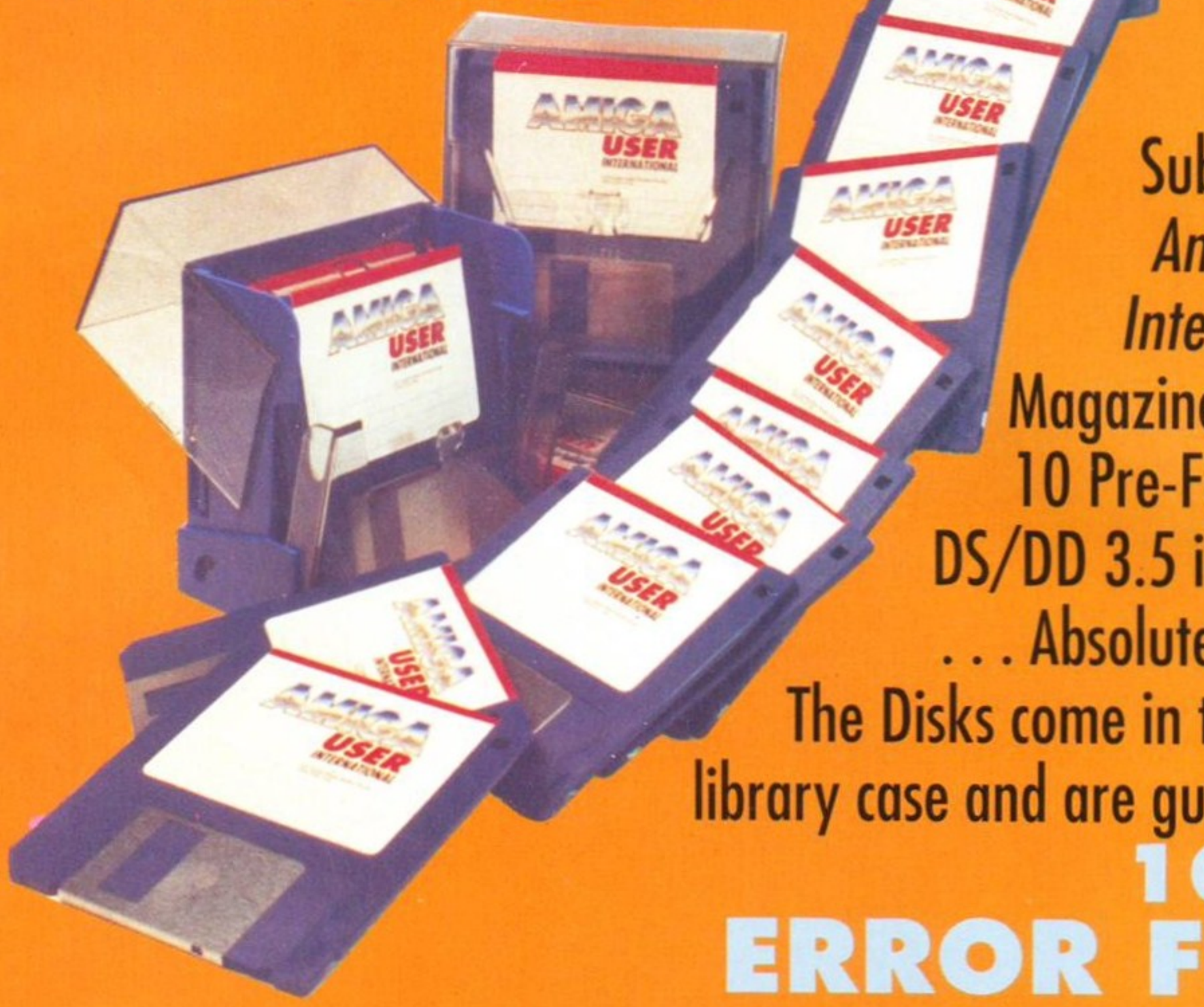

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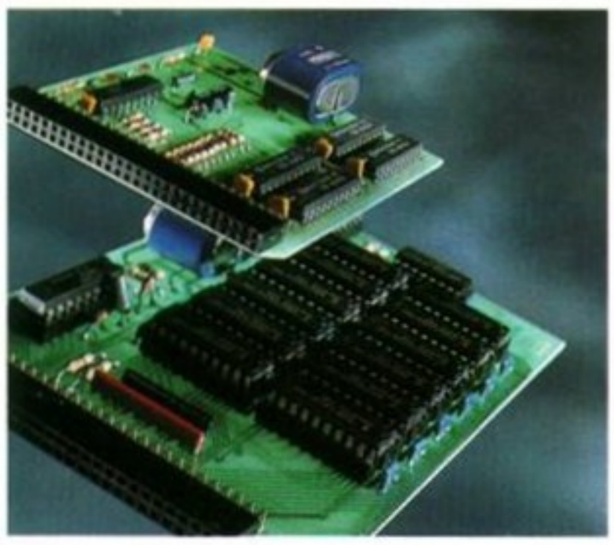

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Sampling Success

The Amiga has made professional quality sampling a possibility for everyone. Tony Horgan takes a user's view and explains the easy way to make it happen, happen, happen...

It started out innocently enough. In the early 80s, the likes of Howard Jones, The Eurhythmics and OMD were exploring the avenues of "this new sampling thing" with a great deal of success. What where they sampling? Drum kits, sounds of the outside world, and most of all, themselves. Then, it was a way of adding new voices and effects to your synthesizer, as it still is today, but that's just about all it was in the very beginning. Now it's common practice for an artist to use a sampler to "borrow" a pounding drum beat from here, a vocal from there and a melody from another old favourite, put them together and hit the number one spot. Fancy having a try at it yourself, but need pointing in the right direction? Here we go then...

Assuming you're going for the cut-up style as used by The KLF, Vanilla Ice, A Tribe Called Quest, Snap and Co., or if you just want to remix a single record, the first thing you need is a...

Backing beat

Before you whip out the backing track from a record, there's a question you need to ask yourself: do you want a "clean" beat, or do you want to include the bassline and other background rhythms? If you plan to use this beat as the foundation for the mix, with it running throughout the song, then the first option is probably the best. With a "clean" drum beat, just about anything running at the same tempo will mix in without clashing. If you keep the bassline, then any melody or vocal laid over the top not only needs to have the same tempo, it also needs to be in the same key.

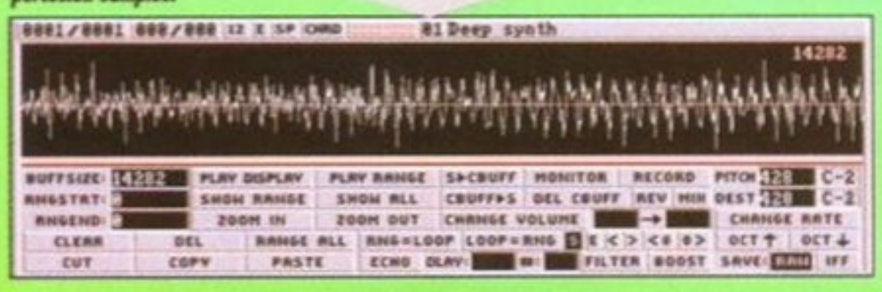
Once you've got that sorted out, there's the matter of finding an appropriate section of the record to sample. Listen to the beat, and find out where it repeats itself. Once you've located your beat, begin sampling a little before the required section, and let your sampler overrun a bit. Home in on the beat with your software's zoom function, and set up a loop to help you take out just what you need. If you're not sure where the start/finish point of the beat is, listen for the start of the vocal or melody, or try to pick out the most prominent bass drum sound. The chances are, that's where it starts. Once you've got the loop playing with no audible jumps or clicks, save it out to disk. If you're short on memory, try to spot certain sounds that are repeated in the sequence. It's sometimes possible to separate the beat into bass, snare and hi-hat sounds, and reconstruct it in your music program.

So you've got your drum beat kicking away in the background. Now you need to add some...

Here's an example of a backing track that's pretty much unbreakable. It's taken from the B-side of The KLF's Last Train to Transcentral. You can mess around with it a bit, but it's best of used as it comes, as a pounding backdrop to give your mix a bit of meat.

This one on the other hand, taken from the Soul II Soul track Holding On, is well suited to a bit of cutting and pasting. Notice the pronounced peaks and troughs, which mark the start and finish of each sound in the beat.

Zooming in on one of the peaks from the Soul II Soul beat, we come across a good bongo sound. Amplify it a little, whip it out, and you've got another professional sounding addition to your collection of percussion samples.



Chords, melodies and basslines

These often go hand-in-hand with the backing beat. If so, you've saved yourself a bit of work, along with some memory. However, there are advantages to recording them separately. The main plus point is versatility. An unadulterated chord sequence for example, can be used on its own, with the original beat, or with any new beat running at the same tempo. The method of cutting up and rearranging a bar can be used again to good effect. It's also occasionally possible to sample just one note or chord, and play back the melody with the single sample, in much the same way that you would use...

Instruments

When you're sampling a single sound for use as an instrument, try to sample the sound at a frequency relative to its pitch. For example, if you've picked out an isolated synth sound, and you can tell that the note is a high C, set up your sampler to sample at 16726hz, or a "period" of 214. If the note is F#, sample at a rate of 11931hz, or a period of 300, and so on. Look at the instructions for MED V3 for all the frequencies and their corresponding notes. That way, when you load the sound into a music program, when you enter a C, you'll actually get the sound played back as a C. Stick to this rule

whenever possible, and you'll find putting your mix together a lot easier.

If you want to give your mix a bit of extra interest, you could do a lot worse than include some...

Vocals

When it comes to vocals, the required sample rate varies. If you're sampling "ooh"s and "aah"s, you'll be able to get away with quite a low rate, around 8816hz. Other types of speech are more awkward. Hard consanants, "S" and "T" sounds especially, call for a higher sample rate. Unless you go for a rate of about 16726hz, you'll notice a lisp creeping in.

Finally, if you're a really adventurous DIY mixer, you could abandon the ready-made back beat, and build your own.

Percussion

If you do decide to write your own beats, or just want to fill out what you've already got, don't be tight with memory. Percussion sounds take up very little space. A bass or snare drum sampled at our favourite rate of 16726hz, takes up about 5K tops, and quite often only half that. Once you get onto closed high hats and the like, you're talking 1-2K at the most.

Sometimes you'll find the drum sound you're after is cut short by the next sound in the beat, but don't despair. Take out what there is of the sound you want, and use your software to echo the second half of it. With a bit of experimenting, you should be able to get yourself a good decay "tail" formed from the echoes.

Prime Sources

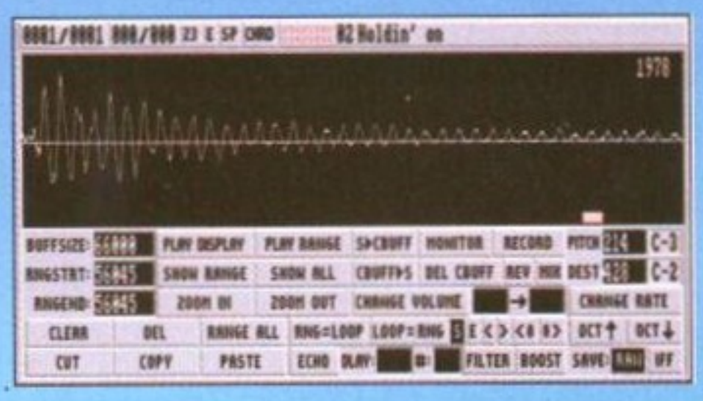
Whether you're looking for a beat, a vocal or a hook, record intros are excellent sources. Very often a record starts out with a simple beat that builds up over a few bars. If not, there's bound to be some other worthwhile sound out on its own, before the rest of the song kicks in, be it vocals, a bass sound or whatever.

Want some examples? How about Michael Jackson's "Leave Me Alone": sample the very first note at a high rate, and play it back an octave lower for a deep, rich and very realistic piano sound.

If you want a good isolated vocal, try the intro to The KLF's 3am Eternal. Drop that over another beat of the same tempo; you'll be pleasantly surprised at how neatly it fits in.

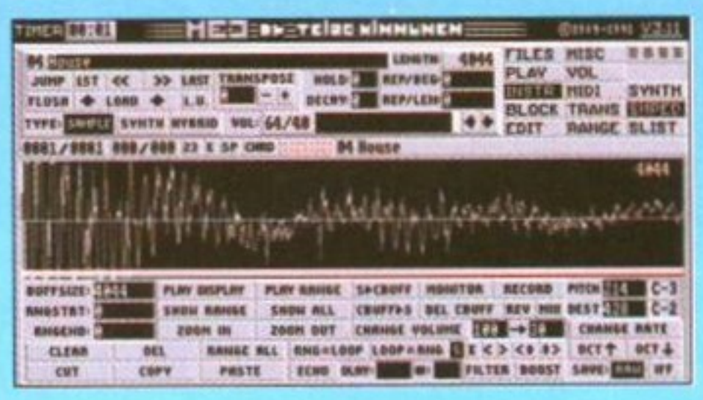
Snap's dance anthem of summer 1990, The Power, has an intro just begging to be sampled. Take the first note of the sampled guitar hook, give it some echo with your editing software, and you've got a great addition to your collection of instruments. It doesn't have to be used to play back the same Snap/Bobby Brown riff; with a little experimentation you can come up with some great new effects, as The KLF have done in their massive Last Train to Transcentral single. Can you spot it?

Although 12" singles are often "emptier" than the 7" versions, they're good sampling material, with more uncluttered hooks and basslines than the original mixes. Although intros are a good source, don't ignore the rest of the record. If you're after a full-blown chorus, you'll have to venture a bit deeper into the song.



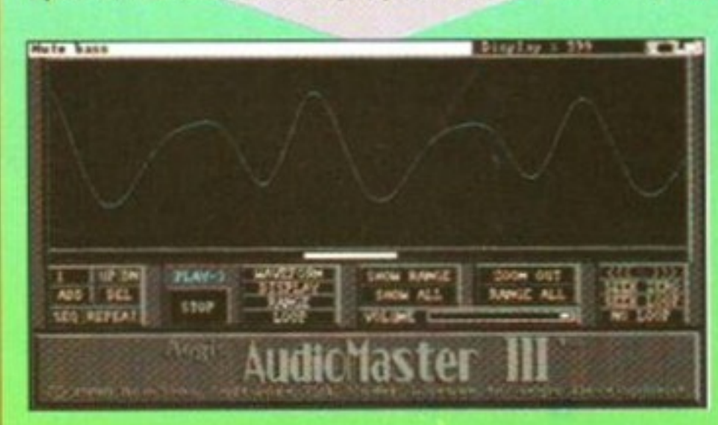
What we have here is a nice "housey" snare drum, but it's had to be cut short to avoid including the bass drum that quickly followed it. The resulting sound is okay, but it cuts off rather abruptly.

This is that same snare drum sound, but now it fades out towards the end. One way to achieve this effect, would have been to just ramp the volume down at the end of the original sample, but then you'd end up with a very short sound. Instead the sound has been lengthened a little, by echoing the second half, and then faded out.



If you're lucky enough to own the Audiomaster sampling software, or any other package that allows freehand editing, use it on your bass sounds. You'll normally get a slight hiss when you sample a bass instrument. The hiss shows up on very close inspection as tiny blips on the main waveform. Smooth these over by tracing the affected sections very carefully with the mouse, and you should end up with a sound as smooth as the visible waveform.

Looping can be used to great effect, giving your sounds an infinite length without using loads of memory. Finding suitable loop point however, can be tricky. Some sounds are impossible to loop in their raw state. The waveform of a synth sound, or a sampled trumpet for example, may never go "full circle", so it would seem that there's sometimes no alternative to an audible click on the loop point. Here's a quick trick that can be used to rectify the problem, and it works extremely well.



In General

Sample your sounds at twice the rate that you intend to use. Then use your software to compress the sound to half its original size. Because there's less anti-aliasing involved, you'll end up with a clearer sample than if you had originally sampled at the lower rate, but you use no more memory.

Before you begin sampling, make sure you reduce all background noise and interference to a minimum. First of all, tweak your graphic equalizer or treble and bass controls to filter out any hiss or hum. Just about any electrical device can interfere with the signal picked up by the computer, including the TV! If you have bad interference problems, set your sampler to monitor a sound, and then unplug any possible offending items in turn, noting whether you get an improvement in sound quality as you go. You may even have to disconnect the TV from the Amiga to get the noise level down. If so, don't worry, "blind" sampling is possible with a bit of practice.

One other important detail is the volume level. Your sampler software should have some kind of volume meter, so use it before you start sampling. Even if you're recording a sound that's probably going to be fairly quiet in the final mix, sample it at the maximum volume level possible before it distorts. This way you'll get a better reproduction of the sound, and you can always tweak its playback volume from within your music program.

When it comes to cutting out and saving your sounds, make sure you don't leave any silence at the start of the sample, otherwise when you come to sequence them, you'll find they sound half a beat or so late.

Get to it then! If you don't already have a copy of the brilliant PD music program MED V3 (available from Amiganuts United Tel: 0703 785680), or OctaMed, the 8-channel version, get hold of one in time for the next AUI, when we'll be using it with your samples to build that smash hit megamix. Before you know it, you'll be a fully paid up Justified Ancient of Mu Mu.

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That's not all **AudioMaster III** has going for it! The author, Peter Norman of RamScan Software, has an affinity for compact discs. Thus we have included the Aegis CD Player Simulator for your listening pleasure. Load up to 20 songs or samples to play in the background via a fully-simulated compact disc player. Since it's fully multi-tasking, the Aegis CD Player can bring a whole afternoon of music to you while you work on other projects!

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TEST DRIVE

SoundMaster *versus* Perfect Sound

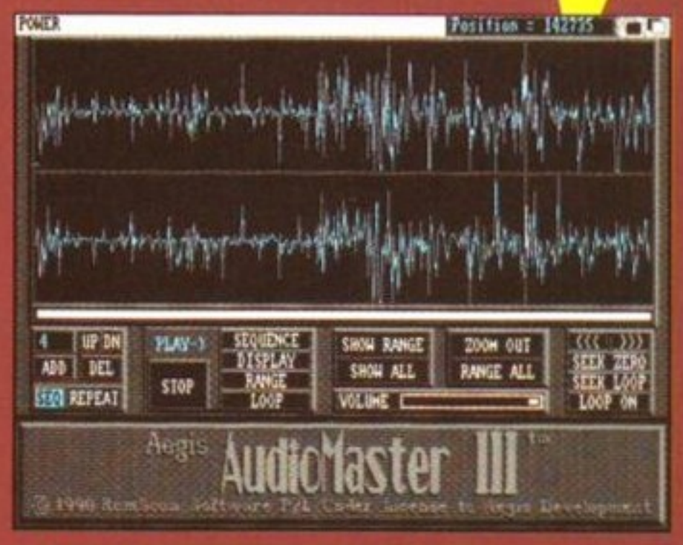
HEAD TO HEAD

Mike Nelson reports on two packages from America which provide both hardware to perform the sampling and also the necessary software to drive it.

The Amiga has an impressive potential for generating high quality sampled sound without spending a fortune or years learning how to do it. For those new to sampling a brief introduction to this area is in order. Most computers are only capable of generating a limited array of different waveforms (usually sine, square, sawtooth and random "white" noise). The Amiga hardware places no such restrictions on the budding musician and will play any waveform you care to define, and this is where the problems start. You have to get the sound, which may have an extremely complicated waveform such as speech, into a format with which the computer can deal. Physicists will tell you that any sound is essentially a series of vibrations in the medium which carries it (air in our case), and the various components of the wave, such as the wavelength, amplitude and frequency are defined around this model. Musicians are not particularly concerned with wavelength, but will know amplitude as volume or loudness and frequency as pitch, governing position on the musical scale. How does this fit in with the Amiga?

The diagram shows a representation of a sine wave, and notice how the amplitude varies with time to generate the sound. All the Amiga needs to know to mimic this sound is the amplitude at regular time intervals, and this is where the sampler enters into the scene. This device is an analog to digital converter that measures an incoming voltage from the source (e.g. a microphone) and sends the computer a number whose size will depend on this signal. The Amiga hardware can then reverse this process, generating a voltage from the digit in its memory which is sent to the speakers in the monitor, or better still a Hi-Fi system, for transmission to the listener. This is exactly the same principle as the technology involved in compact disc sound.

The quality of the sound reproduction will depend on several factors. Assuming the source is up to scratch, the resolution of the sampler is important. In practice, this means the magnitude of the number generated by the A to D device, and as the Amiga can only deal with 8-bit samples, the resolution is limited to +/- 127. For comparison, a CD is coded as 16-bit values, double the resolution of the Amiga. The second parameter involved is the sampling frequency, or how often the system takes an amplitude measurement. Looking at the diagram, you can see that the more often this occurs, the less time is spent interpolating between successive samples, and the more accurate the representation of the sound. The only problem with this is the more samples that are present, the greater the storage requirements and also very large samples impose certain programming difficulties owing to hardware limitations. The standard Amiga is capable of playing 28,000 samples every second, and again this is way short of the 44,100 of a CD player.



"Physicists will tell you that any sound is essentially a series of vibrations in the medium which carries it (air in our case)"

Soundmaster

The software for Oxxi's Soundmaster has been around for several months now and was reviewed in the December issue of AUI. Called Audiomaster III, this remains one of the most powerful sample processing packages available, and coupled with the Soundmaster hardware, the combination is formidable to say the least. Although Audiomaster III works with almost any sampler available, the best performance is naturally obtained with Soundmaster, and Oxxi provide an updated version of the software especially for use with their hardware.

From the outset, the package suggests that considerable effort has gone into the planning and manufacture of the product. The user interface of the software and the build quality of the hardware both testify to this. The Soundmaster is a box slightly bigger than the mouse with about 3 feet of cable trailing to a connector for the parallel port in the back of the Amiga. It may seem a small point, but this flexibility is soon appreciated when it comes to playing with the slider gain control and swapping wires around. The sampler is equipped with two phono sockets, for left and right channels as stereo sampling is fully supported, and also two jack plugs for microphones if you want to sing or wail into the computer. A red LED illuminates to tell you the source is too loud and the sampler is being overloaded. Finally, if you haven't got a microphone, there is one built into the sampler box with its own "I'm active" LED. Incidentally, this microphone is controllable through the Audiomaster program (hence the upgrade) and can be actived simultaneously with the phono inputs, allowing you the dubious delights of a simple Karaoke effect.

Once these connections are in place and the Audiomaster program running, the next step is the sampling, and this really could not be simpler. The hardest thing to master is getting the input level correct, as if it is too high, the sampler will only register 127's, and too low will generate almost a zero line. Getting the level correct is assisted by Audiomaster displaying a real-time trace (a bit like an oscilloscope) so you can adjust the volume either on the source, or if this is not possible as on cheaper CDs, the slider control on the Soundmaster. Audiomaster is able to ▶

TEST DRIVE

SoundMaster

versus

Perfect Sound

CONTINUED

play the sample (almost) simultaneously as well as recording the information so you can hear exactly what is being saved. A side effect of this ability is Audiomaster can add definable echoes to the sound in real time for some fun and games, particularly when you are sampling your own voice while listening to a computer-enhanced version at the same time through headphones.

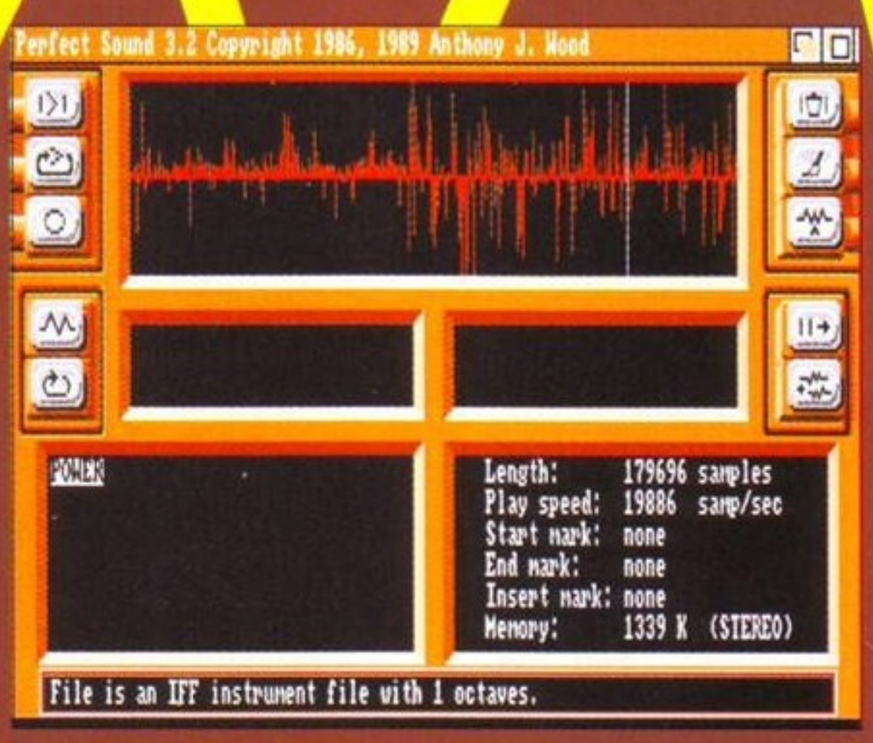
Getting the sample into memory is only the start of the entertainment as you effectively have a recording studio at your disposal in the shape of Audiomaster. You can edit and mix samples together, add special effects like volume fades or echoes, before saving the data as either a standard IFF sample file or as an instrument suitable for Sonix.

"The standard Amiga is capable of playing 28,000 samples every second, and this is way short of the 44,100 of a CD player"

From a technical point of view, Soundmaster performs extremely well indeed. I mentioned the limiting factors normally experienced by Amiga programmers, namely sample size (usually less than 128K) and playback frequency (28,000 per second). Oxxi would have no truck with such concepts and their product is easily capable of surpassing these values, using very fast assembler (and multi-tasking unfriendly) routines to outgun the Amiga DMA hardware, when necessary. The end result however, is superb quality which is realistically limited in applications; games programmers are invariably restricted by memory considerations, and music software needs to be able to process more than just the sounds, updating the display as well. Nonetheless, if all you want to do is play around and have lots of memory, the extra power of Soundmaster really does make a significant difference to sound quality.

Perfect Sound

The second offering is Perfect Sound, an upgrade from Sunrize Industries. The software has been updated (to version 3.2) to cope with the demands of a new digitiser so it seemed like a good idea to consider it with the Oxxi package. It is important to realise that although both products do essentially the same job, they have very different capablilities and applications.



The Perfect Sound hardware plugs straight into the parallel port, and does not have the extension cable of Soundmaster. This may prove irritating for many people as it effectively increases the computer's width by almost six inches, maybe necessitating an extension to the desk, if not the house. Also, the two phono and single microphone jack plugs are less than accessible, but you can buy an appropriate cable to help relieve the problem (Rombo do one for their Vidi kit which worked "perfectly" for me). There is no slider to alter the gain as this is controlled digitally via the new upgraded Perfect Sound software, and this does have certain relatively minor advantages over Soundmaster, particularly when dealing with a very quiet source because there seems to be less noise in the system.

It is fair to say that the software accompanying Perfect Sound is not in the same league as Audiomaster III, and Sunrize recognised this fact by developing "Audition" seemingly to go a stage further. Unfortunately, this is not yet available, but a preliminary glimpse suggests great things lie ahead. Although inferior in many ways (notably in ease of use and overall power in areas such as the display and zoom facility), Perfect Sound does an excellent job of manipulating sound samples with the big advantage over Audiomaster in that you can have several samples in memory simultaneously (if you have sufficient RAM).

The hardware, assisted by some internal filters to keep noise to a minimum, produces very accurate samples indeed, but does not have the exceptional specifications of Soundmaster. This comment must be taken in context as I wouldn't want to suggest that Perfect Sound is particularly inferior. It's like comparing a Ferrari with a Sierra in that both will get you where you want to go, but one is quicker (and slightly more pricey), and you can rarely use the extra capabilities, unless you have some convenient arrangement with the local constabulary. For most people's purposes, Perfect Sound produces more than adequate sound quality at a good overall cost. It only gets worried about sampling in stereo at frequencies higher than 14,000 Hz, whereas the Soundmaster can theoretically work in stereo up to 100,000 Hz. You would need a Cray-3 to process the data, and the extra resolution is largely unappreciated by the human auditory apparatus, anyway.

"Audiomaster can add definable echoes to the sound in real time for some fun and games, particularly when you are sampling your own voice"

Conclusion

Soundmaster has to be the ultimate in 8-bit sampling technology for the Amiga, and Perfect Sound runs it a very close second. The quality of the former is indeed exceptional, but the potentially phenomenal resources required can limit the applications. In such circumstances, Perfect Sound is easily on a par, performing particularly well under low input conditions, so at the end of the day, the choice will depend on your pocket and requirements.

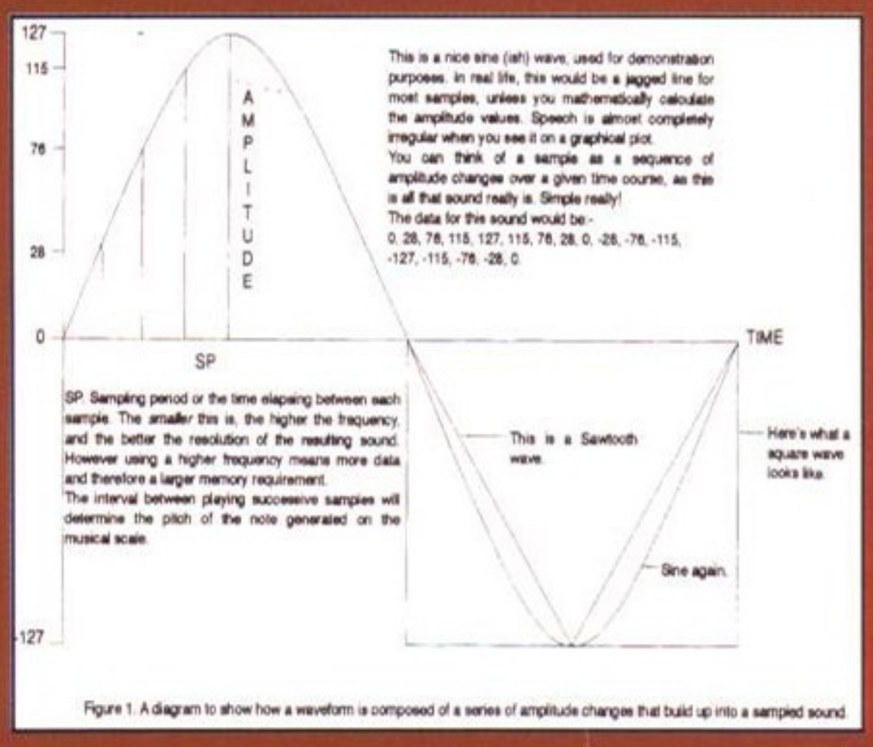


Figure 1. A diagram to show how a waveform is composed of a series of amplitude changes that build up into a sampled sound.

Product: SoundMaster
Price:$189.00
Contact: Oxxi Aegis, PO Box 90309, Long Beach, CA 90809-0309 USA
Tel: (213) 427-1227
Fax: (213) 427-0971

Product: Perfect Sound
Price: £61.25
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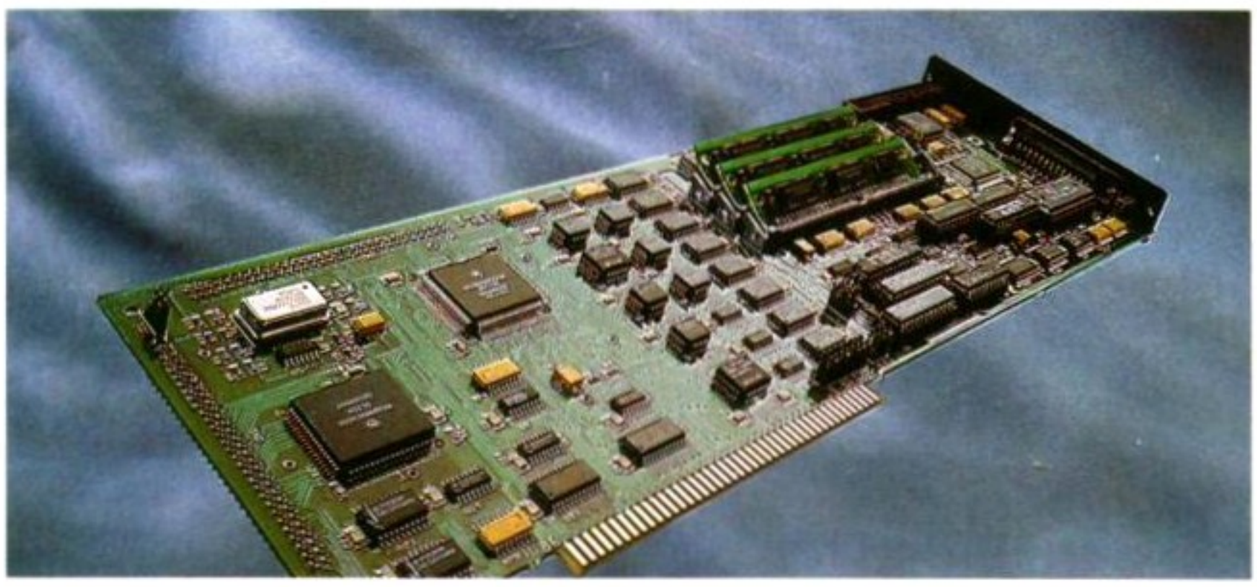

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TEST DRIVE

What does it take to keep your Amiga's graphic power up to date? Gary Fenton finds out with the latest piece of hot graphics hardware from the U.S.A.

HAM

For years there have been graphic upgrade cards for IBM compatibles, but until recently there has been nothing of a similar nature for the Amiga. The 32 bit Harlequin device is on the market now but it is priced from £1400 upwards. The Harlequin's graphic output is indeed top notch stuff and is worth the asking price but how many of us ordinary graphic enthusiasts can afford it?

▲ *This is definitely a gorgeous HAM-E image!*

This is where the latest wave of Amiga add-ons come in. From under £400 you can buy the Colorburst from MAST, DCTV from Digital Creations or HAM-E from Black Belt. DCTV is only NTSC at present and Colorburst is not yet available in the UK. Does this leave HAM-E as the best 24 bit graphics upgrade as the only option?

Getting Started

HAM-E is not at all like any other graphics device for the Amiga. The electronics are housed in a very bland, white metal case about the size of the average modem. Connection to your system is easy. Just plug the RGB lead from the Amiga into HAM-E and then a lead from HAM-E to your RGB monitor. I was told that it works on almost any RGB monitor but I have found that the Commodore and Philips monitors work best.

"The maximum height and width limits for your picture is a colossal 32,000 pixels in both directions!"

Once the RGB connections are made you can then plug in the power supply, which comes free, that supplies HAM-E with all the juice it needs. After that you can power up your Amiga, just as usual, and "tune in" HAM-E. This is not as frightening as it sounds because all the things you need to tune in with are included. On one of the three disks supplied with the unit are several HAM-E pictures that you have to load, one at a time, as you twiddle a screw to get the best picture. A special screwdriver is supplied as part of the kit. After you have done this once you will never have to do it again, unless you use it on another Amiga (all Amigas are slightly different.) This process from start to finish takes no longer than five minutes.

HAM-E offers you many new display modes which fully support interlace and overscan. The first HAM-E mode is a register mode that gives you up to 512 individual colour registers. Along with that first mode goes the impressive 16.8 million colour palette which is a true 24 bit palette. The other main screen mode can display up to 262,144 colours on screen all at the same time for real photographic quality. (All modes are fully genlockable.)

The best thing about HAM-E is that it is not really part of your system and the Amiga does not even know it is connected. Because of this, it does not take up any extra processing time to display a HAM-E image and furthermore you can use it as a standard IFF picture. This is the main strength of HAM-E and I am sure this feature will give it the success it deserves. To put it another way, you can load HAM-E images into any package that uses IFF pictures such as DPaint or AMOS.

I would like to stake the claim that I have made the world's first 24 bit demo with bouncing pictures, a scroll text and bobs that danced with simultaneous music! (At least it is the only one we have heard of! Ed.)

Thanks to the compatibility between HAM-E and AMOS (namely IFF files) there is no limit to the possibilities. I can hardly wait for a 24 bit game to appear on the Amiga!

The Software Collection

With every HAM-E unit you also get some very tasty pictures, a comprehensive 24 bit processing package, a file conversion program and supporting paint program. These programs have full support for ARexx and macros.

The paint package allows you draw with all of the standard gadgets found in DPaint such as line, freehand, curve and so forth. The software goes even further by offering other features including masking, colour cycling, glow, special effects and advanced animation scripting. If that sounds too good to be true then I had better warn you that some operations take time to process.

Don't expect it to be as easy as DPaint to use because that it is definitely not. I ▶

-E

HAM-E -hardware most of us would like to get our hands on!

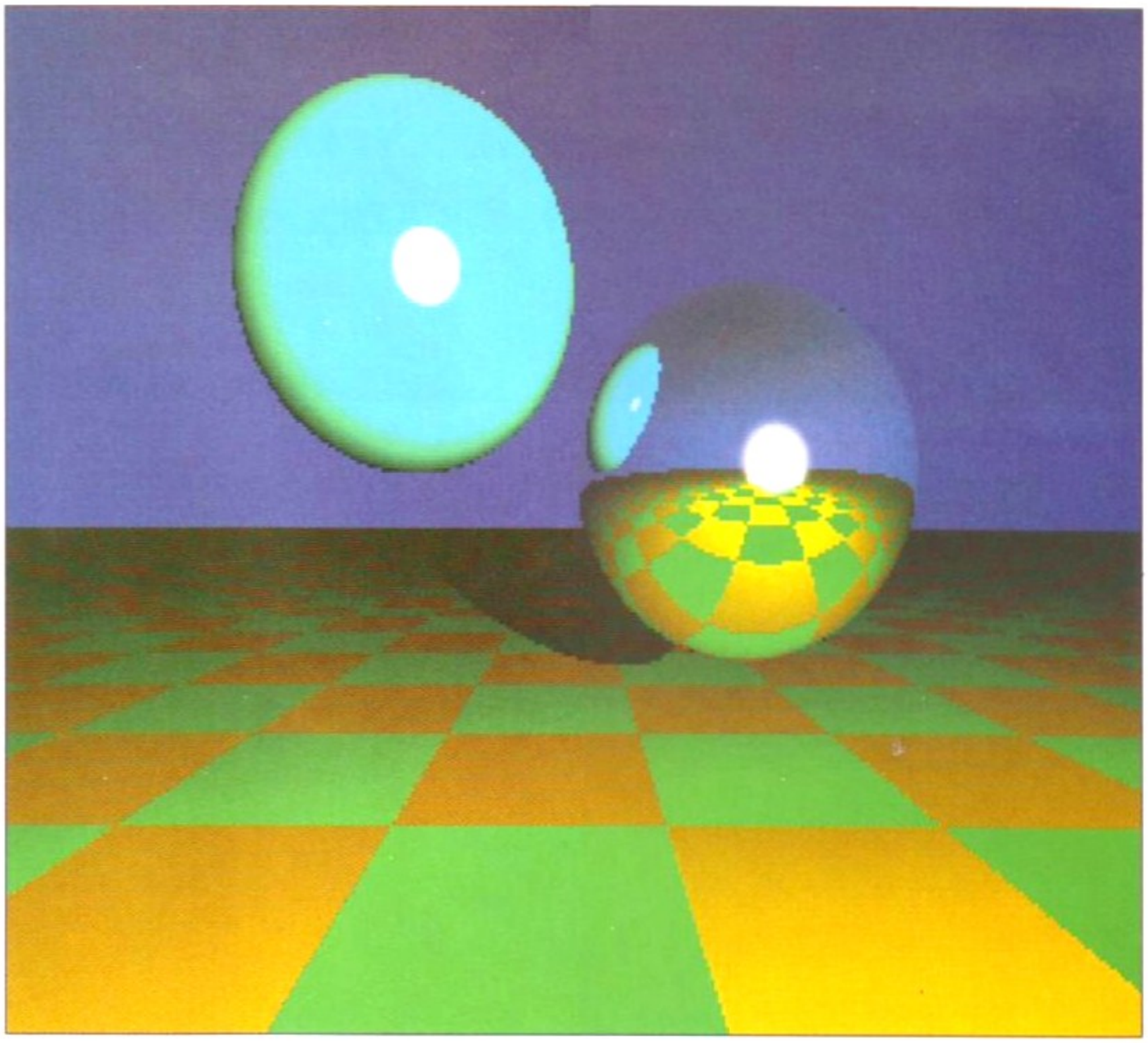
TEST DRIVE

HAM-E

CONTINUED

recommend you read the detailed documents found on the disks before going in at the deep end. It took me a couple of weeks to get to grips with the package, but once you understand it you can create some delightful images. The current revision of this program only supports 256 registers and not the full 512.

The Image Processor takes a picture even further with a blinding array of special effects. Along with the usual blend, anti-alias, sharpen, and full RGB controls, you can do other things such as stretch, decontour, melt, explode and even add water ripple effects. You can work in a choice of modes including 256 reg, 18 bit, 24 bit, HIQ and fast HAM-E, luma and monochrome. The maximum height and width limits for your picture is a colossal 32,000 pixels in both directions! However, there is a price to pay for such power and as usual it is speed that suffers. Some operations take 30 seconds to complete while the more complex ones can take hours, although they are often worth the long wait. If you plan to use the image processing power to it is full potential, you are advised to buy an accelerator card or take your Amiga to bed ►



▲ *Sculpt 4D rendered it and HAM-E displayed it. What a team.*

▼ *Sculpt, Imagine or Real3D 24 bit images can be viewed with HAM-E.*

▼ *Ah! Served up just the way I like it.*

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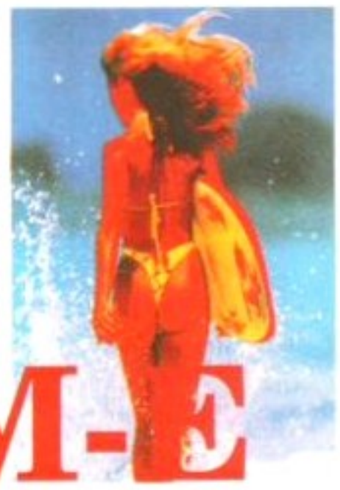

HAM-E

CONTINUED

with you, whichever you prefer.

If you are a proud owner of Newtek's Digiview Gold digitiser then you can make use of the special RGB save feature which allows you to save an image holding 2.1 million colours. If you have enough RAM in your system to run both Image Processor (IP) and Digiview at the same time, you can import digitised pictures directly into IP without having to save then to disk first.

To maintain full compatibility with other file formats, a convert program has been included giving support for IFF, GIF, Dynamic hi-res, 24 bit IFF, RGB8, TARGA, QRT and many other file formats too. One of the other formats it accepts are Sculpt 3D and 4D RGB files. This means you can render images using the 24 bitplanes Sculpt supports and load them into IP. No HAM-E owner can ever complain about the lack of pictures to load in or any incompatibility problems!

Those nice people responsible for HAM-E (Black Belt), have put all the bundled software in the Public Domain, which means you can obtain the latest upgrades without having to pay a small fortune for it. If you have a modem you can get the latest HAM-E software from the HAM-E BBS that is up and running in this country, courtesy of the UK distributor.

Alternatively you can obtain the latest revision on disk through the post.

This product should appeal to everyone from those working with professional video and DTP, right through to the home enthusiast. If you have outgrown HAM then HAM-E is for you.

"With that first mode goes the impressive 16.8 million colour palette which is a true 24 bit palette"

Technical Know-How

The actual output resolution of a standard HAM-E device is 320 by 256 pixels in non-interlace or 320 by 512 in interlace, plus any overscan you require. A basic HAM-E picture is really a 16 colour medium or high resolution IFF screen. How it works goes something like this. HAM-E's hardware pairs up every two pixels next to each other and reads the two pixels as two 4 bits of data. It adds these two neighbouring pixels together to make 8 bits of data which effectively turns two pixels into one. This halves the horizontal resolution which is not so drastic because it was a medium or high res picture to start with. If it is high resolution, jaggy free output you need then there is the optional high-res engine. This adds an extra pixel in between every horizontal pixel and gives it an in-between colour at the flick of a switch. It does this 50 times a second which also antialiases the whole image using a custom maths processor.

HAM-E springs into action whenever it comes across a "cookie". This is a block of pixels that holds information for HAM-E which is followed by palette information. (Yes, you can change the palette on every animation frame!) Without the cookie the screen becomes a mess, so you should never obstruct the cookie with your mouse pointer. This is not a real problem because an overscan screen ensures the cookie is out of the way in the top left hand corner.

Price: £299 or £399 with Hi-Res engine
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▶ *Haven't we met before?*
▼ *The HAM-E is some graphics engine!*

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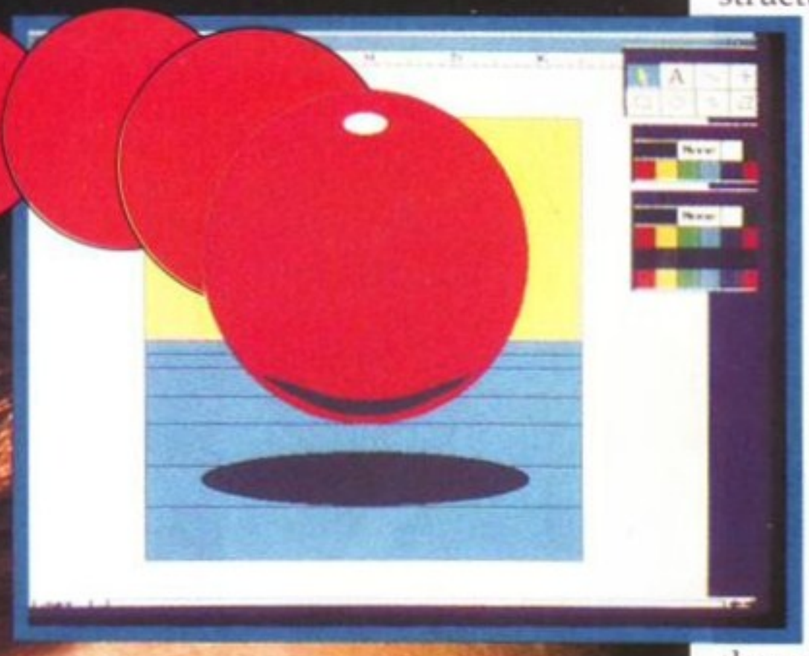

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TEST DRIVE

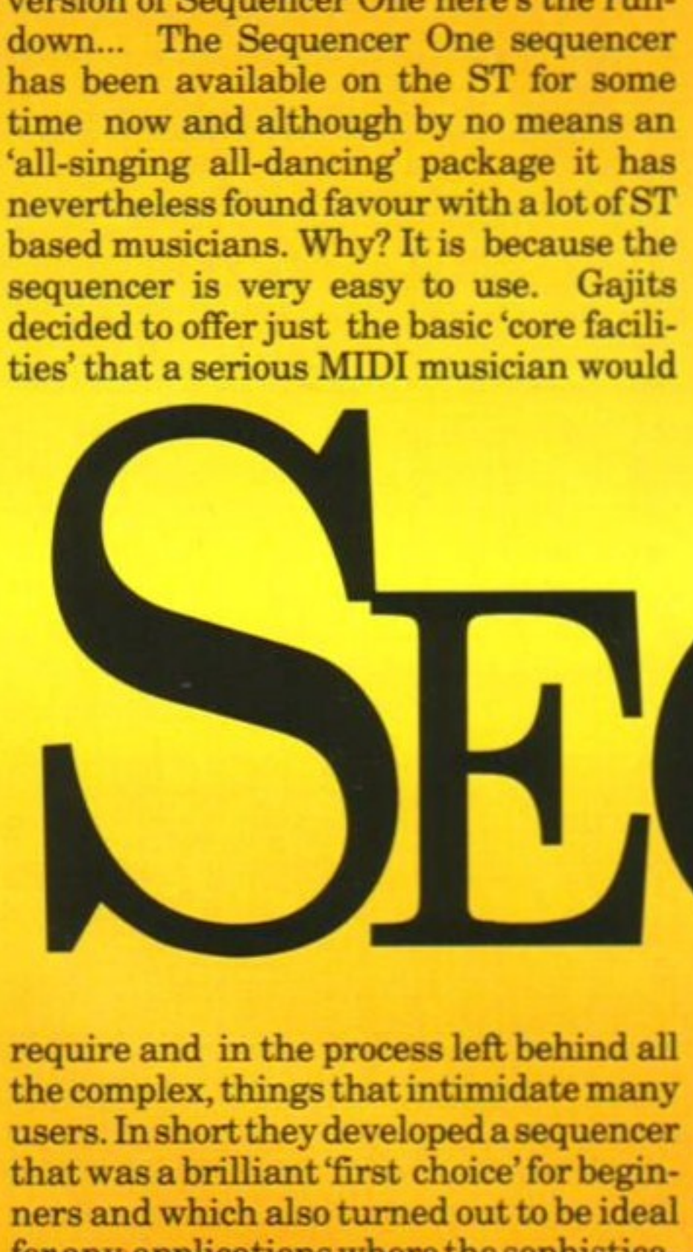
SEQUENCE

There's some welcome news for Amiga-based MIDI musicians; Gajits have just released an Amiga version of their Atari ST Sequencer One package. Paul Overaa, *AUI*'s resident MIDI techie, plays out his test routine on the package that stars on this month's *AUI* Coverdisk.

The arrival of Gajits Sequencer One is good news for Amiga musicians because it means that another software company who have been primarily Atari ST-based have decided to join the Commodore Amiga camp. In case you've not seen the ST version of Sequencer One here's the run-down... The Sequencer One sequencer has been available on the ST for some time now and although by no means an 'all-singing all-dancing' package it has nevertheless found favour with a lot of ST based musicians. Why? It is because the sequencer is very easy to use. Gajits decided to offer just the basic 'core facilities' that a serious MIDI musician would require and in the process left behind all the complex, things that intimidate many users. In short they developed a sequencer that was a brilliant 'first choice' for beginners and which also turned out to be ideal for any applications where the sophistication of the heavyweight Steinberg type sequencers was not needed. They also incidentally left behind the hefty price tags associated with many of their competitors!

In case your thinking that Sequencer One might be a 'toy sequencer offering' it's worth pointing out that nothing could be further from the truth - it is a very capable sequencer which provides all of the usual types of overdub, looping, and cut/paste type transfer operations. The editing facilities are also quite stong and as well as the conventional quantization and transposition type options some useful extras, that you might not have expected, are provided including controller re-mapping and range controlled MIDI event thinning/striping facilities.

"Sequencer One has three primary screen displays - the track screen, the step editor and the bar editor"



Sequencer One Handles MIDI files as well as it's own format.

You get two manuals with the Amiga version of Sequencer One - a 64 page user guide and an 8 page Amiga specific supplement. They are short enough to be read thoroughly and they are well enough written to be useful.

The Working Screens

Sequencer One has three primary screen displays - the track screen, the step editor and the bar editor. The controls, like many other sequencers, are built around a set of tape-recorder style gadgets... record, play, rewind, fast forward and so on. These controls, plus position counters, channel activity indicators etc, are present all of the time (i.e. on all three Sequencer One screens).

The track screen has two parts: On the left there is a scrollable display which contains information about the 32 available tracks (track number, track name mute on/off status, and channel info) and on the right there is a similar list arrangement which is used to store named 'song positions'. Recording and re-channelling output (to either MIDI or the internal sound chips) is just a matter of clicking on a gadget and typing a new output channel.

You don't have to be in track mode to load files.

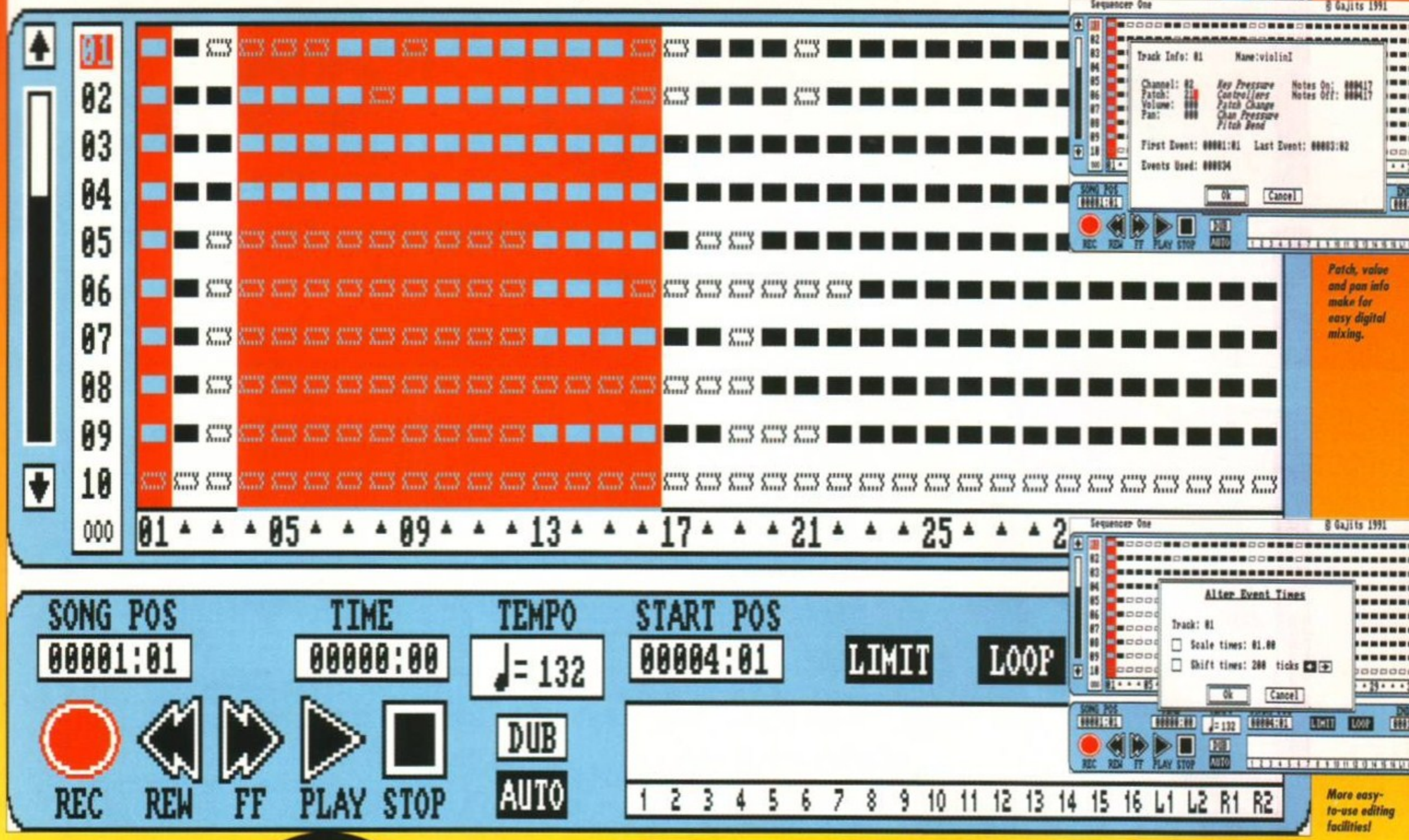
Channel indicators show MIDI and internal output.

The bar editor shows the layout of the song graphically, indicating which bars of which tracks contain data. It is primarily used for viewing arranging and is well suited for carrying out block type operations. The step editor uses the nowadays familiar piano roll approach and shows which notes are played and their starting and finishing points. This editor is used for editing individual notes and for entering music in step time. Event editing is straightforward... click on the event and then, when the appropriate information panel appears, type in whatever changes are required.

Sequencer One may not be all-singing and all-dancing but it still has a very useful selection of options available. The file menu lets you load and save files in both Sequencer One format and in MIDI File formats 0 and 1. A separate block menu handles all of the cut/copy/past/delete type functions and a track menu deals with the global operations carried out on a single track. Quantizing, event stripping and thinning and note, timing, and controller editing are all available from the appropriate menus. There's also a track info option which provides both basic track statistics and lets you add volume, program change and pan information to specific tracks.

On the MIDI front the options of Sequencer One are far less ambitious than

The song note facilities use basic but they do work?



Patch, value and pan info make for easy digital mixing.

More easy-to-use editing facilities!

Editing large blocks is a piece of cake.

R ONE

programs like Music X. It mainly conventional things like soft thru options, internal/external timing selection and so on. A number of filters are available so that note, polyphonic aftertouch, channel aftertouch, program change, pitchbend and controller information can be selectively filtered out. Sequencer One, can incidentally, be set up to provide timing info, start/stop/continue messages, and Song Position Pointer information.

Amiga Sound Samples

As expected Sequencer One's sample play options are based around the use of IFF 8SVX samples and they are really easy to use. There are a great many musicians who, given the easy of MIDI/IFF-sample mixing with Sequencer One are likely to find many uses for this option. When you take the Amiga's left/right audio outputs into a decent amplifier and speakers and couple that with conventional MIDI output the results are surprisingly good!

Other Goodies

Even with relatively simple MIDI sequencers like Sequencer One there are inevitably always more options available than there is space to deal with them. Sequencer One does, for example, also offers user definable MIDI-note metronome control as well as the more conventional audio metronome. It includes tap based (mouse click) tempo setting, and lets you add text notes to your composition.

Conclusion

The Amiga version of Sequencer One is going to win many friends in the 'ease of use' department - it is a nicely designed piece of software and Gajits have got an awful lot of things right. During the time I have had the package for review no real problems have cropped up although, as with most software, I suspect that there will inevitably be the odd bug discovered as this Amiga version gets put through its paces by long term users.

This last year Gajits Music Software seems to have achieved the success that they undoubtedly deserve - the Atari ST version of Sequencer One has a growing user base and we have seen a steady stream of ideas and fresh products arriving (including CMpanion and 4D Companion the Roland orientated editor/librarian packages).

I am absolutely certain that this new Gajits offering will do well. In fact it should do even better on the Amiga than it has done on the ST because there is far less competition. There are a great many Amiga musicians who do not want to spend their musical lifetimes reading manuals and do not want sophisticated options (which frequently fail to work as they should do anyway). More importantly why should you pay a fortune for a sequencer only to find that you really only needed 10%-20% of the facilities on offer?

If you are a newcomer looking for a reliable and reasonably priced way into the world of MIDI, or an Amiga musician who just wants a good workhorse sequencer without the frills, massive manuals, and heavyweight prices, then Sequencer One should undoubtedly be on your shortlist - it is simple to use, effective, and perhaps best of all it costs justs £89.99.

* At the moment Gajits are offering their Hit Kit software with every Sequencer One package that is sold. This normally retails at £25 and is a collection of pre-programmed sequences that can be used in your own compositions.

"The Amiga version of Sequencer One is going to win many friends"

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D301 Evil Dead II (2 Disks)
D317 Evil Dead Sight & Sound (2 Disks)
D309 Fractal Fantasy
D324 Fraxion Revenge Demo
D329 Girls Girls Girls
D314 Girls on Film (X)
D224 Horror Demo
D320 Horror Show (X)
D315 Looney Tunes (1 Meg)
D316 Maria Whitaker Anim
D307 Mars Flight Anim
D304 Monty Python - Lumberjack (2 Disks)
D313 Paradise Picture Show (X)
D303 Saucy Postcards (X)
D328 Showering Girls (X)
D269 Simpsons Slideshow
D203 Star Wars X-Wing
D302 Stealthy Anim 1
D321 Strip Slot Machine (X)
D318 The Evil Dead Demo
D327 Troma Horror Slideshow (X) (2 Disks)
D214 Twin Peaks
D331 Universal Picture 2

UTILITIES

U072 A-gene (1 Meg) (Family Tree)
U088 Alpha Flight Demo Creator
U090 Amateur Radio I
U063 Amigazer
U002 APDL 17 (Home Utilities)
U003 APDL 28 (MIDI Collection)
U085 Art of Virus-Killing
U086 Batbench! (Good)
U071 Biorhythms (1 Meg)
U005 Bootblock Champion
U054 Business Card-Maker
U007 C Manual (3 Disks)
U079 CAD V
U076 Catalogue Creator (2 Disks)
U049 Countach Art Collection (3 Disks)
U231 Digitised Sample Player
U056 DTP Clip Art (2 Disks)
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U044 Education 3: Weather/Climate
U045 Education 4: Evolution
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U006 Home Business Pack (3 Disks: Wordprocessor, Spreadsheet, Database)
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U014 Intromaker
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U096 Label Printer
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U222 Mandlebrot Generator
U212 Med v3.0
U095 Menu Master
U214 Mobed v1.0
U019 Pagesetter Clip Art
U080 Pascal
U093 Picture Format Convertor
U237 Professional Demo Maker
U081 Rabid Rita's Utilityies (Excellent!)
U099 Record Keeping
U209 Red Sector Demo Maker
U025 Sid V1.6
U070 Slideshow-Maker
U221 Spectrapaint
U084 Speech Toy
U038 Text Plus (Wordprocessor)
U087 The Master Virus Killer
U026 TV Graffix (2 Disks)
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U082 Voices
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M105 Another Day in Paradise
M130 Bachbusters
M116 Back 2 Base
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M092 Betty Boo
M200 Bomb The Base
M142 Crusaders does Genesis
M006 Depeche Mode
M141 Dirty Dancing
M149 Don't Miss The Party Line
M144 Dynamite Beats
M135 Electric Youth (2 Disks)
M203 Eurythmics - Thorn In My Side
M101 Feel the Rhythm
M012 Games Music Creator
M015 Genesis
M096 Groove is in the Heart
M098 Hear The Drummer
M093 Iron Maiden
M042 Kim Wilde
M100 London Beat
M097 Madonna: Vogue (4 Disks)
M205 Man in the Mirror
M018 Miami Vice Remix
M206 New Order - Blue Monday
M120 Original Rips 1 (Compilation of best P.D. Music)
M148 Original Rips VI
M107 Pet Shop Boys: Suburbia
M082 Powerpack 5 (1 Meg)
M091 Queen: Flash (2 Disks)
M129 Queen Latifah & De La Soul
M104 Sam Fox Sound Disk
M132 Subway Music
M102 Sydney Youngblood
M094 Technotronics Megamix
M124 The Power Remix (1 Meg)
M031 The Wall - Pink Floyd
M029 Vangelis (1 Meg)
M097 Vogue (4 Disks)
M032 Walk this Way
M204 Wendy & Lisa
M123 What Time Is Love
M133 Zee's Hip Hop Disk

GAMES

G058 2-Player Soccer League
G102 Adventures Disk 1
G081 Airwar (Excellent)
G210 Airwarrior (*)
G001 All New Star Trek Game (2 Disks)
G082 Antep (1 Meg)
G043 Arcade Games
G073 Autobahn 3000
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G212 Dragon's Cave
G008 Eatmine
G063 Electric Train-Set (1 Meg)
G069 Escape from Jovi
G009 Flaschbire
G051 Frantic Freddie
G218 Games Disk 8
G219 Games Disk 9
G012 Gravattack
G213 Intact
G052 Jeopard (1 Meg)
G206 Killing Game Show
G078 Lame ST Ports (Shoot-em-up)
G066 Learn and Play 1
G067 Learn and Play 2
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G057 Marble Slide
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U591 Panther of Lynx Utils
U565 Maverick
U579 Red Devil x4 Disks
U534 Digitech Utilities
U5090 SID
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D955 Auld Lang Syne
D957 Sunsounds of the Summer
D997Madonna - Hanky Panky
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D978 C.D. on a Disk
D985 The Winers Song - Ivor Bigun
D964 Inner City - Multi Trax 1
D966 Depeche Mode
D987 Total Remix
D995 Dirty Dancing
D961 Banging Raves No.1
D904 Supreme sounds
D932 Music Maestro
D929 Beatmaster 3
D917 Technotronic Remixes
D973 Jesus Loves Acid
D910 A Journey into Sound
D900 D-Mob Music Box
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U398 8 Channel S Tracker
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U200 Noisetracker and Soundtracker
U007 Med Music Creator
U092 Noisetrack 2.0 & Utils
U156 Sample ST-01
U157 Sample ST-02
U161 Sample ST06
U271 Sample ST-90
U272 Sample ST-91
U273 Sample ST-92
U274 Sample ST-93
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U023 Perfect Sound
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U087 Soundtracker Boot Disk
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G725 Blizzard
G777 Paranoid
G742 Learn Play 1&2 for Children
G799 Starfleet
G726 Castle of Doom
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G746 Pseudo Cop
G791 The Evil Dead
G785 Star Trek - The Next Generation
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G715 Pipeline
G761 Battleforce
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Employers and directors of Maxwell Consumer Publications, Oxxi Inc., and associated or subsidiary companies or their agents, together with members of their families, may not enter this competition. Anyone else can enter, but if they try to do so more than once they will be disqualified. There is no cash alternative, and the judge's decision is final. The prize winners names will be published in the December Issue of ***AUI*** (on sale November 7th).

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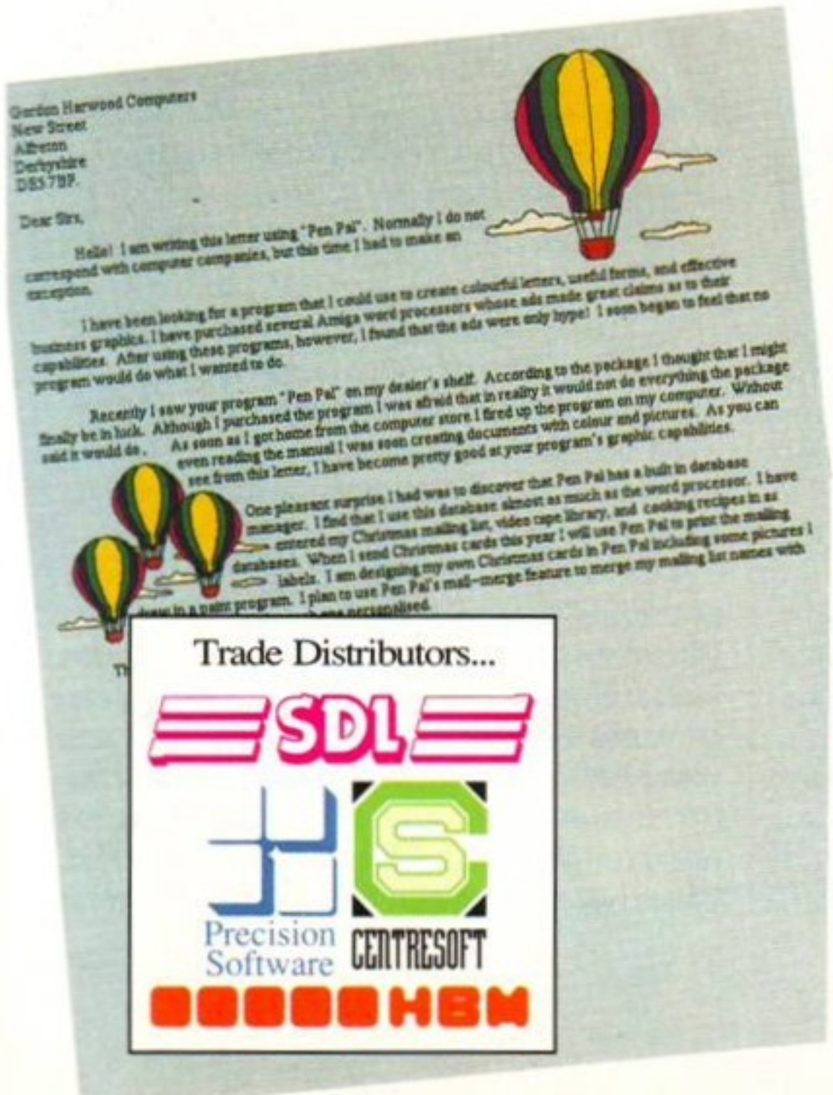
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Dear Sirs,

Hello! I am writing this letter using "Pen Pal". Normally I do not correspond with computer companies, but this time I had to make an exception.

I have been looking for a program that I could use to create colourful letters, useful forms, and effective business graphics. I have purchased several Amiga word processors whose ads made great claims as to their capabilities. After using these programs, however, I found that the ads were only hype! I soon began to feel that no program would do what I wanted to do.

Recently I saw your program "Pen Pal" on my dealer's shelf. According to the package I thought that I might finally be in luck. Although I purchased the program I was afraid that in reality it would not do everything the package said it would do. As soon as I got home from the computer store I fired up the program on my computer. Without even reading the manual I was soon creating documents with colour and pictures. As you can see from this letter, I have become pretty good at your program's graphic capabilities.

One pleasant surprise I had was to discover that Pen Pal has a built in database manager. I find that I use this database almost as much as the word processor. I have entered my Christmas mailing list, video tape library, and cooking recipes in as databases. When I send Christmas cards this year I will use Pen Pal to print the mailing labels. I am designing my own Christmas cards in Pen Pal including some pictures I drew in a paint program. I plan to use Pen Pal's mail-merge feature to merge my mailing list names with

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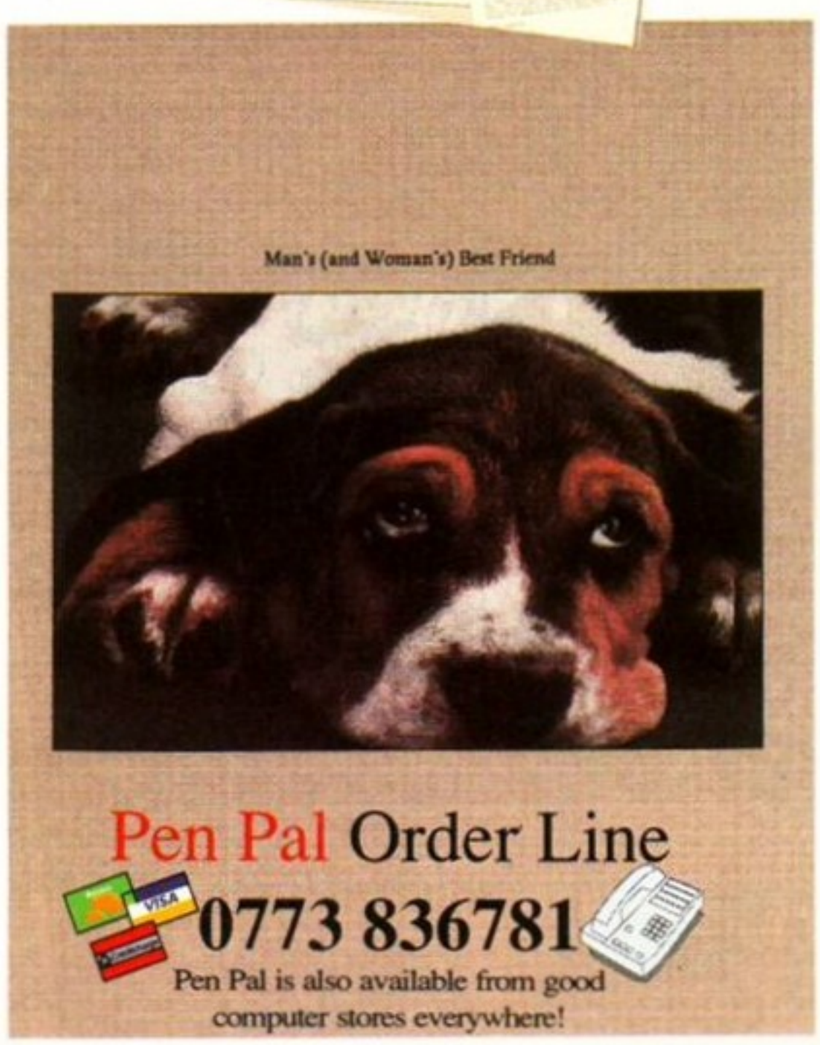

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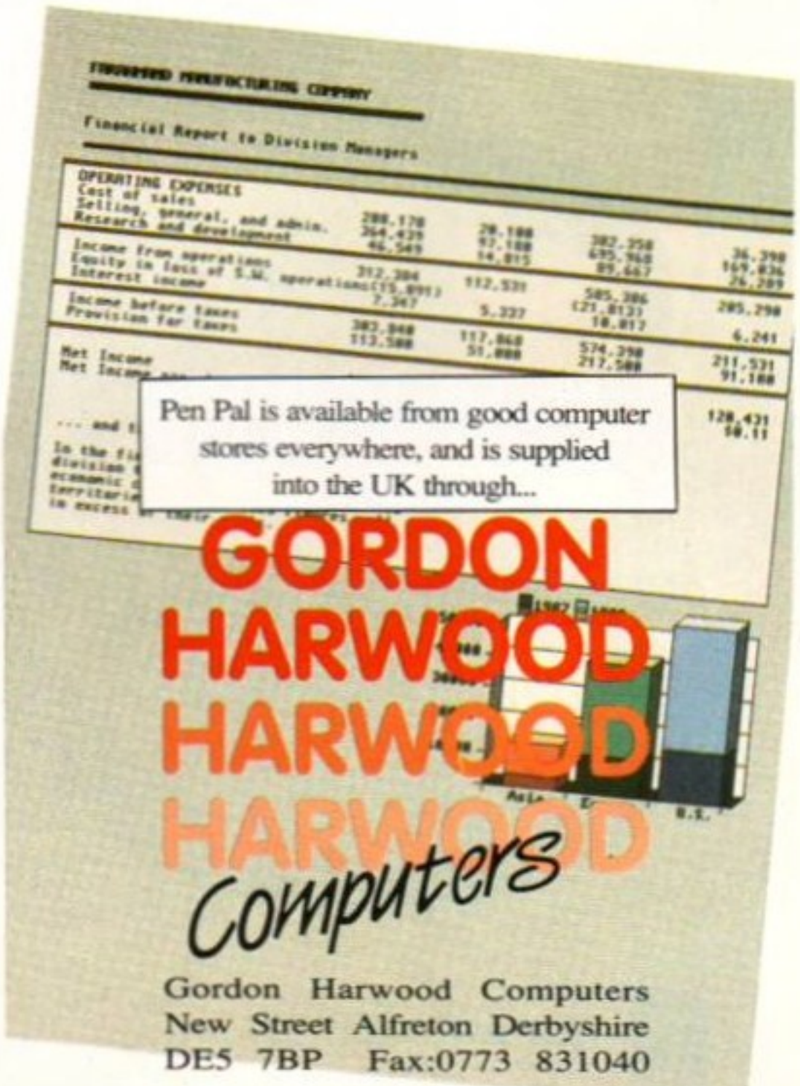

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TEST DRIVE

Now that the CDTV is finally here, John Kennedy uses both it and the recent European CD-ROM Exhibition in London as an excuse to examine the current multimedia phenomena and what it could mean to us all.

"The software houses will love the CDTV - more memory than 500 floppies, no piracy and best of all, they can get away with charging who-knows-what for each program."

MULTIMEDIA AND CD-ROM

"Unlike the audio CD's, CD-ROMs contain more than just music. They can store text, pictures and even moving video images."

Multimedia is a technical-sounding piece of jargon invented to describe the grouping together of text, graphics, sound and animation into one piece of easy to use software. However, unlike most computer games which combines those attributes in a way we've all seem, multimedia has come to mean something in its own right.

Something rather like the interactive 'learn to speak Japanese' system I saw demonstrated at the CD-ROM Exhibition. First you choose the phrase you which to learn, then you sit back and watch as a Nipponese gentleman (or lady if you prefer) pops up on the screen and says something which is subtitled in English as "Can you direct me to the train station?". You can replay the phrase as many times as you like, before checking the Japanese spelling as well.

This is only the start. Multimedia is where computers meet television, like it's never been done before. Forget little animated stick figures, you can now watch real people saying real things with real voices. They can entertain you or educate you. You can have virtually instant access to, and interact with, famous literature, priceless works of art, important moments in history, even vegetarian recipes... there is no limit. (Imagine interactive porn - Ed.) This is multimedia, and it's here right now.

Media Bias

But why the apparent link between multimedia and the emergence of CD-ROMs? Why should they be always used in the same breath? The answer is: money. A good piece of multimedia software will take up a lot of space. Picture it: 250 floppy disks for the graphics, 100 for the text, 150 for the sound. The disk swapping doesn't bear thinking about. What it all means, of course, is that you need a really huge (say, 550Mb) hard disk to run the software. And here is the problem: no one is going to buy a piece of software that comes on a hard disk costing thousands of pounds. Likewise, no one will be interested in buying a program when it's stored on 500 floppy disks and takes two weeks to install.

This is why CD-ROMs are getting all the press they have. For the uninitiated, CD-ROMs look identical to normal common or garden music compact discs and work in exactly the same way: a laser scans the surface, reading the microscopic 'pits' which have been burned in at time of manufacture. The pits are a form of binary information, just like the data stored magnetically on a floppy disk. Unlike the audio CD's, CD-ROMs contain more than just music. They can store text, pictures and even moving video images. Because the discs cannot be written to by the user, they are 'Read Only Memories', hence the term CD-ROM.

The most interesting characteristic of CD-ROM disks is their price. Even though they can store about 550Mb of data, on a large production run they each cost less than a pound to produce. (The same applies to audio discs by the way, which makes CD albums look not a little overpriced).

This is why Multimedia and CD-ROMs are so well matched. Multimedia needs a large data storage capacity, and CD-ROMs supply it at a budget price. If it were not for one small snag, everything would be perfect.

Full Circle

It's quite ironic how the CD has come full circle. Originally it was 12 inches across, used to store feature films and called a Laser Disc. It never caught on in a big way, but the technology was adapted to the enormously popular 5 inch audio CDs. Next came the adaptation to computer readable CD-ROMs and finally back to full-motion video. It's taken fifteen years to get back where it started.

The snag is speed. Or rather, lack of it. CD-ROMs are only just faster than floppy disks, and much slower then hard disks. This makes the Holy Grail of the multimedia world - full-screen moving video - a trifle tricky to achieve.

A CD-ROM drive can read about 150K of data a second from its disc. This may sound fast until you start doing some sums. For example, a PAL video screen consists of 576 x 768 pixels, with each pixel needing about 24 bits of colour information to look convincing. Each frame needs updating fifty times a second. Clearly, reading the raw information off

the disc will not be fast enough, and so some sort of compression algorithm is called for.

The Big C versus the Rest of the World

This is where Commodore and its CDTV differs from the rest of the industry. Instead of using hardware (such as Intel's DVI system) the CDTV has no inherent support for full-motion video, relying instead on clever software and the impressive (although aging) Amiga chipset. The results so far achieved are commendable - about a third of the screen at an acceptable 'frames per second' rate - but are far from perfect.

Meanwhile, Philips have spent the last five years working on their CD-I (CD Interactive) system, and recently announced that they can potentially fit 72 minutes of VHS quality full-motion video on a disc.

Although the current CD-I software will only play video in 40% of the screen, later (say, from 1993 onwards) Philips want the discs to replace the home VHS player - and, as the discs are much cheaper to manufacture than video-cassettes, they will probably succeed. As for the 72 minute barrier, they simply want the manufacturers of the new players to build-in support for playing two discs at a time. A bit obvious really.

The battle between CDTV and the Philips CD-I will be interesting. CD-I is more technically advanced, but is also more expensive and lacks the existing support of the Amiga. It is due to be launched in America in October with fifty titles, by which time the CDTV should have started to amass a substantial following. Will it be a Betamax versus VHS battle all over again? Who knows, but remember that Betamax was more technically advanced that VHS.

Inactive publishing

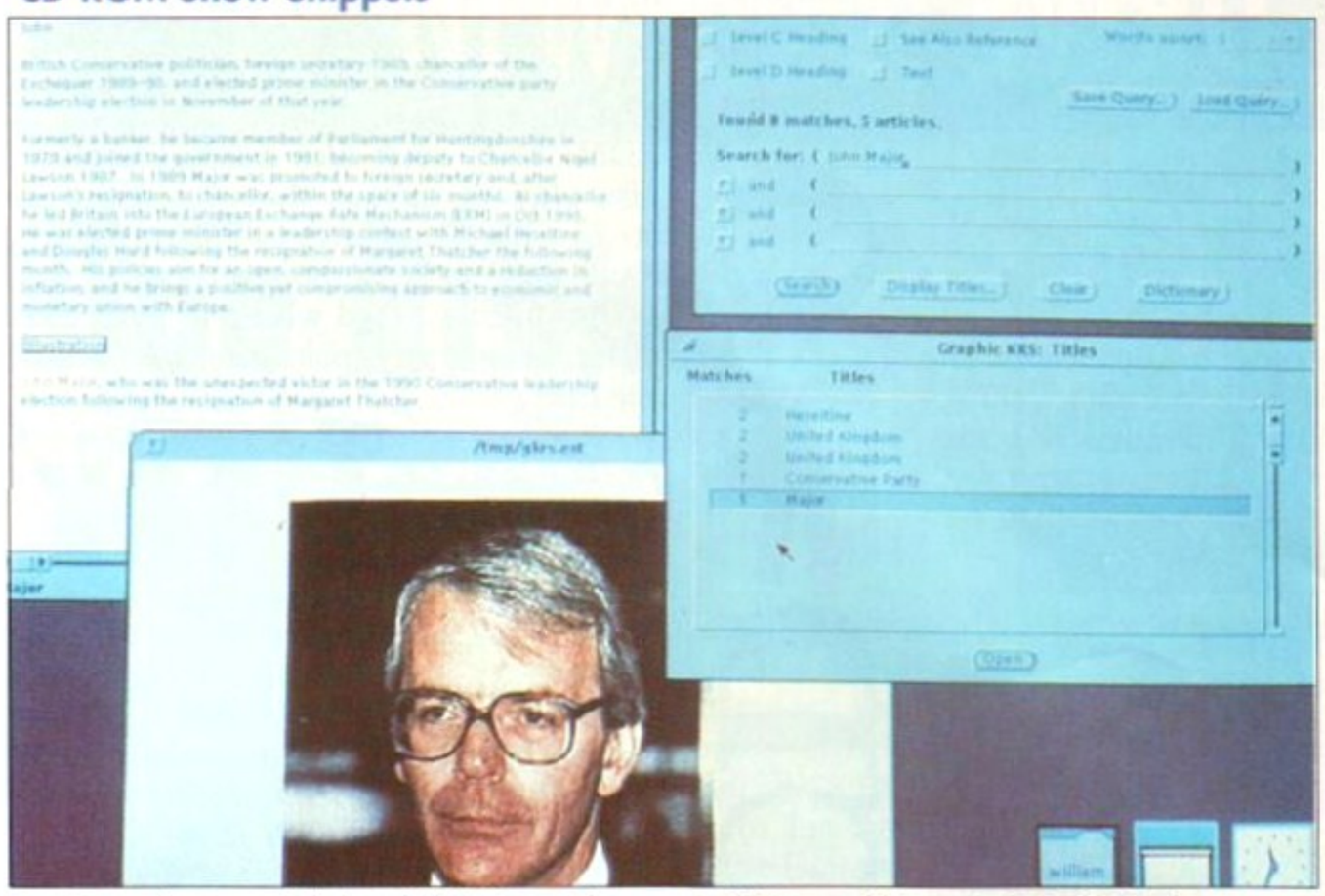
The use of CD-ROMs to store nothing more than feature films is a bit of a waste, because the special thing about multimedia is the 'interactive' quality. It's not just a piece of tape with individual video frames stored on it, it's random access computer memory. The controlling computer can do more than just act as an expensive video recorder.

One of the most impressive pieces of CD-ROM software I've seen on the CDTV is an educational program aimed at 6 to 8 year olds. Narrated by Tom Baker, it creates a cartoon world in which children are encouraged to interact with the characters, to improve their reading and numeracy skills at the same time. This program alone demonstrates the huge potential of the CDTV in the world of education.

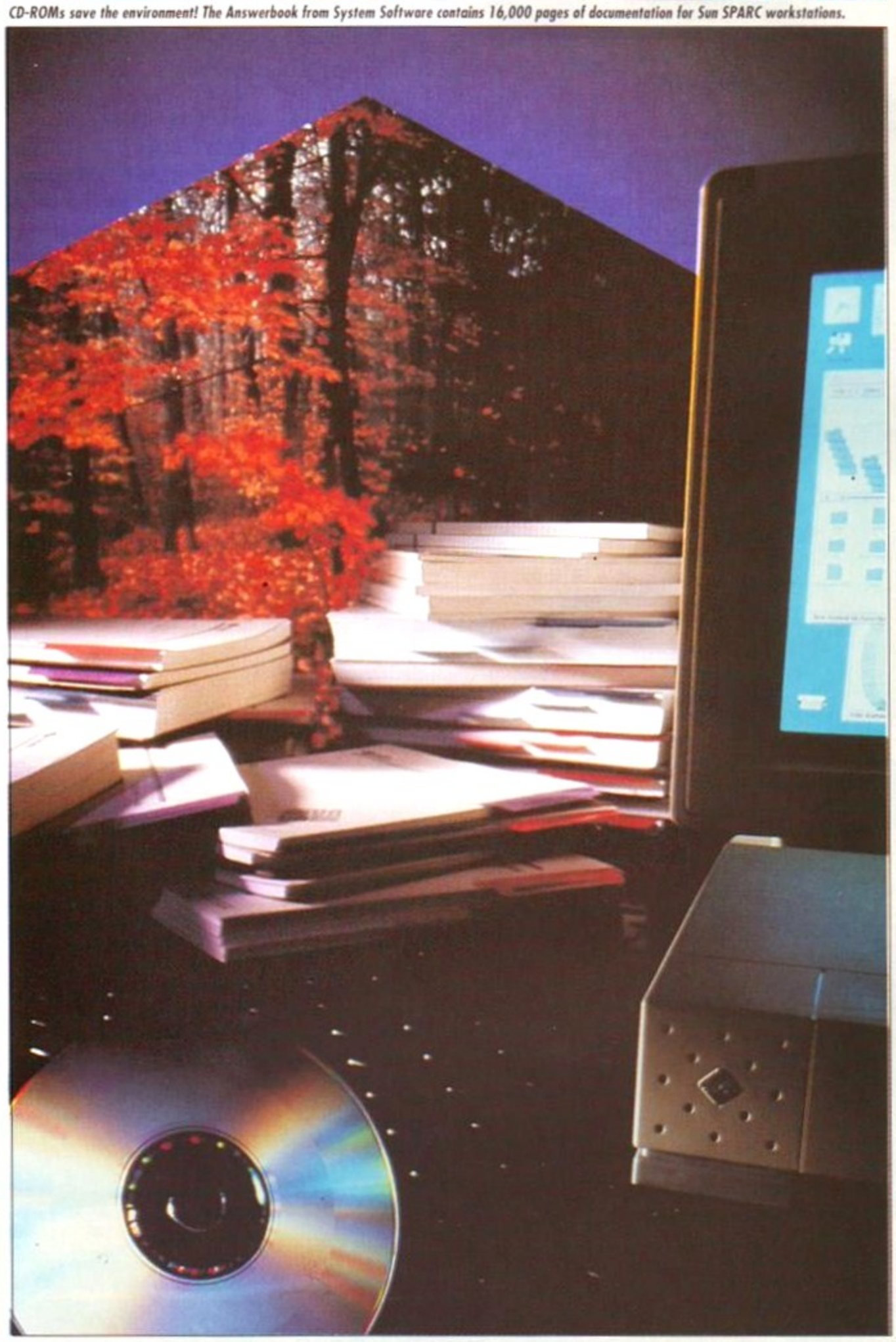
For slightly older users, other discs provide guided tours through important historical events, a computerised atlas and two discs will store the Bible and the complete works of Shakespear on them, complete with pictures.

As authors become more proficient with the CDTV, there are going to be some

CD-ROM Show Snippets



CD-ROMs save the environment! The Answerbook from System Software contains 16,000 pages of documentation for Sun SPARC workstations.



Even UNIX gets into the multimedia act. This is the Hutchinson Electronic Encyclopedia, the first to use a GUI system called 'Open Look' running under UNIX. A CDTV version will be available.

CD-ROM

CONTINUED

◀ stunning discs around by Christmas. The software houses will love the CDTV - more memory than 500 floppies, no piracy and best of all, they can get away with charging who-knows-what for each program.

Multimedia Amiga?

The use of the software-only approach to the CDTV's capabilities is good news for existing Amiga owners. By September, Commodore promises they'll have an add-on CD-ROM drive which means you'll be able to run all the CDTV software of your existing Amiga.

If you can't wait, Xetec have already released a CD-ROM player which comes complete with a CD containing the first 400 or so Fred Fish public domain disks.

Mass market

The face of computer software is changing forever. No more the sole domain of spotty anorak cases, the CD-ROM will bring computers out of the bedroom and into the living room. Before you can say "copyright infringements" you'll be able to hire discs for your CDTV from your local video rental shop. And the discs won't just be remixed versions of XENON-2 either.

Jargon

CDI
Compact Disc Interactive. The Philips machine for playing multimedia CD's. Due for an American launch in October.

CD-ROM
A 5 inch, aluminum disc containing about 500Mb of digital information. CD-ROMs look identical to music CDs.

"If it were not for one small snag, everything would be perfect."

CD-ROM Drive
The hardware needed to play the CD-ROM. They look like normal compact disc players, except they are white instead of black and have no flashing LEDs. Most have a headphone output so you listen to Pink Floyd whilst at your computer, or hear any spoken instructions on the disc.

Collective VCR

The video-recorder of the not-so-distant future will be a remarkable unit. A collection of hi-fi separates, it will have cassettes adapted from DATs to record off-air television broadcasts, compact discs for music and pre-recorded films and a computer to control the interactive games and information retrieval stored on CD-ROM. Expect the remote control unit to be the size of a typewriter and needing a power supply!

CDTV
Commodore Dynamic Total Vision. The Big C is the first to launch a multimedia machine, beating even the inventor of CD technology, Philips. Commodore cheated a bit, using a CD-ROM drive coupled to a 1Mb Amiga. The CDTV is black so that it doesn't get confused with a piece of computer hardware.

DAT
Digital Audio Tape. What CDs are to records, so DATs are to music cassettes.

DVI
Digital Video Interactive. A standard from Intel which compresses audio and video information. The algorithms used are implemented in hardware form for the best possible speed.

Full-motion video
A fancy way of saying a decent moving TV picture. Obtaining full-motion video from a CD-ROM is not easy, but can be done.

How to make your own CDTV disc. First think of an idea. Then author it, index it, premaster it, simulate it and finally master it. Clarinet Systems of Camberley (0276 600398) will sell you the hardware to do all this for £24,000 and the software for £8,000. Alternatively, you may wish to pay them £340 to produce one disk for you.

Several manufactures ancounced CD-ROM drives for PCs, Macs and even Archimedes. Clearly they are aimed at the educational market, which explains why the Amiga has not been included in their list! Units from Hitachi and Cumana start at about £700, but remember that as they use SCSI drives you can (theoretically) daisy chain them to your A590 hard drive.

The CDTV had a high profile at the show, for it is by far the cheapest and easiest way of making use of CD-ROM software. No need for drives and computers, just plug the CDTV into a TV and sit back with the remote control unit. Companies displaying the CDTV and wares included: Clarinet Systems Ltd; Next Technology Corporation Ltd; New Media; Nimbus Information Systems; Stable Software and TopClass Technology Limited. Commodore were there too, although they didn't really need to be with the number of CDTV's on other stands.

Large ROM!

A question which had been nagging me was what did the CDTV display when it was switched on with no CD-ROM in the drive? A white screen with an anaemic hand holding an upside down disc? When no one was looking I reset a demonstration machine and found out: it's a very pretty picture of a CD reflecting a laser beam with the letters 'CDTV' spinning around in the background. So that's why the new Kickstart ROM is so large...

NEWSFILE

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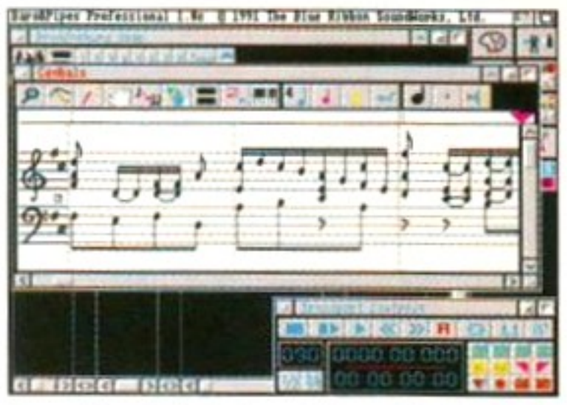
Newsfile compiled and edited by Martin Witton and Anthony Mael.

Blue Ribbon Gives Tootorial



Bars and Pipes Professional, awardwinner and used in successful Atlanta bid to stage Olympic games.

The Blue Ribbon Soundworks (Why did they change their name from the delightful Blue Ribbon Bakery? They always looked fun at AmiExpos when they wore white Bakers' suits and tall chefs hats!) are bringing out some additions to their award-winning music program Bars and Pipes. The first on the list is the aptly-named Tootorial Kit. To use the the Tootorial Kit you need Bars and Pipes Professional. It is designed to instruct and inform users of what Blue Ribbon claims is the leading Amiga music package. The Kit contains several tutorial lessons explaining Bars and Pipes Professional's features in an innovative, step by step form.

The Tootorial Kit is a part of the growing Add-On Series for Bars and Pipes and has a recommended price of $69.95.

Also available from Blue Ribbon Bakery, sorry Soundworks, are two other Bars and Pipes add-ons: The Creative Kit and the Pro-Studio Kit.

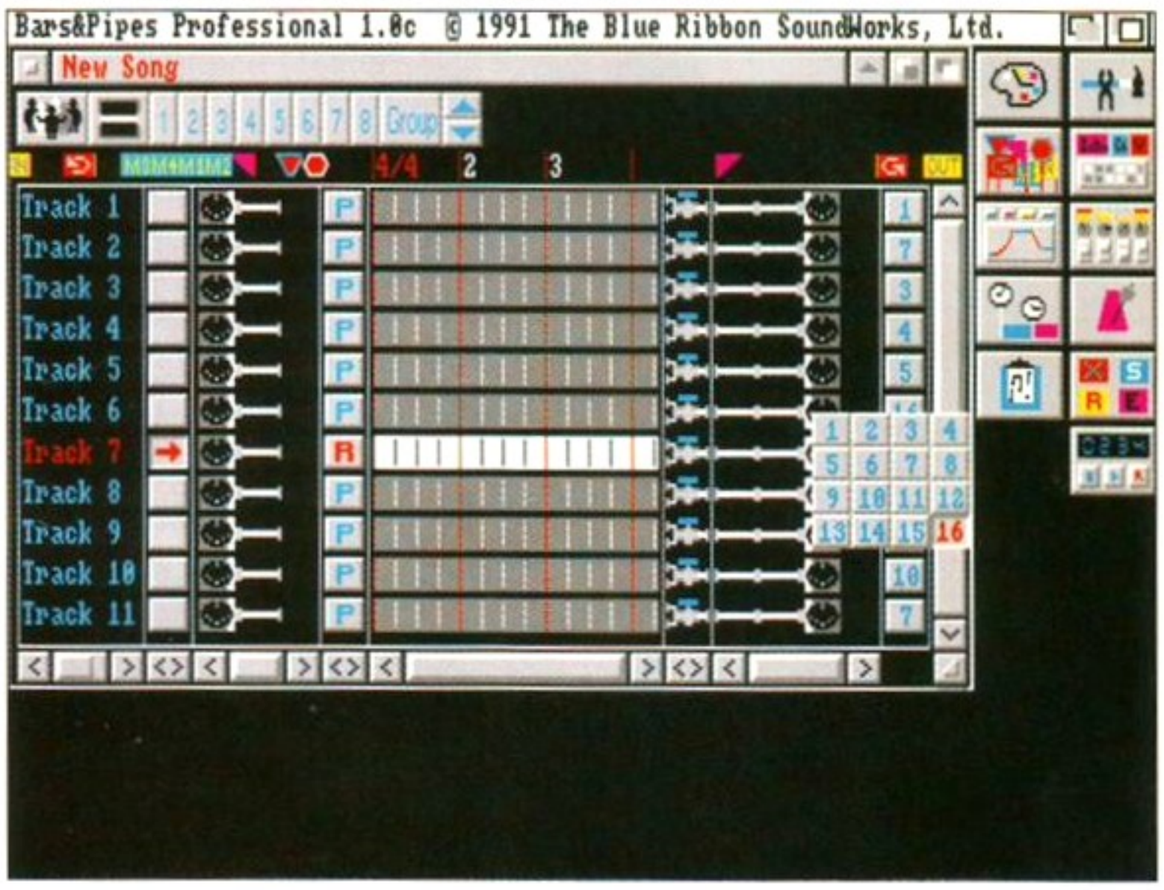
The Creativity Kit includes such tools as an Articulation Randomizer (You shouldn't be seen without one!), Autotranspose, Riff Chord, Tri-Arpeggiator and the interestingly-named Whoopee. (Not a cushion-shaped one, we trust.)

The Pro-Studio Kit is aimed at professional musicians and includes some no doubt remarkable and exciting-named (Blue Ribbon Bakery was a more fun name!) tools, for example the Defram, the Deglibel, the Sttrreeetttcch and one we've always wanted, the Feels Good. When you use that one right, no doubt you do!

Both the Crreeattivvvittty and the Pro-Studio Kits require Bars and Pipes Professional and cost $69.95 each.

Contact: the Blue Ribbon Bakery - Oh dear! - Soundworks, 1293 Briardale NE, Atlanta, Georgia 30306 U.S.A.
Tel: 404 377 1514

Bars and Pipes Professional -to be reviewed in September AUI - now has add ons.



Syntronix Goes DTV

Syntronix have launched a range of Desk Top Video products aimed at both the professional and the consumer marketplace.

EDITMAN is an Amiga-based system capable of controlling domestic VCRs and Camcorders with a professional level of accuracy - plus or minus one frame. Auto-assembly, Insert and Audio dub editing are available from simple mouse-driven screens. IFF files can be edited with or without genlock support.

Syntronix have also produced an RGB to S(Y/C) Recording Interface. As more and more aspects of the Amiga's graphic capabilities are exploited, it becomes clear that the Amiga's own video output is not really up to professional standard, So Syntronix are now offering to users of S-VHS or Hi8 equipment a device that will allow them to record animation or computer-generated images without the fuzzy edges to their colours which are apparent when using the Amiga'a composite PAL signal.

Syntronix claim that their new product will offer quality which surpasses that achieved with S-VHS equipped genlocks. A YUV version will be available for those using professional component systems.

The third in the range of new products is an RGB digitising interface. Getting video sourced grabs into the the Amiga is an important aspect of DTV. Composite signals pose a number of problems for digitising. Syntronix are to offer a device that accepts S(Y/C) signals and provides the host software with the appropriate RGB signals when requested. Syntronix also has other models that cater for real-time frame grabbing systems.

Contact: Syntronix Systems, Burlington House, Prime Industrial Pask, Shaftesbury Street, Derby DE3 8YB
Tel: 0332 298422

NEWSFILE

More Toast, Less Amiga

First we have from Commodore the Amiga that isn't - the CDTV which must never be mentioned in the same breath as the word "Computer". Now we have, from NewTek, the Amiga that has completely disappeared and become a Toaster.

NewTek, creators of DigiView and Digipaint went, as anyone in the Amiga scene who hasn't been asleep for the last two years must know, one very much further when they came up with the Video Toaster. This video effects device has taken the burgeoning video market in the U.S.A. by storm. The Toaster, allied to an Amiga 2000, is according to those who have used it, as good as machines that cost $100,000 or more. Note that it runs with an A2000 - not an A3000. Reputedly, CBM and NewTek haven't had the most comprehensive of relationships and in spite of Commodore's ardent wish to sell A3000s, which are about 4 times as expensive as the already somewhat dated 2000, those who wanted the Toaster had to take an A2000. In fact, they often bought an Amiga plus an A2000 with mucho mucho memory, especially to run NewTek's magic box.

What No Amiga?

Now the story is becoming even more tangled for NewTek have announced they are selling a Stand Alone Video Toaster System. What no Amiga? Well, you give NewTek $4000 and they will give you $5 change and a machine that doesn't anywhere say "Commodore" or "Amiga" but is housed in a box that looks remarkably like an Amiga 2000 and, surprise, surprise, though NewTek are telling the world it is a complete solution for broadcast-quality video at a revolutionary price, contains a certain chip from Motorola that is precisely the same as the chips you'll find inside an Amiga.

Paul Montgomery, NewTek's popular VP, a nice chap but with the cheek of the devil, suavely points out that " Our original plug-in card version of the Toaster required that the user be familiar with computers."(How awful, Paul! The Amiga into which it was plugged is so unuser-friendly!) About this "familiar with computers",won't the new Video Toaster users have to employ the same technology as the rest of us - at least when the Amiga, sorry Video Toaster, is actually switched on?

NewTek, never ones to do things by halves, announced at the launch of the new computer, sorry, we'll wash our mouth out, system, that already some 25 developers, software and hardware, are creating products for the new "Video Toaster platform". Mark Randall, NewTek's Director of Marketing commented

Even Commodore must admit that NewTek, whose Digiview has been one of the great Amiga products and who have worked on the Toaster for nearly four years deserve every success they get - and there are stories that Tim Jennison, NewTek's Onlie Begetter, has been offered nice little sums like $500 million for his company, an amount for which he could probably buy CBM! However, Commodore cannot be too pleased that NewTek is taking something of the shine off their present meal ticket by coming out with a machine that doesn't even mention its connection with the Amiga.

Still, they have only themselves to blame. They were the ones who started it with the CDTV which cannot even be sold off the same counter as the Amiga, just in case a bolt of the dreaded Computer Technofear strikes terror into the poor potential innocent buyer. But with the Video Toaster recently being the major factor in the sales of Amigas in the non-games field in the U.S.A. There will certainly be a loss of prestige and public awareness of the Amiga if NewTek's "Just a Video Toaster" campaign works.

And the NewTek guys are not stupid. By our reckoning, a Video Toaster that was being sold at $1595 plus an Amiga 2000, say about $1000, is now going to cost someone, without any familiarity with computers, of course, $3995. Now that's good enough business to buy the whole Newtek crowd some goldplated roller skates.

AUI GREMLINS BITE SEQUENCER ONE DISK

The Sequencer One Demo on the ***AUI*** Coverdisk was in the preparation at ***AUI*** bitten by one of those dreaded Gremlins who sometimes stalk the second floor. The ***AUI*** Coverdisk ended up missing some files. To use the Sequencer One Demo to its full potential, we advise you to create a single disk and carefully follow the steps listed below. (Watch out for the colons and the slashes – and the Gremlins!)

1) Boot your Amiga with your Workbench disk
2) Initialise a blank disk from the menu bar (under Disk)
3) Rename the disk to "Seq One Demo".
4) Open the Workbench window, by double-clicking on its disk gadget.
5) Open the Shel (CLI) by double clicking on the Shell gadget..
6) Install the demo disk. If you have two drives, put the Seq One Demo disk in df1 and Workbench in df0, and type:

install df1:

If you have just one drive, you will need to make the "install" command resident first:

resident c/install add

Single drive users should then insert the Seq One Demo disk and type:

install df0:

7) Make "copy", "makedir", and "cd" resident for speed and convenience. With Workbench in df0, type:

resident c/copy add
resident c/makedir add
resident c/cd add

8) Create some foldes:

cd "Seq One Demo:"
makedir c
makedir s
makedir devs
makedir devs/keymaps

9) Copy the necessary files from the Coverdisk and Workbench disks on to the Seq One Demo disk. Use the following commands:

copy Coverdisk: SequencerOne/ "Seq One Demo:" all
copy Coverdisk: Samples "Seq One Demo: Samples" all
copy Workbench1.3:devs/serial.device "Seq One Demo:devs/"
copy Workbench1.3:devs/keymaps/gb "Seq One Demo:devs/keymaps/"
copy Workbench1.3:System/SetMap "Seq One Demo:c/"

(Use a different volume name in place of "Workbench1.3" if appropriate.) For speed, single drive users may like to copy the files into the RAM disk first (RAM:), before copying on to the Seq One Demo disk.

10) Create a "startup-sequence" in the text editor to allow the disk to auto boot. Type:

cd "Seq One Demo:"
ed s/startup-sequence

Enter the following two lines in the text editor window:

sys: c/SetMap gb
sys: Seq_One_Demo

Then Press the "Esc" key, followed by "X" and Return.

11) Type in the program below using a BASIC editor, such as the AmigaBASIC program supplied on your Workbench Extras disk. Pull down the RUN-menu and select START. The program will request you to insert your new demo disk "Seq One Demo:" and will create the file "Seq_One.cfg" on it.
When the drive light stops your file has been created on your disk and you can now run the full un-Gremlined Sequencer One Demo.
Now that was fairly painless, wasn't it?
/* This is the BASIC listing that you have to type in. Don't forget to use AmigaBASIC on your Workbench Extras disk. (Remember it has to be typed in exactly as it is here - and we do mean exactly!)

```
OPEN "Seq One Demo:seq_one.cfg" FOR OUTPUT AS 1
THELOOP:
READ A$
IF A$="STOP" THEN GOTO GOHERE
FOR B=1 TO LEN(A$) STEP 2
C$=MID$(A$,B,2)
C=VAL("&h"+C$)
PRINT #1,CHR$(C);
NEXT B
GOTO THELOOP
GOHERE:
CLOSE 1
DATA "00000001000000000004000800020009"
DATA "003C00780000000100010000000410002"
DATA "00020002000200020002000200020002"
DATA "00020002000200020002000200020005F"
DATA "00240006000D00000064004B00600048"
DATA "00060000000000000000000E00160101"
DATA "0B000100000536571204F6E65204465"
DATA "6D6F3A53616D706C65732F52696D5F53"
DATA "686F74000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000000000000000000000000"
DATA "000000000000"
DATA "STOP"
/* End of BASIC listing
```

12) Now, write Protect your disk! Now you've got a brand new Sequencer One disk created all by your brilliant self. (J.K. cry your heart out!) The Demo will auto-execute when you reset the computer with your new disk in df0.
If you have any difficulties with the instructions see Understanding the Amiga: Workbench Part 3 on page 108 or wait for next month, the Sequencer One Demo in its entirety will be on the ***AUI*** September Coverdisk.

Pen Pal Price Pushdown

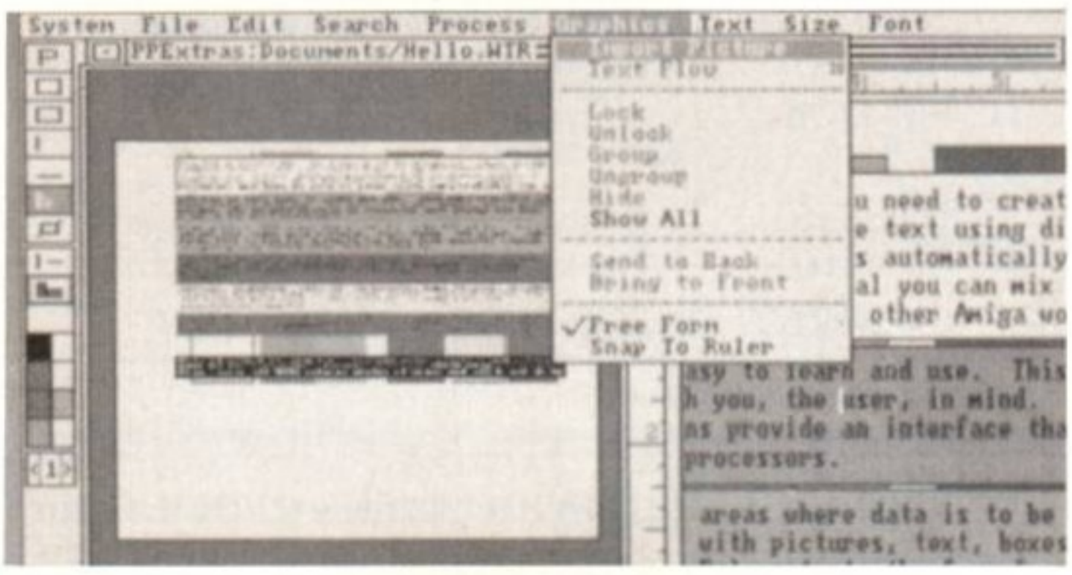
Pen Pal, the word processing package, which was reviewed with considerable enthusiasm in June *AUI* has had a major price cut and now has a U.K. distributor, announces Softwood, its creators.

Previously priced at £129.99, the new price is now to be just £79.99 inc VAT. There is also to be an upgraded support level with a special Help telephone number in in the U.K. The new U.K.-based support and distribution is being provided by Gordon Harwood Computers.

New buyers of Pen Pal will receive a complimentary disk containing database form and document templates. The disk also contains IFF pictuers that can be imported into documents. Technical bulletins of common Pen Pal queries are also available.

One of the problems most common for computer users is the difficulty of making contact with hardware and software companies from outside their country who supply Amiga products. This, of course, is largely a question of U.S. companies. With the higher level of support that Gordon Harwood Computing are providing to Pen pal users, a good example is being set that every Amiga user will find encouraging. American suppliers please note the Gordon Harwood initiative and copy.

Contact: Gordon Harwood Computers, New Street, Alfriston, Derbyshire DES 7BP
Tel 0773 836781



Supra's New Modems

Supra have begun releasing the latest additions to their range of low cost modems - a cost which, they say, does not reflect the high quality. Their newest are the SupraModem 2400 Plus and the SupraModem 2400 MNP. Various upgrades are available to established Supra modem owners.

The SupraModem Plus features both MNP(Microcom Network Protocol) classes 2-5 and CCITT V,4,2bis, the international standard for error correcting data compressing modems. With these protocols, the user can get 9600 bps(baud per second), error-free throughput when communicating with other MNP 5 modems. The external SupraModem 2400 works with virtuallly any computer and sells for $239.95.

An internal version for Amiga 2000 and 3000 computers includes A TalkIII telecommunications software for $229.00.

The SupraModem 2400 MNP offers a less expensive path to error correction and data compression. For $199.95, the user gets up to 4800 bps error-free throughput. As the user's needs and budget expand, for $40 more, this modem can be upgraded to the capabilities of the SupraModem Plus.

Contact: Supra Corporation, 1133 Commercial Way, Albany OR 97321 U.S.A.
Tel: 503 967 9375

Nelson's Intuition

Kuma Computers are publishing a book on the Amiga's Intuition system by Mike Nelson, who writes on programming and other technical areas for *AUI*. The book is based on a series of articles on Intuition that appeared in *AUI*.

"This book is aimed at the Amiga programmer who wants to do more than write clever scrolling demos while playing an irritating soundtrack." Kuma told ***AUI***. "There is no reason why anyone with experience in BASIC cannot graduate to the world of C and Intuition, the Amiga's graphical user interface."

Extensive examples are provided throughout the text of the book, as Nelson believes that the best way to start learning to program is to look at and modify other people's code. (Isn't that what is called in technical jargon "Ripping It Off"?)The programs can be typed in or obtained separately on disk.

All code is presented in C but, say Kuma, the information will serve anyone programming in other languages, especially Assembler.

"Intuition - A Practical Amiga Programmers Guide" by Mike Nelson costs £16.95,ISBN No07457-0143-4. The disk version of the listings contained in the book costs £10.00.

Contact: Kuma Computers Ltd, 12 Horseshoe Park, Pamgbourne, Berks RG8 7JW Tel 0734 844335

Newspoint

Programmers from the Soviet Union are working for U.K. organizations for just £50 a day - one tenth of what some U.K.computer service companies charge. The programmers are supplied by Morline Systems, a London-based contract agency owned by the Soviet Government.

It seems Morline are finding a warm welcome for the Soviet programmers because the normal charge for equally skilled programmers from U.K. contractors would be between £100 and £500 per day.

Morline can charge such low fees because the average programmer's salary in the Soviet Union, at the offical rate of exchange, is 800 roubles a month, which comes to just £16!

Undercutting the competitions' prices while exploiting the workers? That sounds more like a low capitalist trick than orthodox Communist philosophy. Marx must be whirling in his (expensive) Highgate cemetary grave...

Turbo Charging the Amiga

Great Valley Products (GVP) have announced the release of the redesigned 50 Mgz 68030 accelerator board. Already claimed by GVP to be the fastest board on the market, this new model, says GVP, will allow even more speed and expandability.

The accelerator board comes populated with 4 Mb of 60ns Drams and has the capability of expanding to 32MB of 32 bit memory. New, optional IDE/AT drives available with the board are the Maxtor 1" high 120 MB drive or the half-height 340MB model.

GVP say that another important feature of this new board is that even with a full-blown 32MB, 50Mgz kit installed in the A2000's CPU slot, all of the expansion slots are left free for other expansions.

"This newer,faster and more expandable A3050 accelerator kit will turbo-chage the Amiga 2000 beyond the user's wildest dreams." Gregg Garnick, GVP's Vice Prresident told ***AUI***.

The A3050 accelerator kit populated with 4 MB of RAM has a suggested price of $2999.00.

Contact: GVP, 600 Clark Avenue, King of Prussia, PA 19406
Tel 215 337 8770

NEWSFILE

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A590	143Meg	SEAGATE	819.95
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ADD 60.00 FOR 2 Meg RAM IF PURCHASED WITH ANY OF THE ABOVE DRIVES.

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SEAGATE	15Ms	142Meg		559.95
SEAGATE	15Ms	211Meg		648.95
QUANTUM	17/9Ms	_52Meg	64k CACHE	239.95
QUANTUM	17/9Ms	105Meg	64k CACHE	391.95
QUANTUM	15/8Ms	120Meg	64k CACHE	506.95
QUANTUM	15/8Ms	170Meg	64k CACHE	597.95
QUANTUM	15/8Ms	210Meg	64k CACHE	670.95

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AMOS

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#1 = 1meg. #1.5 = 1.5 meg. *2= 2 disks.
*3 = 3 disks. *4 = 4 disks +2 = 2 drives

ANIMATIONS

AN-001 Juggler & Juggette #1
AN-017 El Gato (the cat)
AN-024 Stealthy II & Terminal #1
AN-025 Batman & Late Night #1
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AN-051 At the Movies #1.5
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AN-069 Ami V's Walker #1
AN-072 Iraqi Demo
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AN-083 Suicide Blonde *2 #1 +2
AN-085 Do the Bartman *2 #1 +2
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GD-005 Rebels Mega Demo
GD-031 Budbrain II
GD-034 Keferens Power Munker
GD-039 KGB Hit F100 *2 #1

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SS-026 Madonna Slide Show II *2
SS-052 Madonna & Friends
SS-054 Diggy Piggy *2

MUSIC DEMOS

MD-004 Helloween *2
MD-021 Music Invasion III *2
MD-025 Gnome Music II
MD-037 Teenage Turtles #1
MD-053 Difinitive Jarre
MD-057 Flash by Queen *2
MD-071 North Star Acid Demo 1989
MD-075 Madonna Hanky Panky
MD-078 Outsider Acid #1
MD-099 Eargasm II
MD-103 I've Got the Power
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MD-167 Black Box *2 +2
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GA-010 The Golden Fleece
GA-013 Emerald Mine 3
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Hacked to Pieces

Unix, now possibly the most widely used operating system in scientific, government and academic computing has been penetrated by hackers causing considerable alarm, especially in government computing circles. UNIX is now available on the Amiga 3500 and is considered to behighly significant for the Amiga in serious applications.

The hackers appear to have discovered a fundamental weakness in the UNIX system which allows them to have total control of the form of UNIX called BSD. The weakness lets them have unlimited access to any files and to overwrite or change master control lists. To do this they have created a device of which the Communications media have been asked not to publicise details.

An informed source has revealed that some one hundred computers at more than 40 sites in the U.K. have been affected. The hackers have so cleverly covered their tracks that some users will not even know their security has been breached until the hackers choose to disclose it. In some cases the hackers have left Trojan Horses which are programs that let the hacker re-enter the system at a later date as an apparently legitimate user.

Taunting

The hackers have not done damage to the systems but seem to enjoy taunting the users and the police who are trying to find them. They are believed by Scotland Yard's Computer Crime Unit to have such control that it takes them less than one minute to enter a system. They often leave personalised messages for computer managers, especially at universities. Bath, Edinburgh, London, Lancaster and Oxford are among the universities that have had "visits" from hackers. Edinburgh's system manager found a message which said "Hi, Jim. You should be finding this interesting being a Unix guy." On Lanacaster's system it said "Did you have fun after our last visit?"

When the hacking group penetrated the University of London's system, they left a cryptic message about VMS, another operating system used on DEC machines. It emerged that they had left Trojan Horses running in files under that system too.

What particularly worries the government specialists is the hackers' ability to crack the systems at the level of senior managers, so giving them the access to browse through potentially highly sensitive material.

ADA Raped

Further concern in government computing circles is being expressed at the revelation that ADA, the language specified by the U.S.A.'s Defense Department for military computing applications has fundamental security weaknesses.It too appears to be subject to easy penetration. This has caused alarm in the U.K. as the Ministry of Defence has been increasingly favouring programming carried out in ADA in an attempt to standardize military computing activity (In other words, trying to get the U.S to spend some military cash in the U.K.)

If these supposedly high security computer operations are so easily breached perhaps we shall soon get a new attitude to "Open Systems" or even more encouragingly, "Open Government".

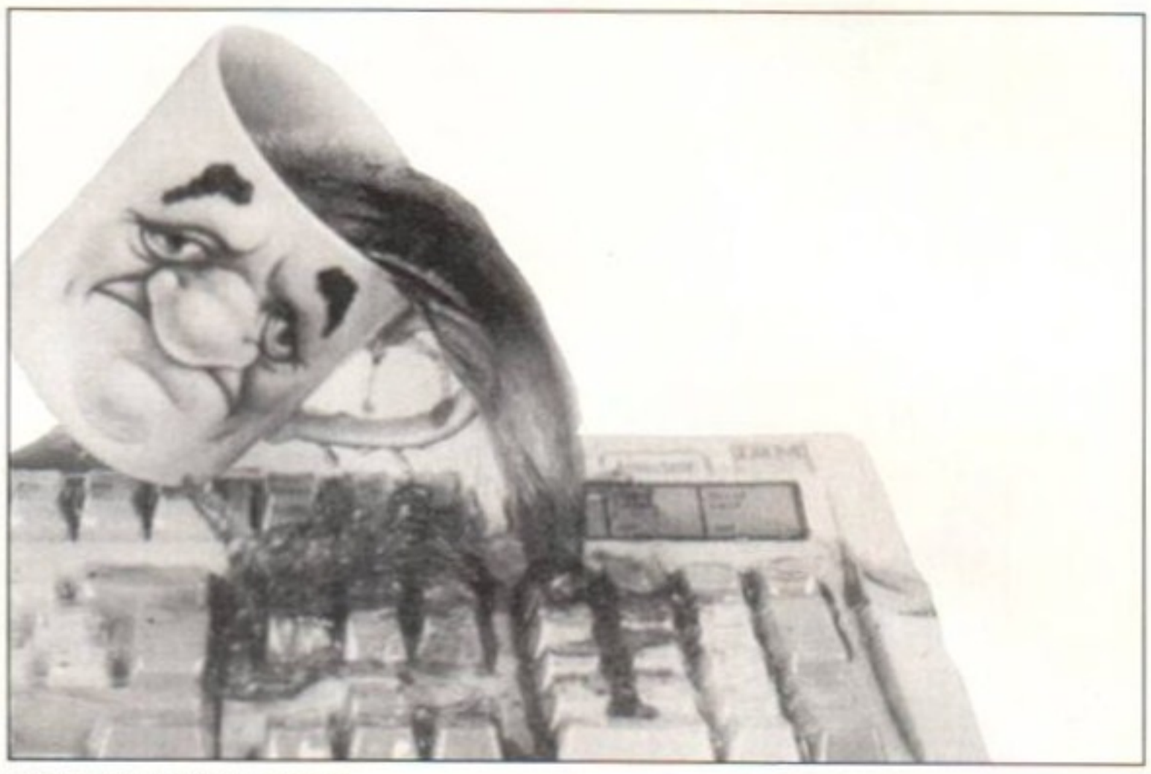
"SAFE COMPUTING"

Kador has announced the arrival of its 500th model of SEAL'n TYPE , (500th? Yes that's what they say. Non-stop redesigning!), the protective keyboard cover through which you can type.

Seal'n Type is a flexible, durable, transparent keyboard cover, which is specially moulded to fit over the keys of specific keyboards. Typing is thus unimpaired, whilst your valuable computer keyboard remains protected from the everyday hazards of spills, dust, ash and grime. Prices start from £8.95 + VAT.

The arrival of the 500th model of Seal'n Type says Kador, confirms Kador's position as Europe's largest manufacturer of type-through keyboard covers. (500? Are there that many different computers?)

Contact: Kador, 0443 740281



500th COMPUTER PROTECTOR COVER.

A BRIDGE TOO FAR?

Arnhem, previously available as 8 Bit and on MS DOS, is now being released for the Amiga. This tactical wargame simulates the historical 'Market Garden' operation in 1944. Montgomery's plan was to break the occupation of Holland thereby opening the door to Berlin and ending the war. Three Allied Airborne Divisions were dropped behind enemy lines to capture vital bridges for the advancing Allied forces.

In Arnhem you fight the bitter conflict. Can the Allies succeed or is the bridge at Arnhem a bridge too far? Historically accurate, with five scenarios, Arnhem is one to watch for warlike fans. Price £19.95. Contact: CCS Ltd. 642 Bridge Road, London E10 6AP. Tel: 081 558 3420

"Quote of the Month"

The late President Pompidou of France was a wise man. He once wrote:

"There are three ways to disaster,
Gambling is the quickest,
Sex is the most enjoyable,
But the most certain is technology"

Anyone disagree?

NEWSFILE

Here at Golden Image we take little pride in our office accomodation. The wind whistles through the cracks, rain water drips through the roof, the window frames are rotten and the carpet is threadbare.

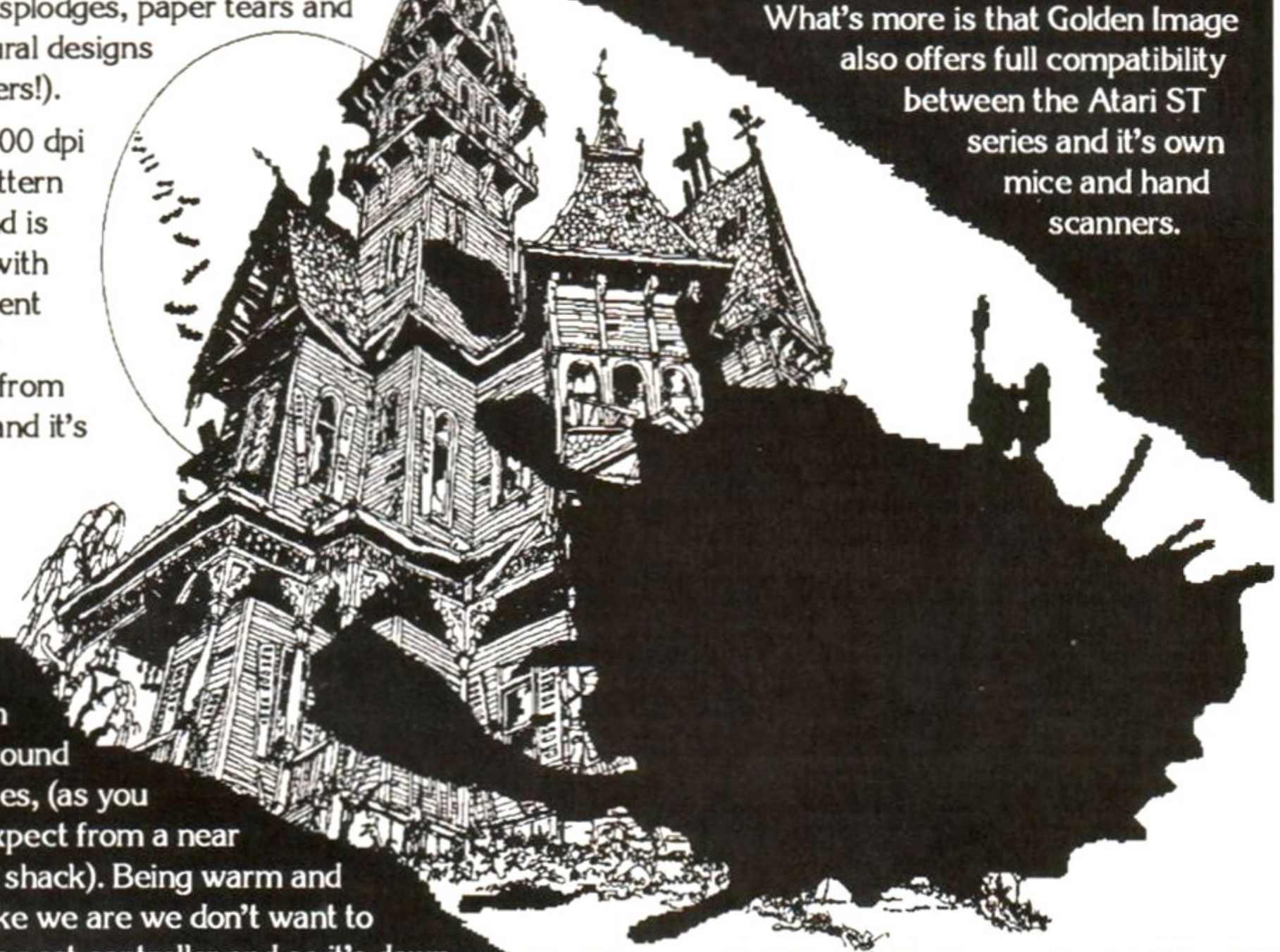
You'll be glad to know that we don't show the same neglect for our products or customers.

At Golden Image, instead of spending oodles of cash on our environment, we've spent pounds on studying the human race long and hard. Our research took many minutes and Golden Image (UK) can now comfortably claim true Customer Compatibility.

What's more is that Golden Image also offers full compatibility between the Atari ST series and it's own mice and hand scanners.

The Golden Image hand scanner is the cherry on top of the cake. Crowned in Gold by ST Format, it's reputation follows that of the company. As can be seen from this page, it's ideal for scanning splodges, paper tears and architectural designs (or disasters!).

It offers 400 dpi in four pattern modes and is supplied with the excellent Touch-Up software from MiGraph and it's utterly brilliant!



Golden Image mice run freely around our offices, (as you might expect from a near derelect shack). Being warm and caring like we are we don't want to employ a pest controller and so it's down to you to rid us of this tyrant.

Every mouse is hand picked from the floor. Recently we've discovered a new breed of mouse that moves at the speed of light. These mice have no balls, and are a lot more difficult to catch and so cost a bit more. But the better quality of these optical mice warrants the higher price.

Standard, opto-mechanical mice (mice with balls) also frequent our building. We've got so many mice, we feel sure they're breeding faster than rabbits. However we assure you that you will get an adult mouse and not an immature adolescent.

Hand Scanner with MiGraph's Touch-up	**Special Offer**	£149.95
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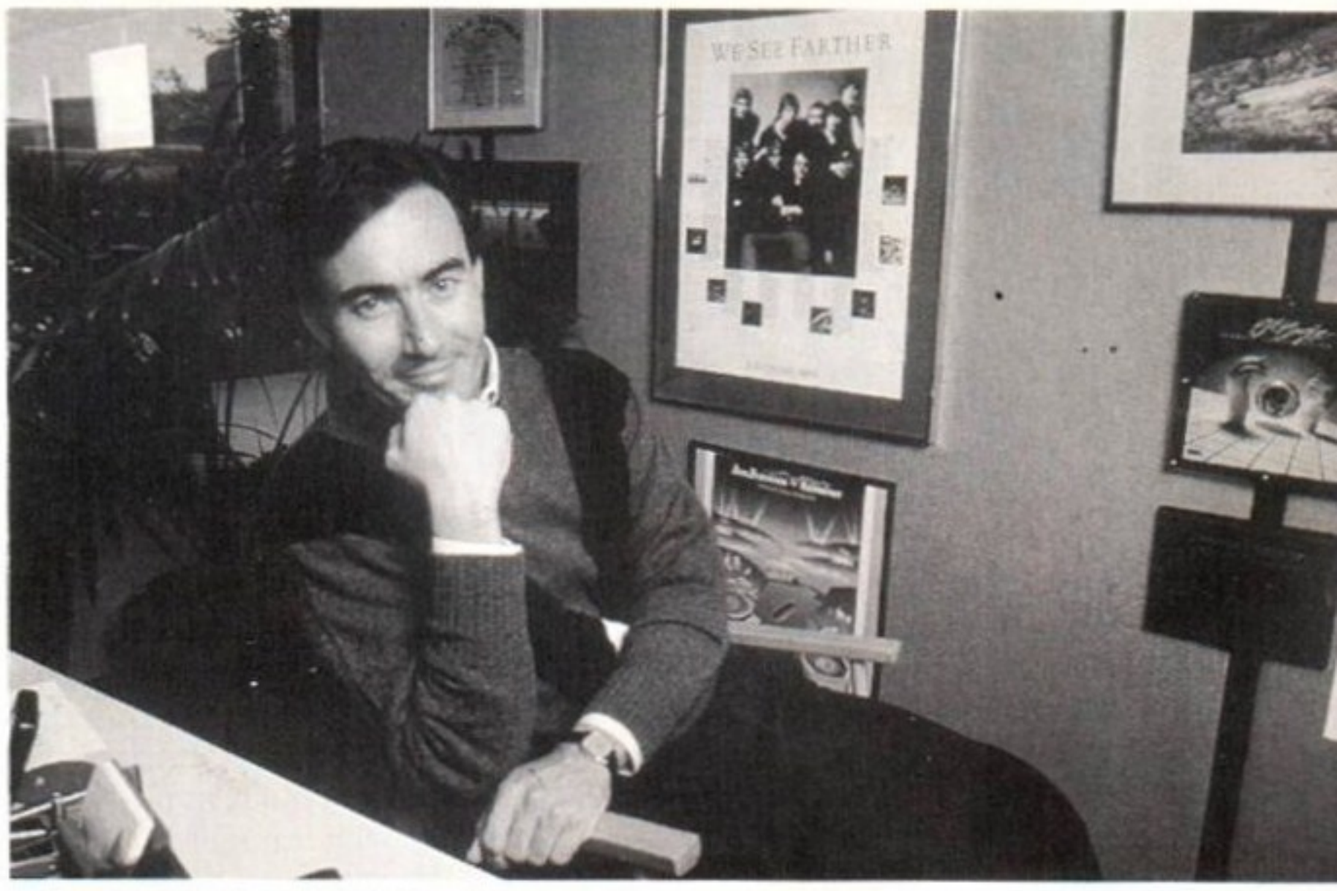
Software Company Shakeouts - *The Sequel II*



E.A.'s President Hawkins - the $100,000,000 man

Elite, longtime software games house (Remember Bombjack?) is feeling the pinch in the home computer market as the consoles start to dominate the games field. Elite have just made 14 of their staff, including their Marketing Manager, Gill Birch, redundant and said that they are "scaling down their commitment" to the home computer formats.

Those software games houses that were not quick enough off the mark into the Sega and Nintendo fields or have not been able to break in to this highly competitive area of games development are now finding themselves squeezed between the recession that has struck the High Streets and the consequent fall in sales of computer games, especially on the 8 Bit formats and the Atari ST, and the growing power of the video games consoles where formats are proliferating.

Sega and Nintendo now command around 25% of the total games market and they are increasing. The ST share of this market has fallen back from some 25% to only about 10% while only the Amiga and the often pronounced dead C64 are still holding their places as the most popular brands of home computers - between them dominating about half the market.

Elite have never been a strong Commodore company. like the recenly collapsed Hewson, they had their beginnings in the Spectrum boom of the early and mid Eighties.

And Makeouts...

While others falter, Electronic Arts, the first into the Amiga field so long ago in 1985, are still making it big - in fact very big. They have aannounced their last year turnover to have passed the $100 million mark and their profits way up too. It hasn't all been made on the back of Deluxe Paint, though that outstanding progam must have made a solid contribution. It is the same old story, the consoles. What has added around 40 million green ones to E.A.'s previous take was their involvement in video games. And Trip Hawkins, E.A.'s far seeing Boss, is looking into the future and leaving the everyday running of his successful corporation to others. You can bet he sees, at least in the games field, consoles looming large. But for Amiga users, there will also be the pleasure of Number IIII in the Deluxe series which may reach our screens by the end of the year. $150 million next year, Trip?

MED Goes 8-Track

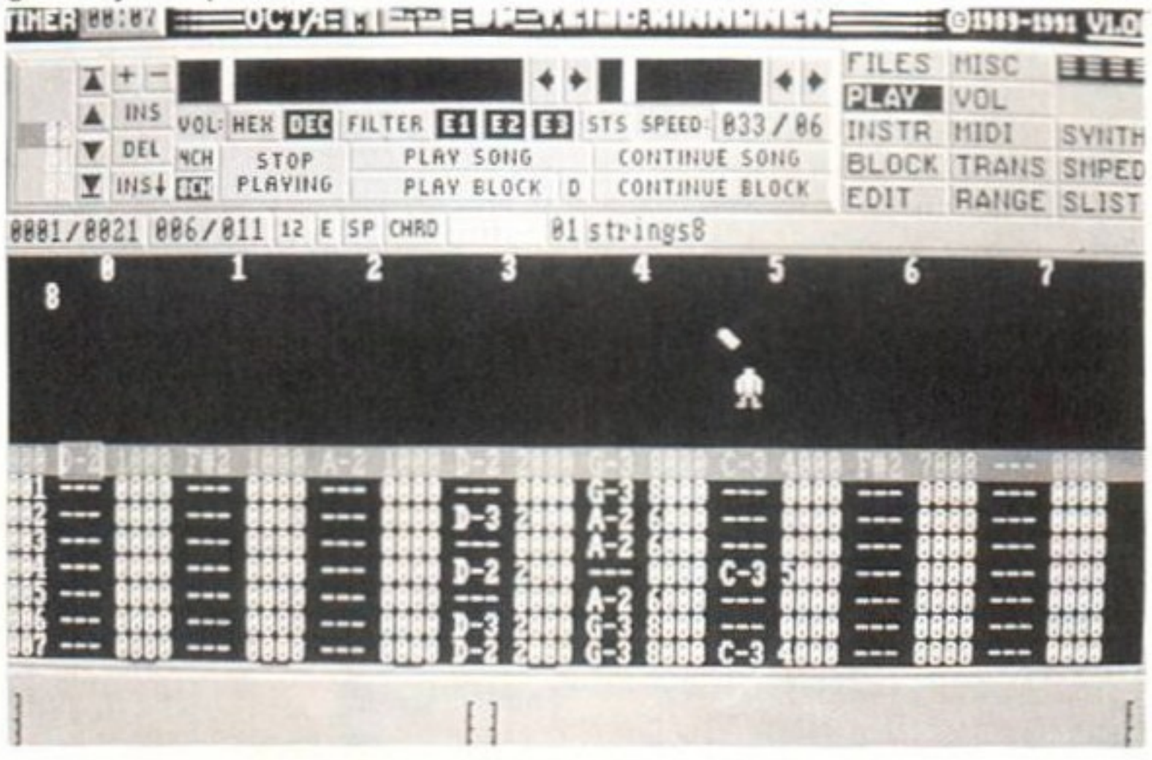
Teijo Kinnunen's Music Editor (MED) has spawned a sister- program: OctaMed. OctaMed includes almost all the features of MED 3.00, and multi-tasks the Amiga's standard four-channels, allowing eight-channel music to be created and replayed.

The small price you pay for the extra four channels is a slight reduction in sound quality, and a limitation to Soundtracker-type tempo control rather than the more flexible "beats per minute" system. Realtime recording is no-longer a viable option, as the keyboard is read too infrequently. That's all the bad news. The good news is that it all works extremely well, and with the extra channels, there's far more scope for filling out drum patterns, adding chords and generally beefing up your tunes.

OctaMed is not public domain. It is available exclusively from Amiganuts United, priced at £10 within Europe, and £15 for the rest of the world. OctaMed's range of sample-editing, sequencing and MIDI features make it an unbeatable sample sequencer, at any price.

The four-channel version of MED is continuing in production, and the latest version at the time of going to press was 3.11b. There are now two new gadgets in the sample editor section: filter and boost. The filter reduces high frequences over specified sections of the sample. Boost does the opposite. Rather than making your samples tinny and noisy, it brings up the high frequencies very clearly, enhancing the clarity of most drum loops and vocals no end. Although it is not public domain, MED V3.11b is also available exclusively from Amiganuts United at the outrageously low price of £3.

Contact: Amiganuts United
169 Dale Valley Road
Hollybrook Southampton
SO1 6QX
Tel: 0703 785680



NEWSFILE

Roctec's Expansions

Roctec, a company based in Hong Kong and the U.S.A., are bringing their products to Europe. The first on the list to be distributed are two RAM expansion cards for the Amiga 500.

RM2MC

RM2MC is Roctec's 2 Meg Ram card. It allows, with the software provided, the A500 to use the complete 2 Meg on the card. What it does is double the chip Ram by using the 512K memory of the RM2MC as the extra chip memory but your A500 will need to have the Super Agnus chip CBM's 8372.

You can select the memory size of the RAM card from 512K to 2 Meg just by setting the jumpers of the Ram card.

Roctec have told AUI that installation is easy as you don't have to disturb the motherboard.

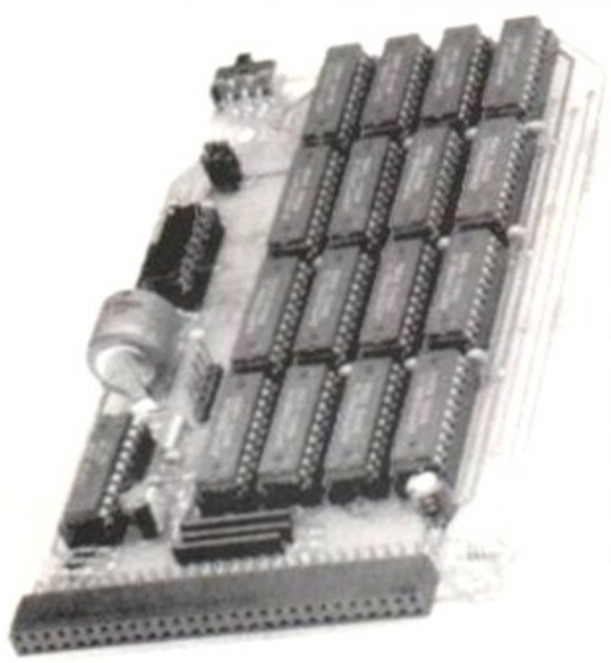
The chips used are high speed DRAMS and there is a realtime clock and calendar included. There is also an external on/off switch.

RM550C

Roctec have realised, like everyone else, that the time has come to forget the 512K Amiga 500. Nearly all users will be willing to spend the few extra pounds to upgrade their machine to 1 Meg. So Roctec are bringing in the 550C, a slim size 1/2 Meg board. It too contains a high speed DRAM chip plus a realtime clock and calendar and an external on/off switch.

No prices for the U.K. are yet available but by the time you read this, Roctec have told us, there should be supplies of both boards coming into the country. And dealer enquiries are welcome.

Roctec's 1/2 Meg entry into a busy field.



The RM2MC 2 Meg board.

Contact: Roctec Electronics Limited, 9/F Union Ind.Building, 18 Lee Chung Street, Chai Wan, Hong Kong,
Tel. 852 897 1869
Fax 852 558 8099

MICROSEARCH'S TEXTURE LIBRARY

Microsearch are releasing a materials library. The first is 'Materials texture Library' Volume 1 : Stone Surfaces.

The Materials texture Library is a collection of high resolution (704 x 480 pixels), colour HAM mode images of various surfaces. These can be used with a variety of 3-D rendering, painting and video applications to enhance appearance. Photorealistic qualities can be added to paintings in HAM paint programs, and object in 3-D renderings can take on what Microsearch calls, "an astonishing realism" when texture mapped with images from the collection.

The library has 15 different surface textures on 5 diskettes (over 3.5 megabytes) and includes Marble, Granite, Asphalt, Pebbles, Bricks etc. Each image is 704 x 480 x 4096 colours (IFF HAM mode). It can be used with paint programs, as video titling backgrounds, and for wrapping 3-D objects. Future volumes will include Wood, Cloth and Organic textures.

Contact: MicroSearch, 9896 S.W> Freeway, Houston, TX 77074 .
Tel: (713) 988-2819.

JUGGLE WITH THE AMIGA JUGGLER

That's what MicroSearch say you can do if you use their new Chroma Key / Switcher. If you add their new Chroma Key/ Switcher to your Amiga and external genlock combination, and you have the ability to create ,they say, sophisticated video mixing effects, Chroma Key /Switcher can put live video over the Amiga's pictures. Ordinary genlock effects are the reverse of The Chroma Key/ Switcher chromally style effects, MicroSearch say, are usuially available only to professional studios puts the power of these special effects at your fingertips. Price $395.00

Contact: MicroSearch, 9896 Southwest Freeway, Houston Texas 77074 U.S.A.
Tel: 713 988 2818.

Newspoint

An indication of how this U.K. Government regards technology is given in the recent appointment of the Minister who has responsibilty for Information Technology(IT). The new Minister is Lord Reay. Who he? Well, Lord Reay is an Eton and Oxford educated peer whose interests are given as fishing, shooting and sightseeing. (Whatever happened to hunting?)

What is worse than the Noble Lord's apparent lack of previous attraction to technology is that the Government has downgraded his post from the previously higher Minister of State level to the mere junior minister grade.

This show of profound concern with technology by the Government of technofreak John Major has prompted worry among MPs of all parties and the Labour Party spokesman to say that "It just shows that the Goverment does not take the job seriously."

He must be mistaken. The Government takes the job of running the country's technological future so seriously that it has taken thought to what Lord Reay has to do and realised technology isn't important enough really to merit a full time job anyway. So Lord Reay has been given the responsibility for environmental issues(that must be the fishing and shooting bit) and the film industry too.

In between casting for lethargic trout and blasting away innocent birds perhaps Lord Reay will find time to think about how to keep the U.K. abreast of individual Japanese corporations like Sony who spend more on research than the whole of the U.K does. Anybody know the Japanese for " You barmy British may love a Lord but, in the 21st Century, technology will be King of the Castle - and so will we!"?

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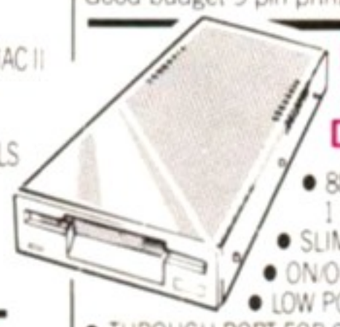

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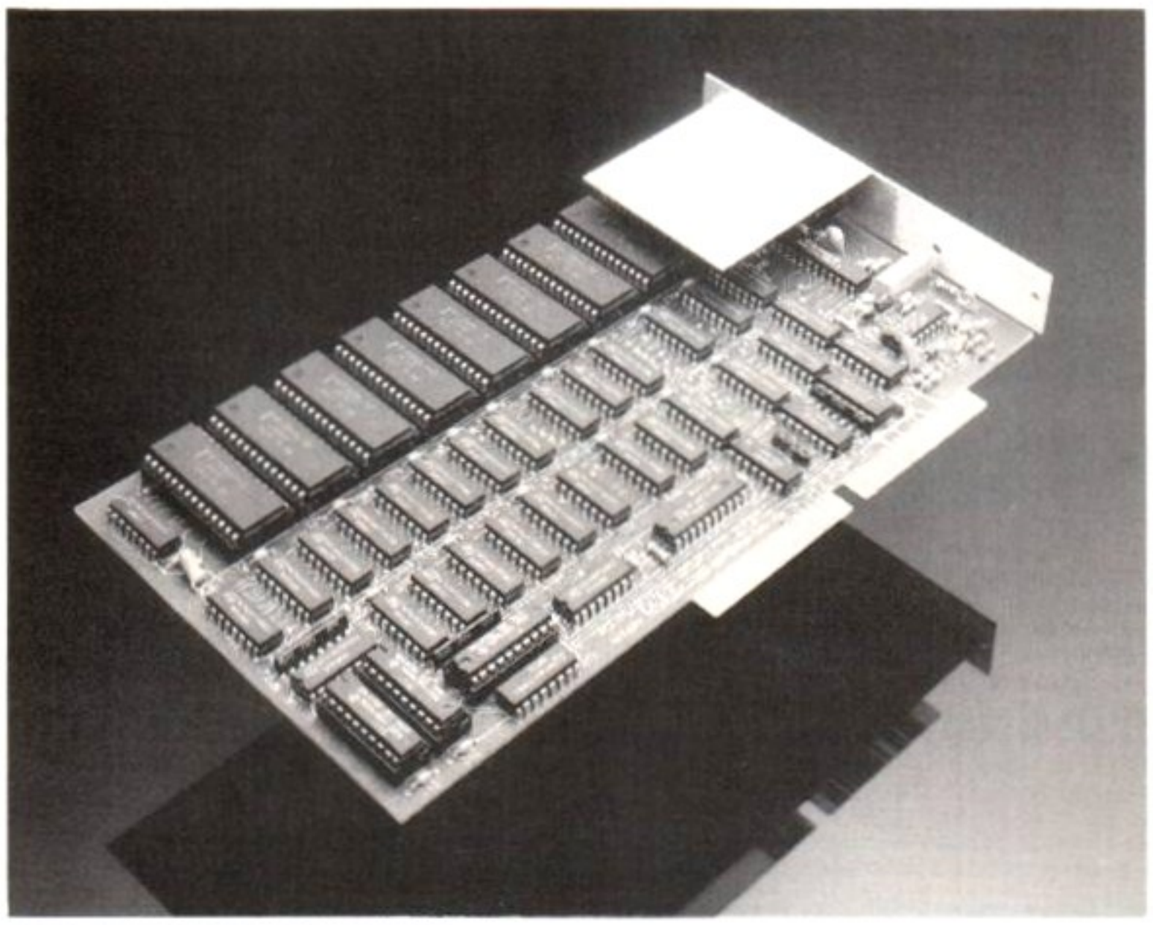

MICROWAY FIXES THE FLICKERS FOR £200 LESS.

Microway has dramatically reduced the price of its FlickerFixer graphics enhancement board designed to eliminate the Amiga 2000 flicker problem on high resolution and VGA monitors. The board, which previously retailed at £325.00, is now being sold at £125.00.

Commenting on this price reduction, Managing Director, Simon Shute, said, "Thanks to the high volume of sales that Microway has achieved, the company is now able to offer the FlickerFixer at a price that is within the range of all Amiga users, not just the professionals".

Designed to fit into the Amiga video slot, the FlickerFixer provides users with superior quality colour or monocrome graphics and text. It works by removing the flicker in the interlace mode and the visible scan lines in the non-interlace mode of the Amiga 2000 display.

The board which is compatible with all user software, does not modify the standard Amiga video signals and may be used simulataneously with the Amiga PAL (Phase Alternation Line) outputs.

Microway's FlickerFixer supports a wide range of standard multiscanning and VGA monitors and when used in conjunction with overscan modes will support video resolutions of up to 704 x 470 pixels. It is also compatible with the Amiga 2000's 4096 colour Hold and Modify (HAM) mode, which allows over 4000 colours to be displayed simultaneously on the screen.

Contact: Microway (Europe) Ltd, 32 High Street, Kingston-upon-Thames, Surrey, KT1 1HL. Tel: 081 541 5466.

GOLD DISK'S SHOWMAKER - FINALLY

Gold Disk is finally releasing the first copies of the long awaited ShowMaker. ShowMaker lets anyone create finished presentations containing a variety of media, including video titling, sounds, pictures, animations, MIDI-music and genlocked video from a wide range of sources, including laser disks, VCRs the Video toaster, and audio tape recorders.

Targetted at the growing demand for high quality multimedia desktop presentation and video software, ShowMaker is a powerful system that allows the visualisation and construction of self-running "shows" containing Amiga based and non-Amiga based elements.

ShowMaker allows the use of an Amiga to control any internal or external device to include in a presentation — from laser disk players to MIDI keyboards to the Video Toaster. ShowMaker will also generate story-boards and cue sheets of presentations.

Showmaker allows the preparation of very long "shows" because it plays one part of the presentation while automatically loading the next part. As a result, ShowMaker presentations are limited only by the available disk space, not RAM.

ShowMaker also comes with a special facility that gives accurate control of a presentation and its timing. This means that users can synchronize diverse media into a single polished product — such as defining an animation in terms of frames per musical beat, instead of frames per second.

Showmaker will retail for $395 and work with any Amiga with at least 1 Mbyte of RAM and a hard drive, 2 Mbytes or more are recommended.

Contact: Gold Disk, 5155 Spectrum Way, Unit 5, Mississauga, Ontario, Canada L4W 5A1, or call 1-416-602-4000.

Deltaware's A-Sound Goes Elite

A-Sound Elite from Deltaware Products is the professional version of the earlier A-Sound 2.0 editor released in 1990. This new version is now fully functional in stereo and its editing facilities have been totally revamped. (Right term for a musical package, don't you think?)

Deltaware told ***AUI*** that that the user interface has been improved and many additional power features have been added. In some areas it is also faster than the previous version.

A-Sound Elite still supports IFF 8SVX and RAW sound formats as well as Deltaware's proprietary Auto Sound Format(ASF). Every ASF sample has its own built-in player program and is an executable file as separate player programs are no longer needed. In A-Sound Elite, ASF now functions in stereo as well as mono. Support for multi-octave, multi-track IFF and Sonix samples provides,say Deltaware, for the most flexible instrument creation of any Amiga sample editor to date.

A-Sound Elite has a new UNDO featiure which is claimed to be a first for Amiga sample editors. Freehand editing of waveforms is also supported as is variable zoom. It also has over 20 special effects such as Echo, Reverb. Disguise, and Comb Filter.

Contact: Deltaware Products, 3148 Kingston Road, Suite 202, Box 395, Toronto, Canada, MIM IP4 Tel: 416 431 2037

Wir sind 29,000 Berliners (plus Hermann the User!)

More than 29,000 Amiga users packed into the recent Amiga '91 Berlin Computer Show, making it the second largest Amiga gathering in the world - Cologne last November had just double that number.

One product that seems to have aroused particular attention was the Delta Animation Laser Lab. which incorporates computer-aided laser animations with the Amiga. The Amiga reads IFF files which the Lab then transfers into laser graphic images for projection.

A new game at the Show was "Inheritance". The title in German was Das Erbe. It features environmental concerns as its theme.

The next event in Germany is to be a repeat of last year's crowded Cologne Show which is scheduled for October 1st-November 3rd. The organisers have warned that, as in Berlin, the whole show will be dominated not by technology but by the Show mascot, a certain Hermann the User.If you attend the Show better be polite to Hermann or, no doubt, he vill ask de kvestions!

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V043 JASSBENCH Multi Tasking WorkBench PRG
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V114 TEXTPLUS2.2 The Best Word Processor See AF March for Review details with graphic ability
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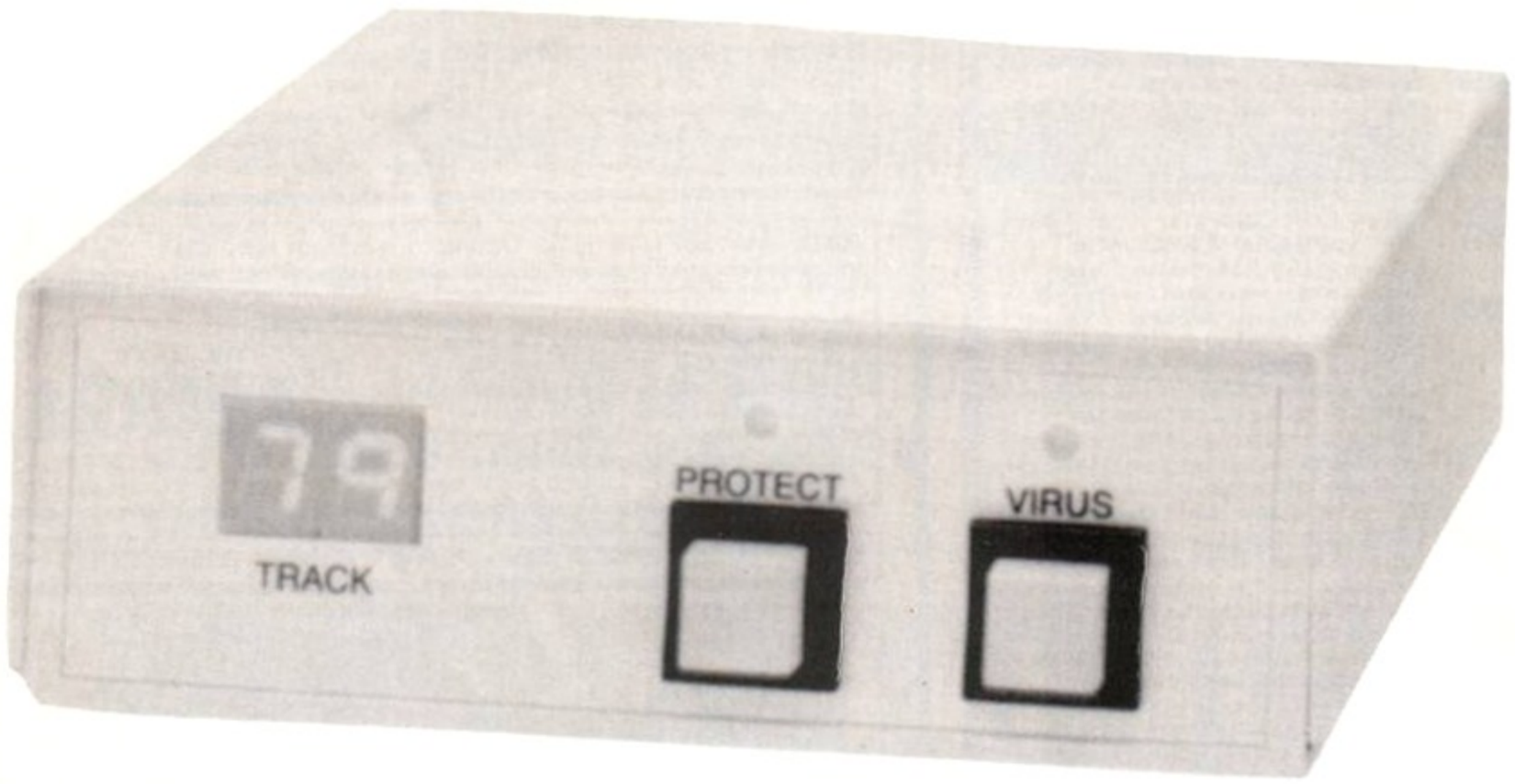
NEWSFILE

Rocknight the Anti-Virus Hardware

Roctec, the Hong Kong-based electronics company, have brought out an anti-virus device that, unlike most Amiga innoculations, is not software but hardware. The RV300C or Rocknight is a small box that plugs into the Amiga which is able to stop viruses by a variety of features. as shown below.

Rocknight measures just 102mm x 91mm x 33 mm, so it should not take up much room on anybody's desk. It weighs only .43kg - about a pound. No price for the U.K. yet and Roctec told AUI they would be happy to hear from dealers interested in stocking the device.

Contact: Roctec Electronics Ltd. 9/F Union Ind.Building, 18 Lee Chung Street, Chai Wan, Hong Kong
Tel. 852 897 3869
Fax 852 558 8099



SUNRIZE GIVES NEW AUDITION

Sunrize have released Audition 4, an advancced 8 bit sample editor which, they say, "Continues where Audio-Master 111 left off". It lets you record direct to floppy disk and is 100% assembler, real time zoom. On a fast scroll, it allows freehand editing, sequenced loops and real time effects including echoes, high pass filter, low pass filter, band pass filter, stop band filter, mix, fade, flange, VU meter and oscilloscope. Its editing functions include cut, copy, paste, delete, keep, invert, filter, echo, mix, fade, treble adjust, bass adjust, smooth, DC removal, invert, resample and tune. Phew!

Advanced recording hardware gives you right and left line level inputs, a microphone jack, noise filters, digital gain, and a hardware based sampling clock. List Price $99.95.

Contact: SunRize Industries, 2959 S. Winchester Blvd., Suite 204 Campbell, CA 95008 USA. Tel: (408) 374 4962. european representatives : France CIS (056) 363 441; Germany: Intelligent Memory (069) 410071; Switzerland Micro-tron (032) 872429; UK HB Marketing (0753) 686000.

Newspoint

The first test lawsuits on RSI - Repetitive Strain Injury, an ailment caused by computer keyboard use - look likely to reach the U.K. Courts shortly. Lawyers representing nine staff at the Financial Times have served writs on the newspaper. The FT says it will defend the action vigorously. Previously, substantial settlements have been made out of court. Last year the Midland Bank paid up £45,000 and three Inland Revenue staff shared £107,000. But the lawyers of the FT staff, some of whom have been off work on full pay for three years, say these cash arrangements are too low.

RSI affects the nerves, tendons or muscles in the arms, hands neck or back and sometimes causes painful swellings.

Going Flippy

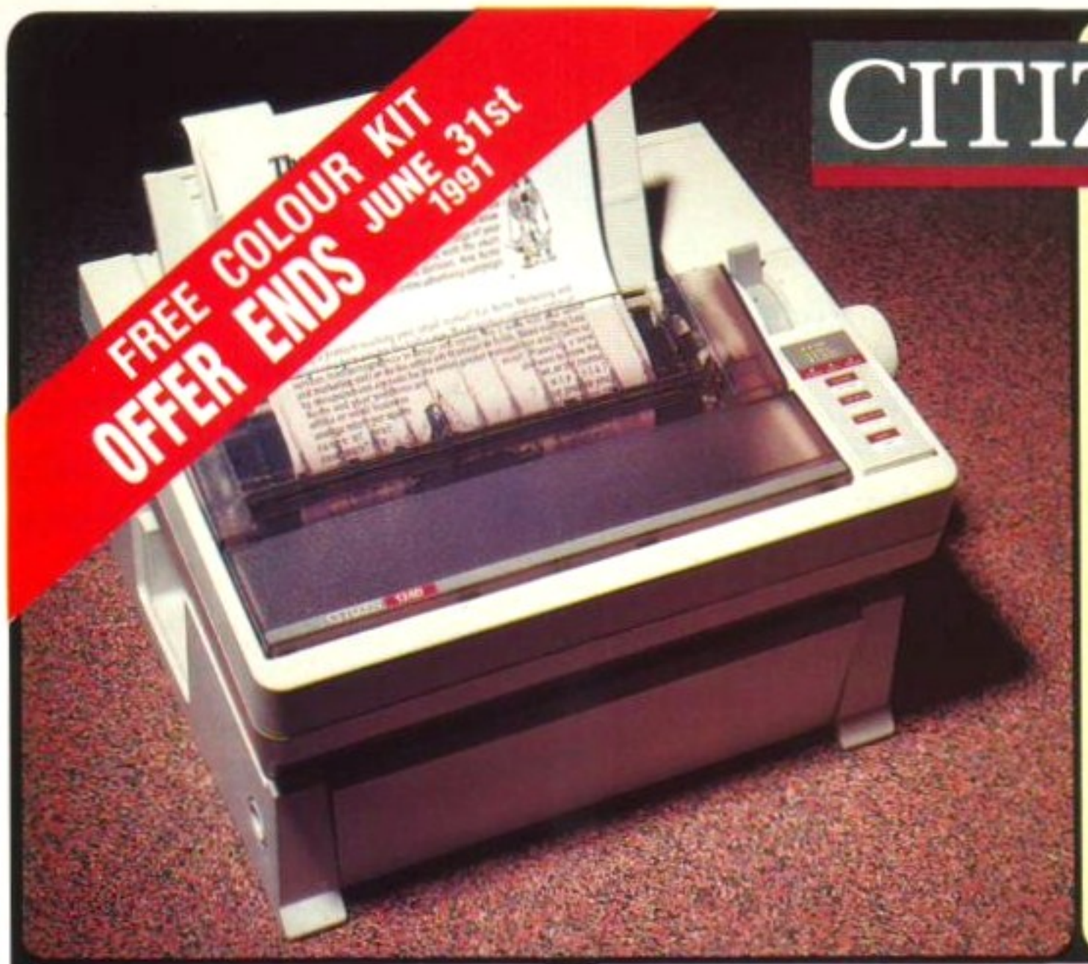
U.S.Gold seeing perhaps the drying up of interest in the Spectrum and even the Amstrad have announced the cost cutting measure of putting all future titles for the Speccy and the Amstrad on the same tape, with one format on each side.

They claim that it will give retailers "extra space...for things like the growing PC market."

The PC taking over from the Spectrum? That may sound, well, as if they have flipped(!) their lid but frankly who can you see walking into Dixons these days and forking out serious cash for a Spectrum? And while USG may reasonably predict the rise of the PC, for games there is simply no computer going to match the appeal for the pre-teens of the games consoles. No, not even the Amiga... So watch for more software games company shakeouts - in the direction of the Sega and Nintendo, who by the way are to spend over £10 million in advertising this year in the U.K. And that is more than all the games software companies put together!

Will they plug you into a Sega yet?

US Gold's Supremo Geoff Brown flips the formats.



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Citizen printers are manufactured to high standards.

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CITIZEN 120D+

The Citizen 120D+ is one of the UK's best selling printers. It has a stylish appearance and excellent features and performance for such an inexpensive printer. The 120D+ is available with either a serial or parallel interface and is an ideal first printer.

- *9-pin Printhead*
- *Print Speed 144cps Draft*
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- *Epson & IBM Graphics Emulation*
- *Pull Tractor & Bottom Feed*
- *Superior Graphics - 240x216dpi*
- *FREE Starter Kit*

RRP	£233.83
STARTER KIT	£29.95
TOTAL RRP:	£263.78
SAVING:	£112.20
SILICA PRICE:	**£151.58**

£129 +VAT = £151.58

144 CPS DRAFT 24 PIN

CITIZEN 124D

The award winning Citizen 124D brings high quality 24-pin dot matrix printing within every computer users reach. It is the ideal choice where high quality printing is required at a budget price.

- *24-pin Impact Printer*
- *Print Speed 144cps Draft*
- *2 LQ Fonts (48cps)*
- *8K Buffer*
- *Epson, IBM & NEC P6+ Emulation*
- *Advanced Paper Parking*
- *Superior Graphics - 360x360dpi*
- *FREE Starter Kit*

RRP	£292.58
STARTER KIT	£29.95
TOTAL RRP:	£322.53
SAVING:	£112.20
SILICA PRICE:	**£210.33**

£179 +VAT = £210.33

192 CPS DRAFT 9 PIN

SWIFT 9 - COLOUR!

The Citizen Swift 9 is perfect for those who require high quality dot matrix black or colour printing at a budget price. The print quality of Swift 9 rivals that of other manufacturer's 24-pin models.

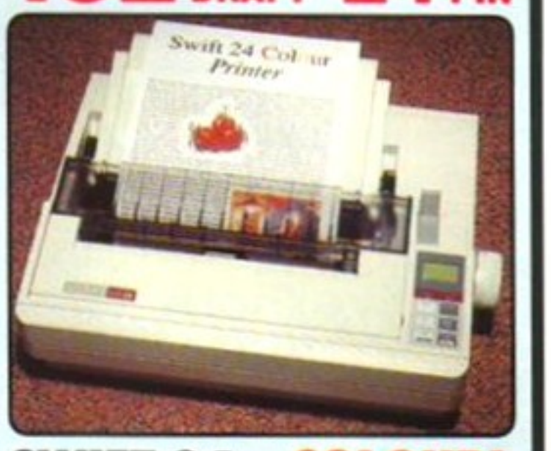
- *9-pin Impact Printer*
- *Print Speed 192cps Draft*
- *3 NLQ Fonts (48cps)*
- *8K Buffer*
- *Epson & IBM Graphics Emulation*
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP	£280.83
STARTER KIT	£29.95
COLOUR KIT	£44.65
TOTAL RRP:	£355.43
SAVING:	£133.35
SILICA PRICE:	**£222.08**

£189 +VAT = £222.08

192 CPS DRAFT 24 PIN



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The Citizen Swift 24 is one of Europe's best selling printers and has won awards including Printer Of The Year 1990. Its rapid print speed, quality and black or colour options, make it a natural choice.

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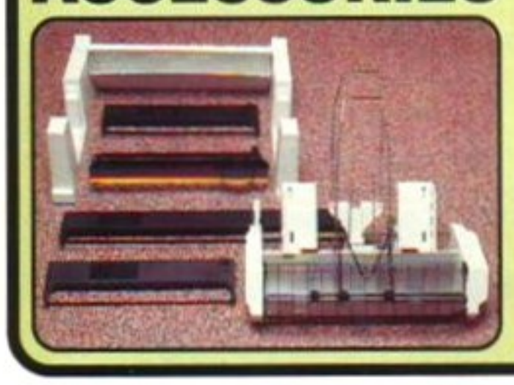
- *Advanced Paper Parking*
- *FREE Starter Kit*
- *FREE Colour Kit*

FREE! COLOUR KIT

RRP	£428.88
STARTER KIT	£29.95
COLOUR KIT	£44.65
TOTAL RRP:	£503.48
SAVING:	£199.15
SILICA PRICE:	**£304.33**

£259 +VAT = £304.33

PRINTER ACCESSORIES



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PRA 1242	124D/Swift 9/24	£24.03
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RIB 3520	120D/Swift 9 Black	£4.11
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RIB 3936	Swift 9/24 Colour	£15.63
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PRA 1236	Swift 9/24	£39.65

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FREE! STARTER KIT

Every Citizen printer from Silica, comes complete with the Silica Printer Starter Kit, including everything you need to get up and running with your new printer immediately, FREE OF CHARGE!

- *3½" Dual Format Disk with Amiga & ST Printer Drivers*
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If you already own a printer, and would like a Silica Printer Starter Kit, you may order one (ref: KIT 5000) for the special Silica price of £24.95 - £5 off RRP!

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Before you decide when to buy your new printer, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after you have made your purchase, when you may require additional peripherals or software, or some technical help and advice. And, will the company you buy from contact you with details of new products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is one of the UKs leading independent computer dealers and provides a quality service to users at home, in education and in business throughout the nation. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature on the Citizen printer range and begin to experience the "Silica Systems Service".

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Opening Hours: Mon-Sat 9.30am-6.00pm	No Late Night Opening	Fax No: 071-323 4737	
LONDON SHOP:	Selfridges (1st Floor), Oxford Street, London, W1A 1AB	**Tel: 071-629 1234**	
Opening Hours: Mon-Sat 9.30am-6.00pm	Late Night: Thursday until 8pm	Extension: 3914	
SIDCUP SHOP:	1-4 The Mews, Hatherley Rd, Sidcup, Kent, DA14 4DX	**Tel: 081-302 8811**	
Opening Hours: Mon-Sat 9.00am-5.30pm	Late Night: Friday until 7pm	Fax No: 081-309 0017	

To: Silica Systems Ltd, Dept. AMUSR 0891 55, 1-4 The Mews, Hatherley Rd, Sidcup Kent, DA14 4DX

PLEASE SEND CITIZEN PRINTER INFORMATION

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Address: .....

.....

..... Postcode: .....

Tel (Home): ..... Tel (Work): .....

Company Name (if applicable): .....

Which computer(s), if any, do you own? .....

E&OE - Advertised prices and specifications may change - Please return the coupon for the latest information.

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PRICES INC.DELIVERY & VAT @ 17.5%

Express Courier Delivery :
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BUY WITH CONFIDENCE from one of the longest established companies in their field, with a reputation for good service and prices. We have invested heavily in a computer system to enable our Telesales staff to provide up-to-the-minute stock information, coupled with highly efficient order processing. Our fully equipped Workshop enables us to carry out almost any repair on our premises. We feel sure that you won't be disappointed if you choose Evesham Micros.

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AMIGA 1500/2000 UPGRADES

HARD DRIVE / RAM UPGRADE BOARD KIT

Kits comprise of full size hard disk controller cards incorporating unpopulated SIMMS RAM expansion sockets for accommodating up to 8Mb RAM; PLUS high speed, fast access NEC SCSI hard disks.

40MB HARD DRIVE & INTERFACE / RAM CARD.... £ 349.00
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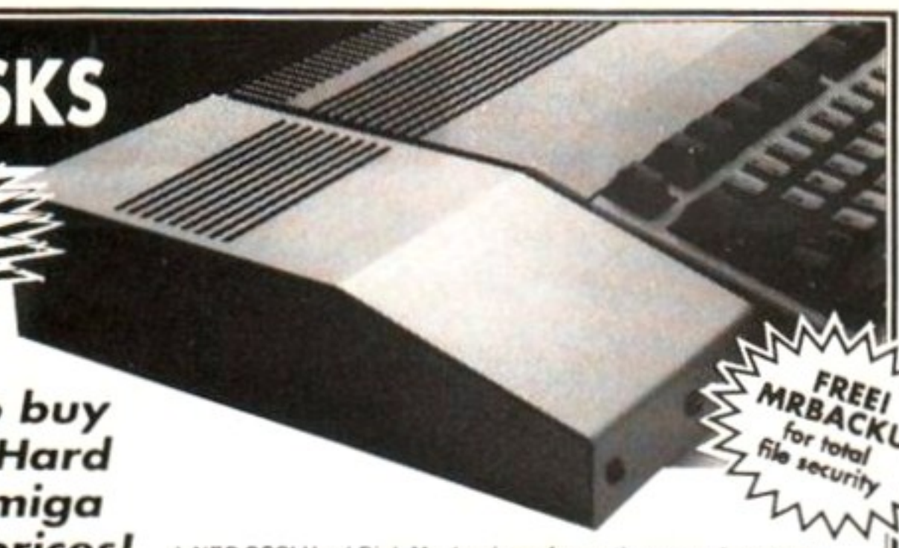
PLEASE NOTE: These are unpopulated RAM sockets - Add £ 119.00 per 2Mb of RAM required.

8Mb RAM Expansion Card with 2Mb Fitted
easily upgradeable to 4Mb, 6Mb or 8Mb ..... £ 149.95

A500 HARD DISKS

PRICE BREAKTHROUGH!



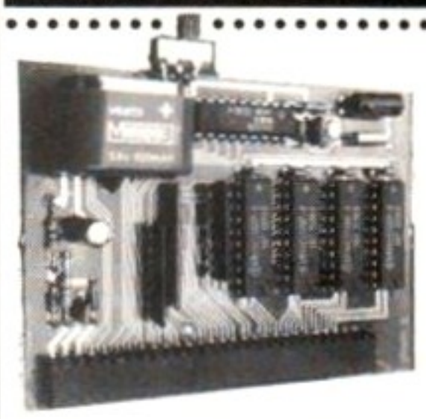
AT LAST... the chance to buy Quality, High Capacity Hard Disk Systems for the Amiga 500 at realistically low prices!

40Mb MODEL ONLY £299
100Mb MODEL ONLY £449
2Mb RAM Version: ADD £100 • 4Mb RAM Version: ADD £200

FREE! MRBACKUP for total file security

- NEC SCSI Hard Disk Mechanisms for *optimum performance*. 25ms Access Time & Autoparking
- **Includes its own Dedicated PSU**. CBM recommends against use of Hard Disks without independent power supply.
- Option for **up to 4MB of additional RAM Expansion**
- Includes **SCSI Throughport** at rear for further expansion
- **High quality** metal casing, colour matched to the Amiga 500
- **Includes 'MRBACKUP Pro'** as well as Configuration/Format software

AMIGA A500 SOLDERLESS RAM UPGRADES



512K RAM/CLOCK UPGRADE

ONLY £28.99 inc. VAT and delivery

512K RAM Expansion also available without clock :
ONLY £24.99

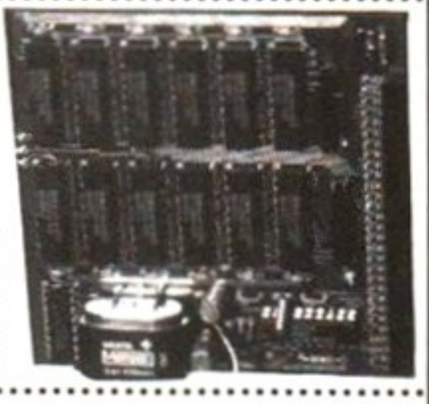
- Direct replacement for the A501 expansion
- Convenient On / Off Memory Switch
- Auto-recharging battery backed Real-Time Clock
- Compact Unit Size : Ultra-neat design
- Only 4 low power FASTRAMs

1.5MB RAM BOARD

- Fully populated board increases total RAM in A500 to 2Mb !
- Plugs into vacant trapdoor area, & connects to 'GARY' chip
- Includes auto-recharging battery-backed real-time Clock
- Socketed RAM ICs for accommodating up to 1.5Mb RAM

Unpopulated RAM board with clock	£ 34.95
RAM Board with 512K FASTRAM installed	£ 54.95
RAM Board with 1Mb FASTRAM installed	£ 69.95
RAM Board with 1.5Mb FASTRAM installed	£ 79.00

N.B.: The expansion board requires Kickstart 1.3 to operate - Kickstart 1.3 upgrade available from us for £29.95



NEW! 'MEGABOARD'

Connects to your 512K RAM upgrade to give 1.5MB

With our MEGABOARD, you can further expand your A500's memory to a total of 2Mb without disposing of your existing 512K upgrade (must be 4 x RAM-chip type, or not exceeding 9cm in length).

ONLY £59.95

MEGABOARD needs Kickstart 1.3 to operate (Kickstart 1.3 upgrade available from us for £29.95). Installation requires connection to the GARY chip. Easy to follow instructions provided.

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AMAZING LOW PRICE !
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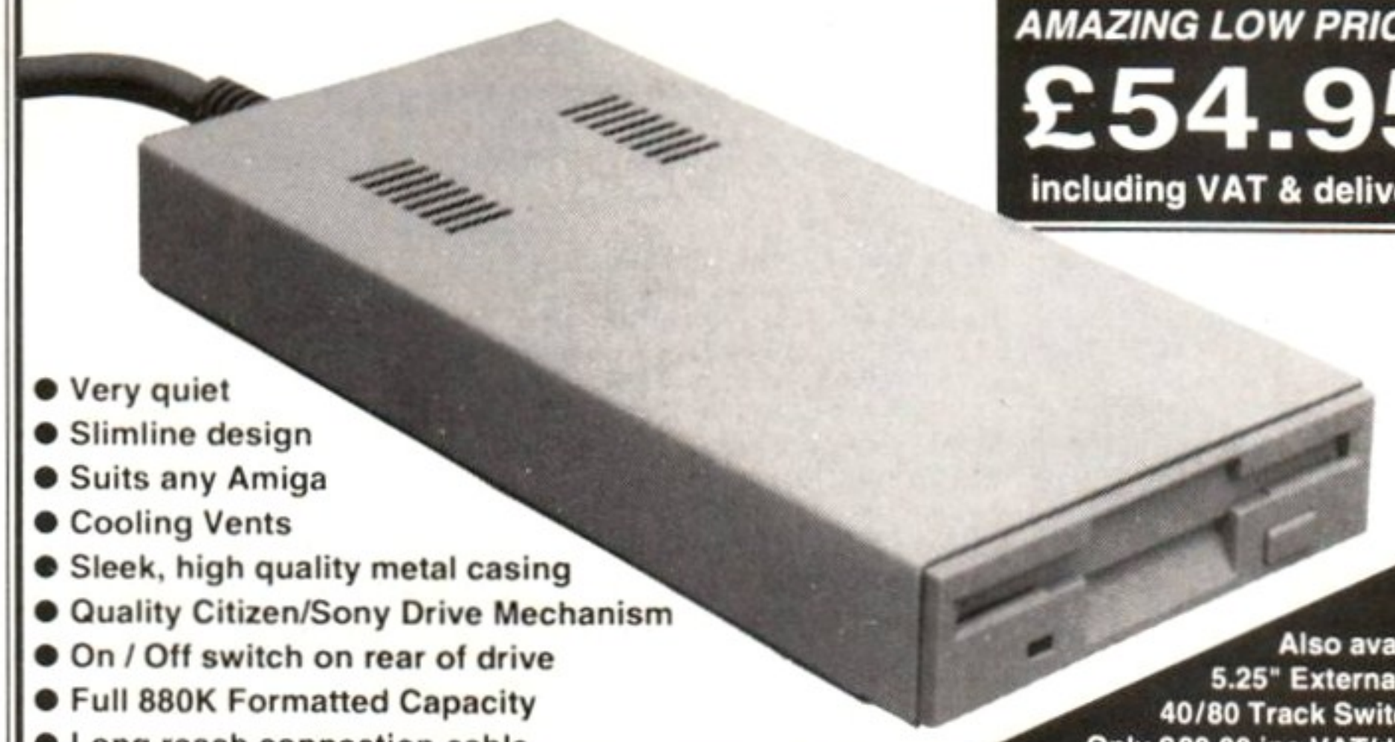

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REALISE THE TRUE SOUND POTENTIAL OF YOUR AMIGA WITH THIS PAIR OF FULL RANGE SPEAKERS !

Your Amiga produces fine quality hi-fi stereo sound. Enjoy quality stereo sound reproduction *to the full* with this specially designed, great new twin speaker system! Features reflex ported speaker design with 3 separate drivers in each unit, and incorporates a built-in amplifier with adjustable volume control. Runs from PSU (supplied) or from batteries (not included).
Speaker Dimensions 248x93x125mm (HxWxD)

ONLY £39.95

CBM A590 HARD DISK

Good quality Commodore 20Mb Hard Disk unit, including its own PSU and built-in cooling fan. Features sockets for up to 2Mb of on-board FASTRAM expansion (see below). 80ms Access time, with up to 2.4Mb/sec transfer rate. Autoboots when used with Kickstart 1.3.

ONLY £279.00

CBM A590 UPGRADES

(RAM upgrades fitted free of charge when bought with A590)

512K RAM Upgrade	£ 29.95
1Mb RAM Upgrade	£ 59.95
2Mb RAM Upgrade	£ 99.95
NEC 40Mb SCSI Drive replacement mechanism	£ 199.00
NEC 100Mb SCSI Drive replacement mechanism	£ 349.00

A590 ADD-ON HARD DRIVES

A590 OWNERS! Expand your hard disk storage further with one of our add-on, externally cased SCSI Hard Drives, featuring 25ms autoparking NEC mechanisms with separate power supply. Simply plugs into the socket provided on the rear of the A590 Hard Disk unit.

External 40Mb SCSI Drive cased with PSU to directly add-on to the Commodore A590	£ 299.00
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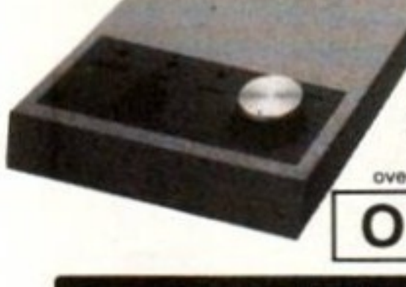
WE GUARANTEE that this is the smoothest, most responsive and accurate replacement mouse you can buy for the Amiga. Excellent performance, amazing low price !

£17.95 *SATISFACTION GUARANTEED*

GOLDEN IMAGE OPTICAL MOUSE Amiga/ST compatible - excellent travel & accuracy assured ..... £ 37.95

GOLDEN IMAGE HANDY SCANNER & TOUCH-UP



Outstanding quality, excellent value for money - this package includes a 100-400dpi scanner with dither options, plus the amazingly powerful TOUCH-UP software package which drives the scanner directly. Scanner includes viewing window & backlight for accurate scans every time. Scan either line-art or grey images up to 400dpi. Many image enhancement & special effects available from within Touch-Up. A sensible investment for Desktop Publishing work.

ONLY £179.00 INCLUDING VAT AND DELIVERY

NEW! ROCGEN GENLOCK

YOU WILL HAVE TO PAY *AT LEAST* TWICE AS MUCH MONEY to obtain a similar level of quality, function and sophistication offered by our new GENLOCK adapter, compatible to all Amigas! Many special features include the ability to record graphics & animations on video recorders, overlay graphic and text onto video and use your domestic colour TV as a colour monitor. Capable of smooth and stable fading and overlaying effects with special tuning knob.

ONLY £114.99

PHILIPS 15" TV/MONITOR

With its dedicated monitor input, this model combines the advantages of a high quality medium resolution colour monitor with the convenience of remote control Teletext TV - at an excellent low price ! NEW Version features dark glass screen for improved contrast, plus full range 3-way speaker sound output .

£269.00 Including VAT, delivery & cable

Philips CM8833 Mk.II including cable ..... £ 239.00

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AMIGA 500 COMPUTER BASE PACK

Features a Genuine UK version 512K Commodore Amiga 500 computer with 1Mb Internal Drive, TV Modulator, Mouse, Power Supply, Kickstart 1.3, etc.

AMIGA 500 BASE PACKAGE
ONLY £ 307.49

A500 PACK AS ABOVE, WITH 512K RAM/CLOCK FITTED
ONLY £ 333.99

A500 PACK WITH EXTERNAL 3½" DRIVE
ONLY £ 357.49

A500 PACK WITH EXTERNAL 3½" DRIVE *AND* 512K RAM/ CLOCK UPGRADE FITTED
ONLY £ 383.99

N.B. Does NOT include extra software included with other packages.

LOOK WHAT ELSE YOU GET WHEN YOU BUY AN AMIGA FEATURE PACK FROM EveshamMicros

THESE FABULOUS GAMES:
Tracksuit Manager 90 • Subbuteo • Asterix • Block Alanche • Jungle Book • Treasure Trap • DiskMan • Battle Squadron • Diet Riot • Tank Battle • Nigel Mansell • Lost'N'Maze
PLUS! A wordprocessor and spreadsheet

AMIGA 500 SCREEN GEMS PACK

Includes Amiga 500 **with 1Mb RAM**, plus 1Mb Drive, TV modulator, 'Night Breed', 'The Beast 2', 'Back to the Future 2', 'Days of Thunder', 'Deluxe Paint II'.

A500 1MB SCREEN GEMS PACKAGE ..... £ 369.99
A500 Screen Gems Package PLUS 3½" External Drive .... £ 419.99

AMIGA 500 CLASS OF THE 90'S PACK

Pack features A500 computer plus A501 512K RAM Upgrade, TV Modulator, 8 software titles, 10 Disks, mouse mat, Video Tape & more ....

CLASS OF THE 90's Package..... £ 499.00
Class of the 90's Pack *plus* 3½" Drive..... £ 549.00

AMIGA 1500 STARTER PACK

Includes A1500 computer (1Mb RAM, 2 x 3½" Drives, 8 expansion slots), Commodore Hi-Resolution Colour Monitor, plus Software including 'Deluxe Paint III', 'Battle Chess', 'Sim City' and 'The Works' (business software)

A1500 STARTER PACKAGE ..... £ 949.00

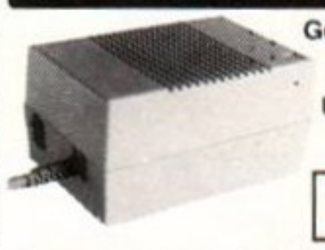
VIRUS PROTECTOR

BANISH VIRUS PROBLEMS!

Our compact Virus Protector fits easily to the Port of the last disk drive in your Amiga system, protecting all internal and external drives from boot block viruses. Incorporates a switch to enable or disable the protection facility. *Top*

ONLY £9.95

REPLACEMENT A500 PSU



Genuine Commodore Amiga A500 type replacement Power Supply Unit. Good quality 'switch mode' type. Super low price!

ONLY £39.95

MIDI INTERFACE

Our fully compatible, high quality MIDI interface connects directly with the Amiga serial port and provides IN, OUT & THRU ports for good flexibility. Features LED indicators on each port for diagnostic purposes. Superb compact design.

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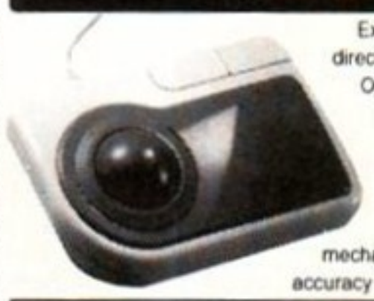
STEREO SOUND SAMPLER

Offering full compatibility with almost any Amiga audio digitiser package, our Sound Sampler features excellent circuitry, yielding professional results. The main A/D converter gives a digitising resolution of up to 50KHz, with a fast slew rate. Two phono sockets are provided for stereo line input, plus an option for microphone. Adjustable gain is achieved with built-in control knob. Complete with public domain disk containing sound sampling applications / utilities.

ONLY £29.95

TRACKBALL



Excellent new high performance trackball, directly compatible to any Amiga or Atari ST. Operates from the mouse or joystick port. Super-smooth, accurate and versatile - you probably won't want to use a mouse again after using this Trackball ! Total one-handed control. Top quality construction and opto-mechanical design, delivering high speed and accuracy every time. No driver software needed !

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***NEW!* A500 INTERNAL 3.5" REPLACEMENT DRIVE**
Fully compatible. Kit includes full fitting instructions ..... £ 49.95

VIDI-Amiga video digitiser package inc. VIDI-Chrome	£ 110.00
VIDI-Chrome Amiga colour frame generation kit from B&W images	£ 16.95
VIDI-RGB colour frame generation kit from B&W images	£ 64.95
MINIGEN Genlock Adapter	£ 95.00
KCS Powerboard Hardware PC Emulator with its own 1Mb of RAM on-board, 512K useable in Amiga mode	£ 229.99
Kickstart 1.3 Upgrade	£ 29.95
Amiga 500 Dust Cover	£ 4.95

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NEW! WORDWORTH	£ 119.00	Deluxe Video 3	£ 84.95
Kind Words 2	£ 37.95	Music-X 1.1	£ 99.00
Protext V5	£ 119.95	AMOS	£ 37.50
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		Devpac 2.15	£ 44.95
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Outstanding 24 Pin COLOUR Printer

PROFESSIONAL QUALITY 24-PIN COLOUR PRINTING NOW AVAILABLE – AT AN AFFORDABLE PRICE !

Combining the advantages of advanced COLOUR output with the *superior* quality of Olivetti Professional 24-pin printing, the *new* DM124C represents excellent value for money! Consistent high quality is assured every time, with no ink excesses or pale lines at any speed. Peace Of Mind for trouble-free use is *Guaranteed*, with Olivetti's 12 Months On-Site Warranty cover !

- 200 cps output in draft, 50 cps in LQ mode; *huge* 40K buffer
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- Parallel Interface, Tractor & Single Sheet Feed as standard
- **Complete with cable & 12 MONTHS ON-SITE WARRANTY**

Olivetti DM124C Normal RRP: £ 389.95 inc.VAT

Evesham Micros Special Offer Price **ONLY £269.00** inc.VAT, Delivery & cable

- Automatic Cut Sheet Feeder available for only £ 79.95 -

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Prices include VAT, delivery and cable

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Star LC 24-200 24-Pin, 5 fonts, 200/67cps	£ 249.00
Star LC 24-200C 7 colour version of above	£ 289.00
Star FR-10 9-pin including Colour Upgrade	£ 259.00
Star XB24-10 24-pin including Colr. Upgrade	£ 359.00

Citizen Swift-24 24-Pin COLOUR Printer	£ 279.00
Olivetti JP-350 Inkjet high speed 300dpi printer	£ 389.99
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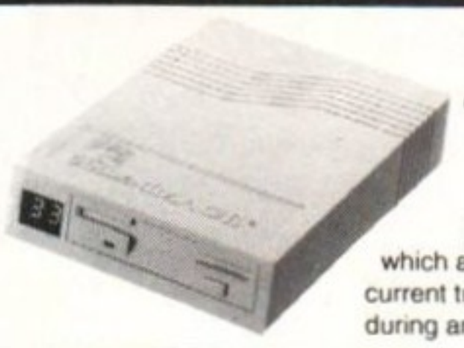
Panasonic KXP1123 good value 24-pin printer	£ 215.00

NEW! 3½" DRIVE with LED Track Display



High quality double-sided 3.5" floppy drive offering the full 880K formatted capacity per 3.5" disk. Features a special LED display which accurately shows the current track being accessed during any disk drive activity.

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DEMOS

A001 Walker Demo 1/1 Mb
A003 Walker Demo 2/1 Mb
A006 Enterprise in dry dock/Anim 1 Mb
A008 Star Trek fleet manouvers/Anim 1Mb
A011 The run Anim/car chase 1 Mb
A012 Puggs in space, weird alien visits Earth
A070 Coma Demo superb GFX & House
A075 Probe sequence. Been on TV!
A076 Newt Demo reel 3/2 Discs.
A094 Star Trek craft - Various Anims by T Richter
A119 Budbrain Mega demo/2 disks, demo over 18
A129 Bruce Lee / Anim 1 Mb
A134 Mike Tyson / Anim 1 Mb
A146 RSI Mega demo / 2 disks demo
A180 Scoopex demo / Mental Hangover
A225 Horizon mega demo / Sleeping bag by Shurken
A250 Total Recall demo music and pics from the film
A261 Fraxion horror demo / over 18 video horror
A262 Robo Cop 11. Demo slides and music
A267 Rebels Mega demo
A279 Iraq demo / USA v Iraq
A280 Viz slide show
A281 Fighter Animation / Anim 1 Mb
A282 Simpsons slide show Anim & slidesbyH.A.C.L
A021 Magician and Juggler demo
A030 Clothes Peg 1 Mb
A033 Crionics / Total Destruction
A036 Fractal Flight
A055 Creepshow 1
A286 Nasa Shuttles demo / Animation 1 Mb
A287 Bad Bar club remix / Slideshow + music

MUSIC

M001 Kylie Minogue 2 Discs
M036 Sound of Silents
M002 Groove is in the heart
M038 100 C64 tunes
M025 Digital concert 3
M040 Simpsons Do the Bart man. 3 disc
M038 808 State remixers
M071 D Mob music 2
M068 Madonna Spanky
M016 Feel The Rhythm
M017 Tecnotronic Mega Mix
M021 Pet Shop Boys / Suberbia
M022 Crusaders / Genesis 1 Meg
M025 Digital Concert 111
M028 Digital Concert 6
M042 Betty Boo 2 discs
M044 Miami Vice Remix

SOUND

S001 Sound tracker. Music programme (needs ST/01)
S003 Games music creator
S004 Med music programme V.3.0
ST01/2Instrument disc for sound tracker
ST07 Samples disc for sound tracker
S005 Pro Tracker 2 disc/latest music editor

GAMES

G045 Double Barrel 1 / Mutants + X-Fire
G046 Double Barrel 2 / A.T.C + Gridder
G047 Double Barrel 3 / Ping Pong + China Challenge
G048 Seven Tiles / (NBS Disk G199)
G049 Eat Himz / Boulderdash Type Game
G051 Frantic Freddie / Arcade Action
G033 Drip / 15 levels / Arcade Action
G037 Twin Tris / 2 player Tetris

UTILITIES

U001 Amibase Excellent Datbase
U002 'C' Manual 3 discs tutorial
U003 IFF Fonts and surfaces for DTP
U004 Workbench plus. Workbench replacement
U005 Wordprocessor and label printer
U007 Dope intromaker
U008 Space writer Demo creator
U009 RIM relational database
U010 Visicalc spreadsheet
U011 Jazz bench work bench replacement
U012 North 'C' compiler
U025 Business pack, Wordprocessor, Spreadsheet & Database. 3 disc
U050 A-Copy disc copier
U060 K.O. Virus killers compilation
U061 Master virus killer V.2.1 kills 124 viruses
U065 M-cad. Computer aided design
U067 Crunchers compilation inc. power packer
U070 D-copy backs-up protected disc (some)
U073 Mandalbrot. PD compilation
U099 ABPD utility disc. 30+ Utils.
U105 Messy dos. Transfer PC files
U221 Clipart for DTP
U040 Speedbench / Workench, replacement
U045 Pendle Europa Utilities / Compilation
U105 Messy Dos / Read / Write PC Files
U107 Darkstar utilities / Compilation
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Speedy service

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85 P PER DISK (INC)

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10 PACK QUALITY DSDD/135TPI BLANK DISKS AND LABELS **ONLY £4.75 inc**

Cheques & P.O's payable to **ABPD.**

Order 10-12 Disks get free Simpack Disk Box
Order 13-14 Disks get free Deluxe Mouse House
Order 15-17 Disks get free 2 free Simpack Disk Boxes
Order 18-19 Disks get free Deluxe Mouse Mat
Order 20+ Disks get free Amiga Dust Cover

BLITTERCHIPS AMIGA PD

GAMES

78. The Holy Grail, a very good adventure
363. The Golden Fleece a text adventure (*)
418. Frantic Freddie the PD game, good fun
441. All new Psuedo Cop game, a Shoot em up
458. Castle of Doom, adventure with graphics
477. Return to earth, space combat/adventure
460., Flaschbier, a boulderdash P.D game
551. Cluedo and Monopoly, 2 great games
552. Eat Mine, has 80 screens to play at
553. Retaliator and Pacman, 2 great games
555. Drip, a painter type of game, great fun
558. Murder, an adventure playable preview
559. Back to the Future, playable preview
562. Spaceblitz, 4 good games to play
644. Horror Zombies, a playable game preview
665. Killing Game Show, playable preview
668. Cybercon III, playable game demo
672. James Pond and Paradroid playable demos
699. Yelp, a Painter type game, multi-levels
900. Blizzard, fast scrolling shoot 'em up
1014. Chinese checkers, similar to solitaire

SLIDESHOWS

781. Wendy and Lisa, pictures of the pop duo
779. Twin Peaks, pictures from the TV show
758. Yabba Dabba Doo, great cartoon pictures
667. Future Visions, more fantasy pictures
480. Saucy postcards, naughty but nice
474. Madonna Slideshow, lots of pictures
472. Viz slideshow as seen in Amiga Format
112. Space Bubbles, terrific fantasy pics
739. Slideshow Spectacular, superb hi-res.
904. Countach fantasy slideshow 1
905. Countach fantasy slideshow 2
991. Belinda Carlisle slideshow, great pics

UTILITIES

992. MED V3.10, supercedes MED V3.0 (*)
1026. MED V3.11 we bring it to you first (*)
813. Startrekker V1.2 Soundtracker clone
793. Red Sector demo maker V1.0 great! (*)
735. Flexi Base, a more friendly data base
843. Iconmania, a disk full of Icon utils.
640. Mobed V1.0, a movable object editor
623. C-Light, ray tracing program very good
613. Soundtracker Professional (Protracker)
993. Master Virus Killer V2.1, terrific!!
877. NORTH C V1.3 a 2 disk set £1.98
898. Audio Magic V1.1 full of utilities

DEMOS

617. The Byte Busters Mega demo, good
807. Evil Dead demo, for all you Sycho's (*)
759. Amos Creator II demo, official release
751. Colour Cycling, superb effects get it!
750. Budbrain II a new disk from Budbrain
656. Pussy Inership, good graphics and game
655. Unreal game demo, to show off your Amiga
654. Olympia, parallax scrolling at its best
598. Fractal animation, super mandelbrots (*)
597. Cool Fridge, superb Plasma effects here
547. Materialized, cryptoburners superb demo
539. Chromium, a great new demo by Scoopex
516. Purple, very large vector routines
321. Fractal Flight animation, unusual demo
287. Golam Gates Mega demo II, worth getting.
132. Dragons demo 1, has lovely raster effects
174. Ian & Micks mega demo, 9 parts to this
982. Total Rebate, from the Steve Wright show
983. Total Retrial, from the Steve Wright show
984. Total Restyle, from the Steve Wright show
985. Total Respray, from the Steve Wright show
986. Total Recount, from the Steve Wright show

MUSIC

796. Crusaders does Genesis, superb (*)
794. In a Silent Way, don't miss this disk!
980. Jarre Live, eleven good tracks of music
770. Arcane Music, 11 tracks for you to play
767. The 900/Oxygen remix, collect it now (*)
978. Give Me What I Want, Sam Fox sample
723. Sounds of DOB II, 17 tracks of music (*)
970. If only I could, Sidney Youngblood sample
718. Revolutions by Jean Michelle Jarre
848. A kind of magic, by Queen. Sampled (*)
716. Bomb the Base, 8 fab tracks to listen to
703. 808 remixes from the Beatmaster who else?

MUSIC

The following are £1.98 each 2 disk sets.

2. I should be so Lucky by Kylie, 5 samples
856. The power of love, by Huey Lewis, sample
301. Darkstar's music 9, 14 great tunes
417. Electric Youth by Debbie Gibson, great!
420. Lumberjack song from Monty Python
478. Made In Heaven by Kylie, a full 6 mins!
525. Flash by Queen, a great two disk set
968. Followin you, by Madonna great song
581. D-Mob music 4, 2 disks of good music

ANIMATIONS

43. Puggs in Space, a cute and funny demo
863. Iraq demo, rather comical animation
313. Revenge Horror Show, for psycho's only
394. Stamp Collector, an old but good demo
444. Fillet The Fish, similar to Puggs demo
631. Steves animations 1, has 8 cute anims.
632. Steves animations 2, has 6 cute anims.
789. Steves animations 3, has 6 cute anims.
790. Steves animations 4, has 5 cute anims.
791. Steves animations 5, has 6 cute anims.

The following animations all require 1 meg.

805. Franklin the Fly, hilarious and funny
763. Basketball player, superb ray tracing
866. Ami versus the Walker as reviewd
913. Mars, smooth space fighter animation
917. Juggette anim, and Juggette the revenge
633. Batman the movie, funny and amusing
625. Juggler II, the Juggler meets a lady
582. Stealthy II Manoevres, great cartoon
291. The Lotus Car chase from Agatron
865. Coyote Strikes back, poor Roadrunner
101. The very famous "Gymnast" demo
79. Education of Cool Cougar, very funny.

The demos below consist of 2 DISKS so each demo costs £1.98.. please remember

929. Maximum Overdrive, lots here & good
45. Kefrens mega demo 8, one of the best
66. Predators, great game to play as well
926. Mr Food, hilarious sample of record
199. Red Sectors, a must for demo collectors
201. RAF another of the classic demos
365. Budbrain, over 18 yrs for this, sorry
537. Monty Python's Secret Policemans Ball
614. Monty Python's Nudge Nudge, more humour
594. Hit the Road by Flash, multi part demo.

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LPD6	Pukadu & Sprites	LPD16	Reversi II (*)
LPD7	4 Way Link (*)	LPD17	Dog fight II (*)
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CONSTANT FACTORS

The Update Column

A quick look at some interesting new Amiga developments.

AUI takes pride in its in-depth reviews of the widest range of items on the Amiga market, it is not always possible, for the reasons of space, to include all very worthwhile products. This column aims to put that right, with several products under the eagle-eye every month, as well as featuring updates to already existing software and hardware.

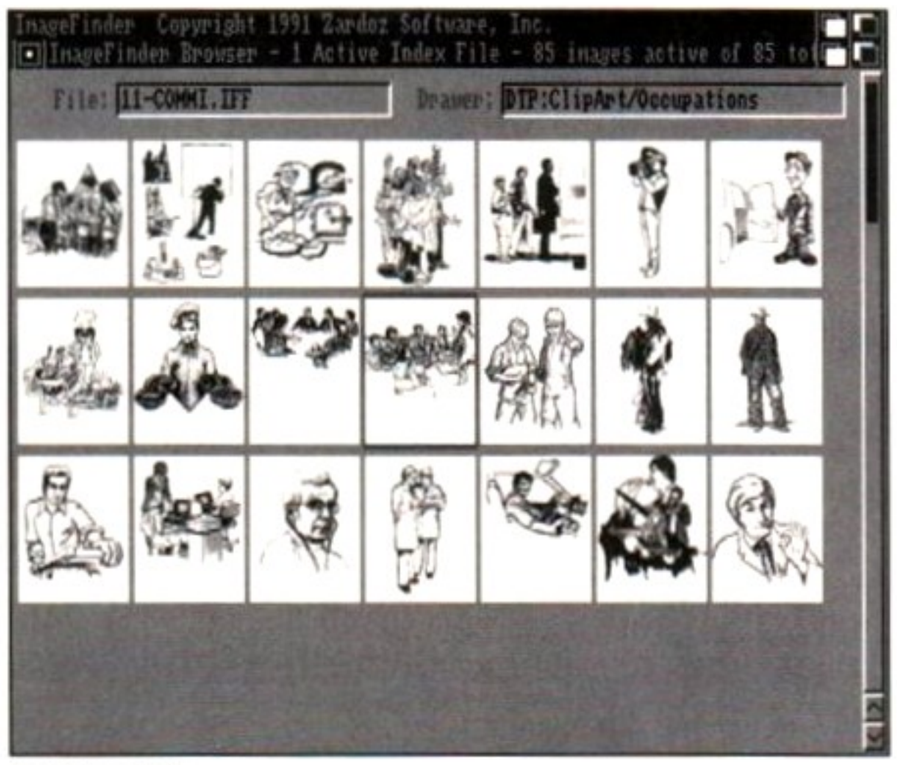
ImageFinder

Firstly we have ***Image Finder*** from a new company based in California called **Zardoz Software**. Shades of science fiction already, so this is a good start! In fact, Zardoz is owned by John Goodnow who originally worked at Manx on the Aztec C compiler so there can be little doubt about its pedigree. Image Finder is a cunning program which builds indexes of IFF picture files and then displays icon-sized "thumbnails" of them. This is actually considerably more useful than it sounds, particularly when you use the very powerful communication side of the package.

All you do is tell Image Finder which directories on which to work with the name of the index file required and it just gets on with the job, running quietly as a background task. That is just as well because it can take a while to chunder through a hard disk of clip art. The icons generated are definable. You can specify their size, resolution and the method used to condense the full picture. This can be important as memory or disk space can limit the extent of Image Finder's potential, and so optimising the file size is sometimes necessary.

How many times have you fired up the "Open" requester in DPaint only to be met with a list of filenames which are meaningless (like Mike1, Mike2, Mike3 etc)? The really clever bit about Image Finder is that at this point, you would call up its screen with a definable "hot" key combination, and it would display the icons for each picture in the index. When you select the icon, it sends a message into the Amiga's input stream that mimics the effect of you typing the characters of the filename. Intuition sees this, thinks "Aha! This is for me" and sends the key codes to the DPaint requester's string gadgets, automatically updating them and all you need to do is click on "Load". You can also view the entire picture using another module, if you think it'll help!

Image Finder has several different methods of sorting files into various patterns, using criteria like file name and creation date, or physical characteristics such as height, width, number and intensity of colours. It is virtually completely definable, and you can even configure it to update its indexes automatically - it just looks at the directories and puts in any additions as appropriate.



Zardo's Imagefinder

Anyone with a lot of IFF pictures should find Image Finder very handy indeed and DTP fans will also be able to catalogue all their clip art into a very convenient form. The software looks very nice with its Workbench 2.0 interface and functions very well. Zardoz are promising an early update which will address the speed of generating the index files, and I hope they continue to develop more products of this standard.

MegaChip 2000

The new Amiga 3000 is equipped with an enhanced version of the Agnus chip that is capable of accessing 2 Mb of CHIP memory. This allows you the luxury of running more programs which require a large amount of such memory. The obvious application is in DTP when you may want a structured drawing program like Professional Draw and the Professional Page available at the same time. Both programs need lots of CHIP memory and ***MegaChip*** is the answer. Also, with the Amiga featuring so prominently in the world of multi-media, the ability to use large sound samples and complicated graphics is advantageous.

How does it work? The current version only works in the Amiga 1500 or 2000, and installation is a pretty hairy process as you need to remove the entire innards of the computer, not a pretty sight. Because the Agnus is a square chip which is notoriously difficult to remove, I found the easiest way was to remove the motherboard and tap the chip out of its socket (gently!) through the holes underneath. Once this is accomplished, fitting the MegaChip board is easy, but it does preclude the use of other cards which fit into the 68000 socket.

The board costs £250 from **Bytes and Pieces** and includes the extra 1 Mb of RAM. This seems quite a lot, but reflects mainly the expense of the new Agnus chip; Commodore are rather reluctant to sell them as they would presumably prefer you to lash out of an A3000 in the first place.

Turbo 68000

Turbo 68000 is a really cheap way of almost doubling the speed of your Amiga. It fits into the processor socket of the computer and is effectively a 14 MHz 68000 with a switch for it to drop back to normal speed, in case of any compatibility problems. It is not particularly hard to fit, once like me, you are used to pulling out the 68000 and slotting in a replacement board. The instructions are pretty sparse, but basically adequate and **Omega Projects** have an excellent technical support line so a quick phone call to Bob should sort out any difficulties. There are a few areas where the Turbo 68000 gets in a knot with other hardware, notably Commodore hard drives, so check with the suppliers first for the latest information. I tried it with a number of productivity programs like DPaint, Word Perfect and Professional Page and they seemed quite happy. The speed increase is not blistering, or even totally obvious at first, but some simple benchmarks showed the Amiga to be running at about 1.75 times the usual. Not quite a 68040, but then it doesn't cost £2000!

Contacts:
Image Finder
Zardoz Software,
6114 LaSalle Avenue,
Suite 304,
Oakland, California,
94611

Bytes & Pieces
37, Cecil St, Lytham, Lancs
(0253) 734218

Omega Projects
14 Derwent Close
Culceth, Warrington
(0925) 763946

FIELD REPORT

Guten Tag, Amiga

Part 1

Germany is probably the country with more Amigas than any other. It is also producing some outstanding Amiga hardware and software. Hartmut Schumacher highlights a few of of the best products.

Commodore Deutschland (that's CBM Germany) claims to have sold more than 500,000 Amigas in the western part of Germany. Since CBM UK has published similar figures, it's easy to calculate that more than fifty per cent of all Amigas are used in the UK and Germany. So it wouldn't be too wrong to say that the Amiga - despite its American origin - is now a European computer. And so it is not very astonishing that there is a growing number of European developers of Amiga products. There are some of the best and most innovative German software and hardware products.

(All mentioned prices are approximate prices which were converted from German marks to British pounds. The telephone numbers include in brackets the country code for Germany.)

bsc bueroautomation AG - storage media, memory expansion, and animation editing

bsc has a wide range of Amiga software and hardware. All products are also available with English documentation.

Sie Frogen - Wir Antworten

A.L.F.

In the case of "A.L.F. 3", "A.L.F." doesn't stand for "Alien Life Form" but for "Amiga Loads Faster". This 16 bit SCSI hard disk controller has received top ratings in German Amiga magazines and is indeed a powerful and very versatile product: You can connect it with up to seven SCSI devices like hard disks, streamers, removable hard disks, DAT recorders, scanners, printers or networks as well as optical disks (which are also available from bsc).

"A.L.F. 3" is one of fastest hard disk controllers for the Amiga: The highest possible data transfer rate is 1.9 MByte (if you should own a hard disk which is fast enough for that).

The software that comes with "A.L.F. 3" includes a back-up program, an installation program for PC partitions, password protection, and support of the Macintosh emulator "A-Max II". The price corresponds to the features: You have to pay £265 for the controller without a hard

```
GFA-BASIC Editor
| Save |Save,A| Quit | New  |BlkSta|Replac| Pg ◊ |Normal|Direct| Run 15:46:18
| Load |Merge |Llist |Block |BlkEnd| Find | Pg ◊ |Insert|ClkOn | Test        0
'
'       IFF_to_Bob: program to pick a bob out of an IFF-picture
'
'       (C) 1988 by GFA Systemtechnik GmbH.
'
' ************************************************************
'
cd&=0 !  (bob-attribute - values: SAVEBACK=8, OVERLAY=16, SAVEBOB=32)
FILESELECT "GFABasic 3.00:","OK","test",n$
DIM plane%(8)
OPEN "i",#1,n$
mybuf%=AllocMem(360,65537)
IF mybuf%=0
  ALERT 0,"Not enough memory",0,"OK",v&
ENDIF
inbuf%=mybuf%
cbuf%=ADD(mybuf%,120)
ctab%=ADD(mybuf%,240)
BGET #1,inbuf%,12
IF MKL$({ADD(inbuf%,8)})<>"ILBM"
  ALERT 0,"No ILBM file !",0,"OK",v&
  END
ENDIF
CLR bmhd!,cmap!,body!
WHILE NOT (bmhd! AND cmap! AND body!)
  read_chunk
WEND
CLOSE #1
```

"GFA-BASIC" is a fast and powerful BASIC dialect with an optional compiler.

disk. The 8 bit version "A.L.F. 2 Professional" costs £184 and is also strongly recommendable - especially if you don't need the very latest technology but a less expensive solution.

FileRunner

bsc offers some combinations of the "A.L.F." controllers with Quantum and Fujitsu file cards: The cheapest version is a Fujitsu 45 MByte hard disk with "A.L.F. 2 Professional" for £432. For £599 you get "A.L.F. 2 Professional" in combination with a Quantum 80 MByte hard disk.

"A.L.F. 3" together with a Quantum 52 MByte hard disk costs £599, a 80 MByte Quantum hard disk with "A.L.F. 3" £666. And if you really need it, you can buy "A.L.F. 3" together with a 210 MByte Quantum hard disk for a mere £1232.

Amiga Messe

Amiga 500 controller

bsc has also developed an SCSI controller for the Amiga 500. The user interface of its installation software can be switched between several European languages - including, of course, English and German. With an 40 MByte Fujitsu hard disk this controller costs £334, with a 52 MByte Quantum hard disk £383.

A.L.F.-Streamer

Hard disk crashes can destroy your precious data, so it is advisable to back up your hard disk regularly, for example with a streamer (that is a special tape recorder). The "A.L.F.-Streamer" with a capacity of 150 MByte can be connected to any SCSI controller. It backs up a 20 MByte partition of a hard disk in eight to ten minutes depending on the speed of the hard disk. The internal version which can be built into the Amiga 2000 costs about £773, the external version £867. There are also versions with capacities of 60 and 230 MByte.

bsc bueroautomation AG
Lerchenstrasse 5
8000 Muenchen 50
Germany
Tel: (0 10 49) 89 / 3 54 49 62

Die Floppy Krieg

GFA-BASIC and GFA-BASIC compiler

We all know the flaws of AmigaBASIC: It is rather slow and has a terrible editor. The new BASIC dialects "AMOS" and "BlitzBasic" are great improvements in both aspects but their abilities are restricted almost completely to writing games.

What the Amiga world therefore needs is a BASIC which is fast, has a good editor AND is universally applicable.

Well, here it is: GFA-BASIC from GFA Systemtechnik. This is a BASIC version which is four to six times faster than Amiga BASIC, yet offers equivalents to almost every command and function of AmigaBASIC and some strong new commands (like FILESELECT which calls up a good file requester or ALERT which produces system requesters).

Of course, it supports modern modular programming and constructions like "WHILE ... WEND". And in addition to this GFA-BASIC has many - even exotic - mathematic functions, powerful database commands and comes with some instructive example programs on disk. A runtime module allows you to create versions of your programs which don't need the interpreter.

The editor (see picture 1) is not only fast but also very comfortable: automatic indent, syntax checking and procedure folding are only a few of its features.

But to make things even better (and faster) GFA also offers a compiler for GFA-BASIC. This compiler produces stand alone program code which is three to twelve times faster than an interpreted GFA-BASIC program. There are, however, some problems with programs that are longer than 180 KByte. This is especially regrettable since I learned that GFA doesn't intend to release an improved version of their compiler.

"A runtime module allows you to create versions of your programs which don't need the interpreter."

each other, so converting programs from one machine to another should not be so difficult. Versions for MS-Windows, OS/2 and UNIX are planned.

The GFA-BASIC interpreter costs £49.95, the compiler £29.59. A version with an English language manual of about four hundred pages is available from:

GFA DATA MEDIA (UK) Ltd.
Kingswood House
12 Shute End, Workingham
Berkshire RG11 1BJ

Probleme mit Listing

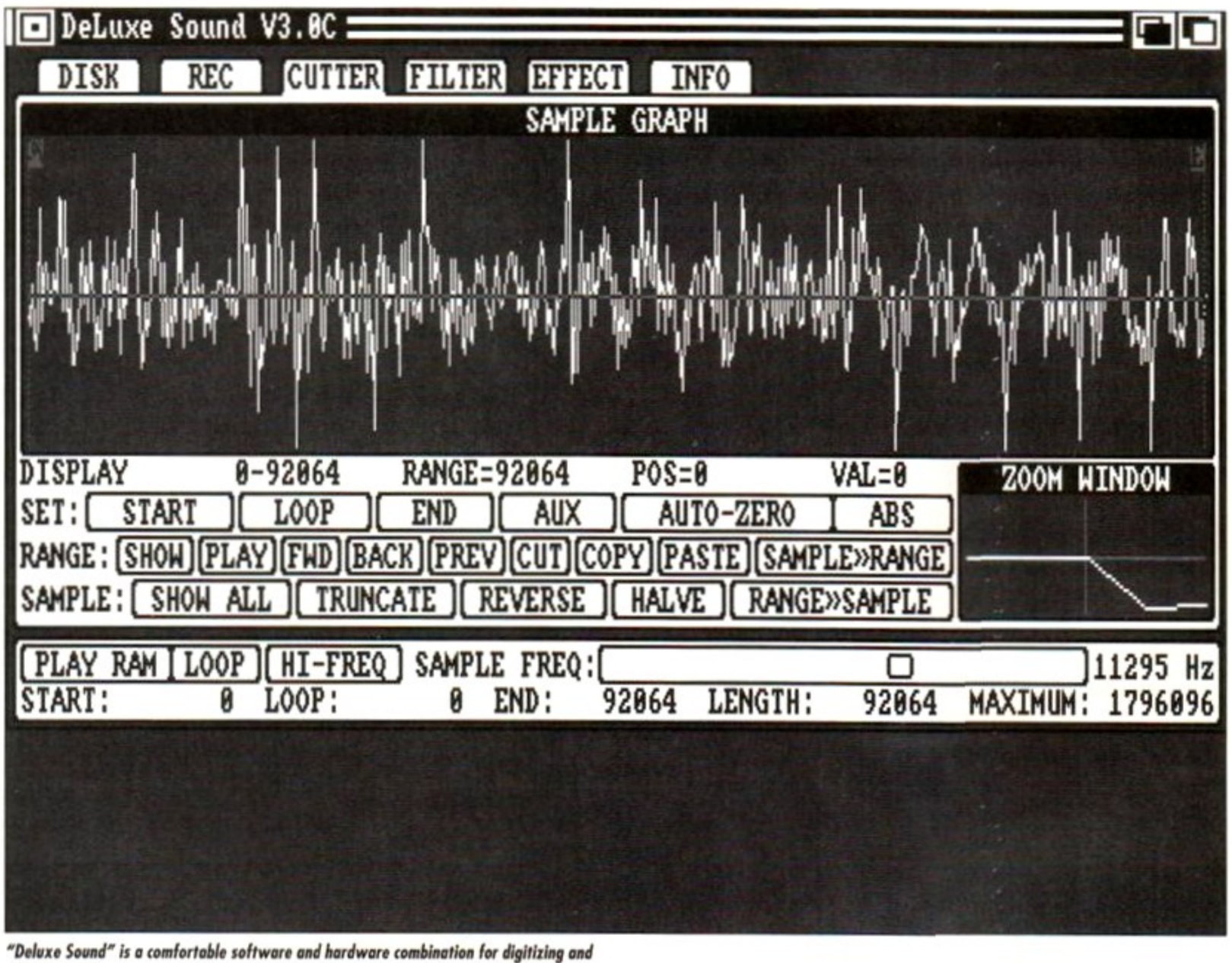
MAXON - programming and composing

MAXON - who are responsible for the German Amiga magazine "Kickstart" and the public domain disk series of the same name - also offer some good software products. English manuals should be available by the time you read this.

KickPascal

Despite its disadvantages and its age, Pascal is quite still dominate in schools and universities. Unfortunately, Borland have not been able to bring themselves to release an Amiga version of their guage.

But MAXON try to fill this gap with their "KickPascal". This produces fast and optimized code, has a good editor, and short compile times. It has implemented the full Jensen-Wirth-standard and many additional powerful commands for string handling, intuition programming (for screens, menus, gadgets), and using the Amiga system libraries as well as the ARP file requester.



"Deluxe Sound" is a comfortable software and hardware combination for digitizing and editing sounds.

On some of the newer Fish disks - e. g. 346 ("CassEti") and 355 ("Tron") - you can find programs written in GFA-BASIC, which show the power and the extent of this language.

There are also versions of GFA-BASIC available for MS-DOS and Atari ST computers. The different versions are very (but, of course, not fully) compatible to

FIELD REPORT

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FIELD REPORT

Guten Tag, Amiga

CONTINUED

◀ Since "KickPascal" is largely compatible to "TurboPascal", in many cases it is not necessary any more to buy a PC bridge board or even a whole PC just to be able to write programs in Pascal for schools or colleges. "KickPascal" costs £63.

Spielend Lernen

Face the Music

There are some quite good music programs available for the Amiga. But since the Amiga offers "only" four sound channels, writing songs is a rather limited affair - unless you own a synthesizer.

"Face the Music" is a sound and music program that supports up to eight independent channels without the need of a hardware addition. This is achieved by a clever mixing of two "pseudo" channels to one of the "real" sound channels.

Songs are notated with letters instead of conventional notes - you probably know this method from the "SoundTracker". In contrast to the "SoundTracker", however, "Face the Music" doesn't combine patterns to songs, but like with the classic program "Deluxe Music Construction Set" you use block operations like cut, copy and paste if you want to use a part of the melody a second time. This is a much more flexible method and also allows you an easier overview of the whole song.

Each song may use up to sixty-three IFF samples. There are some standard special effects (e. g. bending of the pitch) and you can use the sound effect language S.E.L. to program your own effects (e. g. phasing).

The automatic transposing between different keys is a great help for the non-professional musician. You can use the keyboard of the Amiga to play the samples directly. Alternatively it is possible to use a MIDI keyboard to input musical data.
"DigiView's" Dynamic HiRes) that can only be edited with special software.

This digitizer produces pictures with 2 to 4096 colours or with 2 to 16 shades of grey. It supports the graphic modes LoRes, MedRes, HiRes and Interlace (Overscan is optional in all modes).

You can adjust the brightness, the contrast, the sharpness, the colour saturation, the dithering, and, of course, the colours themselves.

The menus are always displayed without flickering even if the picture you are editing is in HiRes or Interlace. Most of the program's functions can also be activated via keyboard shortcuts.

The file requester allows the user not only to load and save files but also to delete files, create directories, and format disks.

The software includes a slideshow program and a program that uses your digitized pictures to creates animations.

At a price of £133 "Deluxe Video" is £17 cheaper, in Germany, than NewTek's "DigiView Gold". The quality of the digitized pictures is the same (see picture 2), though "Deluxe View" has no special graphic modes and does not work with NTSC Amigas.

If you want to build your digitizer into a box, e. g. together with a RGB splitter, then "Deluxe View" is the choice, since it has none of the heat problems that some digitisers have under these conditions.

For £6 you can order a two disk demo version which also includes an animation demo.

Der Ideale Mause

Deluxe Sound

"Deluxe Sound" produces high quality mono samples. You can connect the digitizer to a tape deck, a CD player, a tuner or directly to microphone.

Recording sounds is made easy by a built-in spectrum analyzer and an oscilloscope. The sound can be comfortably edited (with the usual cut, copy, and paste functions), reversed, filtered, tuned, and echoed. The results may be be saved in the formats dump, IFF, Sonix, and SoundTracker. You can also play the sounds via the keyboard. In contrast to "PerfectSound" the hardware of "Deluxe Sound" also works with "AudioMaster II".

The additional program "Recordmaker" allows you to record a song on up to 255 disks. A maximum of 8 minutes and 42 seconds music fit on one disk, so with 255 possible disks this should keep even opera fans happy.

Unlike some other digitizers the "Deluxe Sound" hardware is protected against damage which may occur when you try to print while the digitizer is still connected.

"Deluxe Sound" costs £76. A demo version of this program can be obtained for £4.

Since February English versions of the excellent manuals for "Deluxe View" and "Deluxe Sound" have been available. The HAGENAU products are already sold in nine European countries, but Mr Hagenau told me that he is still looking for distributors in the UK. So you Amiga dealers out there (and also you potential buyers), contact the following address:

HAGENAU COMPUTER GmbH
Alter Uentroper Weg 181
4700 Hamm 1
Germany
Tel: (0 10 49) 23 81 / 88 00 77

Pictures like this can be digitized with "Deluxe View" from HAGENAU COMPUTER.

FIELD REPORT

STARRING Amiga in a Video

Mike Nelson finds out who indeed framed Roger Rabbit and how the Amiga plays a creative role.

The revolution in video technology over the past ten or fifteen years has paved the way for some truly awesome special effects. This increased potential has been made possible by relatively inexpensive hardware, and of course, computers like the Amiga. Traditional techniques for animations, like the classic Disney cartoons, are incredibly labour-intensive and so very costly, particularly when mistakes are made. Using film technology makes subsequent correction of errors very difficult indeed, and the developing process compounds the problems by greatly increasing production time. The answer to this is video, where the image

is stored on magnetic tape, rather than film, and so is instantly available for action replays. This article will look at an animation package, which involves the Amiga, developed in Wales to overcome the financial problems of unbelievably expensive systems yet still maintaining professional standards.

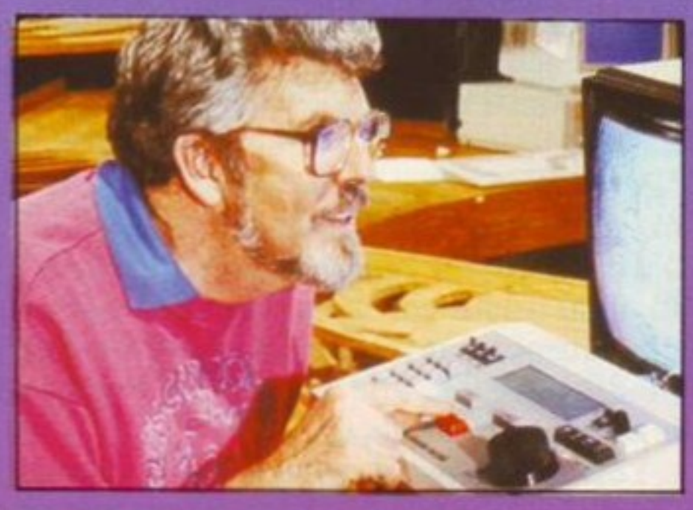
"Plasticine models are excellent subjects as they are easily moved around, but stay still as each frame is recorded."

The Eos Broadcast Animation Control System (the BAC900) is not a home toy, but is aimed squarely at the professional market and its four figure costs reflect this. This video system is not your average VHS job, but a high resolution industry standard called High Band U-matic, so a decent record/edit machine will set you back over £10,000. This is a fair whack by anyone's standards so we won't be offering one as a competition prize! Apart from the picture quality, the major difference between this and the type of video sitting in your lounge is the control achieved over the individual frames of the tape. It's like having a super-accurate tape counter and pause button, a vital component of any animation system.

The BAC900 is used for controlling the video recorder, and is capable of mixing up the signals from different sources, but more about that later. Some readers will be familiar with the television programme "Rolf's Cartoon Time", with Rolf Harris. The BAC900 is used in the show, primarily by children, which underlines the simplicity of the package.

The setup goes like this. A camera is pointed at the subject for the animation and this is signalled to the BAC900 which then records a frame onto the video tape. In traditional animation style, the subject is altered slightly, and the process repeated.

The animation could be a solid three dimensional object or a cartoon drawing, in other words, if you can move it and



point a camera at it, then it's animated! Plasticine models are excellent subjects as they are easily moved around, but stay still as each frame is recorded. You can instantly see the effects of what you are doing by running the tape forwards or backwards at any speed with the press of a button on the console, always guaranteed to return to the correct spot by the advanced time coded system of the recorder. This is the standard SMPTE system.

World

Commercial animators, such as those responsible for many of the advertisements which grace our television, are finding the BAC900 a very powerful ally indeed, and this extends to the big screen as well. When a large project like Roger Rabbit, or any cartoon for that matter, is initially animated, the frames are drawn individually in the time-honoured pen and ink fashion, and BAC900 video systems are used to check if the sequence moves correctly, as the animator imagined. Any problems can then be dealt with before the expensive filming process is undertaken. However, the resolution of High Band video is so good that many commercials are run entirely from this medium, minimising that all-important cost.

In the case of Roger Rabbit, the live action with the actors was first filmed, and then the animated portion added later. Using a video animator, the artists were able to align their drawings perfectly and test the overall picture, so the end result is pretty believable, if you can be convinced that a fluffy rabbit can drive a talking car with Bob Hoskins in tow!

The frame advance capabilities of the BAC900 are only the start of things as there is a multitude of other amazing options available. If you look closely at animations, the artists tend to be as economical on moving parts as possible. Characters walking, for instance, actually stay in the same place while the background scrolls, and the BAC900 can simplify this process further by cycling the animation of the arms and legs while changing the background. Everyone has

seen time-lapse photography of plants growing and blooming in a matter of seconds, and the mechanical apparatus for conventional film cameras is nothing special these days. Using a video camera is more tricky and the BAC900 helps out as you can program it to take a frame (or several if you want), wait a while for the plant to do some growing, and then run the tape for another frame. When the video is replayed, you have a lettuce going from a seedling to maturity in the space of a few seconds. (I've always wondered how they did that without wasting miles of film. Ed.)

Another useful feature of the BAC900 is the frame grabber which means that the frame is digitized into a memory buffer, from where it can be manipulated in a number of ways. A colour video printer (costing about £5000) can be used to get hard copies of the picture and this system is being increasingly employed in hospitals to obtain a permanent record of various investigations like internally photographed examinations. Alternatively, the image can be transferred into a computer for further processing in the usual manner with programs like Butcher. The other use for grabbed frames is to simply drop them back out onto tape, perhaps in an entirely different place. Such is the accuracy of the coding that you can tell the system to go to position 3 minutes, 21 seconds and 4 frames and load the frame into the store for whatever use.

The BAC900 is very easy to use indeed, and this was one of the initial design goals of the team at Eos. There is a numeric keypad for entering the desired time codes, a small (8 lines of 42 characters), but adequate LCD display which tells the user about the current frame and any pre-programming such as the time-lapse delay. Various buttons allow the extremely fine control over the tape position and the display quality means the freeze-frame is rock steady and without noise bars. You can even animate with the tape running backwards! A hand or foot controller means that the animator can work at the site of the subject without

having to dash back and forth for every frame.

Where does the Amiga fit into this bundle of tricks? With the aid of a high quality Genlock (a device which removes the background colour from the signal), the Amiga's display can be overlaid onto

the video picture, and the combination is subsequently output to a second video recorder. This is where the fun really starts as you now have the whole of the Amiga's wonderful graphics processing potential which you can carefully add to a sequence, frame by frame. The results are spectacular as you can see from the example screen shots. The gadget window from Photon Paint will be familiar to most and graphically illustrates the system in use. It's just a simple matter of drawing over the real picture to get virtually unlimited effects.

There are many systems based on the BAC900 range in the field, and one of the major uses for Amigas is in titling work. The wealth of such software for the Amiga, and its legendary graphics makes it ideal for adding the final professional touches to anything from corporate videos to records of weddings or other family events.

The system is undoubtedly a professional tool, but Eos are about to release a low cost version which they hope will be within reach of tertiary colleges, if not other more junior schools. The ease of use demonstrated regularly on children's television suggests that the BAC900 would make a fantastic teaching aid for pupils of all ages. Animation has not been part of the school curriculum, to date anyway, because of the prohibitive costs involved. This is a pity as many pupils, perhaps less able academically speaking, are gifted in other areas, talents which could be exploited with the BAC900 or something similar. The Amiga is just the icing on the cake with its superb graphics hardware

and excellent software is already creating the awareness of the marvels of computerised graphics so more people should be able to have access to the fascinating world of animation.

"When the video is replayed, you have a lettuce going from a seedling to maturity in the space of a few seconds."

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FIELD REPORT

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MENTOR

MSH

AN MS-DOS DISK HANDLER FOR THE AMIGA

Hartmut Schumacher discovers a shareware program that enables the Amiga to read and write MS-DOS and Atari ST disks.

We all know that the Amiga is a great computer. But there is still a small group of people who think an IBM PC is a good thing.

Unfortunately, IBM compatible computers are very common in the business, academic and educational fields. If you use an IBM clone at your work or in school or at the university, you will find yourself rather often in the situation that you wished you could transfer MS-DOS files to your Amiga and vice versa. Thus you could finish your work at home if necessary.

This may be achieved by buying a XT or AT bridgeboard (the expensive solution) or by sending the files through the serial port (the awkward solution).

If only the Amiga could handle MS-DOS disks! Well - it can. "MSH" from the Fish disk 382 is a shareware program that makes it possible for the Amiga to read and write MS-DOS disks as well as Atari ST disks (if you should really want to do so). Of course, it can't do what bridgeboards do which is allow you to use MSDOS software - and that may be what you want.

"Hey," you might say, "what about 'CrossDOS' from Consultron?" Yes, "CrossDOS" is a fine product (see October '90 issue of ***AUI***, page 24) - but it costs £29 whereas Olaf Seibert's "MSH" is a shareware program for which you only have to pay if you really like and use it - and even then it is up to you to decide how much you want to pay.

Easy to use and to install

The installation is very simple: Just copy the file "messydisk.device" into the drawer "devs:" and the file "MessyFileSystem" in the drawer "l:". Then add an ASCII text (which can also be found in the "MSH" drawer) to your MountList.

With the CLI command "MOUNT MSH:" you can now mount a new disk device which can handle MS-DOS disks and which may be used like any other Amiga device.

You can use the normal CLI commands to manipulate the files on MS-DOS disks: You may COPY them, DELETE them, TYPE them, get INFOrmations about them, LIST them or RENAME them. MS-DOS disks can be formatted with the utility program "messyfmt". MS-DOS file attributes are converted to AmigaDOS file protection bits.

Supported are double sided disks with 40 or 80 tracks and 8, 9 or 10 sectors. Therefore you can also read and write Atari ST disks.

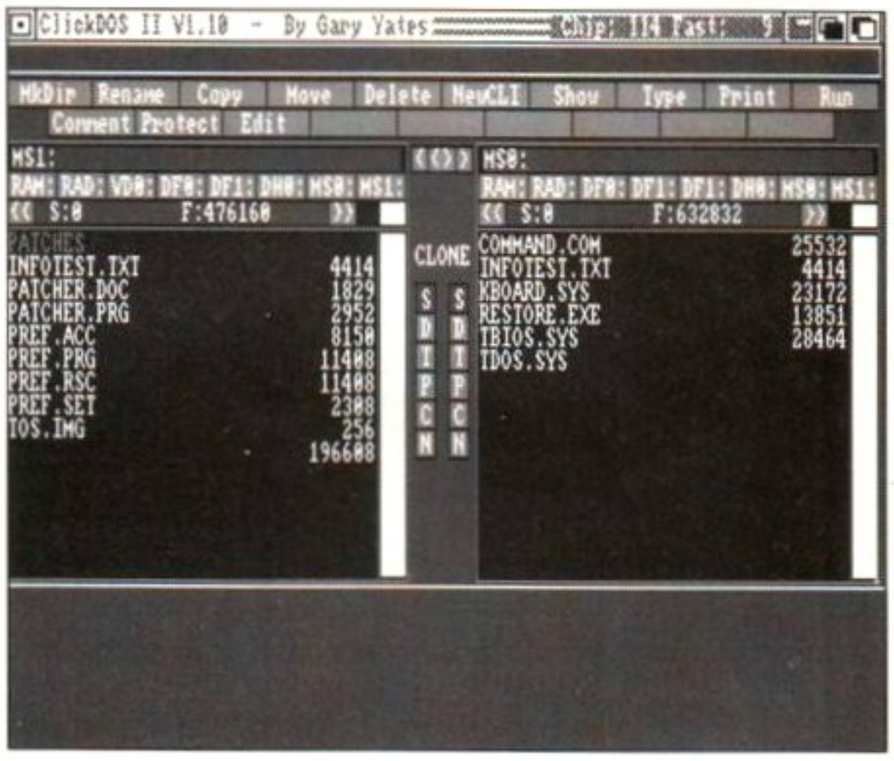
There are, however, a few minor limitations: you can't use file notes on MS-DOS files, and the file name mustn't be longer than eight characters plus a period and a three character extension. Only upper case letters are allowed.

Compatibility

Since "MSH:" is a real Amiga device it can be used not only from within the CLI but also in the file requesters of productivity programs. If such programs scan for existing devices, they will automatically give you a "MSH"-Gadget in their file requesters. The picture on this page shows the file utility "ClickDOS II" (from Fish disk 276, see December '90 issue of ***AUI***, page 54). In the two directory areas you can see the contents of an Atari ST disk (left) and of a MS-DOS disk (right).

Every Amiga drive can be made MS-DOS compatible: You just have to add another entry with the appropriate unit number to the MountList. But the best thing is, you don't loose one Amiga drive if you install the MS DOS device: If, for example, the internal Amiga drive is defined as the MS-DOS compatible "MSH:", you may still use it as the normal AmigaDOS compatible "DF0:", when you want to read or write an AmigaDOS disk in this drive.

"MSH" automatically recognizes if an inserted disk is an AmigaDOS disk and then ignores it. Thus, you are not bothered by "Not a DOS disk" requesters.



All in all

"MSH" is a very handy program if you want to transfer texts or spreadsheets or any other kind of information for which there is a real or a *de facto* standard. Even pictures can be transferred since there are some PC programs that support the IFF format. (It is also possible to exchange data with the Apple Macintosh because this computer can read MS-DOS disks.)

In addition to this, "MSH" is very user friendly: you don't have to fiddle about with transfer programs, you just use it like any other Amiga device. Even if it were not shareware but a commercial program, "MSH" would give you very good value for your money.

"Every Amiga drive can be made MS-DOS compatible: You just have to add another entry with the appropriate unit number to the MountList"

Quick Info

Program name: MSH
Program version: 1.30 (Update to 1.5; yes, I know it sounds funny)
Author of program: Olaf Seibert
Type of program: Amiga file system handler for MS-DOS disks
Price: Shareware
Source: various PD dealers (see advertisements in this issue of *AUI*)
On PD disk: Fish 382

The file "INFO.TXT" from the Atari ST disk on the left has been transferred - via "ClickDOS II" - to the MS-DOS disk on the right.

TEST DRIVE

Wordworth

John Walker tests a new British word processor with some interesting ideas to find out if it is really worth his wordpower and your cash.

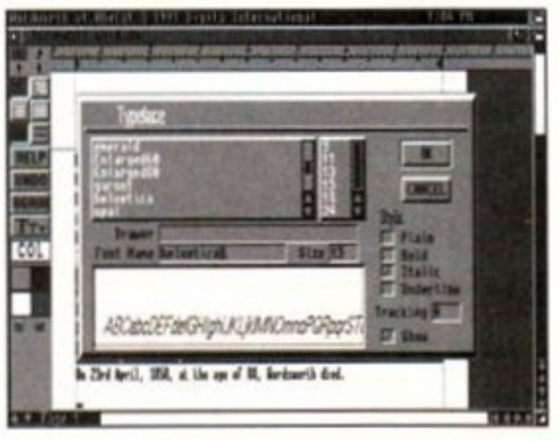
Digita's Wordworth is our first home-grown graphics-based document processor. If the name almost suggests William Wordsworth, England's first great romantic poet, that's no coincidence. You click on a portrait of the writer to load the program and a sample document includes his life-story.

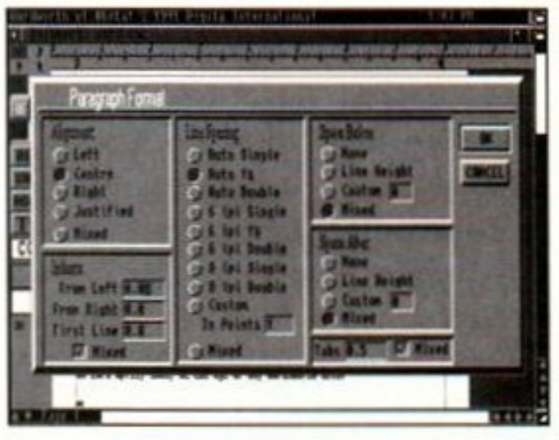
a tool-box so that formatting options are a mouse-click away.

Another is its WYSIWIG approach. What you see on the screen is virtually what you'll get when you print your document, down to fonts, type-styles (bold, italic, underlined, superscript and subscript as well as normal), headers and footers, page breaks and graphics.

have Workbench 2.0 or a program, such as is supplied with Deluxe Paint III, to make them compatible with WB 1.3. Then you can use your printer's built-in fonts or Wordworth's own special high resolution fonts.

There are four of these UltraPrint Fonts: Blake resembles the sans serif Helvetica, Coleridge is a serif font close to Times,





But the important question is: what are your words worth when you use Wordworth? The answer is that it can give them added value by producing a good quality of print even when used with a dot-matrix printer.

Wordworth is aiming for the top, intended either as an upgrade for those who have bad thoughts when using KindWords or as an alternative to Pen Pal, ProWrite and excellence! It is also HIP, which stands for Human Interface Protocol, a name that Digita has coined for its attractive and easy-to-use approach to word processing.

Because Wordworth supports graphics, it edges closer to a desktop publishing program than most word processors and allows, at least, simple newsletters to be created without much difficulty.

One of its great advantages is that it can be customised to suit virtually every taste, from those who like a screen that resembles as closely as possible a blank sheet of paper, to users who prefer the convenience of vertical and horizontal rulers and

"Another nice feature is its timed auto-save, which will automatically save your document after a specified period of time"

There's also an excellent spell-checker and thesaurus, which both feature anglicised spellings such as 'colour' and 'favourite' rather than the American 'color' and 'favorite' that are present on most Amiga word processors, which originate in the States.

It provides an unusual speech function, using the Amiga's built-in speech synthesizer, so that you can listen to all or a selected part of your document being read to you, which can be very useful for proof-reading a complex text.

Another nice feature is its timed auto-save, which will automatically save your document after a specified period of time, thus ensuring that you are unlikely to lose all your work in case of a power failure or some stupid mistake on your part. And there is a screen-blanker to protect your monitor screen from 'burn out' if it is left alone for any time.

Wordworth offers many printing options, all of which are available with or without graphics. You can use any Amiga bit-mapped font, including Colorfonts if you

Byron provides a felt-tip pen style and Worbles (who is Worbles? Ed.) gives you a selection of signs and symbols.

When they are used at their highest resolution, you are limited to fonts in sizes of 12 or 24 points.

Any standard Amiga IFF graphic, including those in HAM format, can be loaded into a document, where it will be reproduced in up to 16 colours. Graphics need to be kept simple, as Wordworth has limitations in handling images with different colours. You can either use the same palette for both, remap them to the screen colours, or choose a new palette for both. Of course, if you are printing in black and white or grey scales, the problem does not arise.

At least 1 meg

Graphics can be shifted around the page easily and re-sized by dragging on one of the eight sizing handles that appear when you click on a picture. If you keep the Shift key depressed, you can maintain the picture's aspect ratio. Text will wrap around

the graphics, either to the left or right or it. It can be justified to give a neat edge or it can follow the contour of the graphic. But you cannot have text on both sides of an illustration.

Wordworth comes well-packaged in a large box that contains an extensive manual and three disks. It requires at least one megabyte of RAM. If you are working from floppy disks and want to use the spelling checker and thesaurus efficiently, you will really need two megabytes so that you can load them into a RAM disk. Even so, you may find that you will run out of memory if you have more than two documents containing graphics open at the same time.

The program itself takes up about 450K of memory, but each document you open is likely to occupy another 50K even before you add text. Because Wordworth is a graphics-based program, information such as typestyles and formatting has to be stored as well so that it may require 200K RAM to open a document that contains only 50K of text.

If you've a hard disk, the program and its files will need around 3 megabytes of disk space. Wordworth comes with an installation program for both floppy and hard disks, which must be used before you can run it.

As a protection against piracy, you will be required to enter your name and licence number the first time you run the program. The floppy installation program copies files from your Workbench disk to a backup of Wordworth to make it a bootable disk and then adds two fonts, Helvetica and Times, from the Extras disk.

Wordworth can be run using between two and 16 colours and in high or medium resolution, which all will have an effect on the amount of available memory for your documents. Like all graphics-based word processors, Wordworth is not particularly fast, but it is not slow, either.

You can set up your personal preferences by means of a requester. The default appearance of the program has a Workbench 2.0 feel about it, with subdued colours and 3D buttons. But if you don't like it, you can alter the colours to fit your own taste or try one of the many other colour combinations supplied.

Virtually everything can be altered, from the size of the cursor to whether or not it flashes to the measurements used on the rulers. The program uses a mouse and pull-down menus, but keyboard equivalents are also provided. And a tool-box down the left-hand side of the screen offers a selection of icons covering the most used commands.

These include an 'Undo' function that will reverse your last command and an 'Again' that will repeat it. From the tool-box you can set your tab styles, the justification of the text, line spacing (single or double), colours and typeface. And if you ever feel lost, you can click on the HELP icon for immediate on-screen aid to save leafing through the manual.

It also makes use of the function keys - alone in in combinations with the Shift key and the Right Alt key - to put its 30 main, or most used, functions just a key-press or so away.

What is impressive about Wordworth is the degree of its flexibility. For example, its rulers can show measurements in inches, centimetres, picas, points, pixels, pitch 10, pitch 12 or pitch 15 so that you can adjust it to fit perfectly the requirements of your printer.

Wordworth handles well all the usual word-processing functions, such as cut-and-paste and search-and-replace. It provides automatic page numbering in a variety of styles. It has a glossary that allows you to store frequently used words, phrases and paragraphs and enter them into a document with a click of the mouse button. And it will allow you to import documents from ProWrite, KindWords 2 - though the graphics will be stripped out - Protext and WordPerfect.

Its spell-checker uses Collins dictionary with 116,00 words (as also found in Protext 5.0). You can set it to check your spelling as you type, providing you have it on hard disk or in a RAM disk. The thesaurus, also from Collins, works well and quickly. It provides synonyms and parts of speech (noun, verb etc) for a selected word. Clicking on any synonym in the list it puts up will bring you a supplementary list and you can return to your original list at any time by clicking on a button.

"As a protection against piracy, you will be required to enter your name and licence number the first time you run the program"

"What is impressive about Wordworth is the degree of its flexibility"

There is automatic hyphenation, which can improve the look of fully justified text. And Wordworth's mailmerge is good and is compatible with Superbase and Digita's own mailing program, Mailshot Plus, as well as standard ASCII files. It even caters for those who do not like writing for too long by including a simple little sliding-tile game to play.

Although its excellent design makes it one of the easiest of all word processors to use, it has some unfriendly features. When you use your printer's built-in NLQ fonts with graphics, Wordworth needs two passes to produce hard copy. It first prints the text and then reverse-feeds the paper to the top and prints the graphics on the second pass. This obviously can cause problems if you are using single sheet paper since you will need to re-feed the sheet in precisely the same position the second time around.

It also lacks some facilities I would expect to find in a heavyweight document processor. Although it is compatible with Workbench 2.0, it has no ARexx port, for instance, to communicate with other programs; nor does it have any support for macros.

Its main rivals - excellence!, Pen Pal and ProWrite - all have features that I would like to see added. Wordworth lacks ProWrite's multiple columns and Pen Pal's forms creation and database and its simple drawing tools. And, unlike excellence!, it has no PostScript printing facility, being limited to the Amiga's Preferences printers.

There are other functions, too, that could be added to turn it into a power user's program: footnotes and indexing, for instance, and a page preview system so that you can see a whole page on screen before it is printed.

With luck, those things will come in the future. This is, after all, version 1. Even at this early stage, if you're looking for a graphics-based word processor, Wordworth has so many interesting facilities, it is well worth checking out.

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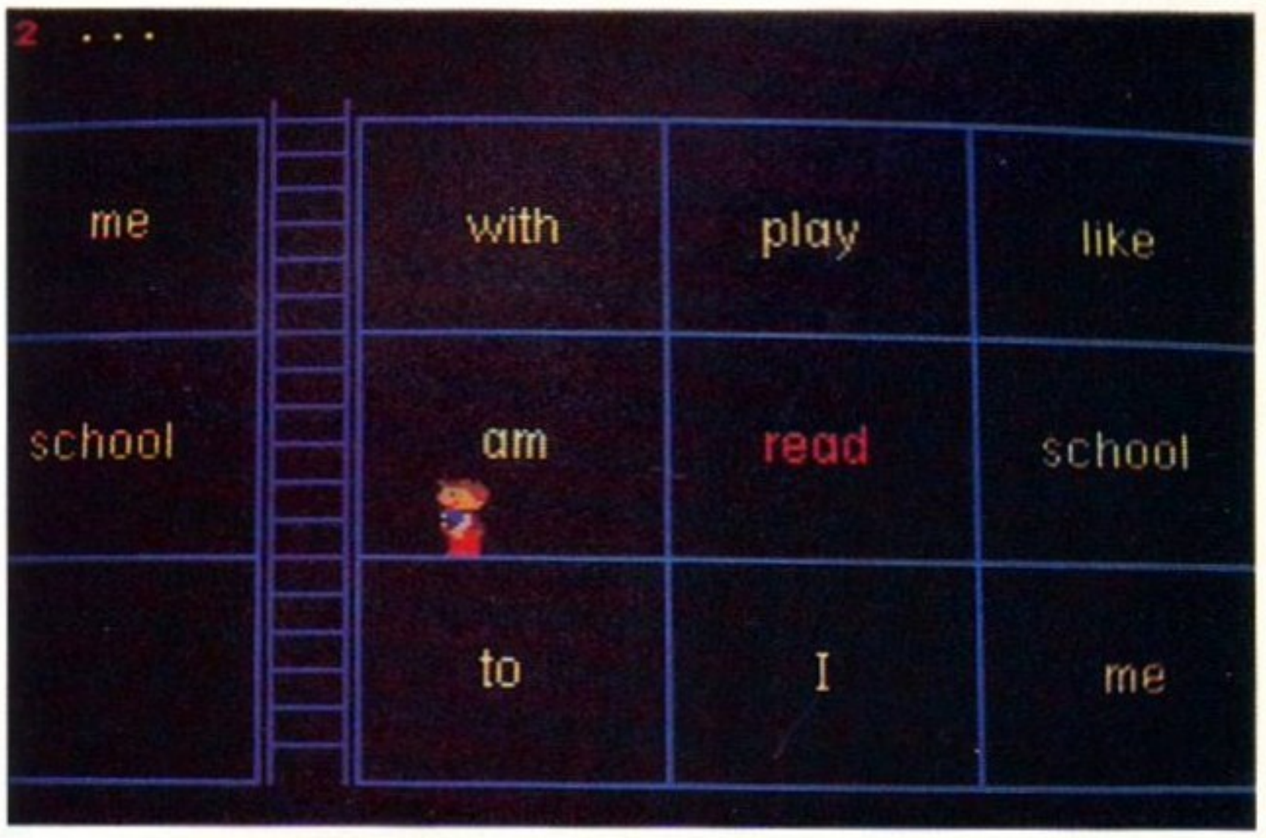

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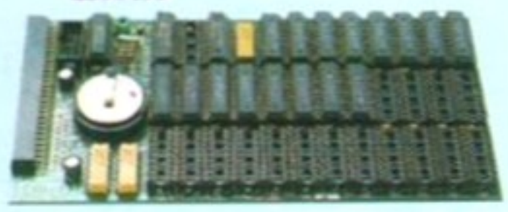

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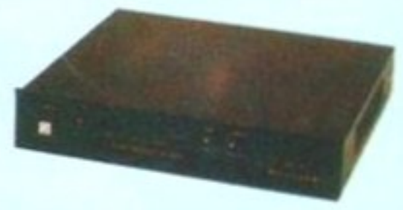

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TEST DRIVE

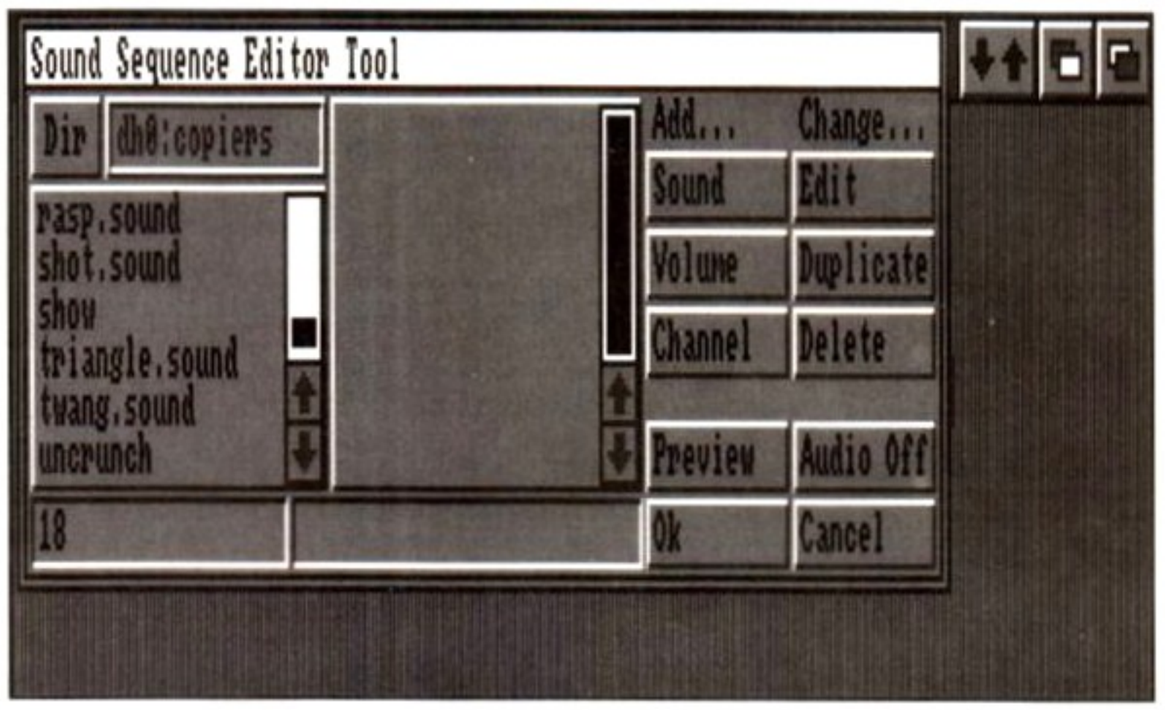
CanDo

Cando lets you create applications software on the Amiga without spending years becoming a programming expert. Peter Lee reviews this updated version of the increasingly popular package.

v1.5

The release of an improved version of CanDo by Inovatronics maintains the program at the forefront of application authoring. Having been a committed CanDo-er since the program was released, I am pleased to find the enhancements are not simply cosmetic, and they rescue the program from any possibility of being caught in the doldrums.

For those unfamiliar with the software, a little explanation. CanDo allows you to create the type of front end for your applications which would previously have required both technical and programming expertise. It makes the Intuition interface do exactly what you want, and allows you to create useful software on the Amiga without asking you to have a PhD. To my mind, it is to serious applications what AMOS is to games - only it is far easier to use.



So what's new? Primarily, a database function, multiple screens and windows, floating point math, full screen animation, and new objects such as key input; the new features are controlled by over 50 new commands in the scripting language.

The first hurdle to overcome is installation; this is a doddle for first-time users, but anyone with CanDo on a hard drive will need to follow the instructions implicitly. Failing that (which I did!) you can erase everything and start from scratch.

MAIN DIFFERENCES

Cosmetically, the control panels have gone high-tech and look more in keeping with the design of Workbench 2. Routines are accessed from within scripts and not from the main panel. Their place has been taken by the Key Input Event button, which lets you assign a script to a particular key press, or combination of keys.

The window Object has a new event - the AppEvent. This requires AmigaDos 2.0 to work, and allows an application to run on Workbench. It is triggered when an icon is dragged into the event's window. What you do then is your own business.

Choice of borders and buttons has been improved, offering several new styles - bevel, rollover, radio knob and checkbox. The button Editor itself now lets you specify the initial state of a button - on/off, enabled/disabled, toggled or not.

"It is to serious applications what AMOS is to games - only it is far easier to use"

There are half a dozen new shortcut keys to speed things along - for instance quick saving the deck, scroll screen and moving screens to the front or back.

You can perform a printout (either hard copy or to a file) which dissects a given Deck, detailing all objects, their location and scripts.

You are now allowed to open other CanDo Decks or SubDecks from within an application, and they can pass information to each other. To my mind this greatly improves the use of CanDo, and although tight management is needed to create seamless applications, the effort is of tremendous benefit.

The powerhouse of the program, the script editor, has been tweaked to include shortcut keys, auto-indent and a line-basis cut and paste function (a great improvement!).

The BrushAnim Editor allows you to draw on-screen the path of your brush with a host of parameters, including an easy edit option for getting the position exactly right.

There is also a new tool for chaining sequences of sounds, and the paint editor tool now allows you to load a brush onto your drawings screen as part of the script.

COMMANDS

Despite the extent of the original commands, more have been added, and others improved. Major new capabilities are:

Floating point math

Dynamically created multi-dimensional arrays.

Database creation and multiple window applications.

Meanwhile enhancements have been made to graphics, file support, ARexx and error trapping. You can now also write math expressions in English - for instance MINUS for - and IS GREATER THAN for > (though why this was thought necessary is beyond me).

The addendum manual is, as expected, of the highest quality.

CONCLUSION

CanDo is the mainstay of many people's Amiga application work, and thanks to the improvements in version 1.5, it will allow them to expand their capabilities further. The US upgrade price is $40, and this does represent value for money, because the enhancements are more than skin deep. Unreservedly recommended for CanDo-ers.

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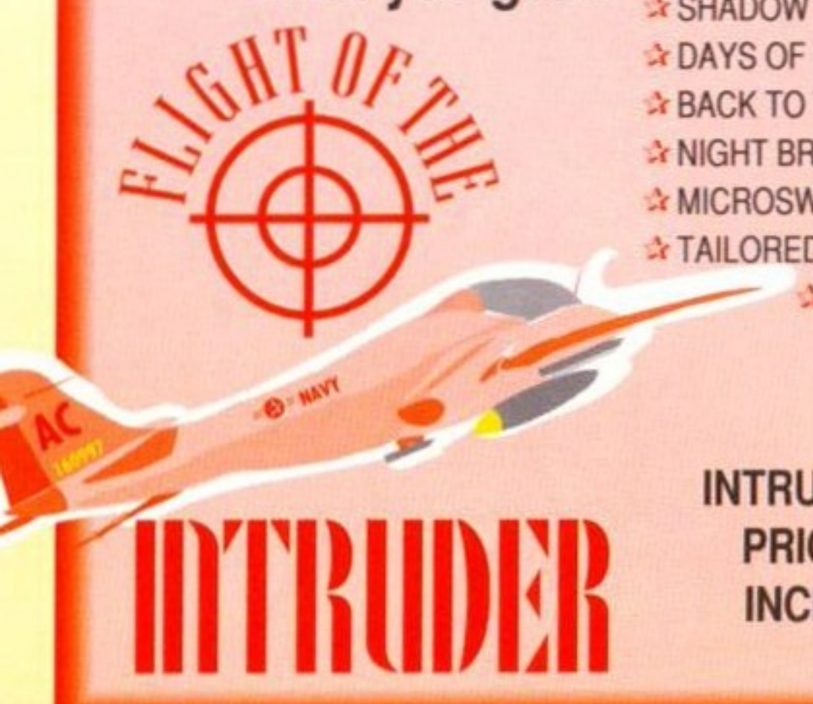

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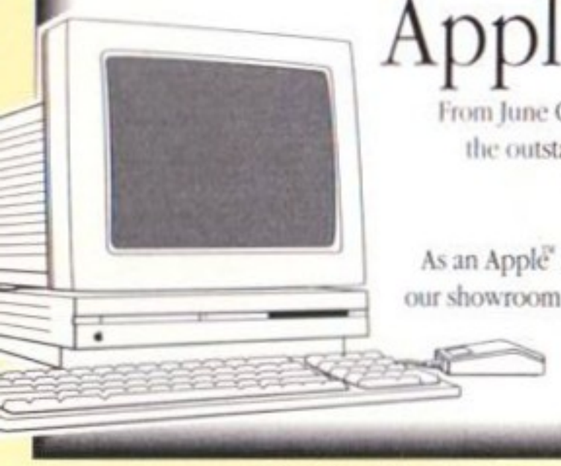

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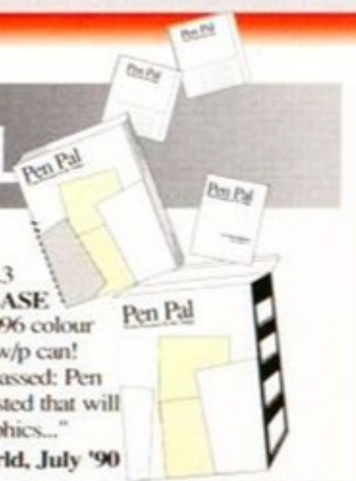

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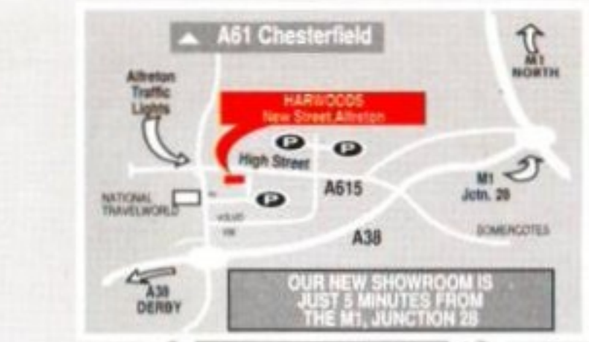

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2. =	SWIV	Storm	(2)	81%	£24.95
3. ▲	Gods	Mindscape	(8)	79%	£25.99
4. ▼	Lemmings	Psygnosis	(1)	100%	£24.99
5. NE	Secret of Monkey Island	US Gold	(-)	93%	£25.95
6. ▼	Speedball 2	ImageWorks	(2)	91%	£24.95
7. ▼	MIG-29 Fulcrum	Domark	(6)	86%	£34.95
8. NE	Eye Of The Beholder	US Gold	(-)	TBA	£39.99
9. ▼	Turrican II	Rainbow Arts	(4)	90%	£24.95
10. ▼	F-19 Stealth Fighter	Microprose	(7)	78%	£29.99

NE - New Entry ▲ - Up ▼ - Down = -Non Mover

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So you've noticed a change in the game review ratings? Want to know what it's all about? Ok, here's the lowdown.

Verdict: Marked as a percentage, this sums up the reviewers opinion of the game as a whole. It's not an average, but an overall score which takes all the aspects of the game into account, including the price

Graphics: also marked as a percentage, this tells you how good looking the game is, and considers the variety of graphics and the standard of scrolling and animation, as well as the design of the graphics themselves.

Sound: does the music gee you up in an exciting, or irritating way? Do the monsters go "pop" when you kill them, or scream out a chilling death cry? Once again marked as a percentage.

Difficulty: each game we review is given a difficulty rating from 1 to 10. This rating differs from the rest in that a higher rating is not necessarily better. A game rated with a difficulty level of 1, for example , would be an absolute doddle for even the youngest or most clumsy player. A rating of 10 would reflect an extremely difficult game, which would drive the average player mad with frustration, but hold a substantial challenge for the very best gamers. We take a mark of five as an average.

To help you get a handle on the gauging of the difficulty level rating, this is how AUI would rate for difficulty three classic Amiga games.

R-type: **8/10.** Rick Dangerous II: **5/10.** F-A/18 Interceptor: **4/10.**

ICONS

Every game review is accompanied by at least two icons. First, either a joystick, keyboard, mouse, or any combination of the three will signify the control methods it uses. The remaining icon, or icons, tell you about the type of game. We've decided on six categories: arcade, adventure, arcade adventure, strategy, sport and wargame. While some games fit neatly into these pigeon holes, others almost defy categorisation, so this is just meant as a rough, instant guide. Reflecting this, sometimes you will see a combination of icons; both strategy and sport icons would accompany a football management game for example.

Here are the icons and their meanings:

A **Keyboard control**
B **Mouse control**
C **Joystick control**
1 **Arcade game:** not necessarily a conversion of an arcade game, but one that calls on quick reactions and good hand-eye coordination.
2 **Adventure game:** the emphasis is switched to brain power, and the game would usually consist of a quest or mission with puzzles to solve along the way.
3 **Arcade adventure game:** a combination of two previous styles.
4 **Strategy game**: this encompasses the likes of chess, management simulations and board games.
5 **Sport simulation**: this also includes future sports games.
6 **Wargames: battle** simulations of local, global or inter-galactic proportions.

Recommended Games of Recent Months

Although PGA Tour Golf was the first ever game to receive the coveted Classic Award the games below are those which have been given honorary awards. Each month, this list of games is the game buyers guide to value and sheer excellence.

Lemmings Psygnosis £24.99 100%

If you only ever buy one game in your life it's got to be Lemmings. Lemmings is based on a race of simple creatures who will walk into Psygnosis' death traps. Using various skills which you can bestow upon these Walkers you can prevent them from dying and save the Lemming race. It's new, and addictive, with four different game difficulties from fun to mayhem. You'll not find another like it.

Prince of Persia Broderbund £24.95 92%

A brilliant arcade adventure from the creators of Loderunner, Wings of Fury and Choplifter, Prince of Persia is one of the most compulsive games released for months. What at first seems to be a mundane and graphically dull game is uplifted by some superb character animation and devious level designs. Don't be deceived by its unexciting look in still shots. Get a copy ASAP.

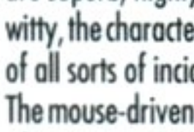
B.A.T. Ubisoft £24.95 99%

This long-awaited adventure was in the development stages for nearly 2 years and, as Andy Moss found out, was well worth the wait. It has to be one of the best adventures to date as Andy is not one to give out high ratings willy-nilly. The main character is one of the Bureau of Astral Troubleshooters' best agents and has been sent to Terrapolis to foil the evil plans of two terrorists who wish to bomb up the galactic city. There are over 110 static screens which are gloriously drawn and feature animation sequences. If investigative adventures are to your liking then B.A.T. must be on your shopping list!

PGA Tour Golf Electronic Arts £24.95 94%

PGA Tour Golf has ousted Leaderboard from its throne. Hard to believe maybe, but true. Never before has golf been simulated so well on a home computer. Four 18 hole courses are there for your selection, with the option to play against computer controlled opponents. Dynamic features such as dual camera angles, action replays, contoured greens, and 3D fly-by hole previews give it a TV style feel. Realism in the graphics and the movement of the ball create a completely believable environment. A great golf game, that will run and run.

The Secret Of Monkey Island Lucasfilm/US Gold £25.99 93%



This is real quality. Unlike some adventure games, Monkey Island is much more than just a series of puzzles and locations. The graphics are superb, highly detailed and extremely varied. The script is witty, the characters brilliantly created, and the whole thing is full of all sorts of incidental details that lesser games can't touch. The mouse-driven menu system allows a surprisingly wide range of actions, and there's never the problem of finding words the game understands. There's four disks' worth of adventuring for your money. Not the most difficult adventure ever written, but definitely one of the most entertaining.

Wonderland Magnetic Scrolls/Virgin £29.99 95%

Text adventures don't come any better than those from Magnetic Scrolls, and Wonderland is their best to date. This adventure features pull-down graphics windows and intricately woven puzzles throughout the plot. Using their highly developed WIMP system Magnetic Scrolls have re-vitalised the text adventure. If you are a fan of text adventures then snatch a copy of Wonderland as soon as you can!

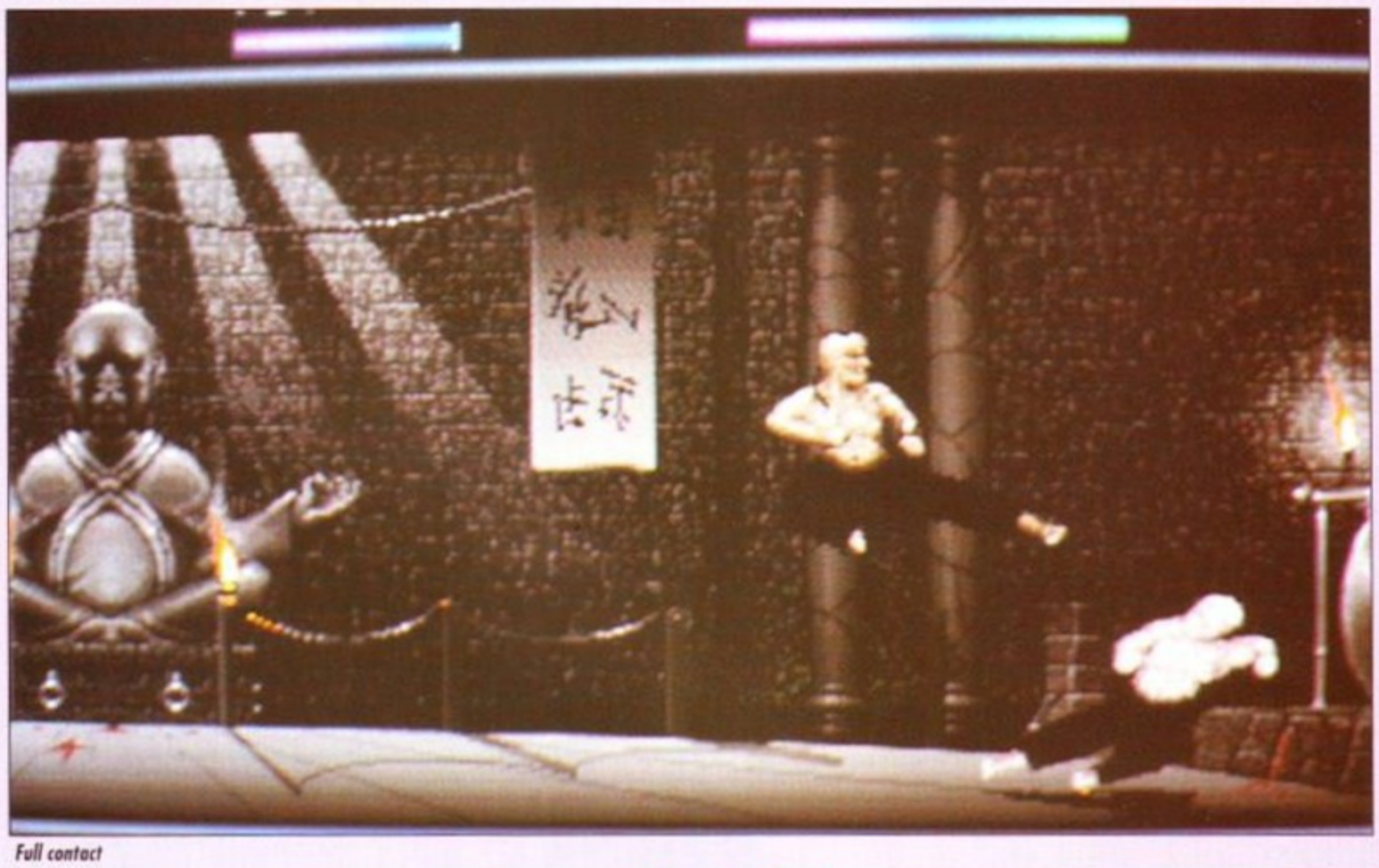
Games News

Team 17

Full Contact

From a team including some of the best coders on the PD scene, comes this extravagant beat 'em up. Special effects fans should be in for a treat. We're promised a chunky front end, packed with all kinds of demo-style tricks, with the same level of presentation carried through-out the rest of the game. If the beta version we've seen is anything to go by, it should be one of the fastest beat 'em ups ever written. A series of varied opponents, dynamic sound effects and frantic gameplay should culminate in something rather special. It'll be priced at just #11, and is scheduled for release any time now.

Full Contact



Full contact

Ocean

Elf

It sounds like another electro-dance pop group, but Elf is in fact a new arcade adventure. Mixing traditional platform adventuring with some superb cartoon graphics, it looks as if it could be a nice little earner for the Manchester mob. It's set in an enchanted forest, filled with all kinds of strange hares, insects, men on flying carpets, wizards and plenty more! Neatly programmed, with multi-coloured graduated sunsets and highly detailed graphics, this could be one to watch.

Elf

Elf

Mindscape

Life and Death

An "interactive medical movie" is how Mindscape describe their highly original Life and Death. The life of your patients rest entirely in your hands, as move from examinations, to diagnosis, to operating theatre. All your operations are shown in graphic detail, blood, guts and all. You'd better have a steady scalpel hand. Extra authenticity is promised by the inclusion of a pair of lubricated rubber gloves and a face mask. Pass me the bin, I don't feel too good...

Life and Death

Mindscape

Fast Eddies Pool and Billiards

Here's a pool game that sounds a lot more adventurous than most. No less than fourteen different types of pool are to be included. There's also a carom billiards table, a bumper pool table, and a full snooker table. Not only that, but there's talk of a playable Missile Command machine in the corner of the bar. Instant replays can be saved to disk, and trick shots can be set up. There's also realistic rolling animation of the balls, a number of skill levels, and provision for up to four players to take part.

Fast Eddies Pool and Billiards

Demonware

PP Hammer and his Pnumatic Weapon

PP Hammer is a platform game with a difference. The weapon of the title is a magic pneumatic drill, which young Mr Hammer uses to churn up the blocks and slabs of his cavernous world. The magic part about his drill is that it only destroys blocks for a few seconds, after which they re-materialise. Treasure is Hammer's goal, but to get he, he'll need to apply some brainwork to his drilling. A blend of puzzle, arcade and adventure is promised.

Hal Levee

Graphics

A Constable-style scene opens the adventure

WONDER

(1 MegaByte Only) MAGNETIC SCROLLS/VIRGIN

One lazy afternoon, Alice was sitting by the river, trying desperately to enjoy the book she was reading in the hot sun. All of a sudden a large white rabbit ran past her muttering, 'I'm late, I'm late!!'. Strange, thought Alice, a talking rabbit, and one with a watch no less!

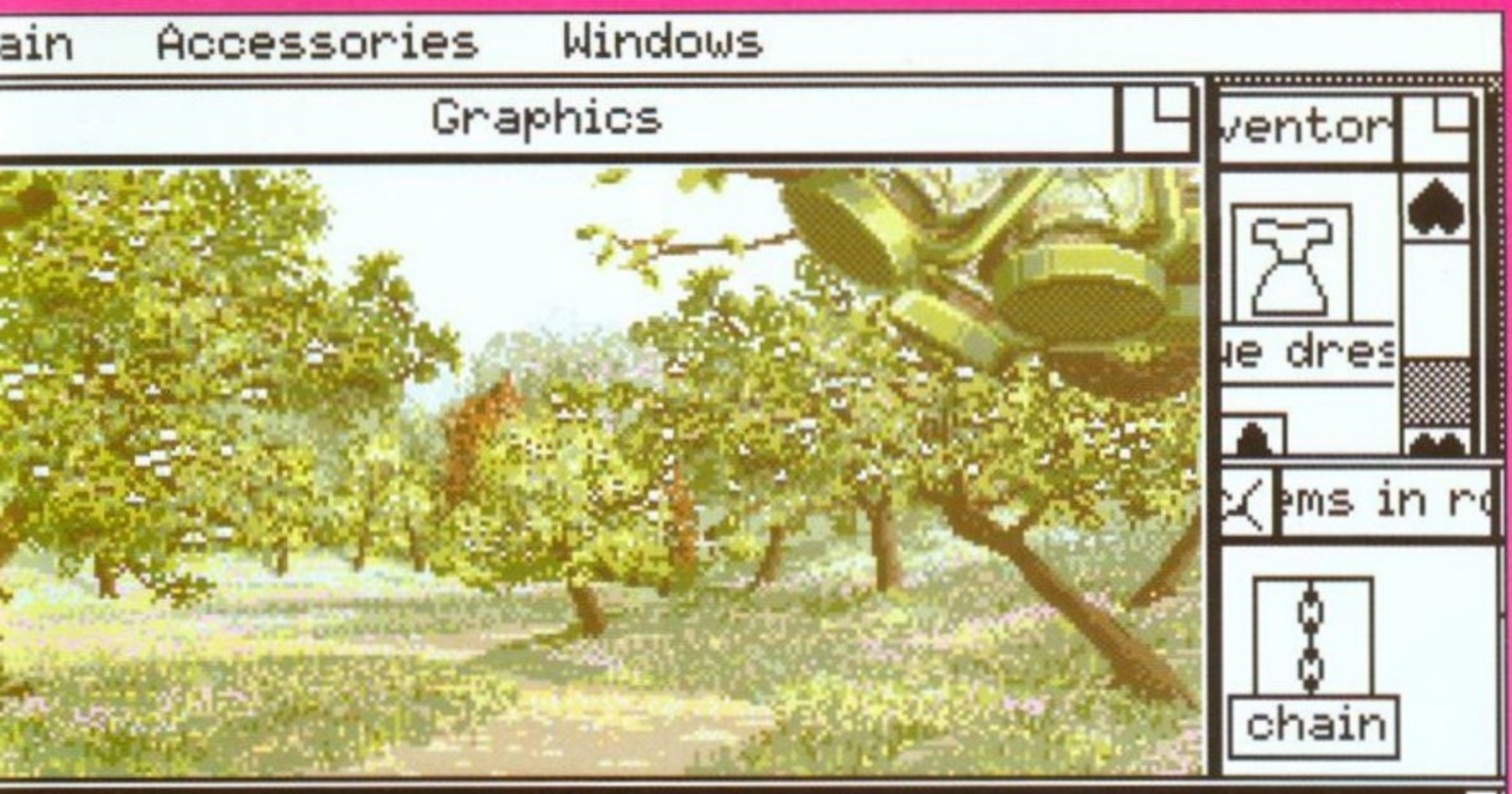
Now, we all know what happened next, don't we? Alice goes down the rabbit hole and begins her adventures in Wonderland. This classic tale from the pen of Lewis Carroll has enchanted children and adults for years, and it is precisely this that makes Mag Scrolls WONDERLAND such a good game. 'What about the multiple windowing, or the animated graphics, the mouse click object recognition, the on screen maps, the help routines, the icons for every object, the pop up menus, the fabulous parser that understands anything!!!', I hear the Virgin marketing department scream out. Yes, I will come to all that later, but it is the story that does it for me. You see, most adventures provide you with a character that is either created for the story, or a historical figure in an imaginary tale. You do not have any real empathy with it other than the background you are given and the relationship you create as the game

progresses. In Wonderland you are Alice, a character you have grown up with and know well, and the story in the adventure is the same as the book, so you are immediately familiar with the game environment. The clever thing here is the puzzles are intricately woven into the original plot so you know where you have to go, but how you get there is another matter. So, a perfect adventure challenge, a story you know inside out with puzzles that are completely new that do not detract from the plot in the slightest.In true Magnetic Scrolls tradition, the delightful narrative contains many witty lines and sumptuous descriptions that transport you into the wonder of Wonderland, where you will meet the March Hare, the giant caterpillar, the Queen of Hearts, the Duchess and her Cook, and of course my old favourite the Mad Hatter.

But, as I mentioned at the start of this piece, the pull down graphics and rich text are just the tip of the iceberg in this adventure. Mag Scrolls have taken a giant leap with text adventures and added a whole feast of options that frankly could drive you to distraction. Just imagine a typical session where most of the time you are trying to decide just what options to use for the best. The manual does its level best to describe in detail each tool but it is only by playing the game that you get a real feel for them. So what is all the fuss about? Well let's see if I can give you a taste of what lies in store for you.

One of the main strengths of the new system is the WIMP Interface, which stands for Windows, Icons, Menus and Pointers. The Windows are individual areas of the screen, like mini screens, through which you can communicate with the game. You can move them around the screen, make them larger or smaller, open them (to view) or close them down. A neat touch here is that the game recognises the restrictions of your computer through a Memory Manager routine which will intercept any memory problems occuring by requesting that a particular Window or Windows be closed. There are also commands for cleaning up the screen presentation or finding a window that has become buried under other windows, similar to Workbench.

The Icons come in two types, Room and Noun, and are 'live', in that clicking on them causes something to happen like a pop up menu for instance. The room icons will normally depict objects and clicking on



are going on in the pear grove

LAND

£29.99

DECISION

95%

A truly all encompassing text adventure which is filled to the brim with a staggering array of options that take the text genre just about as far as it can go.

Graphics: 90%

Extremely high standard pull-down pics that are the Mag scrolls trademark. The text purists can, of course, turn them off.

Sound: 70%

There are a few nice tunes on Amigas with lots of memory.

Gameplay: 90%

A beautifully crafted tale that has an excellent balance of puzzles versus storyline.

Difficulty: 7/10

them will display information about them. You can also drag them from a room window into your inventory window, and vice versa. Most of the icon commands will have 'OK' action buttons that need to be clicked on in order to action that request. As in all good wordprocessors, there is a powerful editing facility in the game which carries all the usual CUT, PASTE and COPY commands as well as inserting, replacing and deleting text.

There are MAP and COMPASS commands which will give you a pictorial map display showing the rooms you have visited and the exits. A useful command here is GOTO which, by simply clicking on the required icon location, will transport you by the quickest route. This is useful as well when you have forgotten where you left an item, and need to get it in a hurry.

Another critical window available for stress sufferers is the HELP option which throws up help on a hierarchical system, offering you increasingly significant hints about a given area of the game. Bear in mind though that using HELP will affect your score, and the game remembers how mant times you access it. HAH!

So, a radically new way to communicate your commands, you can travel from room to room by map clicking, you can pick up, put down and manipulate objects, in various ways by using the graphics, Inventory, and Items windows and their menus. If, at the end of the day, you are just an old fashioned adventurer who likes keyboard bashing well, that's fine too, just turn all the windows off (although the graphics should be viewed) and play it like the old days.Once again, Anita and the crew have created a masterpiece. Play it, live it, love it.

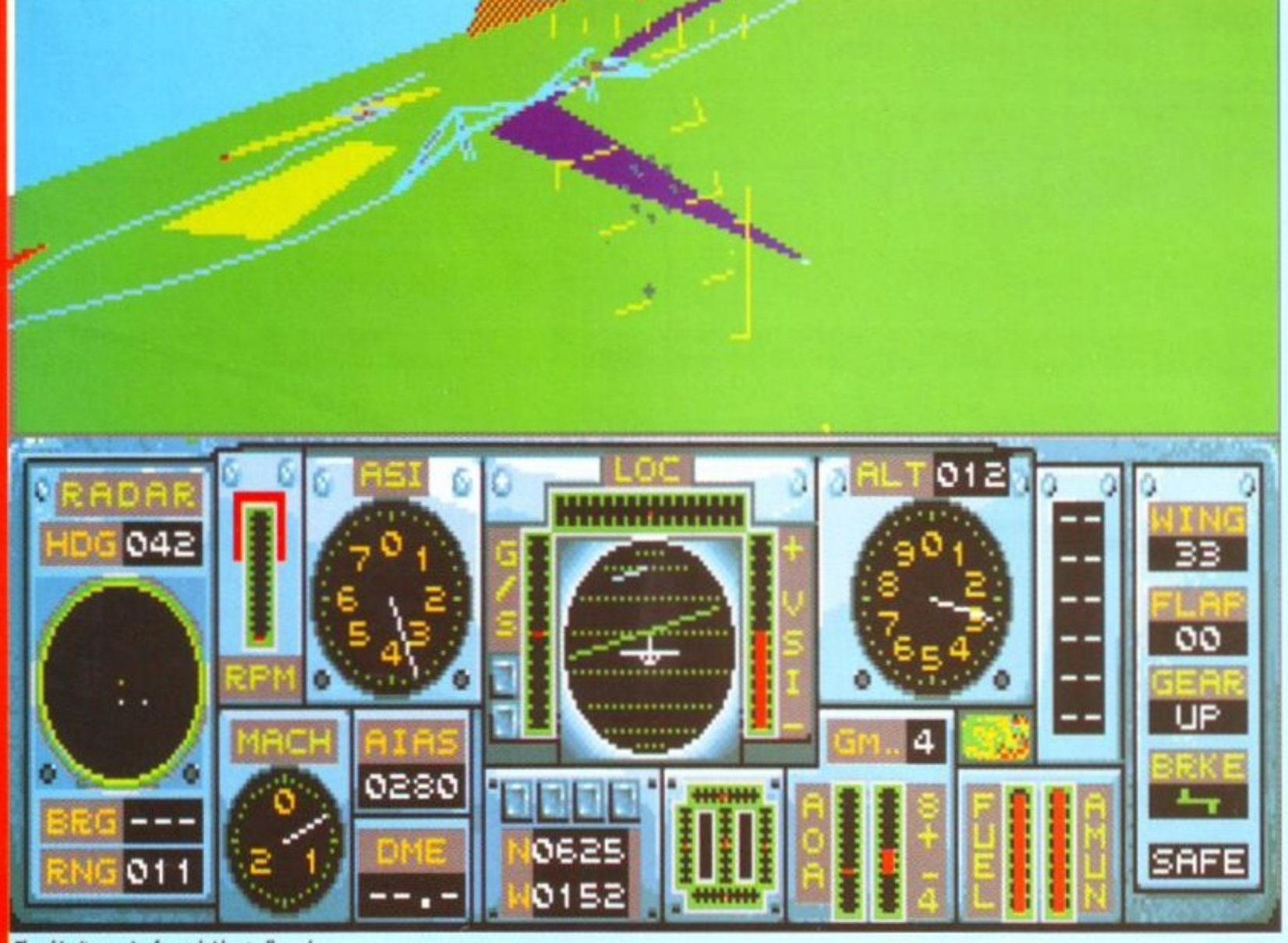
Andy Moss

"The clever thing here is the puzzles are intricately woven into the original plot so you know where you have to go, but how you get there is another matter"

The piano room is home to a collection of magical chairs

There's hours of door-opening fun to be had in the long hall

What could that rabbit hole lead to?



The ubiquitous wire frame bridge to fly under.

ProFlight

HI SOFT £39.99

Yes, the latest in Amiga Flight Sims really does come from the same people responsible for the ultra-serious compilers and assemblers - HiSoft. It's not really something you'd expect a 'serious' software house to produce, but one look at the ring-bound manual might change your mind.

ProFlight is no gamey arcade F16 simulator, let's clear that point up right away. It you want another quantum leap in avionic graphics forget ProFlight and start saving for the new CDTV version Falcon.

ProFlight is a flight simulator, and a darn good one too. A list of all its features would be long, but there is nothing blatant missing and a few extra novelties. But for me, the acid test of a flight sim is: does it feel like flying? Or does it feel like watching a computer screen full of dials with a window of moving green and blue patterns? ProFlight passes this test, for when I pointed the Tornado's nose up towards the evening sky, opened the throttle and burst through the clouds into a starry sky, I had to catch my breath. It was beautiful. For a moment, I really was flying...

And after selecting combat mode the enemy was flying too, so I hit 3 on the keypad to select the AIM-9L Sidewinders, locked onto the bogies' radar and hit the enter key to arm the weapons system. One high-g lag pursuit roll later and I'd crossed into the 6 o'clock position. My gunsight changed into a square to indicate a target lock and I released a missile. Within seconds I was flying through the expanding debris simultaneously performing a victory roll and re-setting the waypoint to the home airfield. Another successful mission for top pilot and general all-round superhero Flt Lt John "Scrapper" Kennedy. My mirrored sunglasses reflected the admiring glances from my navigator as I put the bird on the ground without even touching the ILS/auto-pilot coupled approach system. It would be a good evening in the mess with the chaps tonight.

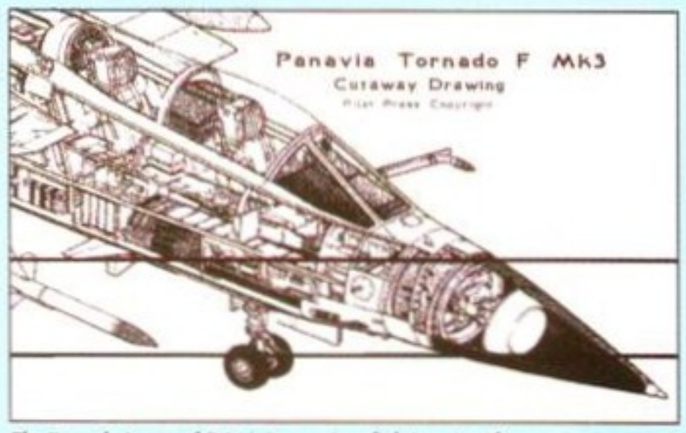
Ahem. Perhaps you had to be there.

Like most modern flight sims, the cockpit view is a bewildering array of controls, instruments and things to do. Fortunately the Tornado is one of the most user-friendly fighter aircraft ever built, and flying one can be as simple or as challenging as you like, simply by over-riding the on-board computer. From the (rather naff) menus you can select just about every option you could possibly think of, and if you suffer a sudden attack of claustrophobia, you can take a good look around yourself in every direction.

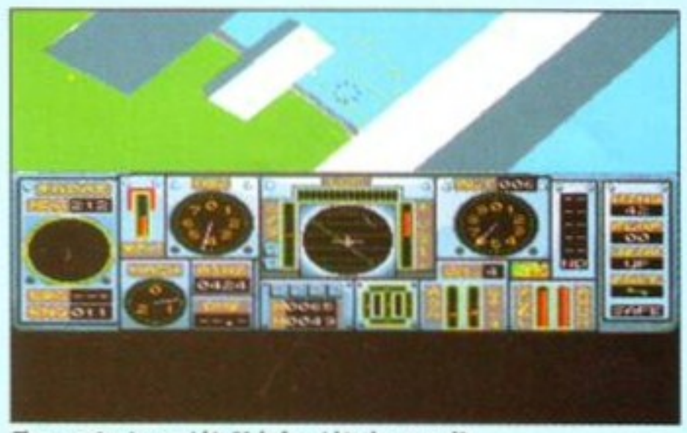
ProFlight is not several things. It's not an arcade game (there are no animated sequences of guys in sunglasses checking rosters). It's not a wargame (there are only four weapons types and no missions). And best of all it's not a jingoistic glorification. To quote the manual: "As marvellous a combat aircraft as the Tornado undoubtedly is, the world would still be a better place if we didn't need it at all". Proflight is simply a very enjoyable Amiga flight simulator with as much warlike activity as anyone needs.

John Kennedy

Flying through a built-up area at night. Somehow I get the feeling something nasty is about to happen...



The Tornado is one of Britain's premiere fighting aircraft.



The question is: can I hit F1 before I hit the ground?

DECISION

85%

An accurate and enjoyable flight simulator. More for "Flight Sim 3" fans than "Falcon" groupies.

Graphics: 76%

Good solid (or wire-frame if you want) representation, with reasonable frame rate. It's even got clouds and stars!

Sound: 60%

The engines make engine noises, the explosions go 'bang!'. Miss Falcon's radio noise, though.

Gameplay: 60%

Instantly playable, although the lack of definite missions may disappoint some xenophobes.

Difficulty: 6/10

PLAYER Manager 2™

by Dino Dini

PLAYER MANAGER 2 IS EXPECTED TO BE RELEASED AT THE END OF THE YEAR OR EARLY NEXT YEAR.

Many thanks for the support and constructive criticism that so many of you extended to our products. Player Manager remains to date perhaps the only real time soccer management game. Now Dino is busy writing Player Manager 2 and the draft specifications are detailed below. If you have any suggestions that would enhance the depth or playability of the Player Manager 2, please write to us.

- One M. byte minimum memory. An additonal disk drive may also be required.
- Full implementation of KICK OFF 2 and FINAL WHISTLE wherever possible. A double tactics editor will also be included.
- Three division leagues with 64 teams. Two Domestic and two Europeans Cup Competitions.
- A young player must be nursed to the first team place otherwise he may burn out quickly.
- Numerous factors can cause player stress which will play a very important part in his individual match performance.
- Captain appointment. Man of the match, Manager of the month and the year awards.
- Manager performance to be put under tighter scrutiny. i.e. failure to get promotion after awhile or maintain the position at the top may lead to being sacked.
- Introduction of some really astute and high spending computer managers. A Player Manager may also get an offer to manager another team in the league.
- Facility to see the stats. of every player in the league and on the transfer market. Only transfer listed players will have price indication.
- Option to bid for a player not transfer listed and overseas players. Introduction of Scouts.
- Much improved match report with information on scoring attempts, keeper saves & possession in each half of the match.
- International caps awarded and also compulsory retirement of players reaching maturity.
- Improved financial structure. Multi-players option.
- Improved coaching with facility to concentrate on an individual player.
- Invisible management stats. influenced by individual player and team performance.
- Referees, pitches and wind may be implemented. Pre-season friendlies.

SUGGESTIONS THAT CANNOT BE IMPLEMENTED

- Fnhanced graphics or facility to edit player names. Both of these take up too much memory.

Each letter received until 15th July 1991 will go into a draw. First 10 letters drawn will receive an autographed copy of Player Manager 2 and next 10 letters drawn will receive £10 record tokens.
Now is your chance to help us create a game you want. Take it and you may also win a prize.

Please address the envelope to the address below:

ANCO

PLAYER MANAGER 2, ANCO SOFTWARE LTD.,
UNIT 7 MILLSIDE IND. ESTATE, LAWSON ROAD, DARTFORD, KENT, DA1 5BH

C&N Computers Amiga Public Domain

354 High street. Chatham. Kent. ME4 4NP Orderline 0634-831870

Music section

C006 Sonix No.1
C030 Share & enjoy equalizer
C029 Sonix No.7
C043 Alf demo 1
C061 Classix 1
C066 Royal Amiga Force 1
C067 Disk B to above
C087 Kylie Its no secret
C088 Disk B to above
C093 Bacteria demo
C101 Sonix classix
C108 Digital concert 3
C113 Sonix No.17
C130 Budbrain demo 1
C131 Disk B to above (18)
C142 Digital concert 1
C143 Digital concert 5
C156 Donald weres yor trousers
C163 Genesis Land of confusion
C189 Treacl mega demo Disk A
C190 Disk B to above
C191 Disk C to above
C192 Alkatraz demo disk A
C193 Disk B to above
C194 Disk C to above
C198 Star trekking disk A 1 meg
C199 Disk B to above
C200 Xmas carols
C201 Good morning vietnam
C210 Alf demo 2
C229 Hot wired
C236 Turtle demo by sector 16
C244 Amazing tunes disk A
C245 Disk B to above
C246 Disk C to above
C248 Budbrain 2
C303 Startracker V1.2
C305 Sonix No.5
C308 Zenn sound box
C324 Noisetracker
C327 Turtle power disk A
C328 Disk B to above
C329 Disk C to above
C356 Beatmaster 808 state
C367 Ultimate FX
C380 Mucky morris & the cowpats
C410 Digital concert 2
C411 Digital concert 3
C412 Digital concert 6
C416 Blues brothers disk A
C417 Disk B to above
C418 Disk C to above
C419 Dr awsome & Fleshbrain
C425 Arni sampled off radio Disk A
C426 Disk B to above
C428 Smith & Jones 1 (18)
C429 Smith & Jones 2 (18)
C430 Smith & Jones 3 (18)

All public domain disks are virus checked with the latest version of the Master virus killer.
Anyone finding a virus on one of our disk please let us know and it will be removed from the disk.

Amiga Public Domain prices

Prices vary on how many disks are needed to make a program work. ie some music disks need 2 or more disks to work these are called sets.

Single disks	£1.50p each
Two disk sets	£2.75p per 2 disk set
Three disk sets	£4.00p per 3 disk set
Four disk sets	£5.25p per 4 disk set

Min order 5 disks

More disks are in the collection to many Disks to list here. Last count over 900

Utility section.

E001 SID
E017 Printer utilities 1
E020 Fonts disk 1
E021 Fonts disk 2
E022 Label designer
E028 Ultimate utilities
E029 Virus killers disk 1
E032 Boot block makers disk 1
E032 Printer utilities 2
E045 Bussiness card maker
E046 Viruscope (good)
E051 Ncom V1.9 (modem util)
E056 Tetracopy
E057 Catalouge workshop
E063 C manuel
E070 QL emulator
E071 Disk B to above
E072 Disk C to above
E074 Spread sheet
E083 Master virus killer
E088 Textpluss word processor
E094 Flexi wosname data base
E105 North C
E114 Slideshow construction set
E119 Dope intro maker
E130 Rim data base
E140 A gene geneology program
E141 Forms really unlimited
E153 Disk crunchers

Games.

D004 Monopoly USA version
D008 Paranoid (Breakout game)
D013 Peters quest
D020 Poker solitare
D026 Blackjack/solatare
D027 Star trek disk A
D028 Disk B to above
D035 Break out games
D044 Flashbier
D052 The drip
D054 Breakout construction set
D057 Letrix
D065 Wet beaver tennis game
D069 Tiles/battleships/chess/tetrisII
D070 Tomtespelet (2 player)
D071 Return to earth
D072 Star trek the next generation
D074 UGA games compulation
D075 Snake pit game

Graphics section.

F011 Space ace demo
F015 3D arm
F025 Pugs in space
F030 Gymnast anim 1 meg
F049 Fractual flight demo
F057 Viz pics (18)
F058 Fantasy pictures DiskA
F059 Disk B to above
F086 Enterprise leaves the Dock anim 1 meg
F091 Stealthy manouvers 1 meg
F097 Argatron anims 07
F098 Argatron anims 24
F100 Argatron anims 02
F101 Argatron anims 22
F102 Argatron anims 23
F104 Argatron anims 17
F109 Clip art disk 1
F110 Clip art disk 2
F111 Clip art disk 3
F112 Clip art disk 4
F113 Walker demo 1 2meg
F114 Disk B to above
F115 Walker demo 2 2meg
F116 Disk B to above
F125 Station anim 2 meg
F126 Disk B to above
F127 Disk C to above
F141 Fillet the fish 1meg
F164 Tobias richter slideshow
F165 Disk B to above
F166 Lost in space anim 2meg
F167 Disk B to above
F168 Disk C to above
F170 Batman the movie 1meg
F173 Juggler meets the lady
F174 Fantasy space slideshow
F176 Mandlebrot generator
F179 Iraq demo 1meg
F180 Amy the squiral at the Movies 2meg
F190 Tron anim 1 meg
F191 Disk B to above
F200 Robin hood slideshow with music (Cartoon)
F209 Life of brian slideshow with samples from film
F219 Franklin the fly anim
F228 Italian Job digi anim 1 1 meg
F229 Italian job digi anim 2 1 meg
F242 Stealthy manouvers Swiss army F16 anim

Directory disk £1.50p inc P&P Contains some free PD utilities/music.
Orders taken 24hrs a day on the answerphone payment via access & visa or mail order payment by Postal order or cheque made payable to C&N COMPUTERS
Orders despatched within 24hrs (Mon-Sat). Phone orders despatched Mon if given on Sundays.

Above ground at the start of level one, you do battle with missile-launching armourdillos.

Switchblade 2

GREMLIN £25.99

There was a lot of fuss made in some quarters about Switchblade 1 when it was released. As I thought might happen, many of those who hailed it as an instant classic have since gone back on their word. Although it was a pleasant enough game, it wasn't a patch on its "sister" games Rick Dangerous I and II. A new team is responsible for the sequel, which has lent the game a whole new feel.

It's a futuristic platform shoot 'em up, something along the lines of Strider, but with all the best bits left out. Hiro, your lone warrior, lost his right arm in a previous battle, and has since replaced it with a machine gun. His remaining hand holds a knife which he uses for close combat.

Little imagination has gone into the first level, which is merely a remix of that seen in Switchblade 1. It starts above ground, with a few horizontally scrolling screens breaking you into the flow before you venture underground. The grey brickwork caverns of Switchblade have been shuffled around, and a few new aliens have replaced the old breeds. Laserbeams are shot from guns mounted on the walls, and clusters of spikes shoot up from the floor. You don't get any warning of these spikes. They just pop up as you walk over them, so the only way to avoid them is to learn where they are, and as one screen looks much the same as any other, this isn't too easy.

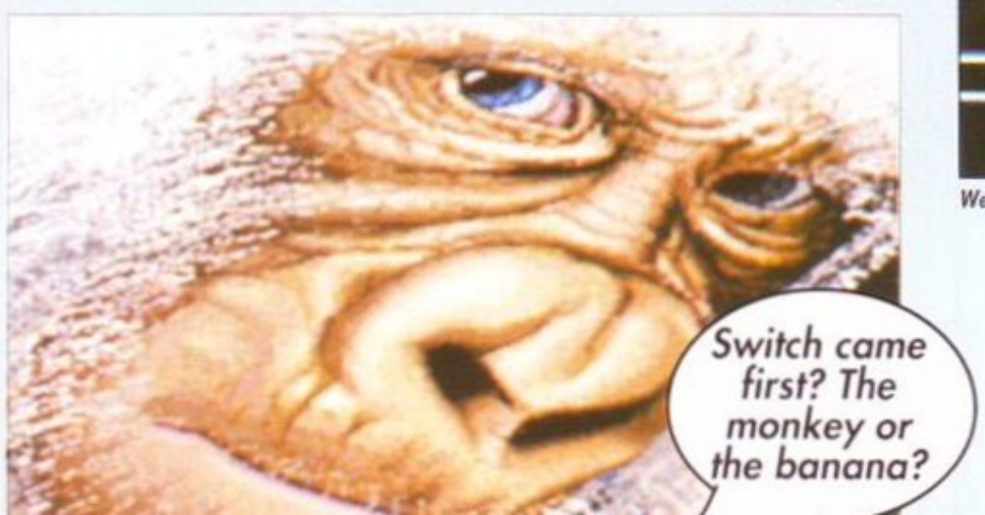
Bonus gems of various kinds are found lying around. Shooting the aliens often reveals cash tokens. The tokens can be

used in the shops to buy better weapons, extra lives and so on. Although some of the weapons are quite impressive, once you lose a life, you lose the weapon too. If you've been saving up for a big weapon for most of the level, to have it confiscated so soon after you've bought it is infuriating.

Although there's variety from one level to the next, there's little change from the start to the finish of a single level. It's the same problem that we had with Venus the Flytrap (programmed by the same team); like a catchy house record that spoils itself by not knowing when to stop.

It's a while since we've seen a game as technically accomplished as this. Full screen PAL scrolling at 50 frames per second, extremely neat graphics and classy sound effects are all on the menu, but the size of the portions makes it all a bit hard to swallow. In a condensed form, with some rather more fleshy aliens to replace the cop-out robots, Switchblade 2 could quite easily be a world-beater. It's still one of the best of its kind to surface recently, but with a bit more time devoted to design, it could have been a lot better.

Hal Levee



DECISION

70%

Fun for the first few minutes, but the shallow gameplay can't justify the price tag. One for staunch Operation Wolf fans only.

Graphics: 78%

The smooth and fast animation is let down by the excessive re-cycling of sprites and backgrounds.

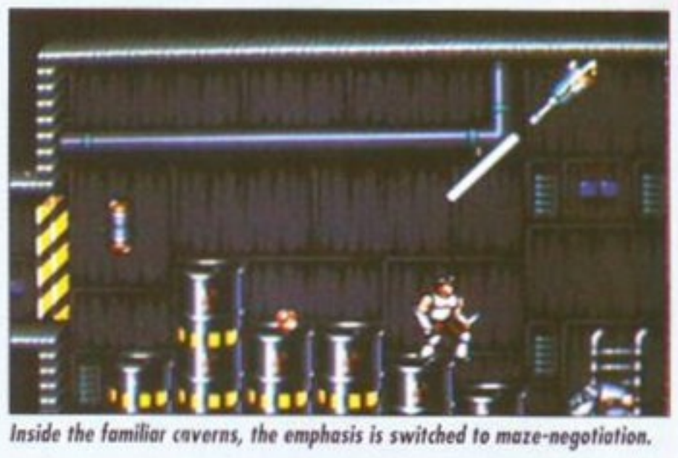
Sound: 92%

An original title track and excellent sound effects, with muffled explosions, electronic bleeps and occasional jinglettes.

Gameplay: 53%

Very playable to begin with, but it's all strung out to such a degree that tedium tends to override the desire to see the next level.

Difficulty: 6/10



Inside the familiar caverns, the emphasis is switched to maze-negotiation.

This is Hiro, the hero of the game, drawn in splendid Japanese coin-op cartoon style.

Weapon upgrades are expensive, and can be very short-lived luxuries.

This is the end of level one. There are at least four people shooting at you here. You have one gun, and most of the enemies take more than one hit. All you can do is keep plugging away and hope you've got enough spare energy to see you through.

Predator 2

IMAGE WORKS £25.99

No Arnie? That's right: in the absence of Mr Schwartzenegger, the starring roles seems to have been shared by the "streetwise cop" played by Danny Glover, and the Predator, played by a man in hopelessly unconvincing alien suit. The game? Well, it's different to the first Predator game, but it could hardly be called original.

As you can probably tell from the screenshots, it's another variation on the Operation Wolf theme. The game is made up of four levels, each based on a particularly bloodthirsty scene from the film.

The first level drops you into a riotous gun battle, raging between a couple of drug-pedalling gangs and the local police. Your priority here is to get to the drug barons' HQ, where you can then make some arrests. As Harrigan, the cop, you see yourself as a wireframe figure at the bottom of the screen. The road to the HQ is filled with drug-crazed gangsters, all of whom are armed. You stay in the middle of the screen, while the road scrolls smoothly by from right to left. A mouse or joystick-controlled gunsight is used to aim your various guns. As is now sadly the norm, the enemies are rated from soft to hard not by their actions, but by how many times you have to shoot them. The first few go down with a single shot, but once you get a bit further on, and meet the end of level guardians, you're required to fill each man with an unfeasibly large quantity of lead.

Innocent civilians make your job a lot harder, running around in a blind panic in the thick of the action. Shooting them reduces your "innocent kills" allowance, reflected by your shrinking police badge. Kill too many and you lose a life. Level two is much the same, but the setting is a hotel, with appropriate changes in the graphics. The Los Angeles subways provide a backdrop for level three, while the final scene takes place in a slaughterhouse.

As a section of a more varied game, any of the four levels would be quite acceptable. However, with the extremely simple gameplay rehashed four times, with barely any variation apart from the graphics, the game's flaws are all the more apparent. The problem of the bullet-eating enemies leads to another irritating detail. When you're faced with five of these super-tough gangsters, all of whom are shooting at you, there's nothing you can do to avoid taking hits. After all, you only have one gun. You can try spreading your shots equally between the attackers, or concentrate on a single gang member, but either way you're going to lose energy. Because of this, there's no way you could get through the whole thing without losing energy, even if you played it perfectly. That's not to say that it's too difficult, but it is unfair.

Maybe the most disappointing aspect of Predator 2 is its acute lack of variety. The point-and-click gameplay becomes tedious before the first level is out, and the thought of playing right through to the end is none too appealing.

Tony Horgan

DECISION

55%

Fun for the first few minutes, but the shallow gameplay can't justify the price tag. One for staunch Operation Wolf fans only.

Graphics: 78%

The smooth scrolling is backed up by a neat parallax effect. Although the sprites are well designed, their animation could do with a little development.

Sound: 60%

The raging gunfights sound more like an angry bowl of Rice Crispies. The fx can be toggled for an unintrusive soundtrack.

Gameplay: 53%

Play it for a minute and you've experienced just about all the gameplay there is. A simple duck-shoot, that lasts for four long levels, is hardly the stuff clasics are made of.

Difficulty: 6/10

No blood, but plenty of bullets fly in the first level. By the way, the yellow things on the right of the screen are actually explosions, not scrambled eggs.

Close-range attackers are fought off with the but of your rifle.

The combination of a close-range attack, and a screenful of blazing guns once again leads to unavoidable energy loss.

That's a hostage at the top of the screen. Meanwhile an enemy feels the brunt of your weapon.

WAR ZONE

CORE £25.99

It's Commando time again! World peace is threatened by a dangerous army of extremists. Guess what? All your backup troops have been killed or captured, leaving just you and your mate to stop the whole army! Sounds familiar...

As you land at the start of level one, it looks as if you're going to get to "fight them on the beaches", but the enemy are positioned in the nearby jungle. Things start out well. You get to test your weapon out on a few oil barrels, which explode in compact but satisfying fashion. Work your way up the screen, and the enemy start taking potshots at you from behind the bushes. A light gun battle follows as you blow them out from their cover, making a point of not shooting the hostages who are tied to stakes in the clearings. Touching the hostages sets them free and earns you some bonus points.

The attack is stepped up as you move through the jungle, with tanks, jeeps and gun emplacements putting up stronger resistance. Some of the first weapon "upgrades" you find aren't actually any more useful than your standard machine gun. Once you get hold of a rocket launcher though, you can start to have a bit of fun. Bedroom anarchists can feel really rebelious by blowing up hostages. Sickos can get off on the gruesome animation as enemies are fried with the flamethrower.

The party comes to a temporary stop when you find yourself up against an armoured truck. How do you combat this? Go for the petrol tank maybe? Take out the gunners? Run around it? No. You run about in front of it, dodging the bullets, shooting it what seems like a million times. Once you've shot it enough times, it blows up. Not the most imaginative of mid-level guardians by a long shot. Isn't it time we moved on from this simple method of raising a game's difficulty level?

After the first few screens, there's nothing much new on offer. You get different scenery with each level, and the enemies get harder as you progress (that is, they require more hits).

Warzone was programmed by Core, and it looks and feels like a Core game. The sprites are mostly small, but colourful and neatly drawn, with minimalist but adequate animation. Likewise, the sound doesn't really come at you, but is a suitable complement to the action. "Let's do a Commando game" seems to have been the attitude. Unfortunately it doesn't manage to recreate the speed, atmosphere and quickfire feel of Commando. This is partly due to the fact that you have to shoot most things a few times before they blow up. You can't go round letting off bullets in all directions, popping off soldiers with a single well-aimed shot. Instead you're reduced to tactics of shooting, ducking behind trees, dodging out and shooting again, then moving on when you've downed your man. This is not the way to create a fast-moving shoot 'em up.

Hal Levee

DECISION

68%

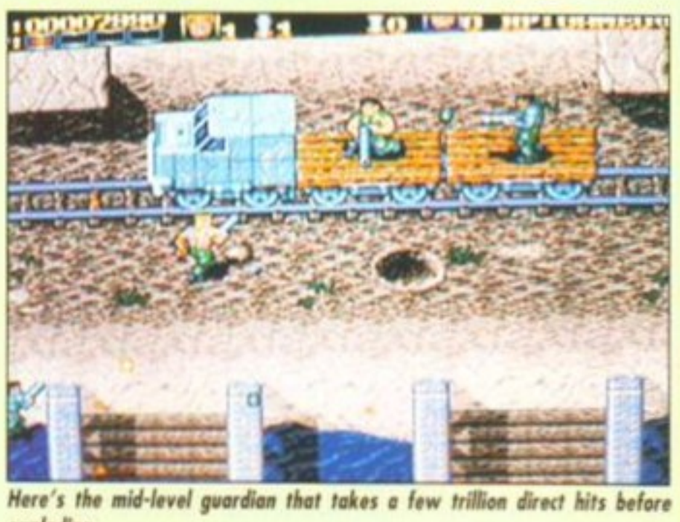
An initially enjoyable but monotonous Ikari Warriors variant with a lack of excitement and new ideas. Better suited to a budget price tag.

Graphics: 71%
Small, neat sprites move smoothly over unspectacular backgrounds.

Sound: 63%
Standard gunfire and explosion fx can be heard throughout.

Gameplay: 69%
It all unfolds with an ultimately tedious predictability, but what's there is fun for a while.

Difficulty: 6/10



Here's the mid-level guardian that takes a few trillion direct hits before exploding.

Even with the rocket launcher you'll have to hit that tent a couple times to blow it up.

The enemy give you a demonstration of their synchonised grenade-lobbing.

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Beneath the gloom, a red haze shrouds the streets of San Francisco.

THE KILLING CLOUD

IMAGE WORKS £25.99

San Francisco has been engulfed in a huge toxic cloud. No-one quite knows what's caused it, or what it consists of, but it's killing the city's population. Rather than doing the sensible thing, and moving away, going to stay with relatives or just hitting the road, the 'Frisconians have chosen to wallow in their plight, and they're dropping like flies.

Law has gone out the window. A gang known as the Black Angels have taken over the running of the city. You're part of the team that's been brought in to straighten things out. Rather than just give you a flying squad car and a gun, Killing Cloud sends you all around the houses in your pursuit of the gang members.

First of all you have to decide where in the city you want to lay a set of nets. Once you've placed the nets at your chosen points around the city, you need to do the same with a set of "PUP"s, which are small pens used for holding your captives. This is all done from the briefing room. Next you can make your way to the launch bay.

After arming up, there's an animated sequence which shows your pilot boarding his "hover-bike", which in fact looks and handles much like a futuristic light aircraft. Once you're finally out above the smog of the city, things start to pick up. The effect of the cloud works really well. All you can see are the tops of the taller buildings peeping through the greyness, as if they were half-submerged in a sea of mud. Fly around for a bit and you can do a spot of sight seeing. Even if you only know San Francisco from TV cop shows and Electronic Arts' Interceptor, you should still recognise the Golden Gate Bridge, and those two other bridges that nobody seems to know the name of. If you want to check out those famous hills, the scenes of a thousand car chases, you'll have to venture into the murky smog.

Under the cover of the cloud, you're sight is adjusted so that you can make out the houses and office blocks of the city. The ground is actually contoured, with proper hills rather than the usual flattened pyramids seen in most flight sims. There's a lot of detail when you get below the cloud however, and the speed is knocked down a few pegs.

Rounding up the criminals with the nets you place earlier, you get down to the real business of your mission. With your quota of arrests accomplished, you can get back to base and plan out your next mission.

There are some great ideas in The Killing Cloud. The effect of the cloud itself is simple, but works extremely well, creating an atmosphere like no other game. It's a shame then, that it's let down by a series of complications that make the really rather simple gameplay quite confused. There's the plot for one thing. If this cloud was so deadly, why hasn't the city been evacuated? The system of nets and PUPs seems to be a case of design for design's sake. Just being able to fly out, track down and pick up the fellons would have made things simpler without compromising the gameplay at all. Still, it's quite original, and if you've got the time and the inclination, it should keep you engrossed for some good long sessions.

Hal Levee

DECISION

72%

A very different kind of flight simulation/adventure cross breed, which holds itself back somewhat by trying to be too clever.

Graphics: 85%

Programmer's Vektor Grafix aren't the fastest polygon manipulators, but the occasionally slow update is compensated for by the original use of filled 3D.

Sound: 60%

The action is accompanied by a passable soundtrack.

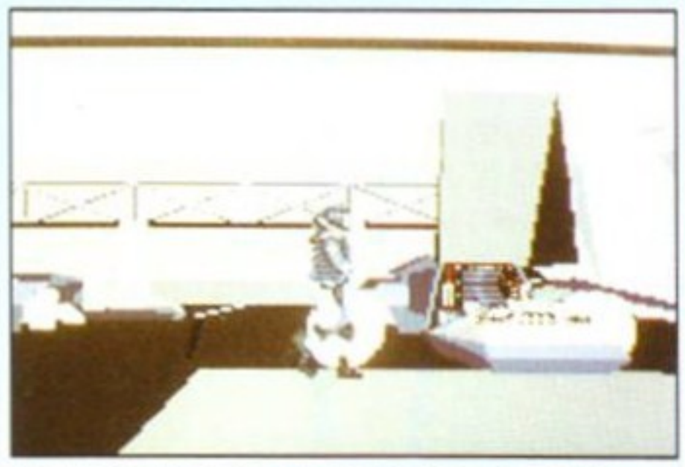
Gameplay: 70%

Very confusing at first, but if you're prepared to throw logic to the wind, there's a lot of fun to be had.

Difficulty: 7/10

Selecting arms before the next sortie.

Up above the mist, only the tips of the highest buildings are visible.



TAn interesting mix of animated sprites and vectors make up the intro.

ENTERTAINMENT

CLOCKWISE: 1 Barbarian troops will pop up now and again, so beware attacks from land and sea. 2 The Roman Legions stand fast against the Carthaginian advance. Come on the Re-eds! 3 There's all to play for coming to the last and it could be anybody's. We're in the lighter of the three types of carriages and positioned on the outside, which allows faster cornering. 4 The race was close, but we just got there, and all of Rome applauds.

CENTU

ELECTRONIC ARTS

Centurion: Defender of Rome is designed by Kellyn Beck, the creator of Cinemaware's Defender of The Crown, one of the first, and then, graphically the best, Amiga game. The one thing that Defender Of The Crown lacked, however, was decent gameplay. The graphics were superb, the sound and animations nice, but the gameplay was terrible. So are we to expect the same here?

In Centurion, the overall aim is to rise through the ranks from Captain to Caesar. The intermediate ranks of Centurion, Tribune, Legatus, General, Praetor, Consul, and ProConsul offer increasing military power. This allows expansion of armies at each stage of promotion, which is awarded by Rome annually, dependant on joint success in battle and in winning popularity with the people of Rome.

To win in Centurion the Roman Empire must be formed starting from the home province of Italia, which contains Rome, and involves conquering the provinces of Europe, Western Asia, and Northern Africa. Only once all provinces are allied, will the Roman people consider giving you the title of Caesar.

Centurion's gamestyle is similar to that of

a board game, with the main map displaying all provinces with information such as troop and fleet positions. The gameplay is in turns, each occupying a year, with all moves being made at leisure and enemy troop movements being made at the end of turn. Taxes are also collected from allied provinces at the end of each year at a rate determined by policies which you set. With this money each legion can be created, strengthened, or moved into an adjacent province. Clicking on allied provinces will allow control over its troops and local policies.

Legions are either of infantry, cavalry, or cohort strength, and, when moved into an enemy territory, a sequence of negotiations with the leader of the province occurs. Succeed in negotiations and the province will ally with you. However, fail and a decision whether totake your legion into battle or withdraw from the province must be made. The legion's scouts will supply estimated military strength of the province before negotiations begin.

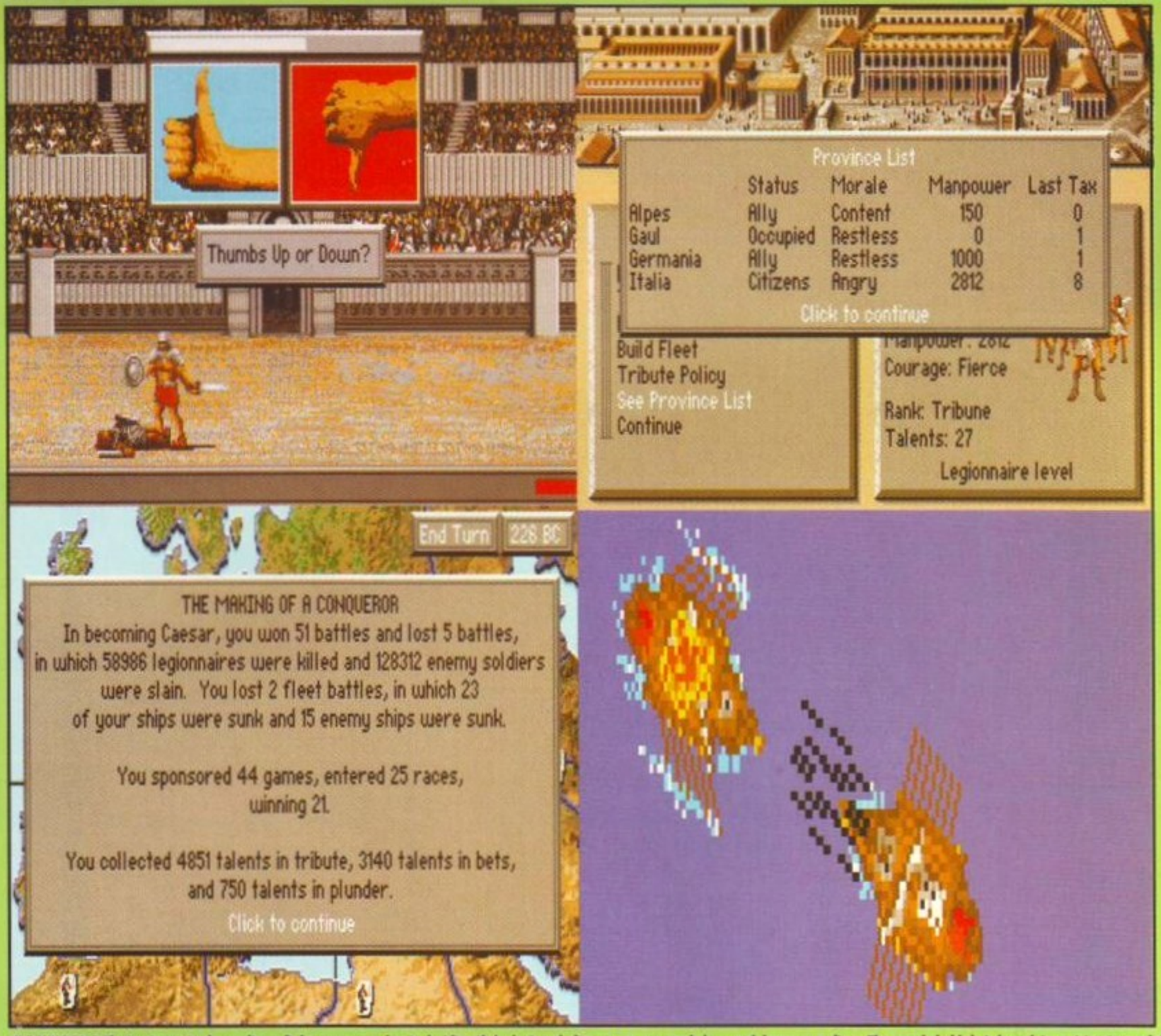
The battles are a major feature of the game. Slay the enemy, and gain in social stature. Be slain, and lose standing with the people of Rome, as well as losing valuable troops and military stature.

There are five formations to choose between when entering battle, and once on the battlefield there are five tactics to choose from. The formation and tactical decisions are the major factors in victory or defeat, and they are varied enough to give interesting input to how the battles are fought. During the battles, while formations and tactics cannot be changed, individual units can be redirected and Retreat and Melee options are available.

Melee will execute a command for all units to find and attack the nearest enemy unit, while Retreat will permit withdrawing from a battle with troops, albeit without honour.

Whether the battle is won or lost, troops will diminish to varying degrees, depending on the might of your opposition. Captured territories can supply reinforcements from their population troop reserve, which grows annually. It is best to keep these reserves as low as possible because there is more chance of a revolt in an upset strong reserve province than in an upset weak one.

On reaching the military rank of Tribune, players are allowed to command a fleet,



CLOCKWISE: 1 The joy is not in the mediocre fight sequences, but in deciding if the losing gladiator put up a good show and deserves to live. The people hold their breath in anticipation and the correct decision will gain a large cheer. A wrong decision will result in boos, or worse - a deadly silence - and will reduce popularity. 2 Information and provincial policies are set in the control menus. 3 Not as exciting as land battles, but it is just as important to be master of the seas. 4 A detailed account of a Caesar's rise to fame.

RION

£29.99

DECISION

88%

More depth than its dated predecessor, but not the mammoth game which I hoped it would be.

Graphics: 90%

Small blocky graphics fit in with the style of the game, but, the whole game is played on an NTSC sized screen!

Sound: 68%

Very important in the gladiator fights as you must hear the crowd's approval, but otherwise not brilliant and not required.

Gameplay: 86%

The menu select system could have been less tedious, however, there are a few sub-games to keep the play varied.

3-9/10

rising to a maximum of three fleets on becoming Consul. Fleets are expensive to build, and are usually only worth creating once a large land base is established, but they can transfer troops across the Med, and protect Rome from an amphibious attack. Sea battles are fought out with the command ships of each side duelling it out. However, winning a duel will not win the battle if the allied fleet is heavily outnumbered.

The Senate will not grant promotion on military victory alone as the people of Rome must be kept happy, and as the Romans are of noble standing, upholding Rome's honour in allied provinces is a priority.

If allied or occupied provinces are unhappy with their treatment, Rome may not approve. The best way to please people of a province is by lowering taxes, or holding games.

Games can be either chariot racing or gladiator fights, but each costs money to stage. If the games are held in Rome, players can participate. Chariot racing provides another arcade-type sequence and improves social standing for the winner, and reduces it when failing miserably. Players can bet on their own chariot in these races which can provide much needed earnings. Suffice to say that some games are fixed and charioteers can be bribed to lose. Gladiator events are most popular with the Romans, but the main sequence is not quite up to arcade standard with sluggish controls. The thrill is not the fighting, but deciding whether the loser deserves to live, and correct judgements win approval with Rome and increase your stature.

There are several difficulty levels, which may be reset at any time during the game, and while it is easier to win battles at lower levels, you will find that you have less diplomatic prowess and therefore less allying power.

Overall, Centurion: Defender of Rome has to be one of the most complete games of its ilk. Its main scenario and secondary sequences are varied enough to make it interesting, however, the game could have been bigger and, after a while, the play sequence becomes tiring and earn it the "not as good as it could have been" cliche.

Pat Kelly

THE ROMAN EMPIRE

The rise and fall of the Roman Empire may always be regarded as one of the most remarkable periods in history. The Romans seemed invincible, and above all, the master race, with all their allies second class citizens - of social standing just higher than that of Rome's sworn enemies.

The Romans were one of the first military tacticianists. However their success on the battlefield was not the only strength they possessed. The Roman Empire stretched as far as Britain - remarkable when you consider that those were non-technological times - and from their archeological remains it would appear that they were a structured and civilised race.

During the Hollywood heydays of the 40s, 50s, and 60s there were several blockbusting epics, such as Ben Hur and Spartacus, based on Roman times. It's remarkable that until now, Psygnosis' Carthage excluded, most computer games set in the Roman era have been unimaginative and poor.

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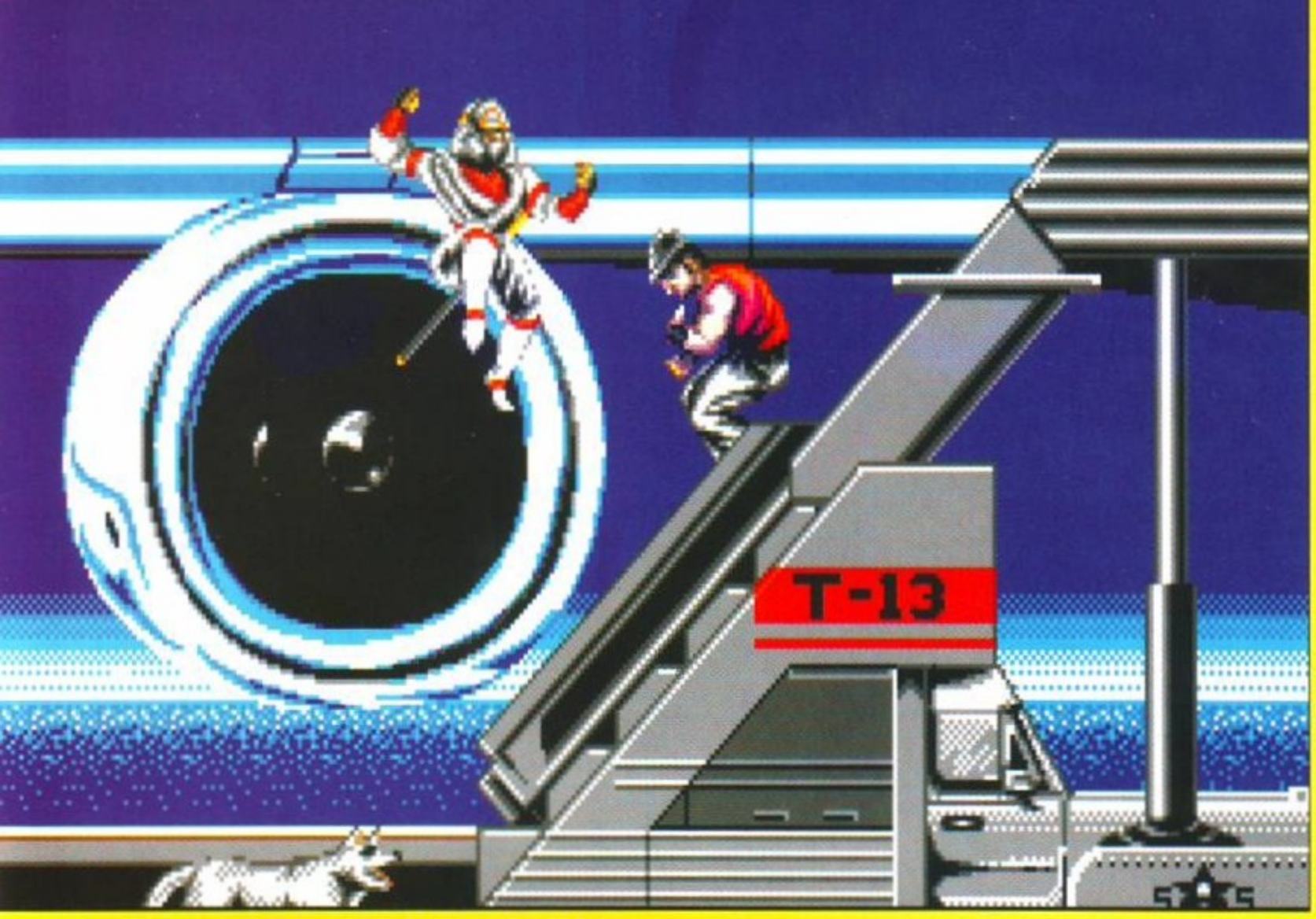

The terrorists' first target is the airport. Get on that plane and fly to level two.

Shadow Dancer

US GOLD £25.99

You might think the Shinobi/Double Dragon style beat 'em up has come as far it can go, with only bigger sprites and weapons as the only possible progressions. Well, although Shadow Dancer is hardly the most original ninja game around, it does have one new feature: a faithful ally in the form of a ninja dog.

Okay, let's be fair. This dog thing isn't completely original, as a very similar idea was used in Titus' Wild Streets, in which the player was supported by a black panther. The important difference with Shadow Dancer is that this time the idea actually works.

As this is the sequel to Shinobi, it's not surprising that the majority of the gameplay is almost identical. In tune with its forerunner, it's also pretty much a carbon copy of that old fave Rolling Thunder, with the 007-inspired atmosphere replaced by the standard ninja scenario. The levels are generally laid out from left to right, with occasional vertically scrolling sections. Terrorists have planted a series of time-bombs throughout the levels, and it's your job to defuse them all before they go off.

Your unlimited supply of throwing stars is your main defence. Confronted with a close-up attack, your ninja switches to his sword. When things get just too much for one man and his dog, you can let rip with some magic. The old tactic of ducking and shooting works well in the opening levels, but things start to get rather more complicated after a while. With a variety of enemies sounding you, each with its own method of attack, standard tactics have to go out of the window.

All this is pretty ordinary. It's the inclusion of your four-legged friend that lifts it above the bulk of ninja games. Bright-eyed and bushy-tailed, he jumps around the crates and platforms, barking when he sees someone he'd like to maul. Pulling the stick down and pressing the button sends him on his way. Fido then leaps over to the enemy and starts wrestling him. This gives you an easy shot at the terrorist who can't shoot back. Leave Fido too long though, and he'll eventually run out of steam. He'll never be killed. Instead, he shrinks to the size of a miniature poodle until you find another bomb. Some enemies are just a bit too tough for your canine companion, so it's not sensible to send him in every time.

Although the original game design is a bit hackneyed, the Amiga conversion isn't at all bad. The scrolling and animation are both smooth enough, but don't quite managing the 50 frames a second that would have given it a real arcade feel. It's a shame you can't turn the music off to leave just the FX, but if you disconnect the left audio jack from the Amiga, you're left with just the bassline with the FX, which is an acceptable compromise.

Fans of the coin-op will lap it up, but for the rest of us, the derivative gameplay will probably confine it to the one-week-wonder category.

Tony Horgan

DECISION

78%

An accurate and attractive conversion of a rather dated coin-op. Well worth a shot if you like the arcade version.

Graphics: 80%

Well drawn man-size sprites, quite a few different characters, and varied level designs keep it looking fresh.

Sound: 74%

Unintrusive sound effects and a bearable soundtrack.

Gameplay: 79%

It won't win any wards for originality, but the beat 'em up action is instantly playable. The idea of using a dog as a partner works surprisngly well.

Difficulty: 5/10

Ninja magic comes in handy when you're up against the level guardians

There's light relief from the Shinobi-style bonus stage

Things aren't looking good for the ninja and his poodle.

They're not all out to get you. This dinosaur provides a free ferry service across the swamp.

Chuck Rock

CORE £25.99

The "villain kidnaps woman" scenario is as old as the hills, and here's proof. Chuck Rock dates it back to the StoneAge, or rather to the Flintstone-age, as Chuck's world combines cavemen and dinosaurs with TV sets and canned beer.

So you've got the storyline then. Chuck, the stereotype dense caveman, has to get his wife, Ophelia, back from the clutches of a pre-historic Gary Glitter look-a-like. Right-to-left scrolling platform levels are the format, with standard Mario Bros-style gameplay as the hub of the action.

World one is a collection of tropical jungle and scrubland scenes. Cacti, quicksand and bouncing boulders are some of the more easily-avoided dangers. Most of your troubles are caused by the variety of beasts that pace along the platforms. You have three ways of combatting most of these. One way is to use your pot-belly to bounce them off the platform, but this only works at very close range. There's also flying kick available, which you can use just about all the time. The third option is to squash your enemy under a big rock.

The rocks play a big part in the game, and have a few uses. They make good steps, handy for reaching high platforms. Chucking one into a pit of quicksand gives you a temporary stepping stone. Another use involves the see-saw crocodiles. These crocs lie across a small pivot. You stand on the croc's tail, drop a rock on his head, and you're catapulted high into the air!

There's a theme to each level, and the scenery and enemies change accordingly. All of the monsters are drawn in a brilliant cartoon style, and each has its own characteristics. The slime monsters in the cave level for example, spring up and wave their arms around, doing their best to make you jump. There's a sub-aquatic stage too, with an excellent buoyancy effect, along with a clever parallax scroll behind the water. Hold Chuck under the water too long, and he flaps around in a wild panic as he starts to drown!

There are two planes of perfectly smooth parallax scrolling in each level, and although it can be a bit disorientating at first (in the same way that Beast II induced seasickness), it all looks and feels very slick. There are only two points that slightly mar the otherwise excellent gameplay. One is that you're sent back to the start of the level when you lose a life, and the other is the collision detection. This normally works in your favour, with enemies having to get a good contact before they zap you. Unfortunately it means that if you're using a rock to shield another rock coming your way, the two sometimes pass through each other, leaving you defenseless.

Although it can be a bit frustrating at times, Chuck Rock is one of the best, and most original platform games the Amiga has seen. A good bit of harmless fun.

Tony Horgan

DECISION

85%

A novel and extremely professionally-made variation on the platform theme, with plenty of original ideas.

Graphics: 91%
Smooth parallax scrolling and colourful cartoon sprites.

Sound: 89%
Excellent sound effects can be toggled in preference to the "rock" soundtrack.

Gameplay: 84%
Instantly playable platform action, with enough in it to keep you plugging away for some lengthy sessions.

Difficulty: 6/10

Exploring the rickety walkways of the cave level.

Blue with cold, Chuck shivers his cods off in the IceAge level.

Here's the villain, Gary Gritter, as seen in the lengthy animated intro.

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Amiga Computing – October 1990

THE BIG ALTERNATIVE SCROLLER

It's new, it comes in a black folder. Price: £49.99

It's simple to use, and it's here! The Big Alternative Scroller is now on sale. This is a self-contained titling programme on one disk. The software enables you to type in credits, titles, display information etc, and scroll them either vertically or horizontally on your monitor screen and likewise onto video tape.

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This program requires 1 megabyte of Ram.

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Unlike the bungalow, you can't even get into this house through the front door, let alone the window.

3D Construc

Incentive

Buzzwords eh? In the computer world they come and go like fashion. You can't have helped noticing that the current computer "buzzword" is virtual reality. Appearances on TV programmes such as Tommorow's World, and psuedo-intelectual documentaries on BBC 2 have given it an innovative and exciting profile. The trouble is, as with any hyped "phenomena", there's never a shortage of candidates for a free ride on the bandwagon.

Incentive have been creating solid 3D games for years now, so how can they be accused of riding the hype? Well, until recently, 3D games were just 3D games. Now we're told 3D games are virtual realities. With VR references on the packaging and in the promo/tutor video, many an expectant computer owner could be fooled into thinking he's getting what he's just seen on Tommorow's Word. Virtual Reality? If you happen to be a snail living in legoland maybe...

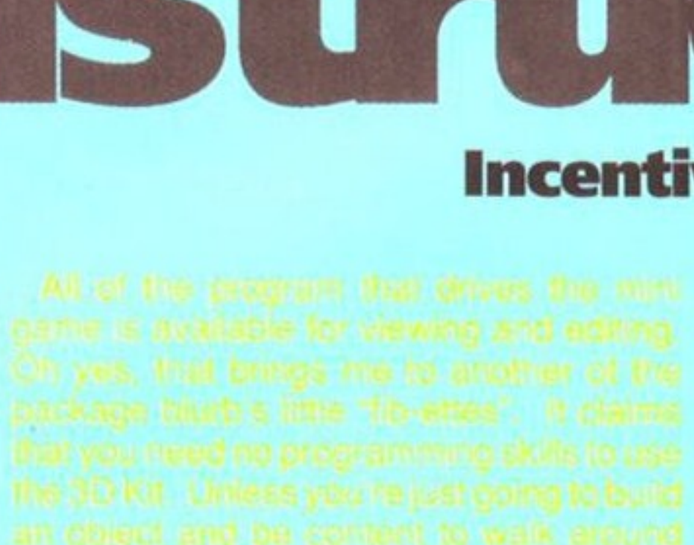
Okay, so it's not proper VR, but the idea of being able to make up your own 3D games may be appealing. After all, it was Incentive who produced the excellent Graphic Adventure Creator, which spawned quite a few decent quality budget releases,

so why shouldn't 3D Construction Kit follow suit?

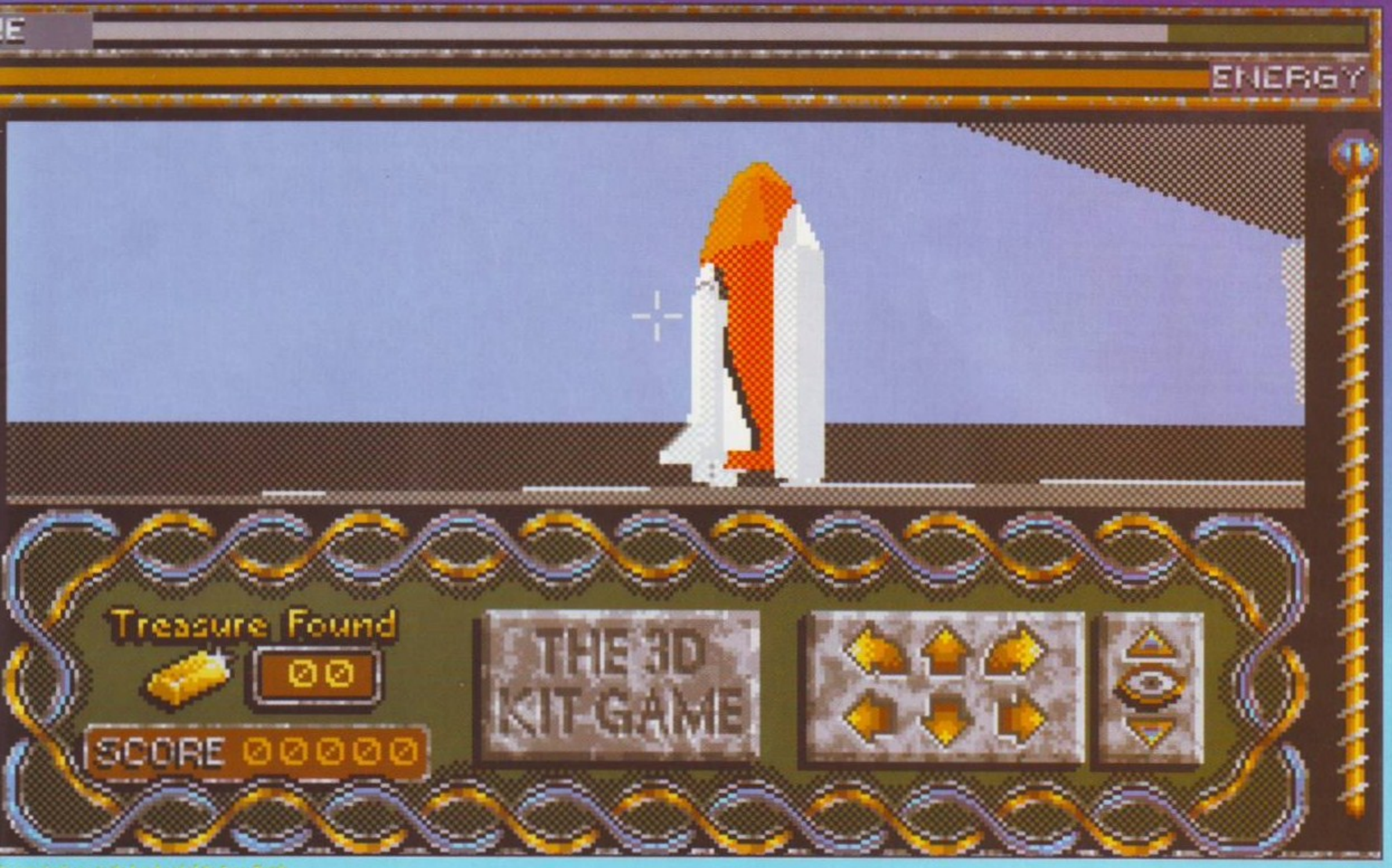
Did you notice the price? It's certainly not cheap, so you could expect to get more than a disk and a scrap of paper for your money. What you do get, is a single disk, a big box, a 70-page manual, and a short video tape. Incentive's big cheese, Ian Andrew, takes you through the basics of building a simple house. It's a good idea that succeeds in getting you into the swing of things fairly quickly.

Upon loading the program, you're presented with a completely empty "world". The first thing to do is load up some of the example files. There are objects, environments, and a small game included on the disk. The environments include a bungalow set in a field. You can plod up to the door and walk in through the hall, and then explore the front room. Here you'll find a settee, a stereo, a lamp, a fireplace and a picture hanging on the wall. You can't actually do anything here. If you want an example of how you can interact with your creations, your best bet is to load up the mini-game. This has examples of houses, tunnels, doors, switches and traps, and can be played as a game in its own right.

All of the program that drives the mini game is available for viewing and editing. Oh yes, that brings me to another of the package blurb's little "fib-ettes". It claims that you need no programming skills to use the 3D Kit. Unless you're just going to build an object and be content to walk around looking at it, you are going to have to use the high level programming language. The language is pretty simple by programming standards, but it does nonetheless call for some degree of programming competence. If you're not familiar with basic programming techniques and theories, you could



The "Kit Game" can be played as a proper game, or you can tinker about with it, learning how things are done.



The game loads you to the launch pad of the Space Shuttle.

tion Kit

£49.95

find this a very big obstacle: quite possibly big enough to make you pack it all in out of frustration.

If you decide to go for a non-interactive environment or not, you're still going to have to design your objects. No matter how complex an object is, it has to be built from a selection of simple shapes. Objects are built in the main 3D "window on the world". After choosing your source object from the control panel, you can stretch, shrink, rotate and move it around until you're happy with it. A house for example, could be built from flattening and stretching four cubes to make the walls, and topped by a pyramid.

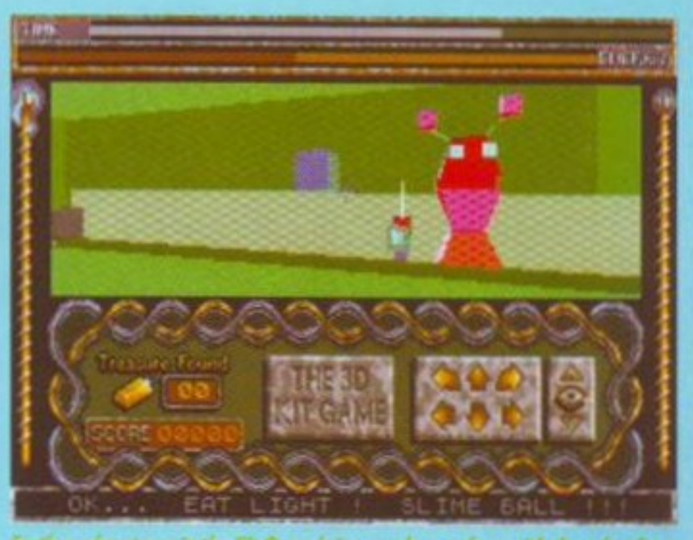
Because it's all done in solid 3D, it can take quite a while to put together even the simplest of objects. Freescape is far from the fastest solid 3D system around, and because it takes so long to manipulate the objects, spontaneous experimentation is almost an impossibility. Maybe a wireframe option just for the creation mode would have given it a much needed boost of speed. At any time you can choose to test your creation. Using the controls you would have if it were a finished game, you can walk around your objects, shoot things and find out if your game logic (program code) works properly.

Games can be saved out and run independantly from the designer program, so the suggestion is that you could end up with a complete, ready-to-ship product.

So, will we be seeing 3D Kit-created games in the Amiga charts? Possibly; there's a lot more chance of coming up with a worthwhile game with this than many game designer programs. I'll bet most creations will end up in the public domain, which is no bad thing. Taking a realistic view, few will have the time and patience to see the construction of a game through to the end. Even fewer will succeed in selling their product.

3D Construction Kit is not a virtual reality program, nor is it quick and easy to use. It calls for a lot of patience, and even more time. At #50, you'll have to be pretty serious about creating your own game if you're to give it a shot.

Tony Horgan



Further adventures in the Kit Game bring you face to face with the robot from the old Sonnak adverts.

Big Brother is an example of one of the more complex objects. Things slow down a great deal in relatively detail scenes such as these.

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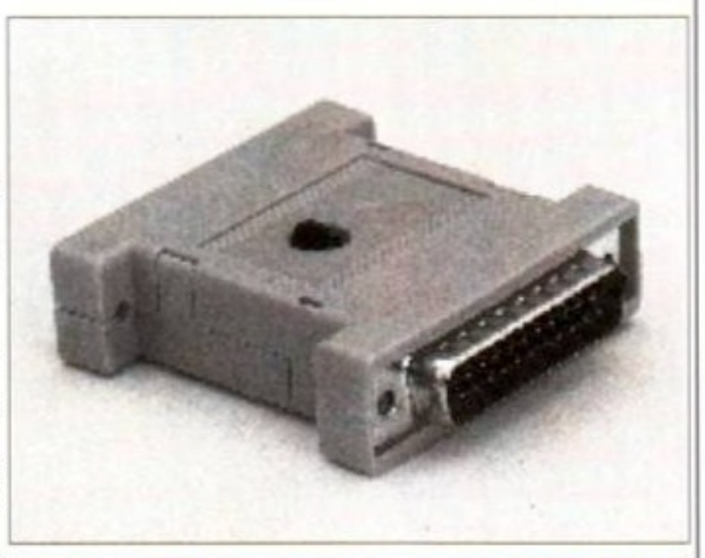

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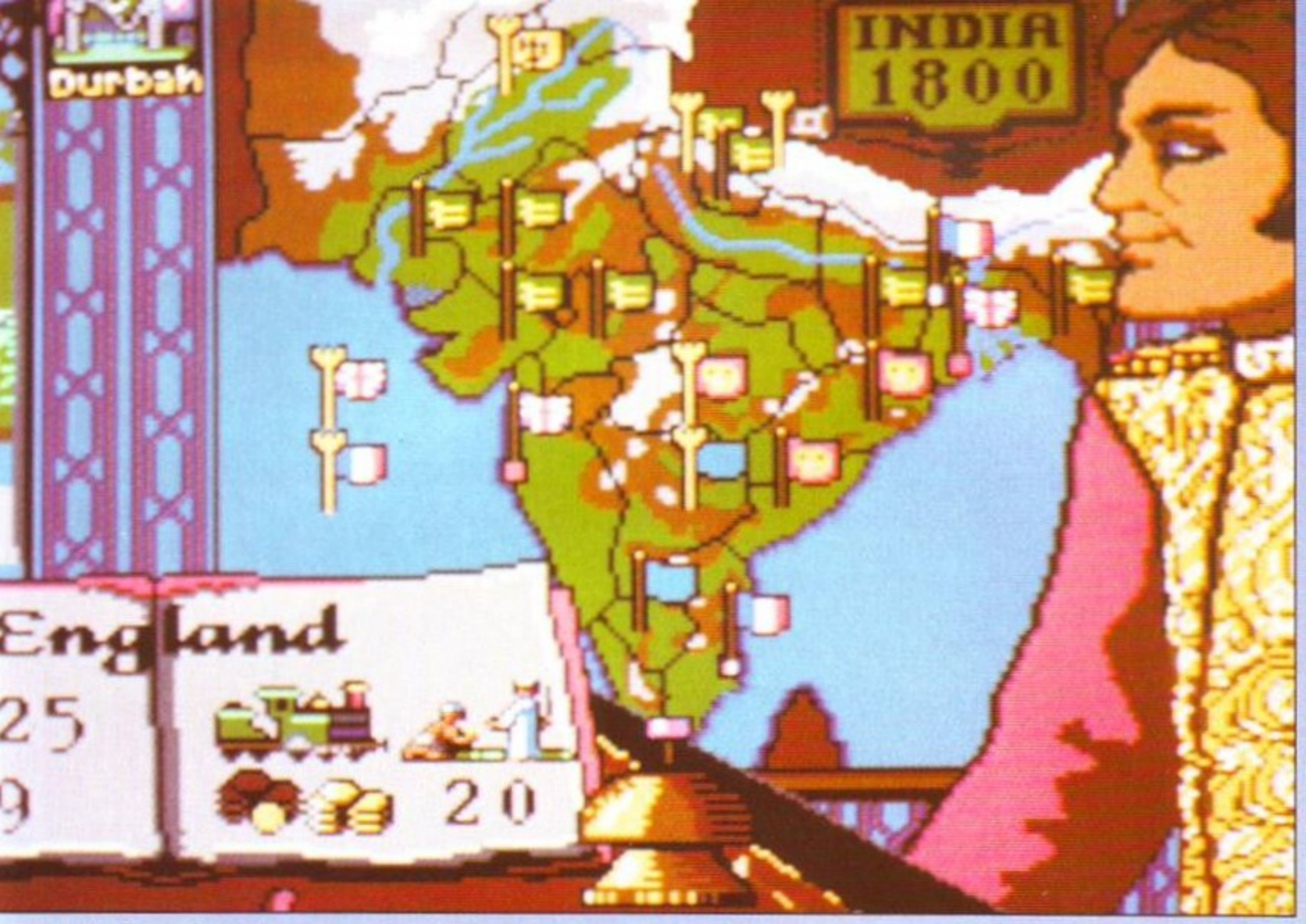


This is the main screen, from which you can peruse the various states and move your army.

CHAMPION OF THE RAJ

Now that there no longer seems to be a demand for "hardcore" text only adventure games, those whose forte they once were are having to make a move to more mainstream styles. Level 9 were very highly respected in the mid 80s for their 8-bit text adventures, which were pretty much unanimously regarded as the best around. Champion of the Raj is one of their new style of games, and while it looks quite different to their older stuff, it's still a game for the thinkers among us.

The scenario is one I've never seen on a computer screen, and that alone makes it worthy of attention. It's all about the remnants of the Indian branch of the British Empire. At a time when the country has broken up into many different states, ruled by six different figureheads, India's stability is rapidly disappearing. The "Thugs" as they are referred to, are taking advantage of the power splits, dragging the country into a mess of anarchy and terrorism. The rulers have each decided to re-unite the country, so long as everyone else joins them and obeys their rules.

What we have is a kind of Defender Of The Crown without the stunning graphics and sounds. You can choose to play as one of the six leaders, and from then, it's up to you to win all the territories for yourself.

You can do this in a number of ways. Building an army is essential. Although you can negotiate for pacts and alliances, you're going to have to fight for some of your land. Your standing in the minds of your fellow leaders will have a lot to do with your success or failure. One way to impress a leader (and so tempt him to join your ranks), is to hold a parade. This works very simply. Invite the VIPs along to your parade, and saunter past them with a train of elephants. Elephants are expensive, but the more you use, the more impressed your visitors will be!

A few arcade sequences are also included. Among them are elephant racing (also handy for impressing the opposition), sword fighting and tiger hunting. The latter isn't the done thing today, but the instructions stress that in those days, wild tigers were a real threat to human life, and hunting was essential.

Champion Of The Raj has nothing to rival the now sadly departed Cinemaware when it comes to presentation, but there's not much difference in the strategic side of the game. The arcade sequences are a bit tame, and so are best suited to dabblers in the world of shoot'em-ups rather than regular joystick jockeys. The game is made all the more interesting for its original, and until now, unexplored setting. Champion of the Raj is really little more than a standard colonisation wargame with knobs on, but an enjoyable one all the same.

Tony Horgan

DECISION

78%

Nothing much new in the gameplay stakes, but the plot makes a refreshing change from World War II battle re-enactments.

Graphics: 65%

There's a strong PC look about the graphics, with the tell-tale reds and deep pinks of the VGA palette often cropping up. Not bad at all though for what is really a wargame.

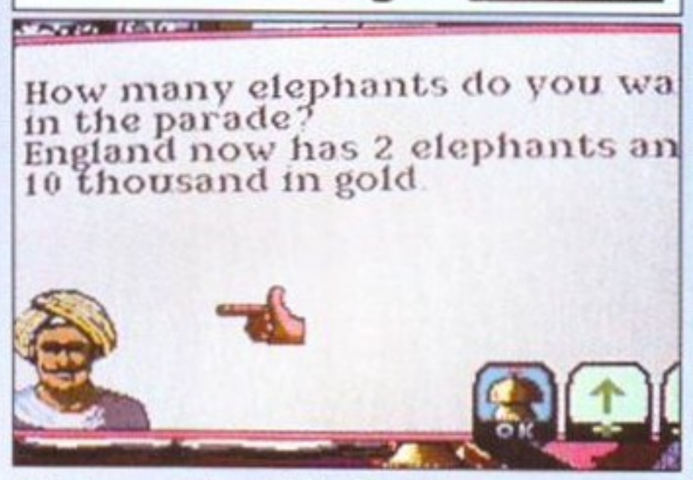
Sound: 40%

The soundtracks would be fine if they didn't keep speeding up and slowing down in mid-song for no apparent reason.

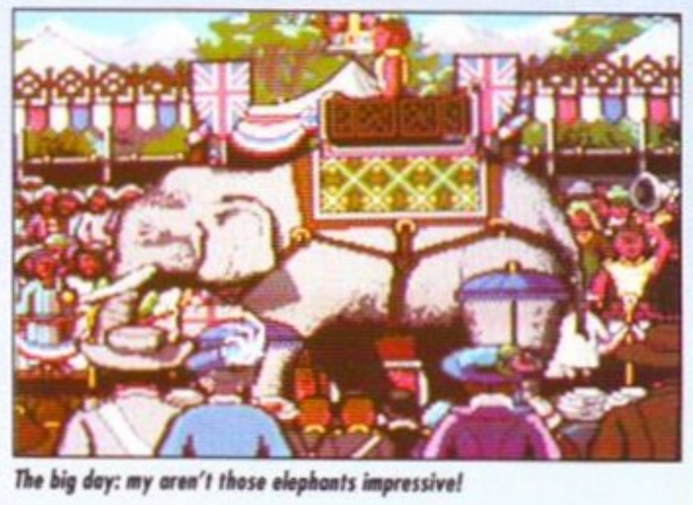
Gameplay: 79%

Not everyone's cup of tea, but an interesting excursion for anyone with a bit of time to spare.

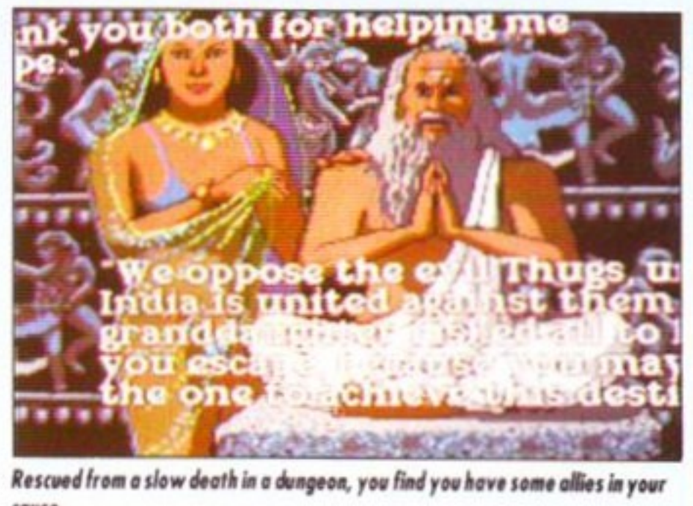
Difficulty: 4/10



Putting in your order for your forthcoming parade.



The big day: my aren't those elephants impressive!



Rescued from a slow death in a dungeon, you find you have some allies in your cause.

Short

Heart of the Dragon

Avatar Consulting £24.95

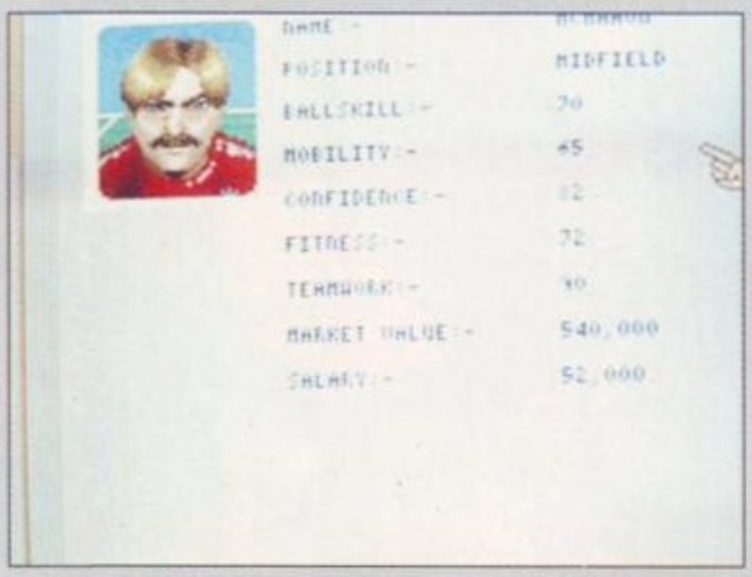
HAM graphics! Stunning digitised sounds and pictures! Featuring "anatomation" for anatomically true animation effects!

Beware the game that hides behind a list of "stunning!" features. Heart of the Dragon is a combination of RPG, adventure and karate beat 'em up. Even with the best programming and design, these styles are going to clash. With the kind of programming and design found in Heart of the Dragon, they lead to disaster.

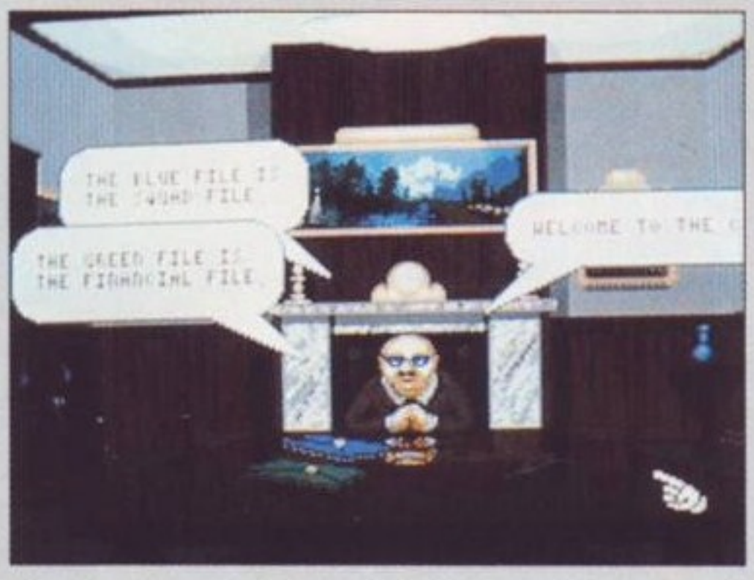
The adventure/RPG sections are extremely simple. The wow-factor here is supposed to come from the HAM graphics. The only way you can tell that HAM mode is being used, is by the untidy shadows that often occur with the 4096 colour mode. The arcade sequences boast "20 frames per second!". The fact that the programmers are proud of that frame rate should tell you something of the rest of their standards. Extremely dodgy animation and unresponsive controls make it a waste of time and money.

Rating: 20%

Heart of the Dragon



European Super League



European Super League

CDS £24.99

A management simulation rather than an arcade football game, European Superleague gives you control over one of a few European teams. It's all mouse controlled, but menus are thrown out to make way for a graphic point and click interface.

All your usual managerial options are available. Buying, selling and training players is the core of the game. Then there's the press to deal with, team morale, tactics and finances to think about. You've got an ever-so efficient secretary to keep you in line and make sure you don't miss any engagements. Although it's no stunner when it comes to graphics, it looks a lot more attractive than most text-orientated football manager games. The only glitch is the lack of on-pitch action, so you never get to see your decisions paying off. It's rather limited, but should satisfy footy manager fans for a short while.

Rating: 70%

Prehistorik

Titus Price £25.99

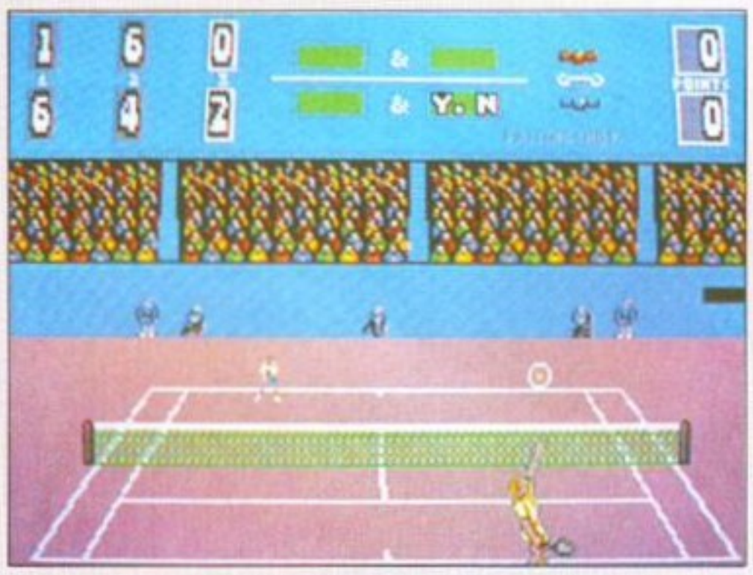
No trumped-up scenario here: Prehistorik is a caveman with an appetite. When his guts rumble, he's a force to be reckoned with. You take control of Prehistorik on his hunger-induced rampage through 150 still screens of platforms and dinosaurs.

Prehistorik is armed with a club. This comes in handy for battering the stupid dinosaurs, who see stars after a session of continued head-pummeling. Whacking the dinos is good fun for a while, thanks to some comical sound and visual effects. That's about all there is to it though. Some of the sprites are well drawn, but do little more than walk or fly across the screen, waiting to be battered. The gameplay is terribly simplistic, and looks as if it's been written in AMOS. After the first couple of goes, all but the least demanding of players will have had their fill.

Rating: 40%

Prehistorik

Passing Shot



Passing Shot

Mirror Image £9.99

Converted from the Sega coin-op some time ago, Passing Shot was released to a mild reception. It was never the most spectacular tennis game in its coin-op format, so it was no surprise that the Amiga version is also pretty mundane as far as graphics go.

However, it's a lot better to play that you'd think from first impressions. After a short while you can build up a repetoire of favourite shots, and learn the patterns of the computer opponents. The game's programmers didn't do much research into the sport it seems, as it calls an ace everytime you win a point, and awards your opponent a point if you hit the net on your first serve. Other than that it's a not a bad game at all, and well suited to its new budget form.

Rating: 80%

Waterloo

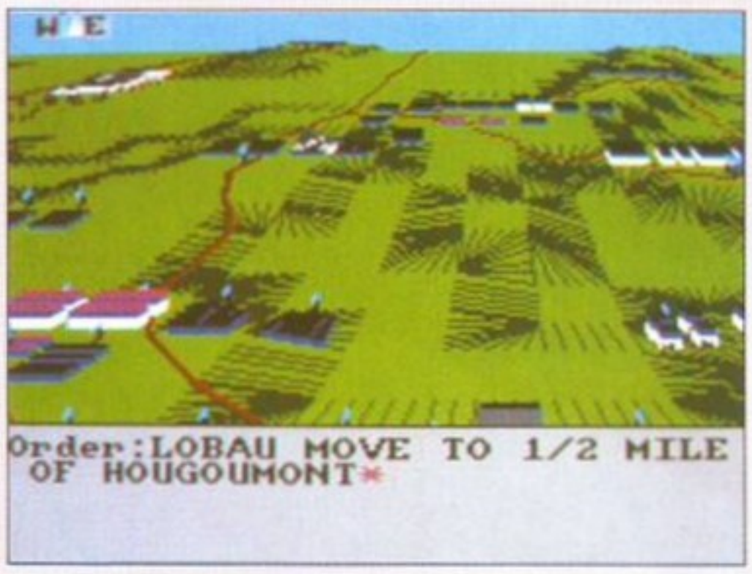
Mirror Image £9.99

Wargames all tend to look the same. Waterloo is the exception. It uses a unique and very realistic 3D graphic system to display the battlefield, which gives a far more convincing portrayal of events than the usual boardgame-style presentation. This time you actually get to see the lie of the land, the troops and all the hardware as it would look in reality, not just a flat patchwork of patterns and symbols. This alone makes Waterloo far more accessible to fringe wargamers who demand something more than just the same old format.

As Dungeon Master introduced role playing to a whole new bunch of computer gamers, Waterloo did the same for wargames, albeit on a slightly smaller scale. Even if you've never considered a wargame before, take a look. You could be pleasantly surprised.

Rating: 89%

Waterloo



TV Sports Football

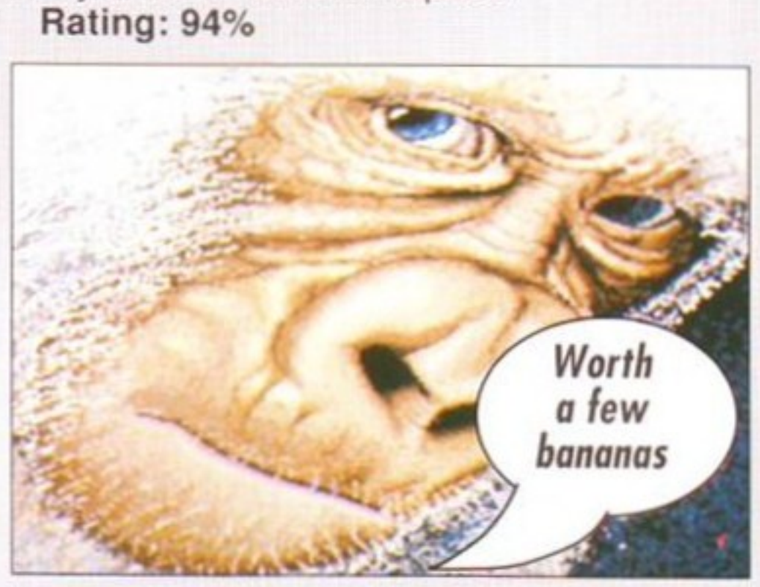
TV Sports Football

Mirror Image £9.99

Here's another corker from Mirrorsoft's extremely high quality back catalogue. From the now-defunct Cinemaware, TV Sports football is an american football action game, with a heavy TV slant on the presentation. The graphics are probably the best of any Amiga sport simulation, with both superb skills and on-pitch visuals. On the field, you control both the quarterback and the reciever. No matter which move you selected beforehand, your're still free to do what you like when the play starts. With loads of sampled sound effects and intricately detailed sprites, it's a game that pulls you right into the action. Gameplay is sometimes a tad slow, but other than that, it's hard to fault.

Tacticians and stats fans are well catered for with plenty of team lists and performance breakdowns. You get to select your moves, and then play them onto the field. This is a game no gridiron fan should be without, especially at its new reduced price.

Rating: 94%



ENTERTAINMENT

Reports

ADVENTURE NOW!

WITH ANDY MOSS

AS ANOTHER CHAPTER UNFOLDS IN THE *AUI* ADVENTURE AND STRATEGY CHRONICLES, THERE ARE ONLY TWO THINGS ON THE MIND OF ANDY MOSS: WILL HE SURVIVE QUASAR INTACT TO FILE HIS REPORT, AND WILL HE FINISH MEGATRAVELLER IN TIME FOR *AUI's* PRESS DEADLINE? ALL WILL BE REVEALED, BUT FIRST, THE NEWS . . .

NEWSDESK

INDIE 4 NEXT

In the true Yankee spirit of never quitting while you're ahead, Lucasfilms have announced that a fourth Indiana Jones adventure is in the making, subtitled THE FATE OF ATLANTIS. Due out in November, the game is based on a new story recently released by a comic publisher. Is this a hint to Messers Spielberg and Co to go down the old road one more time?

Incidentally, whilst on the subject of Lucasfilms and sequels, there is another MONKEY ISLAND in the making (see the fab review of the original in July AUI) called CHUCKS REVENGE, early next year. Great!

BLOODWYCH TEAM BACK IN THE FRAY

Remember Bloodwych, the best of the Dungeon Master clones before EYE OF THE BEHOLDER came along? Well there's a newie called LEGEND which Mirrorsoft believe will the benchmark for all future role players. The game will be split between a 2D display for depicting the overall landscape, and isometric 3D for dungeon interiors.

PLAYING GOD YET AGAIN?

Maxis' SIM EARTH, the mega huge sequel to Sim City I and II is an ambitious project that puts you in charge of an entire planet from birth until its death some 10 billion years later. Using James Lovelock's Gaia hypothesis, where the Earth is a single living organism, the game gives you seven different scenarios each offering a unique challenge. Aquarium, where there is a world without any land; Mars, which believe me is going to be tough; Modern Day, which is obviously Earth today; Stag Nation, where you have to bring civilisation out of the Stone Age; Daisyworld, which is the Gaia principle in its purist form; and Cambrian Earth, which sends you back over 500 million years. I have a feeling that this simulation could fall foul of fanatical religious groups, who would see this as a subversive and lying piece of work, but I find it fascinating.

ADVENTURE REVIEWS

THE BARDS TALE III
THIEF OF FATE
Electronic Arts/Interplay
512k £24.99

I remember the day well. I had just finished dusting down my Commodore 128 when a review copy of Bards Tale I came through my door. Loading it up I was pleased to find that this was something new, a fantasy role player that took itself very seriously but was a dream to play. No fussy rules, no fussy controls,

▲ *The Bards Tale III. Thief of Fate.*

just a cracking good adventure with loads of dungeons to map, gold to collect, great graphics and puzzles a plenty. Interplay, the creators were firmly entrenched as my number one software developer. When Bards II and III came along, I was shouting their praises from the page as loudly as possible.

So time has moved on and three years later we are all now proud owners of powerful Amigas that have brought ever more wondrous games into our lives. Great news reaches me from EA, Bards III has been converted to the Amiga! Oh joy, oh bliss, my favourite adventure is back. It is loaded in with great anticipation, but my joy quickly turns to resigned disappointment, as I see that time has not been kind to my beloved Bard. It has been treated shabbily, no rewrite, no great Amiga stereo sound, no tarting up at all, just a straight port from 64 to Amiga. Now to the uninitiated, this game is a good buy, don't get me wrong; the tale of a brave party of adventurers returning to Skara Brae's ruins finally to confront The Evil One through seven dimensions and release the City from the Bond Of Ruin is a cracking tale. All the spells are there, your characters can be created or transferred from any Ultima roster, and there are over 80 dungeons to explore and over 500 monsters to fight. It's just that you could do all that on the 64, and it looked and sounded just the same, which frankly in today's market is not good enough.

There are many glitzy role players available these days,that are wonderful to look at but lack real depth, with Bards III you have the depth, but it's not as good to look at any more. Fortunately, Interplay have gone on to produce some outstanding work which is soon to come our way, but for now I just feel sorry for an old but worthy friend.

GRAPHICS 40%
PLOT 80%
OVERALL 50%

MEGATRAVELLER I THE ZHODANI CONSPIRACY
Empire A500 £29.95

Too many players of role playing games, there is only one system that is worth talking about, and it will vary depending to whom you are talking. Some swear by AD&D, others on TSR (Buck Rogers XXV) and some on the Games Designer Workshop's Megatraveller system. Marc Miller the original designer of the TRAVELLER system has written more than 34 role playing supplements and adventures, and is thought of as something of an RPG guru to those in the business. The Megatraveller computer game is the first in a series set in the 50th century universe of two warring races, the Third Imperium, and the Zhodani. Four legendary wars have passed, each one started by the Zhodani, and each one ending in a rather dodgy ceasefire. A fifth war is imminent, as with the help of some corrupt Imperium officials the Zhodani are planning to smuggle arms to subversive terror groups within Imperium borders, thereby causing a kind of civil war. Fortunately, a brave female agent has stumbled across the plan, and is seeking help to thwart the Zhodani once and for all. She bursts into the bar you are drinking at and spills the beans to you and your party, whilst handing over 30,000 credits to get you started. She prompts you to travel in a new ship 'the Interloper' to the planet Boughene to make contact with another agent who will provide more instructions. All this to seek out a man called Keifer and do it to him before he does it to you.

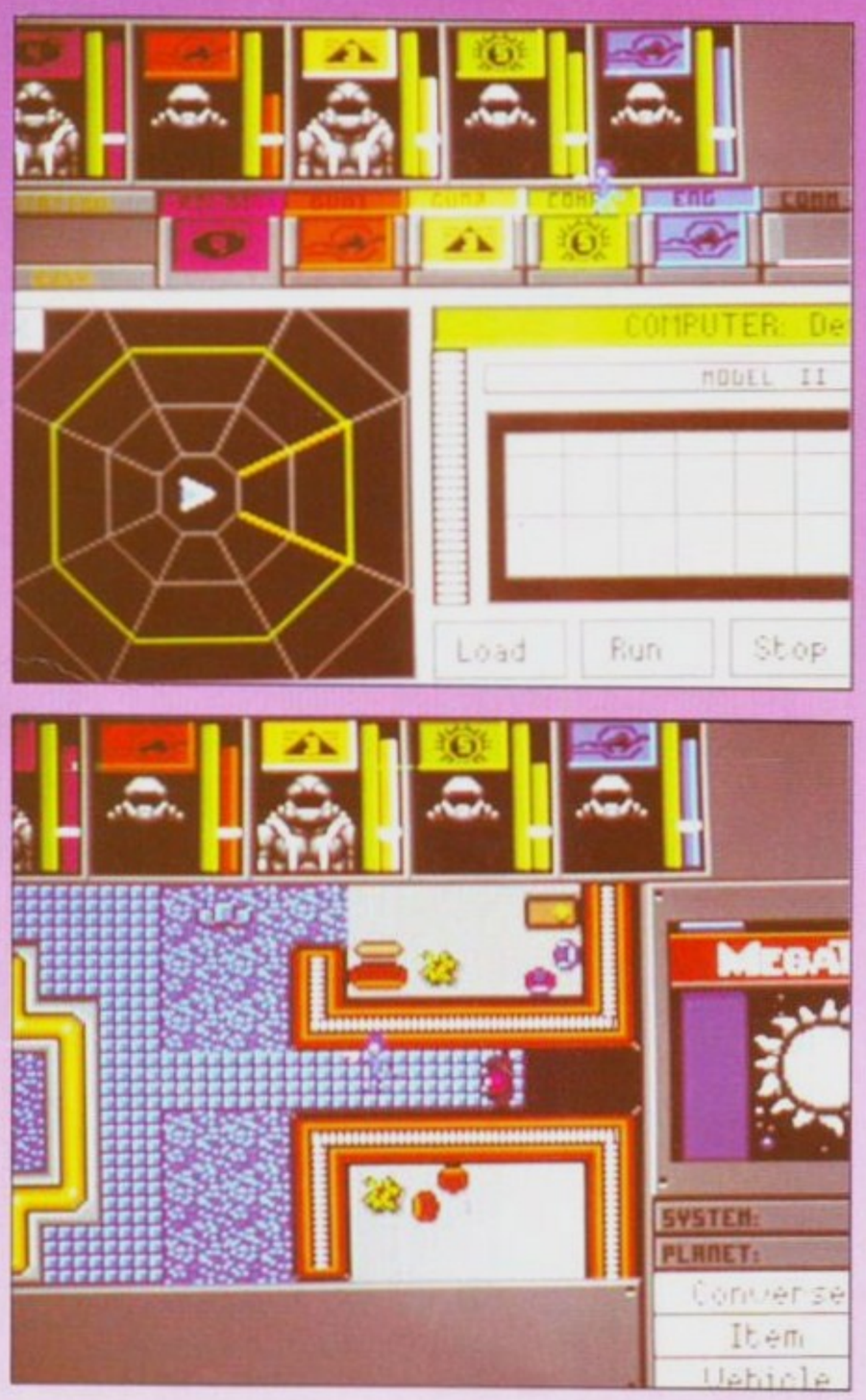
Before you get round to that you have to survive a shoot out (with no guns), buy some weapons, earn two million credits to afford to equip your ship with all the latest gizmos and warp drives to zap around all over the galaxy.

The screen display is very Ultima-like with an overhead view as the landscape scrolls beneath your feet. Character generation has a vast number of options, unless you opt for the default party of ready-made heroes. You can choose from five services, Army, Navy Marines, Merchants and Scouts, with over seventy skills including bribery, communications, piloting,demolitions, gambling etc. There are eight systems and over twenty eight planets to explore, offering many sub plots and 'earning' missions.

Interacting with other characters as in Ultima is a key factor in the game, and this is done by icon clicking where needed. They will offer info, or missions or objects or just plain old fashioned fighting. All the action sequences are fairly crude, with your party represented as a single figure initially, unless you decide to split up and fight as individuals, whereupon it all gets a bit complex, you select a character, choose a weapon, return to the main display, move the cursor, hit the fire icon, and repeat again for the next character. As I mentioned earlier, you must equip your ship, and money is to be had in trading things (a bit of Elite creeping in here) but once equipped, you can zap around the galaxy using a hex grid but only moving two spaces at a time.

MEGATRAVELLER I is not for the inexperienced gamer, it is an extremely complex RPG that is so involved it makes you wonder just what the designers had in mind. They have packed so much into it you feel that with a little less the gameplay could have been a bit quicker and smoother. However, this will appeal to experienced gamers who love a challenge, and even more so to the dedicated followers of the

▼ *Megatraveller I The Zhodani Conspiracy.*

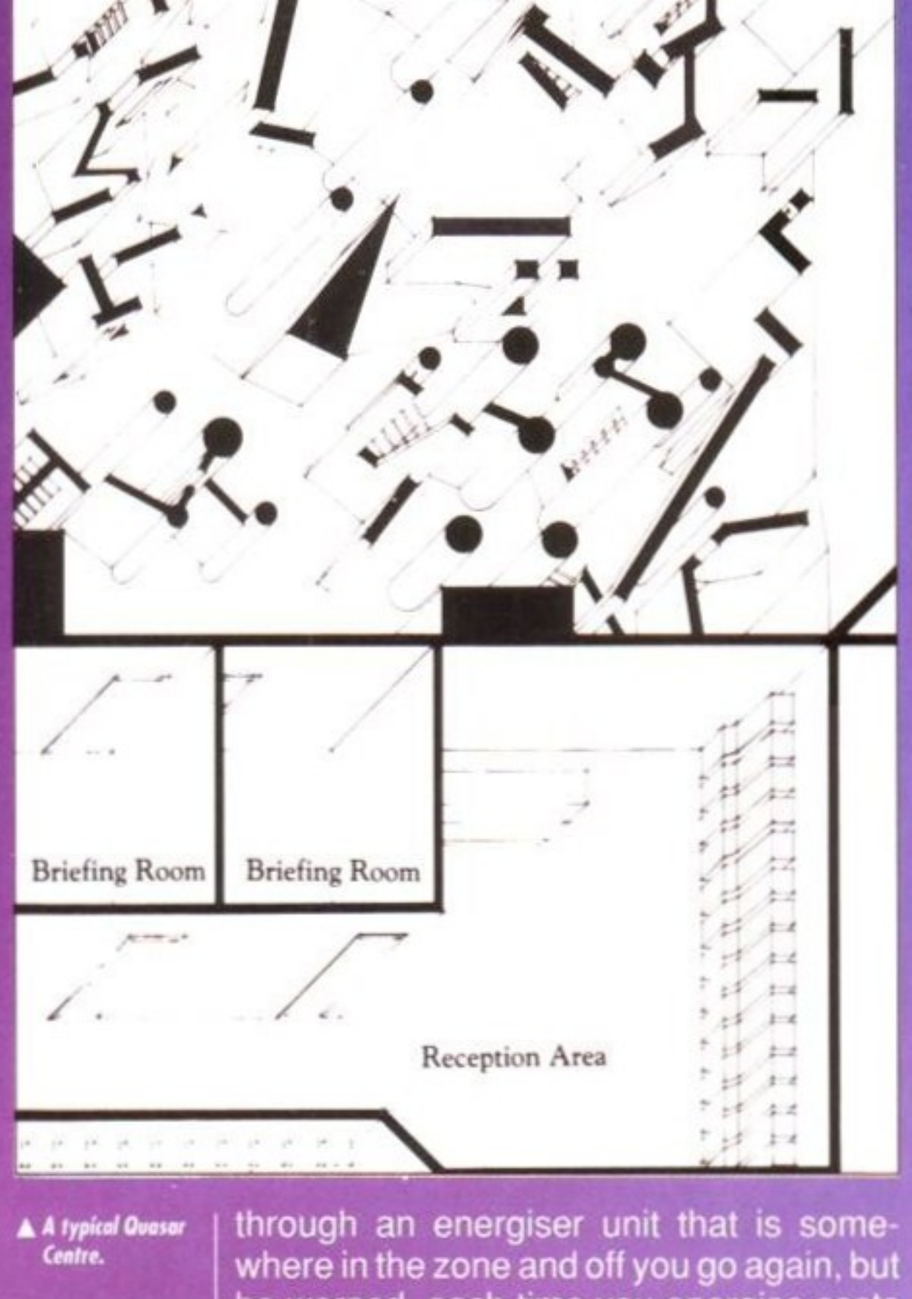


Traveller system whose rules and gameplay have been more than faithfully reproduced.

GRAPHICS	**60%**
PLOT	**60%**
OVERALL	**60%**

QUASAR - *MAY THE FORCE BE WITH ME*

Quasar is a new indoor all action laser gun battle game that does not have the pain, filth, cost, cold and danger that Paintball has, just the same excitement without actual contact. I visited my local Quasar centre in Harringey North London where I joined in a battle for the Greens against the Reds. The game begins in the Briefing Room, where the teams are picked and fitted with their equipment, which consists of a battery powered chest and back pack that contains a speaker and attached to this by cord is the Phasar gun that fires a harmless laser beam. Only the pack and gun are targets, and only hits on these will increase your score. After the briefing which tells you how to fire, how to score, and more importantly for me, how to win, we went through into the battle zone. The play is organised around the two teams ~headquarters~ which have base targets that can be hit for extra points, and consequently need to be defended against attack at all times. The two teams scores are shown on a huge electronic scoreboard high up on the zone walls, which also includes the time remaining, so if you are behind with three minutes left, you need some pretty decisive action on the opposing teams HQ. Every player has four lives before the gun has to be re-energised. Each time you are hit costs a life, and each time 20 shots are used up it costs a life. To re-energise your gun, you simply walk through an energiser unit that is somewhere in the zone and off you go again, but be warned, each time you energise costs you points against!



▲ *A typical Quasar Centre.*

You also know when you have been hit,because your chest pack vibrates each time it registers a hit, but the good news is when you accurately get an opponent, you hear a metallic ~good shot~ come from your own gun! The zone is full of artificial smoke, flashing lights, space age design and loud music, and it is all guaranteed to get the pulse rate sky high.

At the end of the battle (usually around 20 minutes) you receive a personal read out of your own score from the Quasar computer which drives the whole system, and then you are off to either cheer with the rest of your victorious teammates, cry on each others shoulders, or back into the next battle.

A truly great outing, that costs around £2.50 for kids or £4.00 for adults per session. Call the Quasar hot line for information about your nearest centre 081 881 5882

▼ *Quasar. "The most exciting leisure game for the 90's" ?*

BARDS TALE III – *HOW TO START*

1. *You should have two of either Minks, Warriors, Paladins or Hunters in your party, and two magic users, one Rogue and of course one Bard*
2. *After creating your party, fight a few encounters then look for the tavern in the forest and buy a drink*
3. *Exit the bar and find the ruins of Skara Brae, which should lie somewhere NE of your position.*
4. *Enter the city and move forward into a building and take all the cache of goodies you will find there.*
5. *Four paces north and fourteen paces east of the gates is the Boardroom, enter and talk to the old man*
6. *Go to the Temple of Tarjan 2 paces north and 10 paces east and say TARJAN.*
7. *Go through the dungeons to the doors, then through to the stairs and look for the word CHAOS.*
8. *Go back up and return to the Boardroom where you will get advanced a level.*

ONCE AGAIN SPACE HAS DEFEATED ME, BUT FEAR NOT, FOR NEXT MONTH I HAVE WONDERLAND, AT LAST, ALONG WITH QUEST FOR GLORY II AND SWORD OF EXCALIBUR. TILL THEN THE CHRONICLES ARE CLOSED.

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HUD Drivin'

Yes, the Amiga really gets motoring when used by ex-Austin Healey rally driver, and now armchair Amiga navigator, Alan Puzey.

You're happily driving down the A49 from Chester to Shrewsbury when a jam develops as you exit Whitchurch. After waiting an eternity (only two minutes in reality), your patience is exhausted and you call up the onboard navigational computer; voice activated, of course. "Hey computer, give me the best alternative route from Whitchurch to Shrewsbury, please." There's a couple of seconds delay before a new route is projected onto the windscreen, indicating *Whitchurch, Wem, Shresbury, on the B5476, then left onto the A528: same distance and estimated journey time.*

A few years into the future, admittedly, but definitely on its way. Until it arrives, how can you use present day computer technology to aid your motoring? Well, I use my Amiga in two ways before I embark on a journey of any distance - as a supplier of route notes/directions and a provider of HUDs for car driving. For the uninitiated, HUD is the acronym for head up display - as used in the futuristic example above. It is most commonly found in aircraft and computer flight simulations today, but it is applicable to road drivers now as well, as you will see.

HUD modules will be able to project the increasing amount of information being desired by drivers onto the car windscreen, where it can be read by the driver with minimal affect on his driving and concentration on the road ahead.

But I am now going to reveal that head up displays are available now, in a low cost, low tech form that I have been using for rally driving and general motoring for a number of years. A piece of white paper with bold, black lettering, when placed on the dashboard of the car, can be read quite easily in the windscreen. If it is placed where the dashboard meets the bottom of the windscreen, the lettering is seen low down on the windscreen and does not impinge on the normal view of the road at all. Reading directions that you have prepared before the journey is much easier (and safer) like this, rather than holding notes or an 'A to Z' in your hand, as you see many motorists do.

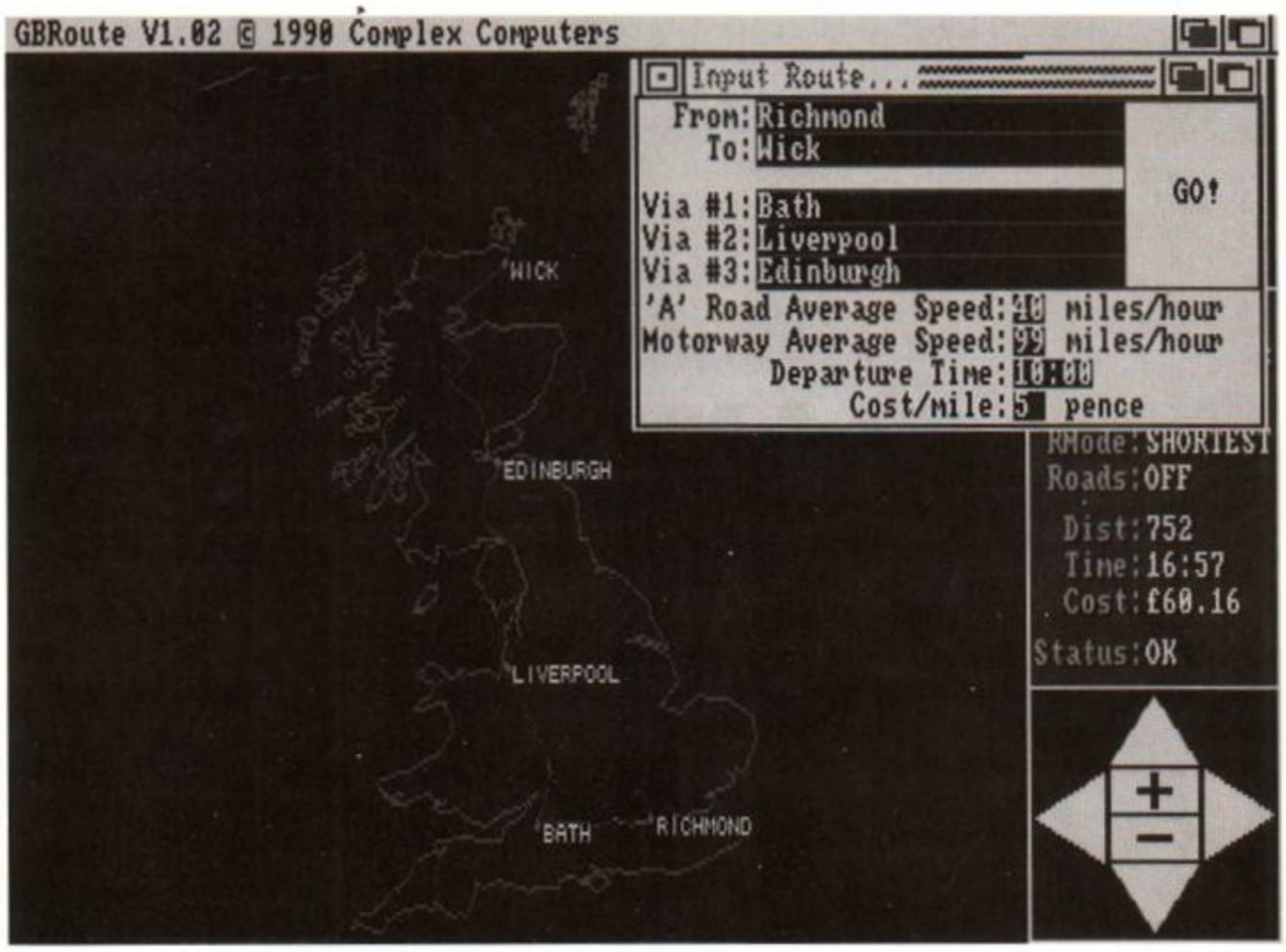
"Arab roads are often poorly mapped and documented, and yet they frequently have permanent hazards to add to the transient ones such as roving camels and goats."

If you try a HUD in this way, your first observation will be that the writing is laterally reversed (back to front), which in the old days meant I had to carefully write my route directions out in mirror writing, so that they appeared correctly in the windscreen. This is where the Amiga now comes in. I use a nice clear font, such as Diamond or Expanded, in DPaint, and draw my routes as in the screen shot examples. Then I simply flip them horizontally before printing and I get nice, legible, laterally reversed HUDs.

My rallying days are now over, but I still find that directions produced in this form are very easy to follow when driving. On the computer, it's so easy to produce two or three alternatives, too, in case you want to vary your route at the last minute.

More akin to the old rally notes I used to produce in this fashion are the route HUDs for Arabia, where I have worked a great deal during the past few years. Arab roads are often poorly mapped and documented, and yet they frequently have permanent hazards to add to the transient ones such as roving camels and goats. These are usually in the form of road humps, to prevent speeding. Whereas the humps currently being introduced in England are hardly likely to reduce the speed of your average rat-runner to below 50 mph, the ones in Arabia will probably demolish your suspension if taken over 10 mph! Consequently, a route display indicating these (as shown in the screen shots), is highly desirable, until each hump is indelibly etched in your brain on frequently used routes!

Back to Blighty and the second use of the Amiga to aid my motoring. That is to use the program GB Route. A route planner has been a long time coming for the Amiga, and I have had recourse to AutoRoute on the IBM in the past. Sure, you can use that road atlas stuffed under the driving seat to plan your route, but when you have a computer, especially an



The shortest route from Richmond to Wick, via certain cities, has just been computed in 4 seconds. The easy-to-use, solitary input window is displayed together with the route map.

Amiga sitting there, you want to use it, right?

So, how does GB Route stack up against AutoRoute? Being a much smaller program, approximately 300k agaist 1meg, GB Route has far fewer place names and road options than AutoRoute, but works much quicker for that very reason. On booting up GB Route you type in your town of departure (or nearest available),the town you are heading for, press the go button, and in a very short time - about four seconds - you have a route list and map available for both the shortest and fastest route. This will often be enough, and you can go ahead and print it out, but there are further options if you wish to use them. You can get a route via three different towns - by keying them in; the cost of the journey - by typing in your estimate of the cost per mile; and the time that the journey will take - by typing in your estimate of the average speed you will do on motorways and A-roads. If you are in map mode you cay move around the route or country by clicling the mouse on appropriate arrows, and you may zoom in on any area - up to a magnification of 64. As you zoom in, more road and town details are revealed.

All of the inputs are performed via one screen where AutoRoute prompts its inputs via four successive screens. On the first screen you input the departure town, destination, up to three towns you wish to pass through and four that you wish to avoid. The second screen invites you to grade the various types of road, on a sliding scale, showing how much you prefer to drive on Motorways, A-roads or B-roads, and how much you like changing roads. You can then opt for a selection of routes - the shortest, fastest or cheapest to be computed. The third AutoRoute screen lists a staggering twelve types of road, from motorway to urban C-road, that you have to input average speeds for - or leave it at the default settings, which is undoubtedly easier. The final screen lists the routes found, from which you can select map or route listing, as in GB Route.

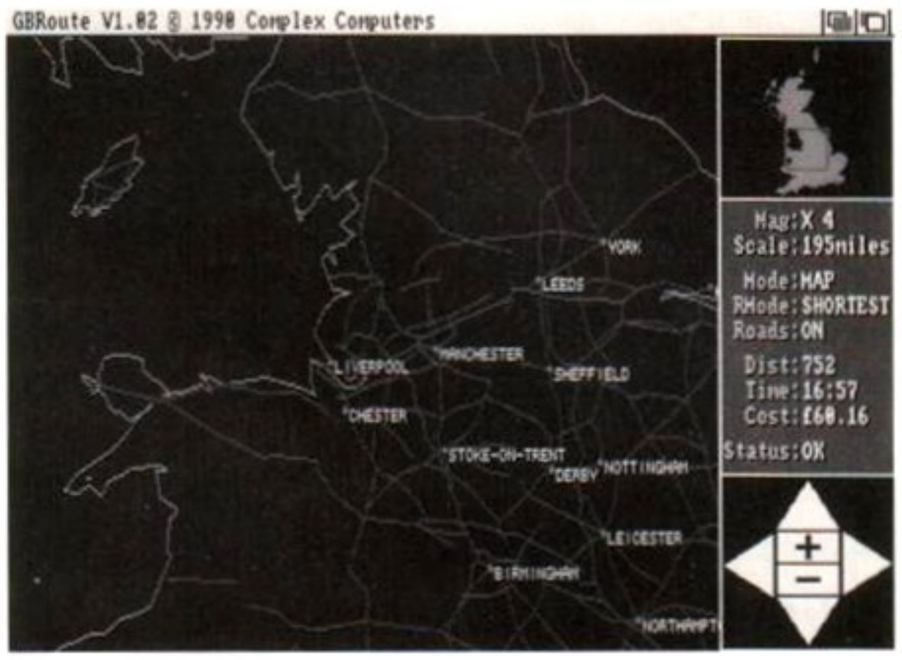
As I've said, the lack of many of these AutoRoute options makes GB Route much faster to use. It would be a shame to lose this characteristic, but a larger database of towns would be welcome. At the moment you have to refer to a road atlas or zoom in on the GB Route map to find the nearest town to the one you want, which is quite tedious. I'm not sure how much I would use the multi road functions; perhaps it would be best to enlarge the program with databases that you only access if required, and which remain uncalled up in normal use, keeping the program fast. My only other criticism of GB Route is that whilst it prints a route listing OK, when the map is printed, it is white on black unless you remember to go back to preferences and invoke inverse printing! Surely this could be done automatically in the program.

"All of the inputs are performed via one screen"

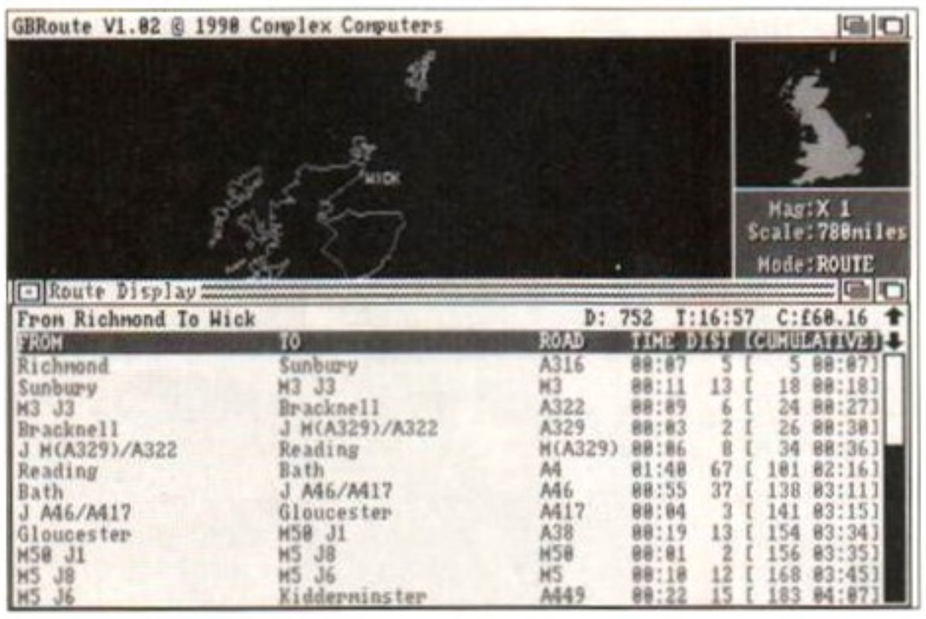
Well it will be! Having just come off the phone from Complex Computers, I can confirm a number of enhancements in GB Route Plus, which should be available in August, when they have thoroughly tested it. Bearing in mind the recent debacle of another company and its over-publicised route finding program, this cause for delay is to be welcomed.

The current program can calculate nearly two million different toutes, however, GB Route Plus will calculate twenty million. B and some C-roads have been added, as well as numerous additional towns. An accompanying program will be supplied with GB Route Plus, enabling you to customise the program yourself, adding towns and roads not there, but important to you. Sounds very useful. The new program will also: compute a greater variety of routes to any destination; have an improved magnification mode; give grid references; enable you to specify places to avoid; have easy-to-use rolling-bar input choices, similar to AutoRoute; and it will support ARexx and interlace mode. There is a cost to all this of course; GB Route Plus requires one meg, rather than the half meg as at present, and the average computation time goes up from four to twelve seconds. It certainly looks promising.

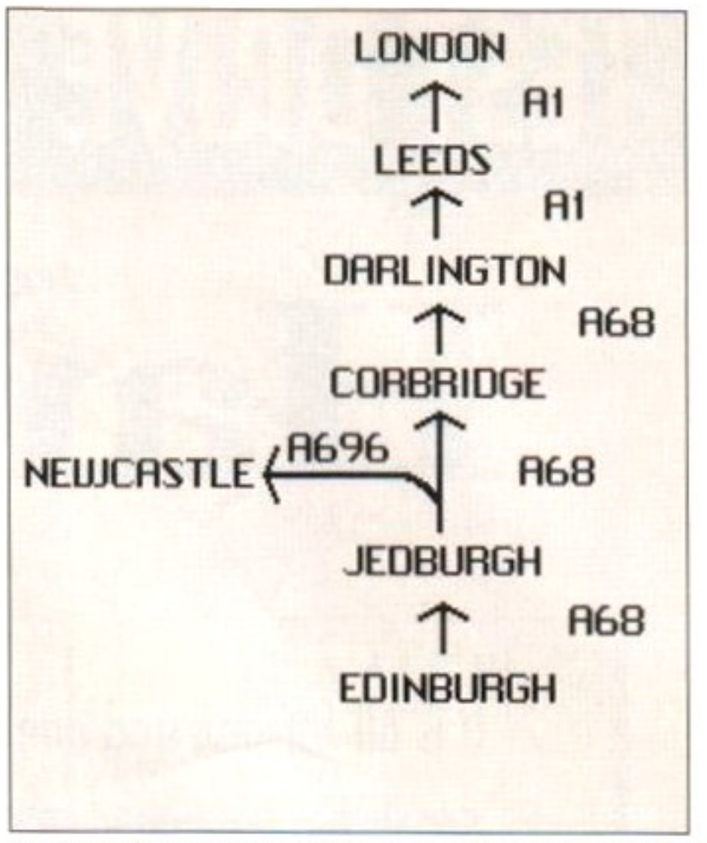
So there you have it. While waiting for these improvements to GB Routes, I will continue to use what I think is one of the neatest of programs, albeit with the assistance of my road atlas for the moment. This, together with my own developed HUDs, will continue to help me on all my lengthier journeys, successfully interfacing the world of motoring with my Amiga.



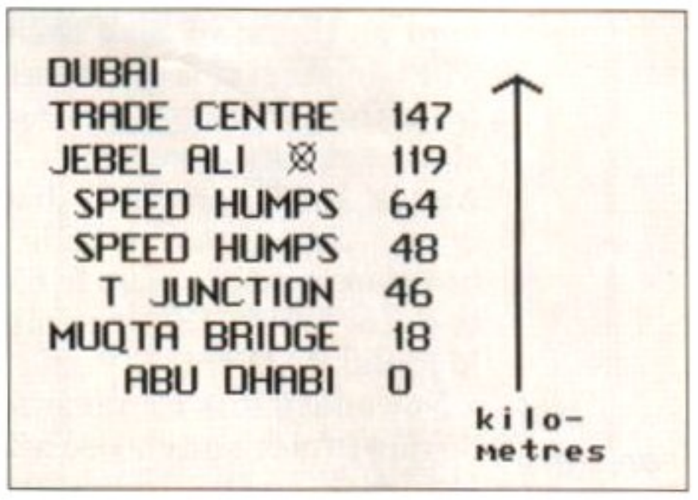
The magnify option has been used to study a section of the proposed journey.



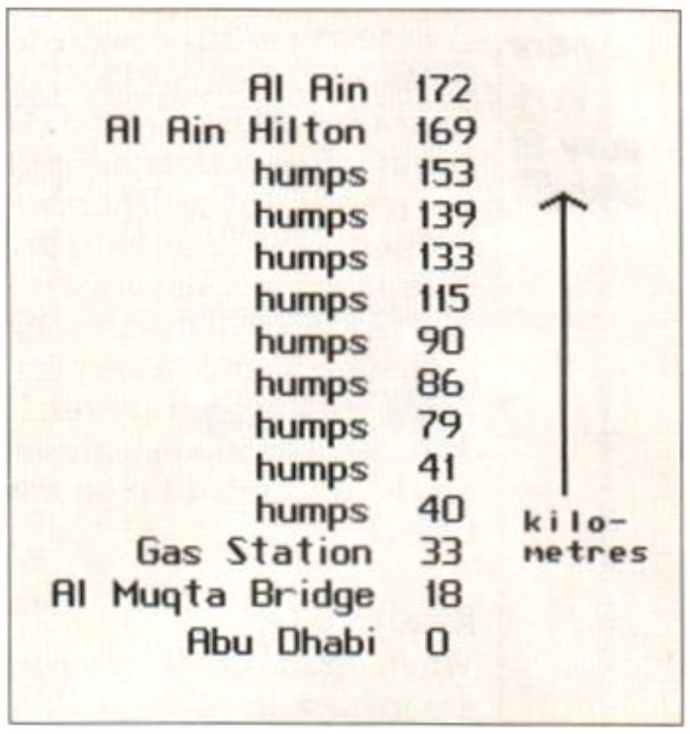
The route display (or nearly half of it, to be exact) is superimposed over the map. This provides an excellent in-car guide when printed out.



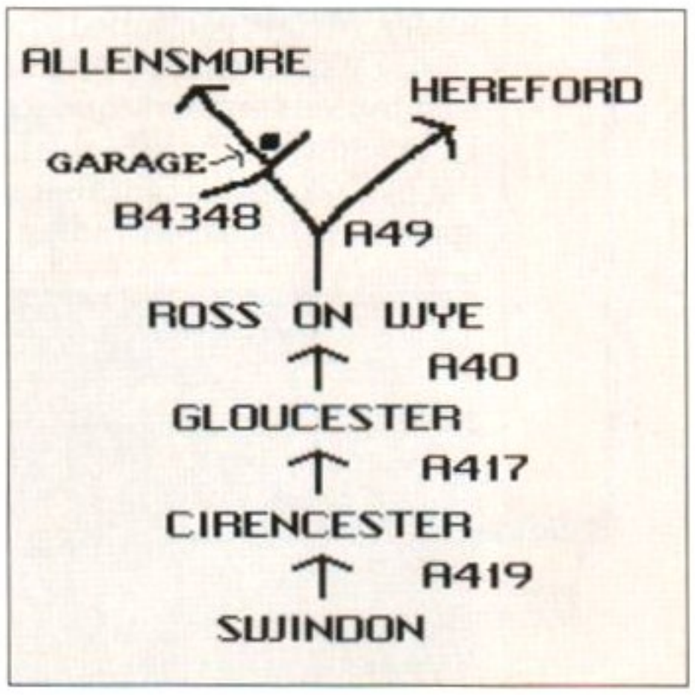
Simple HUD sheets, ready to be placed on the car dashboard - when printed back to front.



A similar example. (The sign after Jebel Ali signifies a roundabout, in case you wondered.)



You could really get the hump driving from Abu Dhabi to Al Ain if you didn't have this handy HUD.



TEST DRIVE

TEST DRIVE

GVP Hard Disk Series II

It is all-for-one and one-for-all as Pat Kelly goes on the upgrade path.

Until recently, only A500 hard disk drives offered users the option of connecting up to 8Mb expansion RAM to the same card as the hard disk drive controller. The benefit of this conmination is, apart from the A500 only having one expansion port, the lower cost. Now several Amiga 1500/2000 hard disk drive controller cards are available offering onboard expansions of up to 8Mb using up-to-date SIMM (Single-Inline Memory Module) RAM chips.

Nowadays it is common for hard disk buyers to pick and choose between which hard disk, and controller, that they combine. AUI was supplied with the 105Mb Quantum 11ms 3.5in. hard drive to accompany the GVP Series II controller for the A2000 - fitted with a full 8Mb of SIMM expansion. This powerful configuration came from GVP's UK distributor Power Computing, and made for one powerful piece of hardware. The A500 version of the same hard drive controller is supplied in a smooth casing and plugs into the left expansion port of the A500.

The Quantum is a very fast drive (11ms using buffers) and slower, lower storage capacity, but less expensive alternatives can be connected to the hard drive controller.

"Not only are the SIMMs fast, but they are very easy to install"

Ready To Go

When the GVP II, complete with pre-assembled hard-drive (if required), is delivered it is already pre-formatted as a single partitioned drive with a well-equipped Workbench. The hard disk under review contained the latest version of Workbench 1.3 and Extras, with a customised startup-sequence for the GVP II. In addition, there is also a GVP Utility floppy disk which contains several GVP-specific utilities, including the highly-touted FaaastPrep. This utility will prep (format) your hard disk into partitions either automatically, or manually for experienced users who require more formatting control.

Automatic mode allows the user to choose the number, and size of, partitions. Then, the FaaastPrep software will happily clunk away formatting and partitioning the hard drive, wiping out all programs, utilities, and data in the process. Unless you purchase one of the many hard disk backup utilities (XCopy Professional and Byte'N'Back - both reviewed in ***AUI*** April 1991 issue) you are faced with a reconstruction of Workbench, as well as your own data, to hard disk - a very messy business indeed.

Although many users like to have organised partitions, backup-partitions, MS-DOS partitions, and the like, I don't personally see the need for them. After all, what are drawers for?

The main constraint of partitions is that they aren't dynamic. i.e. if one becomes full, and another empty, the full partition cannot be expanded to allow free space from the empty partition to be used.

The GVP II came fully set-up for "plug in and go" users, like myself, to fill the single partition with their own programs. However, if someone wants to re-format the drive into partitions then so be it, the utilities are there to make it as fast and painless, or as detailed, as possible.

The special feature of the GVP Series II controller, other than being fast, is that it can accommodate up to 8Mb of expansion RAM on the card. This memory is in the form of SIMMs (Single In-line Memory Modules), with each module holding 1Mb of memory on 8x128k chips. Not only are the SIMMs fast, but they are very easy to install - they require no soldering as they plug into connectors - and take up little space being mounted vertically from the board.

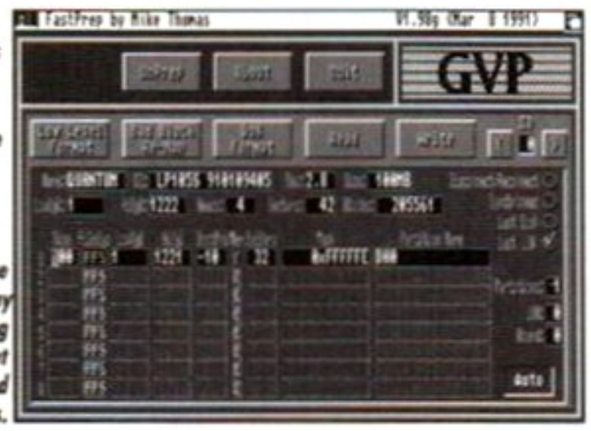
When Commodore get round to officially releasing Kickstart 2.0 and Workbench 2.0 for all Amigas, owners of the GVP will find that their hard drives will install automatically without any additional changes to the mountlist or startup-sequence version 2.0.

Conclusion

The major advantage of the GVP II is that it can accommodate 8 Megabytes of expansion RAM with an access time of 80ns at a cost of £320. A similar memory expansion upgrade on a separate card would cost in the region of £400, although less expensive and slower expansion cards are available for about £300.

Each user will have a different set-up requirement, and therefore the main statistic to note is that this equipment is one of the fastest units available. When you consider that you can also connect up to 8 Megs of cheap SIMM RAM, what seems to be an average controller card could prove to be a relatively inexpensive, fully-populated, high specification, fast and reliable, upgrade.

"The software supplied with the controller includes GVP's FaaastPrep which allows beginners and experienced users alike the ease and flexibility over formatting the hard disk"



The FaaastPrep software will happily clunk away formatting and partitioning the hard drive, wiping out all programs, utilities, and data in the process.

Product: GVP Series II Hard Card
Price: £199.00

Product: Above + 105Mb Quantum 11ms 3.5in. Hard Drive
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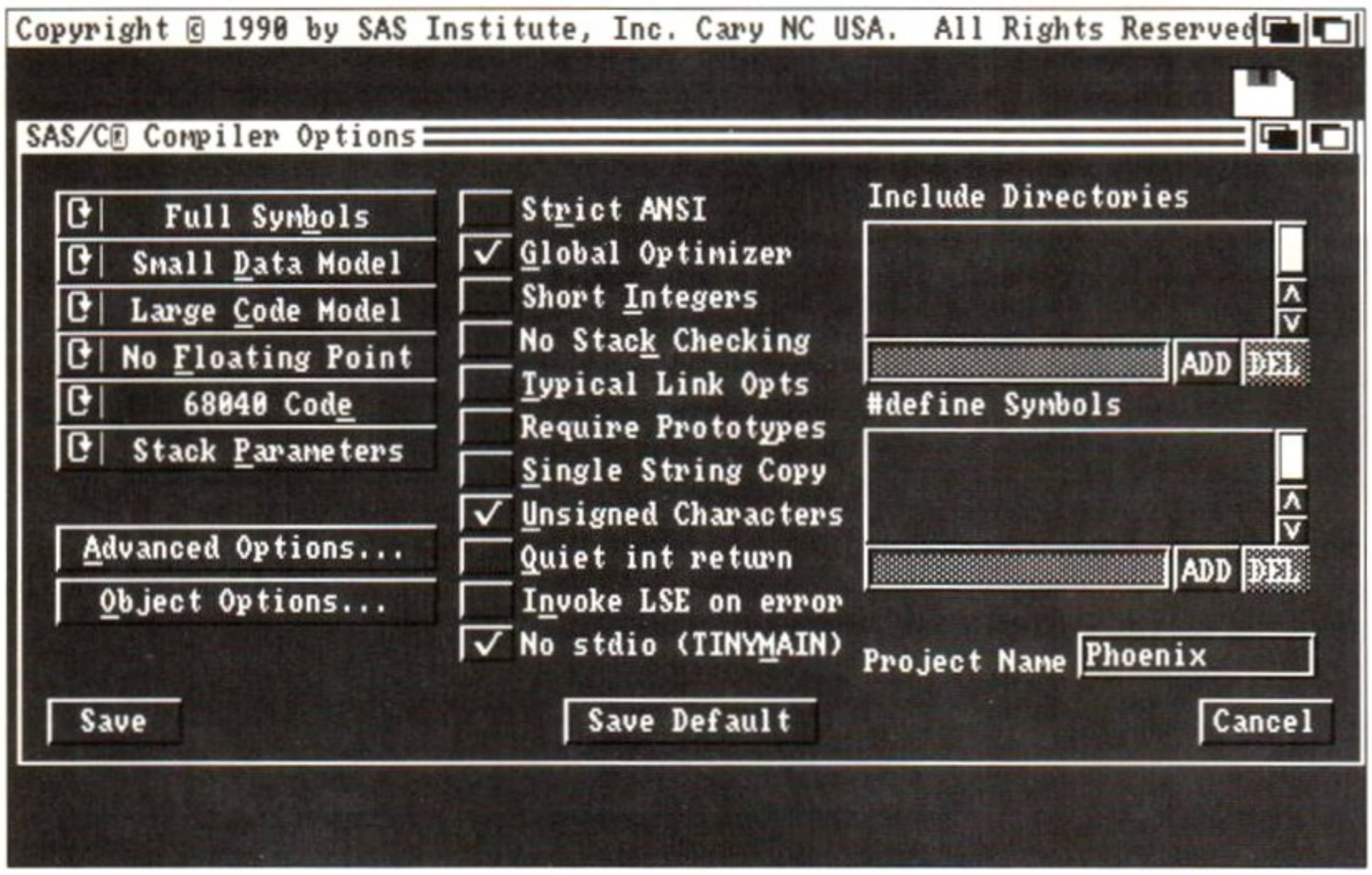
TEST DRIVE

SAS/C

A new name, but the same high quality, says Mike Nelson of the renowned "He who dares.." compiler.



Since most of the Amiga's operating system was written using it, the language of choice as far as system programming on the Amiga goes has always been C. The preferred C compiler for Amiga programmers has been a toss up between Manx C and, of course, Lattice, with the latter probably finding most favour due its extensive support from Commodore. Lattice have now given the development and support for the system to their parent company, the SAS Institute, and although this seems to have made little difference to users in Britain, they have not rested back on any laurels and version 5.10 is now under the microscope. To be precise, we are looking at version 5.10a as the UK suppliers, Hisoft have provided an update to the original shipment which is essentially a pile of bug fixes.

So what's new in the compiler world? Wild things are happening and, yes, I have to admit that Amiga program development has gone the way of everything else and is now fully WIMPed. Gone are the days of typing massive command lines with hundreds of options just waiting for a wrong letter to ruin your morning. No, we are firmly into the era of windows and icons, and SAS have done an excellent job in developing a friendly, yet comprehensive Workbench environment for C programmers. I must admit to feeling slightly sceptical about such a radical change at first, being perfectly happy with the CLI user interface. After a few minutes to get used to the idea, however, I am now converted and my mouse hasn't been quite so busy since Marble Madness.

"C was originally designed to be as portable between different computers as is possible, hopefully minimising the hair loss experienced by the cross-developer"

Right from the word "Go", everything is now considerably easier, with simple clicks to install the upgrade on the hard disk (well recommended) with one of Lattice, sorry SAS's, AmigaDOS scripts. All of the main components of the compiler have an icon associated with them, and they are grouped in a drawer named "lc". You may be wondering how all these icons fit together, and the key is to use an editor like CygnusED (or indeed the one supplied with the compiler) that can generate icons for your source files. I must admit that I didn't bother in the old days, as all those ".info" files tend to litter up directories, but of course they are invisible under Workbench!

Options

The next stage is to generate a directory for all your source files to live in, which is made straightforward for you by simply duplicating SAS's own drawer called "starter_project". This is not simply an "empty" clone as it already contains several icons, and these are used to control the compilation process. Firstly, there is a program to set up the options for both the compiler and linker. This is really tremendous as SAS/C is supplied with an absolute multitude of different options to control every aspect of compilation and linkage, allowing the programmer to specify serious things such as which Motorola chip to optimise for, and whether comments can be nested. The latter is a typical example of the assistance SAS/C gives to the programmer converting code from one computer to the Amiga, and this comes in very handy indeed. Debugging is another area in which SAS/C excels and with this comes the need for appropriate options to include extra information in the object file as fodder for CodeProbe, more of which later.

If you are developing large programs, it is usual practice to split the code into digestible chunks or modules, so that once some aspect of the program is working nicely, there is no need to keep compiling it when something different is being worked on. Managing many little modules can be automated using a utility called "Make" that looks at the modules concerned, and only feeds those to the compiler which it notices as being updated. This idea is extended into Version 5.10a in that all you do to get everything moving is click on the "Build" icon and this invokes "Make", telling it to check all the source files in the directory (i.e. those with a ".c" extension), and compile those which were altered from the last run (using the options selected using previously), and tell "Blink" to link it all to form the object file. Couldn't really be easier, could it?

With regard to the language itself, SAS/

C is as compatible with the ANSI standard for C as anything else around, and SAS are committed to the full ANSI specification as and when it is cast in granite. This is quite important as C was originally designed to be as portable between different computers as is possible, hopefully minimising the hair loss experienced by the cross-developer. This is all well and good, but the Amiga has a few little quirks which can make life intensely tricky for programmers, particularly in the data department. The custom chips which make the Amiga the Amiga are only capable of accessing the bottom megabyte (or so) of memory and programmers need to ensure graphics and sound data goes there. SAS have kindly provided an extension to the ANSI standard in the shape of the "chip" keyword, which does just that. Of course, this sort of behaviour is likely to create a few ripples of dissent down at ANSI HQ, but who cares, it works for us! New to 5.10a is a similar directive, called "_aligned", which forces data onto long word boundaries, a prerequisite for some aspects of dealing with AmigaDOS.

We are all eagerly awaiting the arrival of version 2.0 of the Amiga's operating system, and programmers will be treated to a whole stack of new areas to explore, notably in the Intuition and Workbench environments. SAS are naturally at the forefront of Amiga development and so provide on this release all the new "include" files full of the updated system data structures, fresh from Commodore themselves. They are pretty meaningless at the moment, although some of the comments make interesting reading, but it's nice that someone out there is thinking of us. (Hint!).

The Editor, LSE

Lattice have provided their own editor designed especially for the specific needs of programmers for some time, and SAS have continued development with the addition of Workbench support and also an ARexx port. The latter is becoming a standard inclusion for almost all productivity packages, and this trend is set to continue with Commodore including the ARexx control software in the Extras disk of Workbench release 2.0. Using the ARexx port allows you to effectively use all the functions of LSE remotely from another program; you can therefore write macros to alter files, perhaps to remove all the comments or maybe renumber the lines.

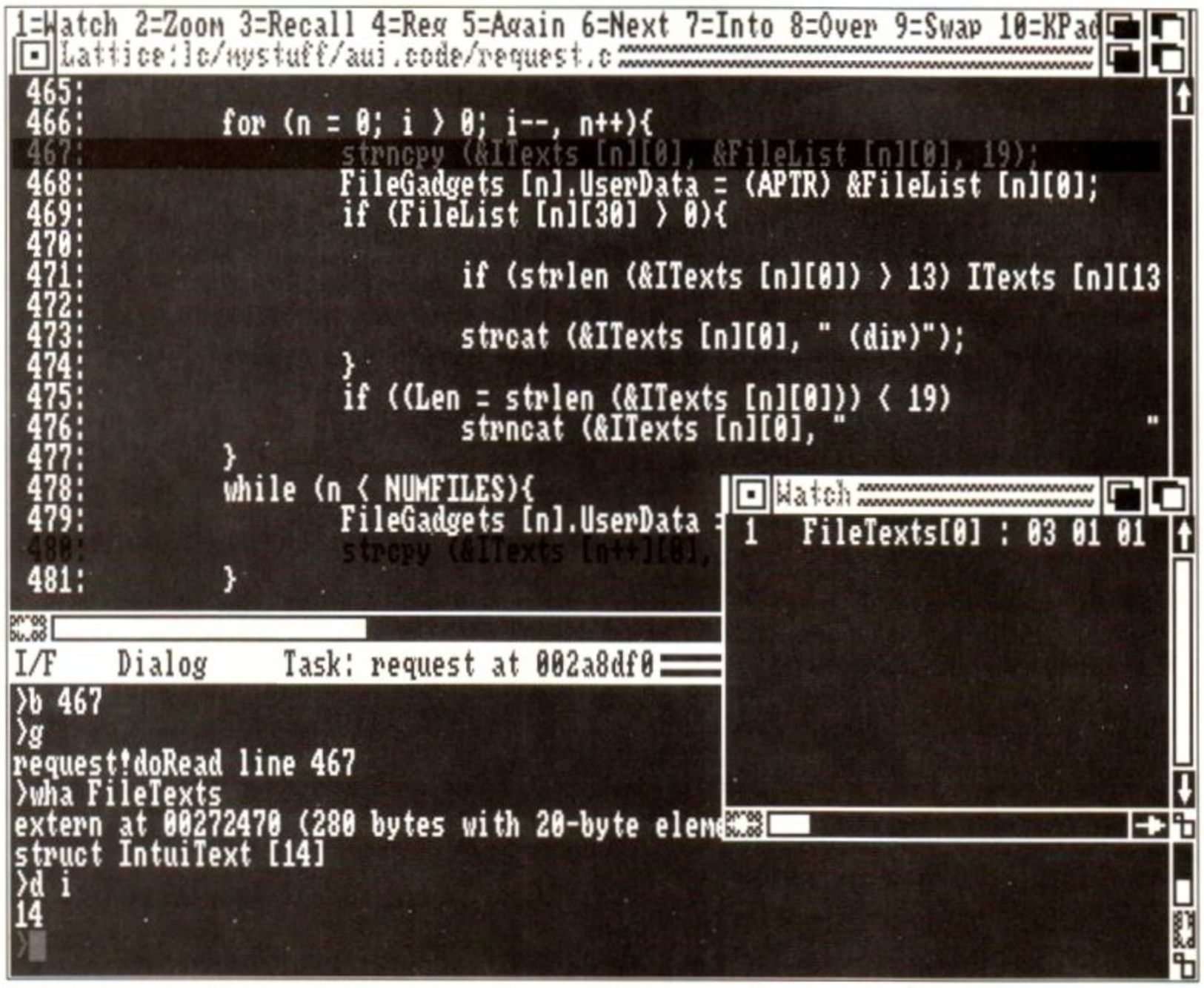
The advantage of using LSE is that you can trigger the compiler (with the usual list of options) within the editor which then points out the errors in your file as reported to it. In fact, I prefer to use CygnusED as it is marginally more powerful, although I did graduate from LSE with great reluctance after getting a review copy!

CodeProbe

When I first saw CodeProbe in action, the initial shock at being able to watch my C code run and the effects on the Amiga was soon replaced by curiosity above and beyond the call of duty. This is easily the most remarkable part of the whole package and is absolutely invaluable. Going back to the early days of trying to put endless "printf" calls to track down Guru invitations is like using a 3.5K machine with a 22 column screen. Been there, done that and wouldn't relish going back!

"SAS/C is supplied with an absolute multitude of different options to control every aspect of compilation and linkage"

All you need to do is set up the compiler and linker to include debugging information for CodeProbe and the rest is plain sailing. It loads and runs the program as a sub-task, but allows you to place break points so you can stop the code at any point and examine any of its variables, perhaps even altering them. The break points are very easy to specify in that you can tell CodeProbe to watch for a certain variable becoming a specific value before returning control to you. Intelligent use of windows allows you instant access to the registers of the 68000, a group of constantly updated variables, the program code (either in native C, the compiled assembler, or both) and also a command line with on-line help. Although not updated further than a Workbench interface, CodeProbe remains a truly excellent tool for software development, but bear in mind it does have a fairly hefty memory requirement.



Other Utilities

"Also provided on this six-disk extravaganza are a number of very useful programming utilities"

Also provided on this six-disk extravaganza are a number of very useful programming utilities. These include a cross referencer which prints a report of the various modules of your program so you can find out where different variables are used and functions called. The profiler program takes your program and calculates how much processing time is being spent in the various functions, allowing you to target areas for improvement or maybe re-coding in assembler.

Other utilities include "Diff" to list the differences between two files (useful for analysing updates), "Grep" which is like a search and replace function, and "Files" which will go looking for a specified file or group of files.

Conclusion

With the benefit of hindsight the Workbench implementation of Lattice C (sorry, SAS/C, old habits die hard) is perhaps overdue. But now it is here, the authors are to be congratulated as it works well. There is one caveat and that is all the source files must be in the same directory, a limitation which does not cause me any problems, but people who are more organised and like grouping their modules by their purpose in life (like graphics, or sound) may be irritated by this until SAS put it right, which they promise to do soon.

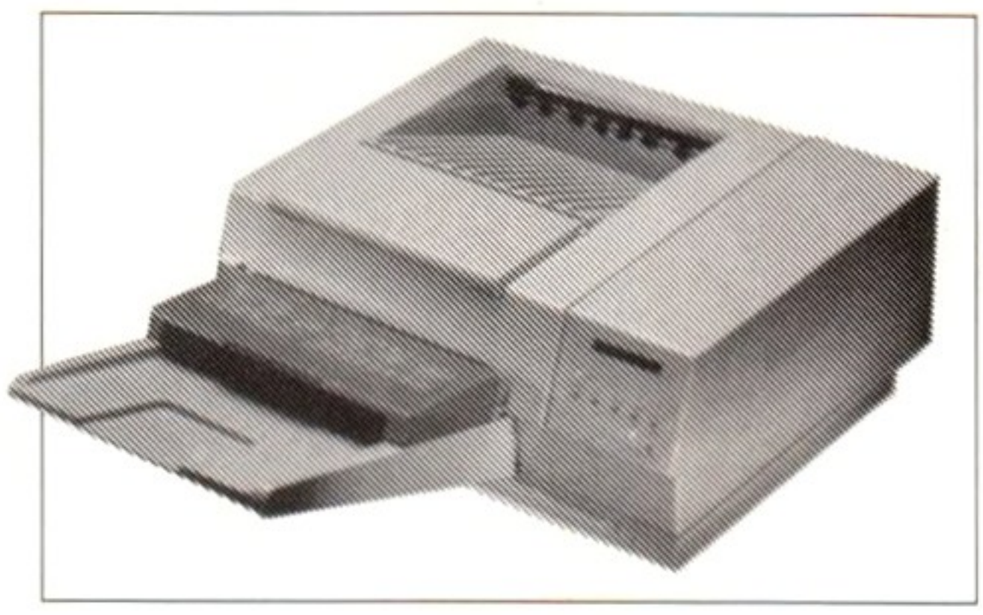
SAS/C is a professional product in every aspect, especially the comprehensive documentation, and this is reflected in the price, but it does represent good value. It would be nice if the SAS Institute could release a cut-down version for under £100 so that more people could get into the fascinating world of C and the Amiga.

Price: £199.00
Contact: Hisoft, The Old School, Greenfield, Bedford, MK45 5DE.
Tel: (0525) 718181
Fax: (0525) 713716

MENTOR

Laser Printers PART 3

Martin Witton explains how laser printing is moving us toward a more creative use of the printed page.



NEC Silentwriter 2, Adobe postscript. 35 fonts at £1895

Printer Emulations.

If a fast, modern printer is to be connected to a computer system or VDU in place of a dot matrix or daisy wheel printer, it is not usually necessary to change the program running the printer. The Kyocera laser printer, for example, has as standard seven emulation modes covering the most widely available printers.

When using emulations, the laser printer can only print out the standard character set of the appropriate printer. The graphics facilities and the entire selection of multiple font variations with different character sets in different point sizes can only be obtained by using the special page description language resident in the system computer.

Printing resolution

Reproduction to near-typeset quality and graphical accuracy depends heavily on the resolution of the printout. Whereas professional equipment in the photosetting business achieves a resolution of 600 to 2,500 dpi (dots per inch), the resolution of laser printers in the commercial arena, and even of the high-capacity printers in computer centres, is 300 dpi. This resolution allows high print quality which is more than adequate for the majority of applications. An improvement in the reproduction quality to 400 dpi, for example, requires double the laser printer memory. This, and the demand for an even greater precision in the manufacture of components, dictates the correspondingly higher prices for these laser printers, compared with printers giving a resolution of 300 dpi.

"The origins of PostScript go back to the beginning of the Seventies"

Which Language does your Laser Printer Speak?

Page description languages "translate" the contents of a document into a digital character sequence which makes up the format in the laser printer as a bitmap display or vector graphics. There are altogether over 100 different page description languages on the market, most of which are adapted to specific systems. As the differences consist only of minute variations, it is simpler to limit ourselves here to the most important, and most typical language of this kind, PostScript

The origins of PostScript go back to the beginning of the Seventies. The current PostScript is marketed by the Adobe Company and is offered by some large PC manufacturers, such as IBM and Apple, as a standard page description language. Other companies, like Kyocera, with its KPDL language (Kyocera page Description language), have developed their own PostScript-compatible page description language, which covers all the functions.

PostScript runs with user-friendly interface software (such as GEM or Microsoft Windows), to prepare the printed page. Behind the interface run DTP software packages such as Ventura or PageMaker, Professional Page, Pagestream, Prowrite and Saxon. They determine precisely at which point on the page the words and graphics should be placed. The graphics are made up of lines, circles, grids, grey shade scaling and drawings, all generated in the computer, as well as photographs and logos, which are brought into the system through a scanner.

As PostScript, like BASIC, is an interpretive language, the statements are not turned into machine language until program execution. However, this activity does not take place in the system compu-

ter, but in a special computer which is built in to the laser printer. This division of work explains why PostScript-capable laser printers are more expensive than standard laser printers.

How are new Typefaces, Graphics and Images Created?

It is necessary to understand what is meant by professional terms like: type font or style, type size, and character set.

There are three type styles: Roman, sans serif and gothic. Roman faces are among the most frequently used in word processing or desktop publishing. In this font, every letter, as in the case of "Times", begins and ends with small horizontal closing lines. These "serifs" guide the eye within the text. If a clear, modern script is required, the choice often falls on a sans serif font, such as Helvetica. Gothic scripts are only used rarely nowadays. Some daily newspapers still use it in the title, but it is a very fancy old fashioned type style.

In the typesetting world type sizes are measured in "points". There are 72 points per inch. The height of initial letters and the height of capitals determine the height of a face can be varied in height width and slanted to the left or right. Single letters can also be rotated by 90, 180 or 270 degrees.

These individual typefaces can be changed even more by using certain additional parameters.

What Accessories Will You Need?

One of the most important criteria in selecting the printer you need is the choice of expansion modules available and whether they can be added to the equipment at a later date.

IC Card

Once the items such as logos, graphic symbols business forms etc. have been created using the printer command language, it is wise to store them safely as you may need to use them again. They can be stored on devices known as IC cards and then recalled whenever needed, on any compatible laser printer. Overall this facility adds immensely to the many applications of a laser printer.

The IC card which is the size of a credit card, is a special store card incorporating microchips. When the printer is switched on or receives a control command from the computer, the data content of one or two cards is read into the integrated system store. They are always ready for recall, for example the creation of special forms or mailshots. The use of the card is simple, just place it in the slot, press the start key and the printing begins.

Additional Working Memory

If most of the documents you produce consist mainly of text, word processed letters and reports, a printer with 512Kb of main memory will be adequate. This memory or RAM will have to be expanded if pixel graphics are to be produced, as in desktop publishing, CADCAM etc.

To create one A4 page of pixel graphics, the printer needs around 1.2 MB of RAM. It quite often happens that the range of applications for which the laser is used expands into areas which were not originally envisaged. This makes it wise to buy one where the memory can be expanded by at least 1MB.

A Second Paper Cassette

Changing the paper in the printer from first sheet letter head to second sheet plain can be tedious, so a second paper cassette is a useful asset. The operating process can be programmed to automate the use of the first and second feeds. An automatic collater is useful for printing out multipage sets.

What Materials does a Laser Printer Use?

The print drum in modern laser printers is made of non-toxic, entirely safe organic compounds. Therefore, there are no worries when disposing of the waste material. Depending on the model, the drum unit must be changed between 4,000 and 20,000 printed pages.

If the drum gets damaged, it may have to be replaced much earlier. The cost of drums between £50 and £250 careful handling is essential.

Toner

The specific toner formula is one of the printer manufacturers' trade secrets. The smaller and finer the individual particles, made up of carbon black, resin and iron dust, the better the print. Normally the toner supply is sufficient for 1,500 to 10,000 printed pages.

When printing documents with large areas of black, more frequent replenishment of toner is inevitable. On certain models the drum unit must be changed at the same time. These running costs should be taken into account before buying a particular machine.

Paper

To print satisfactorily you need to use uncoated and dust free paper. This is vital in order to avoid deposits on the individual components of the laser printer. A rough surface prevents complete adhesion of toner particles; a too smooth surface can cause the paper to slip through the take up rollers, twist and become jammed. Colour paper and transparencies for OHP's can be used according to the specifications of the manufacturers.

How Do You Find The Right Laser Printer?

When choosing a laser printer it is always a good idea to read the performance and price surveys carried out in the professional magazines - such as ***AUI***.

Sharp JX-9500H: now uprated to 9ppm., a laser printer for under £1,000.

"There is no ideal printer, but if you made a list of the requirements for your needs you can check you have chosen the right one"

There is no ideal printer, but if you made a list of the requirements for your needs you can check you have chosen the right one. Common to all users is the desire for a universal, easy to use and robust piece of equipment together with easy access to toner, paper and print drum without having to call out an engineer - although it is advisable to buy a brand where the engineer can be called out promptly if required. A good guide is to base your decision on the projected amount of printing you will be doing - with a facility to increase in the future. A more productive and efficient printer will be more economical in the long run.

Cost Efficiency

This is often calculated on the basis of the cost per printed page, and figures for this can be supplied by the manufacturers. However you should take into account the advantages which the laser printer has over other printing methods, such as the opportunity for more creative work.

In addition to the simple cost of the machine other variables must be taken into account. For example, if a document is created with various typefaces, graphics and photographs will you be able to print it all? On some laser printers you will not be able to do so, and if you can add on extras the cost may be disproportionately high.

Future trends

In the case of monochrome laser printers, the trend is towards even more compact and lower priced equipment. The resolution (currently 300dpi) will be progressively improved, increased bit information will require an increase in memory. In addition, future laser printer generations will also be able to process larger paper formats e.g. A3. Colour printers are now available but are as yet still expensive. As with all new technology, cheaper equipment will quickly become available.

MENTOR

MENTOR

UNDERSTANDING THE AMIGA

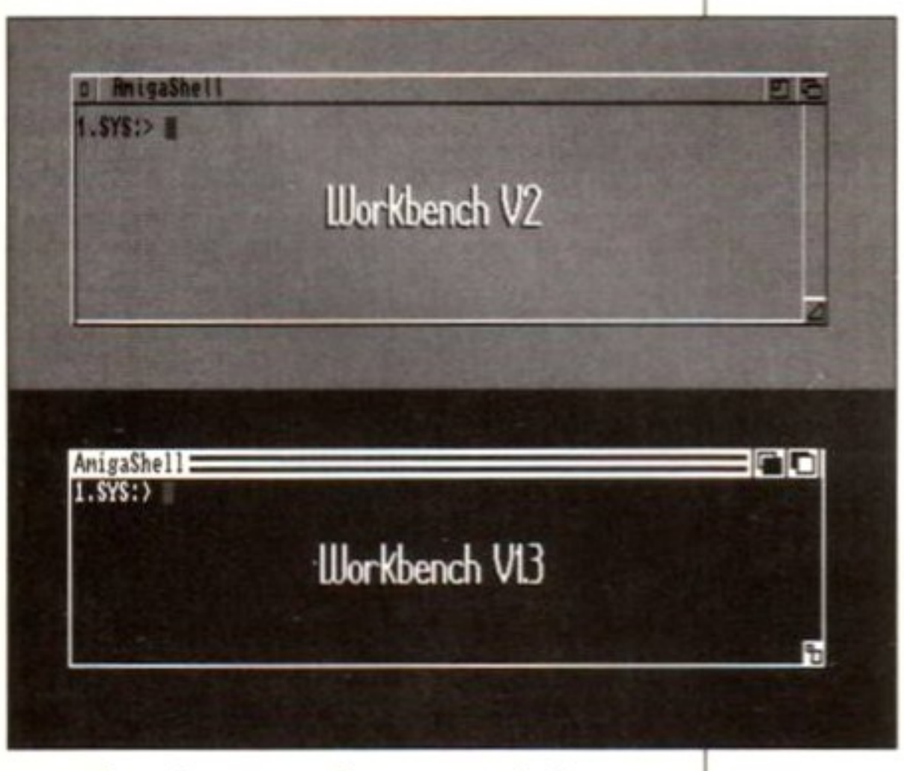
Workbench Part 3

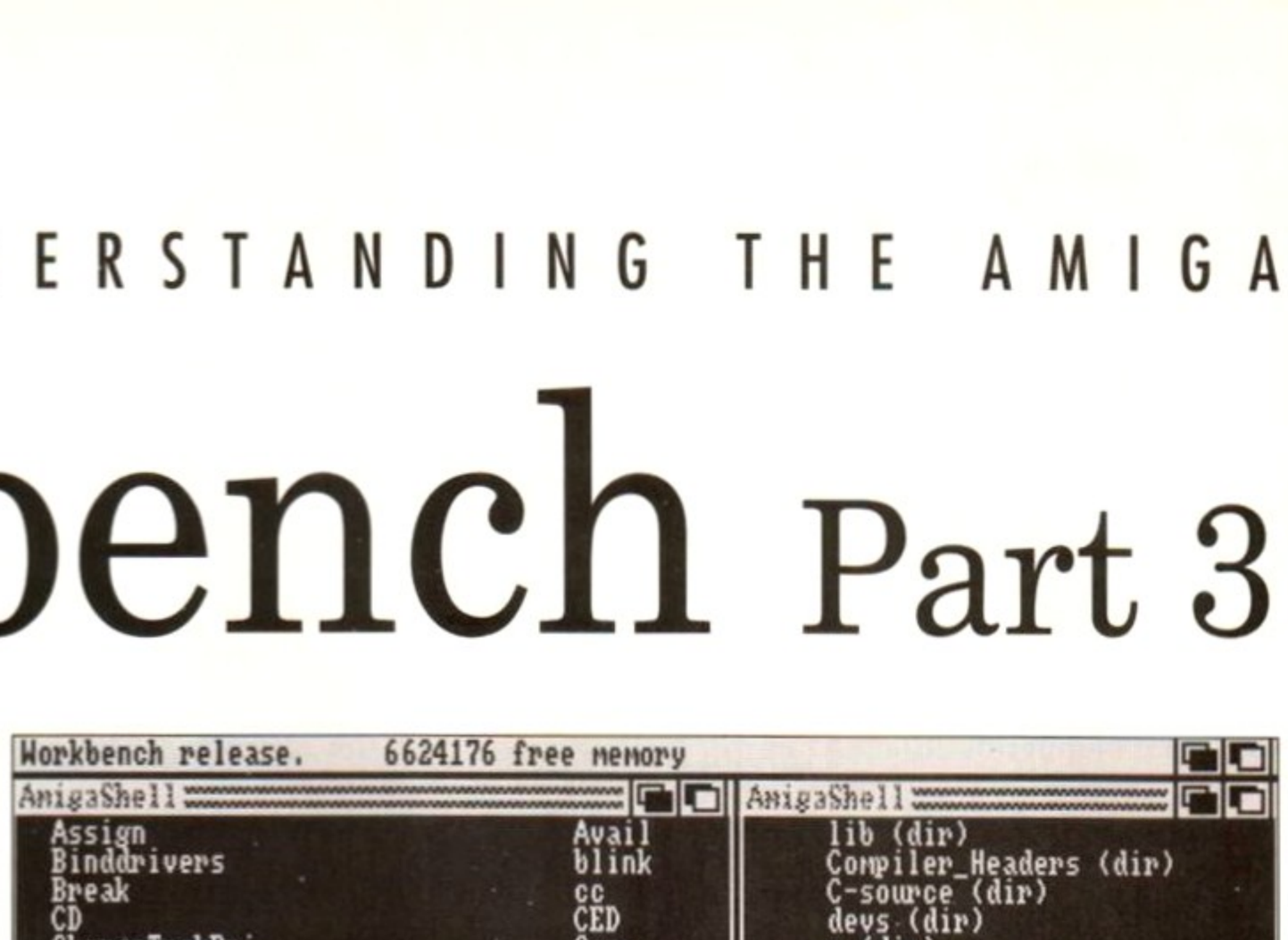
Travel (slightly) beyond the Workbench with John Kennedy, as he takes you to the place where the even the most ardent Amiga fan can meet a sticky end... the CLI.

There comes a time when the border between the user-friendly Workbench and the slightly less than friendly CLI becomes a bit blurred. The CLI is the 'command line interface', and it's where you can type direct commands to the Amiga's operating system.

Starting the CLI is frighteningly simple: you simply click on either the Workbench Icon called "SHELL" or the one called "CLI". Both will achieve the same effect (figure 1) apart from some subtle differences which only hardened CLI-junkies will notice.

Herein lies the first problem - now that the CLI (or SHELL) window has magically appeared on the screen, how on earth do we get rid of it? If you are using Workbench 2 then the answer is simple: click on the close gadget in the top left of the window's border. If you're not using Workbench 2 (and let's face it, that's about all of us at the moment) you'll have to do some typing. First make sure that the CLI window is active (click inside it with the left mouse button, the title will become sharp instead of blurred) and then type 'ENDCLI' (or 'endcli' if you prefer) without the quotation marks but with a press of the Return or Enter key. If you managed to spell it correctly, the window will vanish in a puff of pixels. If you didn't manage to spell it correctly, you have my pity.





"Try showing this trick to any PC, Atari or Mac friends and see what happens. Nine times out of ten they'll say sulkily 'Yeah, so what? Who needs proper multitasking anyway?'"

Now here's something clever. Open a CLI window by clicking on the Icon again. Drag the window down the screen (click and drag the title bar) and then open another CLI by clicking again on the Icon. Inside the first CLI type 'dir' and then move the second and type the same. Remember that to type into a CLI the window must be made active by clicking in it. If you're quick, you should be able to get both (or even more if you like) windows going at once (figure 2). Try showing this trick to any PC, Atari or Mac friends and see what happens. Nine times out of ten they'll say sulkily "Yeah, so what? Who needs proper multitasking anyway?" Smile kindly at them. They'll probably never know what it's like. (You'll soon find some examples of when it becomes slightly more useful, believe me).

The 'dir' command you typed instructed the Amiga to list the contents of the Workbench disk. It is likely that most of the names that shot past your nose were completely new to you. Don't worry, in a short time they'll be old friends. If you want to pause the list as it move upwards, press the Space bar once. You can restart it with a press of the erase key (the one with the left-pointing arrow on the top row).

However, all this clever low-level AmigaDOS-type stuff is taking me away from the completion of this month's goal - giving you enough information to let you construct your very own boot disk.

"What's a boot disk?" you may ask.

"I'm glad you asked that" I may reply, "A boot disk is a disk you can boot from."

"Oh dear", you say, "It's going to be like that is it? I think I'll go and watch Russ Abbot instead. He may not be very funny, but he doesn't go on about booting disks"

Indeed he doesn't, and a good thing too. There is a time when you want to know about booting disks, and a time when you don't. (If you don't, now is your chance to slip away without anyone noticing.)

Boot that disk

So you decided to stay, huh? Well, here's what a boot disk is. When you switch on your Amiga with no disks in the drives (and assuming you have no extra hard drives attached) you'll see the familiar picture of an upside-down disk in a very pale chap's hand. This is the Amiga's subtle way of asking for a bootable disk. At this point, you may insert a game. Well done, you've discovered the secret of a boot disk: it does something when you put in the drive.

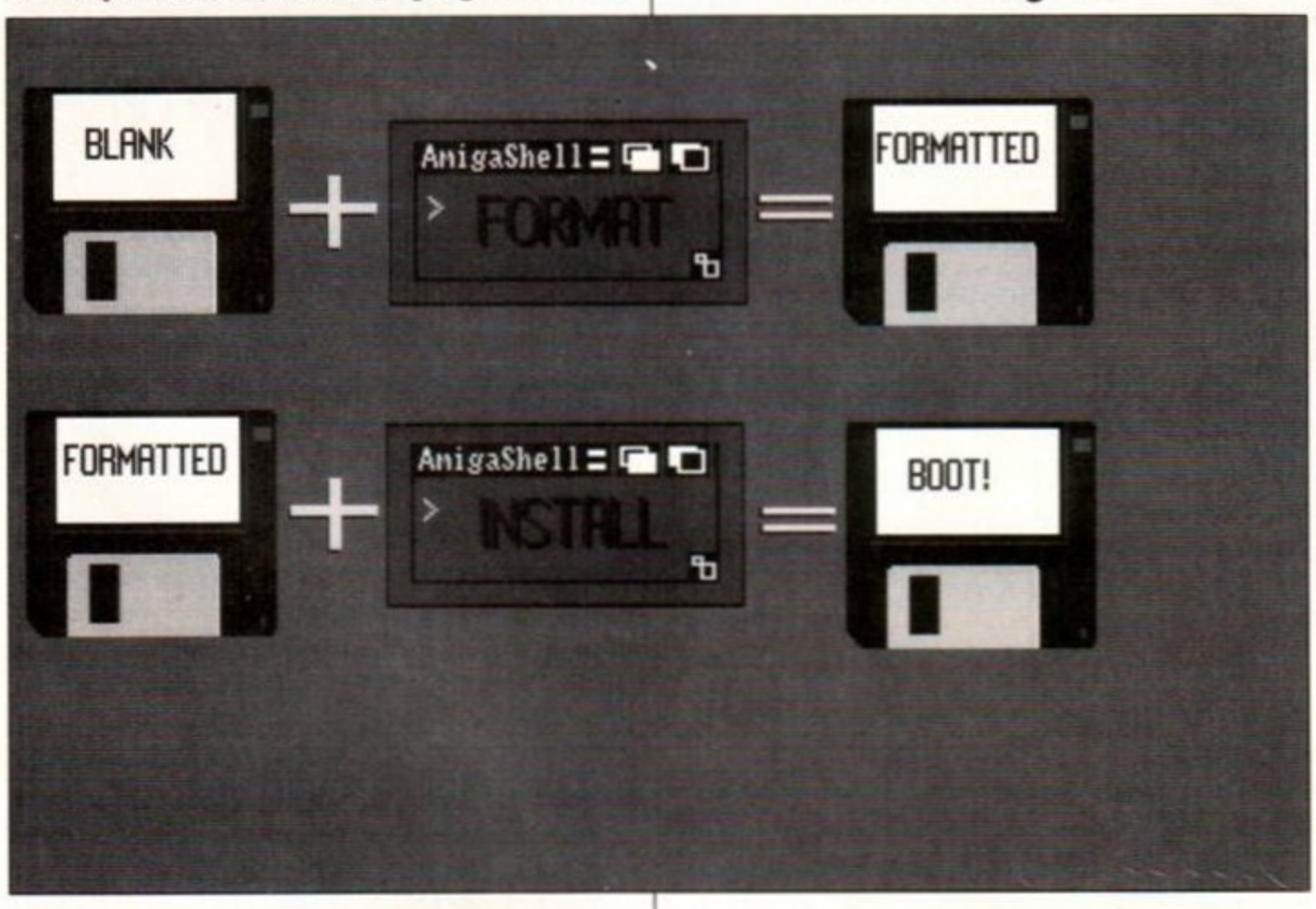
If you were to insert a completely blank just-out-of-the-cellophane-packet never-been-used floppy disk into the drive, the machine would whirr and then put that same picture back on the screen. Lesson one: a blank disk is not the same as a boot disk.

Even a disk which has been formatted (see last month's ***AUI*** for how to perform that particular feat) is not necessarily a boot disk. A boot disk has a special program stored on the very start of its surface, a program which tells the Amiga to hurry up and get on with it. If that program is missing, the Amiga won't boot.

Unfortunately, some nefarious good-for-nothings have abused this system by coding their own special programs to live at the start of the disk. These programs have two aims: (1) copy themselves onto every dish they can and (2) do something nasty to the data stored on the disk. These programs are Viruses. They are very, very Bad Things indeed, and you should see the May 1991 issue of ***AUI*** for more information on them.

Anyway, as I was saying, a blank - even a formatted disk - is not necessarily a bootable disk, simply because it lacks the information stored on the first few blocks of the disk. Obviously there must be a way of writing that information to a disk. There is and it's called 'installing' it. Just to make life that little bit more interesting, installing can only be done from the CLI, so here's how to install a disk. (Note: the disk must be a standard Amiga format disk. It doesn't have to be blank, but it must have been formatted at some stage. Installing a disk WILL NOT destroy the contents. A further note: Do NOT try to install a commercial game disk. There is nothing to gain by doing so, and in fact you may actually wreck the game as a consequence.)

"'Oh dear, you say 'It's going to be like that is it? I think I'll go and watch Russ Abbot instead. He may not be very funny, but he doesn't go on about booting disks'"



INSTALLING A DISK

If you have a hard disk:

Open a CLI window, place the disk in the internal drive and type:

INSTALL df0: (return)

If you have two floppy drives:

Open a CLI window, place the disk in the second drive and type:

INSTALL df1: (return).

If you have only one floppy disk:

Open a CLI, and type:

INSTALL ? (return)

Now remove the Workbench disk and after inserting the blank, type:

df0: (return)

When this process has been finished, you'll have a bootable disk. At this point, you may be wondering what exactly you can do with a bootable disk that you couldn't do with another type of disk. Well, here's an example.

Imagine you have a rather good PD music program which you play with rather a lot. You may use it by first booting from your normal Workbench disk, and then inserting the disk with the Music program on it. If you have a single drive machine, you may get frustrated as you're asked to swap disks several times. It's all rather a nuisance, isn't it?

Now if your music program were on a bootable disk, you wouldn't need to use your Workbench disk in the first place. You'd just pop the (bootable) music disk in the drive, and after a few seconds you'd be greeted by what looks like a huge CLI window. All you need do now is type the name of the program and press return (if it doesn't work, it may be because the program is actually in a drawer. For example, if the music program - musicprog - were in a drawer called musicdrawer, you'd have to type musicdrawer/musicprog to get it going.)

Next time we'll look at something even more cunning - how to get the program to run automatically when you pop the disk into the machine. Yes, don't miss next month's exciting installment (groan): the Startup Sequence!

"Obviously there must be a way of writing that information to a disk"

DIFFERENT TYPES OF DISK

Type:	
The Amiga calls them...	Bootable?
Blank, unformatted disk.	BADNo
Freshly formatted disk.	Empty*No
Installed disk.	Empty*YES
Commercial Game	NDOS or BADYES

* Although the disks are automatically called 'Empty', you should rename them immediately to something more useful. A collection of fifty disks all called 'Empty' is not a sane way to catalogue your software.

SOME SIMPLE CLI COMMANDS

Command	Function:
endcli	'End the CLI' - shuts the CLI window.
newcli	Open another CLI window.
dir	Performs a directory of the current disk.
list	Like 'dir', but with more information.
cd	Change directory or disk. Allows you to change the current directory.
install	Write the boot-data to a disk.
prompt	Try typing Prompt "Do it!> " into a CLI.
assign	Lists all the 'devices' your Amiga currently knows about.
avail	Lists all the memory you have at your disposal.

MENTOR

TEST DRIVE

MINIX

John Kennedy tests out this MIni-UNIX operating system on the Amiga for the first time...

```
$ mail
No mail.
$ banner hello!
                                        @@@
@     @ @@@@@@ @       @        @@@@    @@@
@     @ @      @       @       @    @   @@@
@@@@@@@ @@@@@  @       @       @    @    @
@     @ @      @       @       @    @
@     @ @      @       @       @    @   @@@
@     @ @@@@@@ @@@@@@ @@@@@@   @@@@    @@@

$ dhystone
Dhrystone(1.1) time for 50000 passes = 88
This machine benchmarks at 568 dhrystones/second
$ leave
When do you want to leave? 2000
Alarm set for Tue May 21 19:59:59 1991
$ whoami
John
$ who
 USER    LINE    TIME      ACTIVE      PID
 John    tty0   18:22:10   01:07:00    16
$
```

If you don't want to do any work, MINIX has enough little programs to keep you busy for hours.

In the beginning, there was AT&T. And AT&T looked upon the face of the earth, and saw that it was in darkness and disarray. So AT&T sent forth UNIX onto the world, that there might be a decent standard at long last. And the peoples of the world looked, and saw that UNIX was a Good Thing.

Well, not quite, but UNIX certainly seems to have earned itself the kind of omnipresent reputation usually reserved for deities. If you haven't heard of UNIX then you have obviously lead a very sheltered life. UNIX is an operating system with many features in common with AmigaDOS, although it would be more fair to say that AmigaDOS is an operating system with many features in common with UNIX.

UNIX differs mainly however, because it is an industry recognised standard on everything from high-level desktop machine to entire clusters of mainframes. Many commercial computer companies use UNIX as their main operating system on which to develop and run programs, because it's just about as standard as you can get, and if you ever get a job in the computer industry, you'll have to use it, period.

There are several snags with UNIX. The first is that Unix belongs to the huge AT&T company, who definitely don't see themselves as some sort of vast Public Domain library. They guard their UNIX jealously, and woe betide anyone who looks at it in a funny way, never mind try to disassembles it.

The other snag is that UNIX is big. Really big. To use it, you need a fast computer and a large hard disk set-up. In non-mainframe terms, only top of the range PCs and Amiga's with advanced 680x0 family chips and Memory Management Units can even consider running it.

So how come I've just entered my login code and am now sitting looking at a typical UNIX screen display? And how come it's on a monitor connected to a 1Mb twin floppy A500?

The answer is - I cheated. I'm not using UNIX of course, I'm running MINIX, which is probably as close as I can get without hacking back into the University through JANET. Oopps, I didn't say that! (No, you didn't! Ed.)

MINIX is a totally re-coded, system-call compatible, Mac, PC, ST and Amiga version of UNIX. Although it has obviously been cut down a bit, it still manages to do a heck of a lot. It has gained itself a reputation as 'UNIX for the masses', as it manages to keep a nice community feel to it. It even comes with its own source code to enable you to re-compile it if you want to change it. (AT&T would have an apoplectic fit if anyone suggested that they should supply the UNIX source code!)

"Unix belongs to the huge AT&T company, who definitely don't see themselves as some sort of vast Public Domain library."

Installation

MINIX comes in a wonderfully huge box with a manual so big that it threatens to collapse into a black hole at any moment. The nine (yes, nine) floppy disks are supplied in little wallet holders which clip into the manual's binder. The word 'quality' springs to mind.

After reading through the instructions and finding the part regarding Amiga installation, a nasty feeling started in the pit of my stomach. The words 'hard disk not supported' usually result in me walking over to a wastepaper bin and depositing the software therein. I read on however, as I can understand why such a disastrous state of affairs is almost tolerable.

When you boot from first MINIX disk, the old Amiga operating system passes away to pastures new. It is replaced to such an extent that even good ole AmigaDOS's disk routines are no longer present, and the Amiga disk drives become PC-compatible (in much the same way as they do with software such as Dos-2-Dos). This means that MINIX files can be swapped between any machine running MINIX (PC, ST or Mac). Unfortunately, it also means that an AmigaDOS hard disk cannot be supported.

Thankfully, this should not be the case forever. Both popular hardware PC emulators available for the Amiga now allow PC partitions to be created on hard disks. It is therefore theoretically possible that MINIX can support something more substantial than a floppy. Until it does, it is a seriously flawed product. I don't think the use of the words "Hard disk not required" on the box is a totally honest statement either. In fact, I think it's a sneaky trick.

Playing around

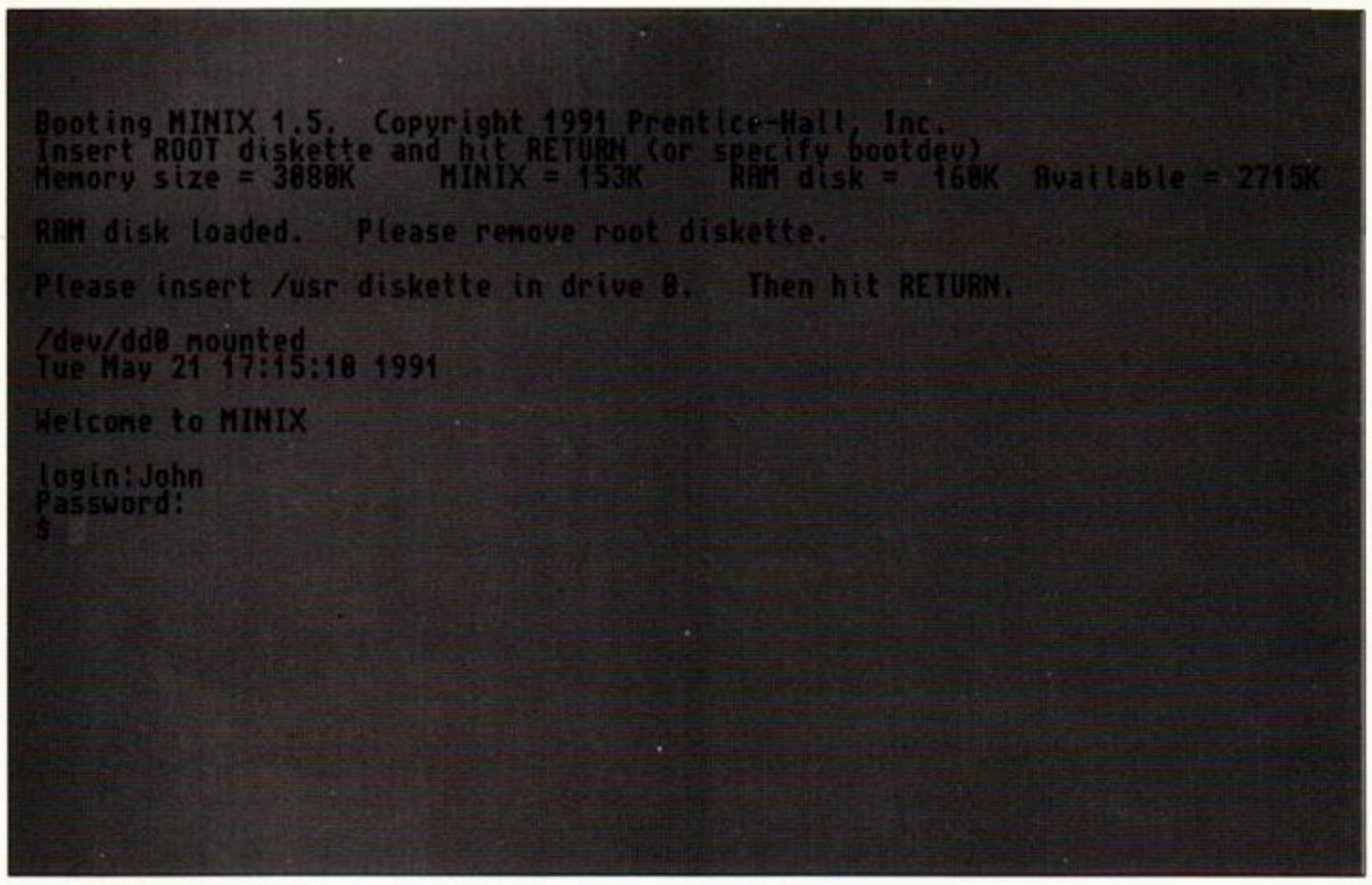
By the time you've followed the screen instructions and inserted the third floppy disk, you are finally in a position to login. The

manual gives you a identity and password to use (you can create your own, of course, later) and you are presented with the UNIX shell's dollar prompt. The UNIX shell is remarkably similar to the familiar AmigaDOS version, although it lacks several useful features such as in-line editing and a command history. It performs exactly the same function though: anything you type in is assumed to be a program, and then loaded and executed. For example, typing "ls" will result in a display of the files in the current directory. The UNIX "ls" is the same as the AmigaDOS "dir". The MINIX shell can also execute scripts, so you can write your own programs using its BASIC-like instruction set.

UNIX stores the files which would normally live in the AmigaDOS 'c' directory in the 'bin' directory. Unfortunately, because the MS-DOS compatible disks don't hold as much as an AmigaDOS disk, the "bin" directory is spread over several floppies. This is the first - and by no means the last - time you realise that hard disk support is essential.

The idea of a text processor might be new to you, so let me elucidate. On a large shared multi-user system, a CPU-hungry program like a word processor is totally out of the question. Instead, text is entered using the lowly line editors (ED and friends) and then passed through a 'text processor'. Inside the Ed document the author places special commands to set the margins, create headings, define headers and footers and so on. Finally the processed document is output on a printer (which, when I used UNIX, meant that output was sent to a different building and then returned to me via a department pigeon hole).

Probably the most important 'free gift' program bundled with MINIX is the C compiler. Effectively, you now have the capability to write any program you may need. In practice, of course, you need to be able to program. But remember, that you can use any programs written to run under MINIX, even those created by PC, MAC and ST owners. There are a lot of MINIX users out there.



A typical login. It's taken two disk swaps to get this far, so don't forget your password.

The only way around the problems associated with being confined to floppies at the moment is to buy lots of extra memory and create a massive RAM DISK to place everything in. This is not a good nor a permanent solution.

What's in the box?

The commands supplied with MINIX are total UNIX clones: everything from 'grep' to a fully-fledged C language compiler is here. It's quite an uncanny feeling using an alien OS on the Amiga.

At the end of the day, once the excitement has worn off, you'll realise that UNIX is just another operating system. You can't do anything with it that you couldn't do with any other system. For that reason, MINIX comes with some extra software to get you started.

As well as a full complement of text editors (ranging from the prehistoric 'ED' which makes AmigaDOS's ED look like Protext) to the wonderfully named 'Elvis', you also get a text processor or two.

Who wants it?

The main market for a product such as MINIX has to be the education sector. I know that access to MINIX would have been very useful to me during my degree course. If I could have experimented with a UNIX system in the privacy of my own student hovel, instead of fighting for an hour's use of a terminal, life would have been a lot easier and I could have visited the Union a lot more.

It will take months to explore all the code supplied, and even longer to understand it all. When you do understand it all, you'll be up to the standard of a professional programmer. It's also a great piece of software nostalgia.

Finally, MINIX represents a very useful way of gaining UNIX experience without spending vast quantities of cash on exotic hardware. If you are in the market for a computing career, and want to spice up your CV, feel free to get MINIX and write "UNIX experience" without feeling guilty.

Price:£125.00
Contact: The Minix Centre
Tel: 0953 - 89345

"For the home user, MINIX represents a challenge rather like a vast interactive text-based adventure system.."

Some of the software supplied with MINIX

The MINIX operating system (including source) A Shell compatible with the UNIX Bourne shell A complete C Compiler Four text editors Two text processors Two games ('animals' and 'tic-tac-toe') A full range of file and disk utilities A miniature Email system Comms software (including Kermit and Zmodem protocols)

UNIX

UNIX comes to you from those nice people who brought you the C programming language. It was developed in the 1970's at the Bell Laboratories, part of the giant AT&T multi-national corporation.

MULTICS (one of the first multi-user operating systems) begat UNICS which begat UNIX. MULTICS lives on, by the way, in the form of the PC based OS/2.

UNIX quickly became a big hit with the computer science fraternity, especially the universities which needed an easy-to-use, multi-user operating system. The UNIX system of my student days was fairly typical - a VAX computer belonging to a University's computer science faculty. Every student was given a password and an I.D. number which they used to 'log in' to the computer. Once in, they had their own private file areas and access to vast pieces of system software (editors, compilers, text processors - that kind of thing). Each student also had access to a local electronic mail system, which made passing little love notes to the female freshers remarkably easy.

UNIX itself has not remained static, and now also exists in other guises known as "System V" and "POSIX". It was also a role model for AmigaDOS, which whilst not multi-user (just multi-tasking) bears striking similarities.

If you are interested in finding out more about UNIX, please let me recommend a good introductory paperback entitled "UNIX - The Book" written by Mike Banahan and Andy Rutter, and published by Sigma Press (ISBN:0 905104 21 8). I managed to pick one up at an All Formats Fair for less than a fiver. MINIX's documentation does not attempt to explain either UNIX or C, and this little black and yellow book does both quite well.

When you start to use UNIX, be warned! It can be habit forming - do you know any other operating system that includes the command 'leave' which you set at the start of a session to remind you when it's time to go home?

Programming in... BASIC

John Kennedy gives beginners and not so beginners some tips on how to progress . . . basically.

In the first of a series of articles aimed at would-be and experienced programmers, John Kennedy looks at the BASIC dialects, and asks, which is the right one for you?

BASIC is probably the first computer language that any would-be programmer meets, for the good reason that writing a program in BASIC is remarkably quick and relatively easy.

This is hardly surprising, as BASIC was originally designed to provide an introduction to computing. With the advent of 'home' computers, BASIC quickly became the language that was supplied with just about every micro under the sun. The reason for this was simple: writing and supplying a BASIC interpreter was both cheap and easy.

Interpreter? Wassat? Normally BASIC programs require an 'interpreter' to enable them to work. The interpreter is a program which sits in the background and oversees the BASIC program. Usually the interpreter is tied up with a text editor program to allow the BASIC program to be easily entered. When BASIC program is started - by typing the RUN command - the interpreter looks at each line in turn, converts it into something it can understand (machine code) and decides what to do with it. If you think this would slow down the execution speed of the language, well you're absolutely right. There are exceptions, as we will see later.

"In keeping with tradition, Commodore decided to bundle a version of BASIC with the Amiga"

BASIC and the Amiga

In keeping with tradition, Commodore decided to bundle a version of BASIC with the Amiga. It won't stretch your credulity too far when you discovered that they named it AmigaBASIC. They then stuck it on the 'Extras' floppy disk and wrote a manual for it. As a language, AmigaBASIC is quite good, as it based on the almost-standard Microsoft BASIC. However, as an implementation, AmigaBASIC sucks.

Using AmigaBASIC is a slow and tedious way to spend time. OK, so it's perfect for the newcomer to programming, but only because it's free and comes with a good manual. The program editor is incredibly slow and prone to Gurus. The programs run slowly. Seemingly simple tasks such as displaying a picture on the screen becomes a major project in itself. Once you have mastered writing programs which are more than 25 lines long, it will dawn on you that there must be an easier way.

Of course, there is an easier way. There always is. The easiest easier way is to use a third party BASIC system, such as the compiled BASIC available from HiSoft. The term 'compiled' means that the BASIC program is converted into a ready-to-use program before execution begins. As far as most programmers are aware, all this means is that there is a short delay between when they type RUN and when their programs start working. Compiled programs run a heck of a lot faster too.

The main advantage of HiSoft BASIC is that it is compatible with AmigaBASIC programs. This means that the manual which you got with your Amiga is completely relevant and you won't need to spend more money.

The disadvantage is that AmigaBASIC - and so by inference HiSoft BASIC - makes it very difficult to achieve anything close to slick and professional results. HiSoft have gone a long way to ease this problem by making extra code libraries available (called Extend), but, as always, there are better ways.

GFA BASIC is one of these better ways. It's a BASIC which runs very quickly indeed (whether used with its compiler or not). It is also rather nifty when it comes to using graphics and sounds. It comes with its manual, which details the many powerful commands and functions available.

There are several more BASIC-like languages around: Blitz BASIC and AMOS to name the two which spring to mind. Both of these lean rather heavily towards supplying the needs of the would-be games programmer. AMOS especially can achieve some rather wonderful results. If you want to write games which, if there was any justice in the world would really require two months of assembly language (and you don't mind a strangely smelly manual), AMOS is the way to do it.

Summary

AmigaBASIC - only use the bundled implementation if completely desperate. It may put you off programming for life. You can achieve some amazing results, but only with a terrible cost to your sanity.

HiSoft BASIC - what AmigaBASIC should have been. Learn BASIC the easy way.

GFA BASIC - More powerful, and therefore slightly more difficult to use, than either of the above. Ideal if you

MENTOR

Programming in . . . . . BASIC

know BASIC and want some power.

Blitz BASIC/AMOS - Aimed at the games writers out there. You can do it too: look in the PD libraries for example programs.

Essential BASIC

Interpreted/Compiled: The bundled BASIC is interpreted, which means each line of the BASIC program is processed in turn during execution. Compiled BASICs are available, and run much quicker (important for games and programs which do lots of sums e.g. Mandelbrot generators) . They can also produce 'stand-alone' code. If your compiled BASIC program 'stands alone', it won't need the usual support files and editing facilities that are needed to run a typical AmigaBASIC program. You can usually sell stand-alone programs with no copyright problems.

Line numbers/labels: some versions of BASIC (not AmigaBASIC) require line numbers to precede every instruction. If your BASIC lets you use words instead of numbers, then for goodness' sake do it. It is much easier to remember what 'GOSUB PRINTROUTINE' does than it is to understand exactly what 'GOSUB 1120' achieves.

Subroutines: the traditional way of providing subroutines - and therefore paying a tiny homage to structured programming - is to use a GOSUB to jump to a routine, and then RETURN back to the body of the program. An improvement has been made by adding PROCEDURES, which are like GOSUB routines except they can accept parameters - values and variables passed into them for processing.

Recursion: BASIC was not designed to be recursive (routines which call themselves) and therefore trying it is (a) brain destroying awkward (b) likely to crash and (c) not a good idea. If you really want to try it, most dialects (except AmigaBASIC) will support it.

Files: the normal sequential and random access filing systems are usually supported. Using files from BASIC is quite easy (if you can remember the list of options which follow the OPEN command) but lack speed and power.

Comments: you can insert comments into a BASIC program by preceeding them with the word REM or a semi-colon. You can't easily comment out sections of your program.

Strings: BASIC has probably the easiest way ever designed of handling strings of text.

Overall Language Score

For: Easy to use. Immediately results make learning almost enjoyable.

Against: Can produce bad programming habits due to inherent lack of structure. Not particularly fast. Making the most of Amiga hardware is hard work.

Example program

```
REM An example BASIC program
REM
CLS
PRINT "Hello World!"
FOR a = 1 to 10
PRINT a;
NEXT a
PRINT
GOSUB routine
END .routine
a$="SPAM SPAM SPAM AND CHIPS"
PRINT right$(a$,5)
RETURN
```

Output from program
(clears screen)
Hello World!
1 2 3 4 5 6 7 8 9 10
CHIPS

"As a language, AmigaBASIC is quite good, as it based on the almost-standard Microsoft BASIC. However, as an implementation, AmigaBASIC sucks."

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R85 Demolisher Utility
R86 Clipart Set (5)
R87 Boot Chamption
R88 Boot Writer
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USER PORT

The Biggest P.D Library in the World

Norman Stone, ICPUG's custodian of the wonderous world of the Fish disks, takes you back to how P.D. began and forward to what is happening now.

Way back in November 1985 shortly after the release of the Amiga 1000 one man started something that has escalated in to the largest P.D library in the world. Through his hard work and perseverance he has brought a lot of joy and happiness to all sorts of people all over the world. He should now be in no need of any introduction for his name is FRED FISH.

At the present Fred Fish lives at 1835 East Belmont drive, Temple, Arizona, 85284 U.S.A and he works for Motorola (the creators of the 68000 chip) in Phoenix Arizona, so all the work he has achieved has been conducted in his spare time. By starting this library he has also brought some deserved fame and recognition to the programmers and authors who have contributed them so generously to the library, for without them none of this would have been possible. Also some recognition must go to the people who help run the various P.D. clubs, groups and libraries, there jobs vary, some deal with the organization of the group and others categorize the disks and programs, while others look after the disks and do the actual copying for people who request various programs. This work is often done on a voluntary basis and their own equipment is used.

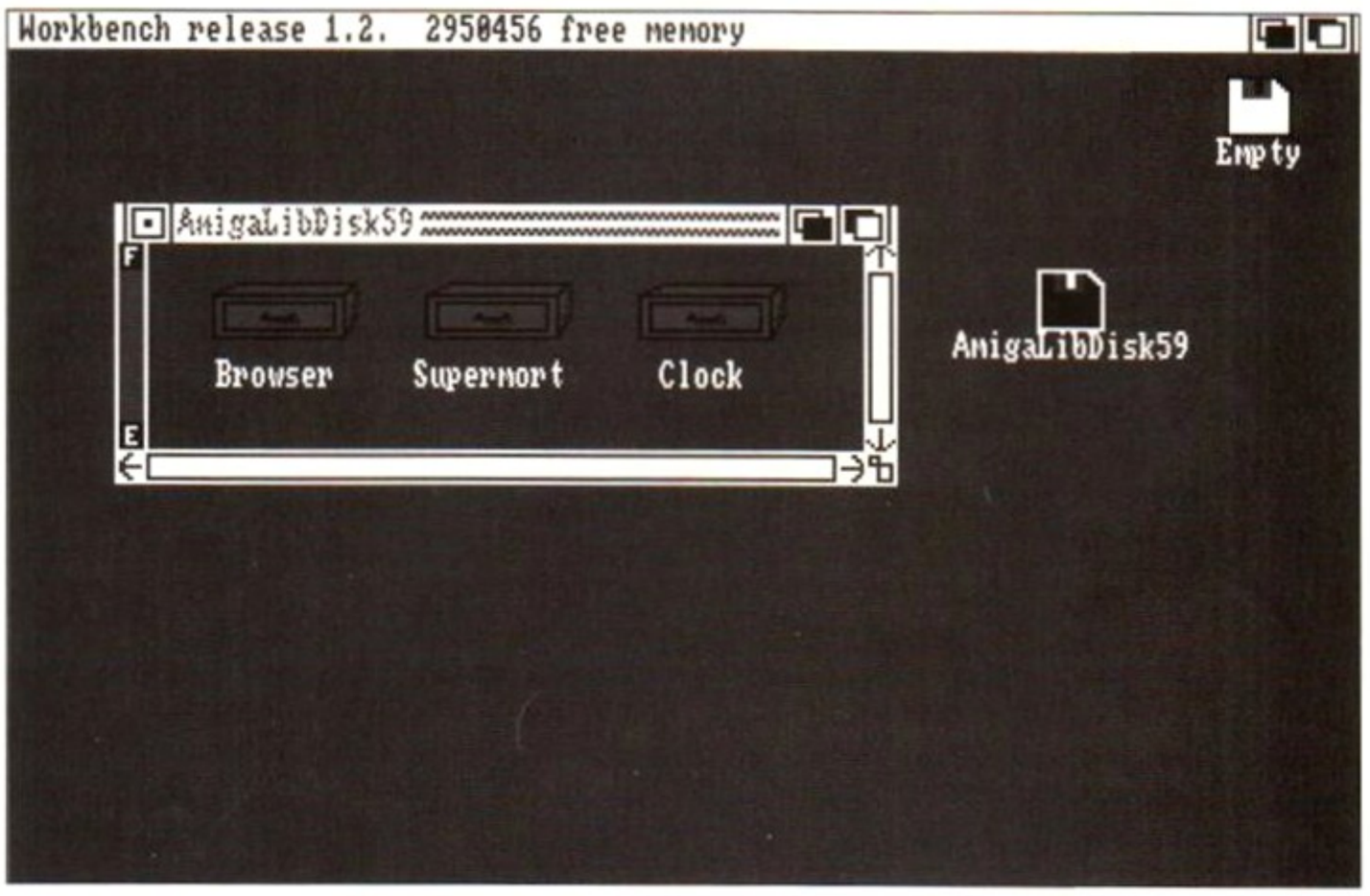
"He should now be in no need of any introduction for his name is FRED FISH"

The P.D Fish library offers help for all types of people in all different walks of life, with the various types of programs that are available to them. Maybe you want a spreadsheet or a database for your home accounts or even someone who is trying to learn to program in "C", "Basic" or modula-2, then again maybe someone just might fancy a good old shoot-em-up program, what ever you are looking for it will be in there somewhere. In the Fish library there are numerous types of programs to suit everyone's needs such as tools, games, programming examples, editors, word-processors, compilers for various languages, graphic and animation programs, and also demos of commercial products there are too many even to attempt to list them here.

When this library first started there was an omission of icons right up to Fish disk 58 and you had to work to obtain your programs and run them. YES, the only way to see them was by the good old CLI (or shell as it is mainly known now a days) which meant you had to have a reasonable amount of knowledge of using and programming in the CLI before you could attempt to use the P.D. programs.

At the birth of the library the information giving the details on how to run and use the programs was held in different directories, so the first thing the P.D punters had to do was load their Workbench disk in, take it out, then load the P.D disk in and type CD df0: this would involve more disk swapping (or load the Workbench in df0: and the P.D disk in df1: and type CD DF1: if you were lucky enough to own an extra drive) then "dir". This would list all the directories, then You could then read down the directories to see what might be of interest to you. If you found one it would be a case of CD [name] of the directory to read the contents of the directory, if there were a 'readme' on the contents of the directory, your next piece of typing would be "type readme" to see how you could load and use the program concerned.

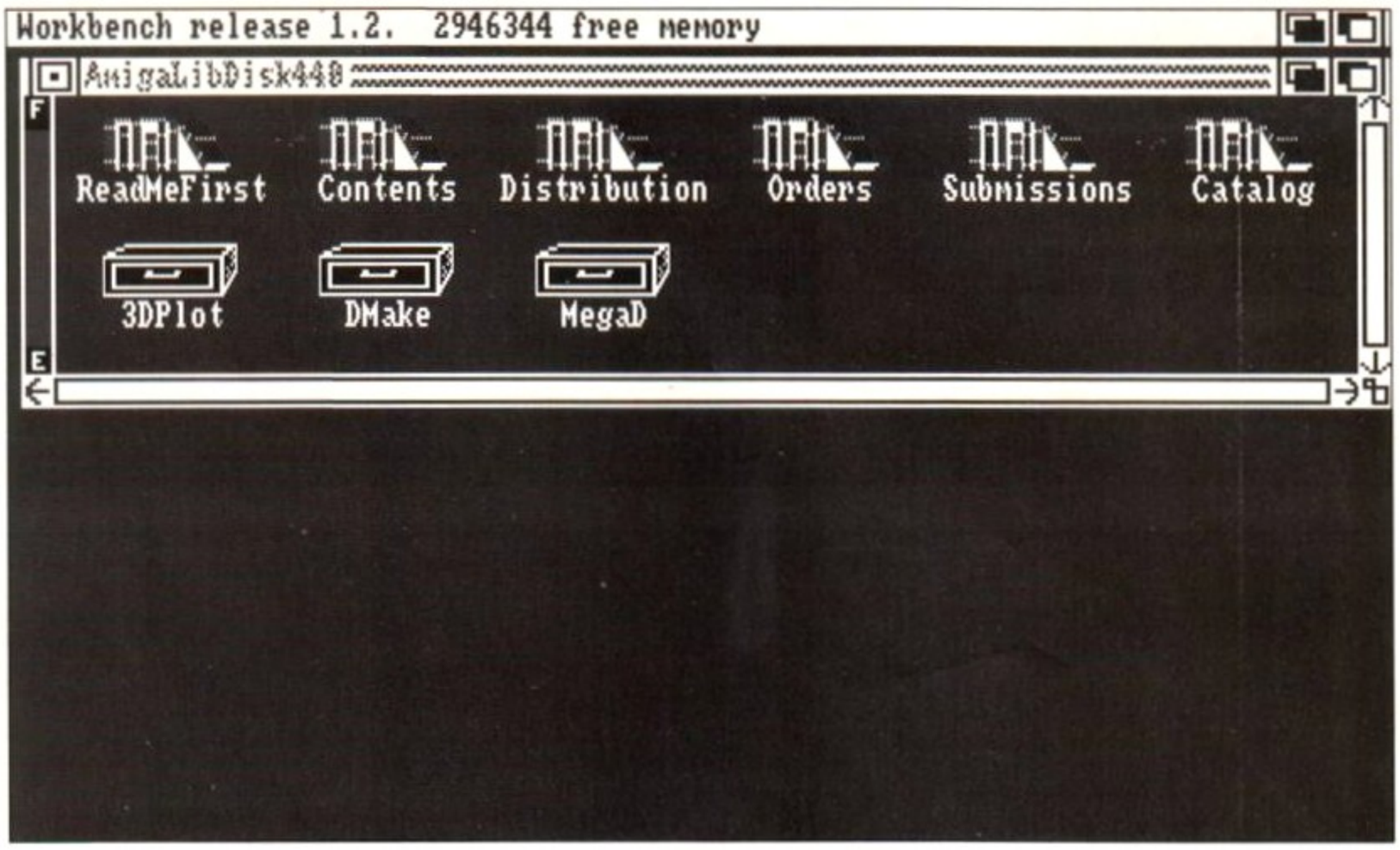
After a while a disk with 'readme' files was introduced and then at last the Fish disks from 59 were icon driven. So you could click on an Icon and view the contents in a drawer. You see how lucky you all are now it is virtually all done for you. It is just a simple matter of clicking on the disk Icon to open up



the contents of the disk and then clicking on the documents draw icon to read what is on offer within the disk. You can then read a short description of the programs within the disk. If there is a program you wish to investigate further, you just click on the program draw icon and all the 'readme' files and the program icon flash up on the screen waiting for you to just click and run the program.

In 1989 a programmer called B. Lennart made life even easier by writing a very nice database called Aquarium (this is on Fish disk 301 in the ICPUG Fish library). He designed this database for the storage and easy retrieval of the information describing the contents of the programs on the Fish disks. With this database you could store all the information on the Fish disks up to 480. No more looking at individual disks clicking on the contents icon then reading what was in there, then going to another disk and going through the same procedure all over again, to try and find the program you wanted to look at. Now all you have to do now is load the Aquarium disk, and Fish around in the aquarium disk and see if you can hook out the program you want (Do I hear groans?).

There are three different ways to search for a program they are KEYS, SUBSTRING IN PROGRAM NAME , & SUBSTRING IN DESCRIBING TEXT, . Using the keys is called search and program mode. For instance, if you want to see the graphic programs in store, you would just click on the graphic key then click on the arrow key and it would work its way through all the stored programs stopping at any graphic programs for you to read the contents. With the name substring, you simply type in the name of the program and it will go straight to that disk. There is a feature included with the name gadget. You can jump to a disk by giving the disk number after a '/' example '/150' with the substring in describing text you would put a brief description of the program you are interested in if you did not know the title of the program. As an example you could type "printer driver" then click on the direction arrows and it would search through all the database disks (it is now better to click on the arrow that sends a search from the present disk backwards to the first disk in the database as there are so many updated programs) and if it finds the words typed in it will stop and display the disk and the information regarding the program. There is a hardcopy menu which will print all or part of the disk information stored on the database for you, and as usual there are documents stored on the disk giving you the necessary information on how to use the Aquarium database for you to read on the screen or print out.



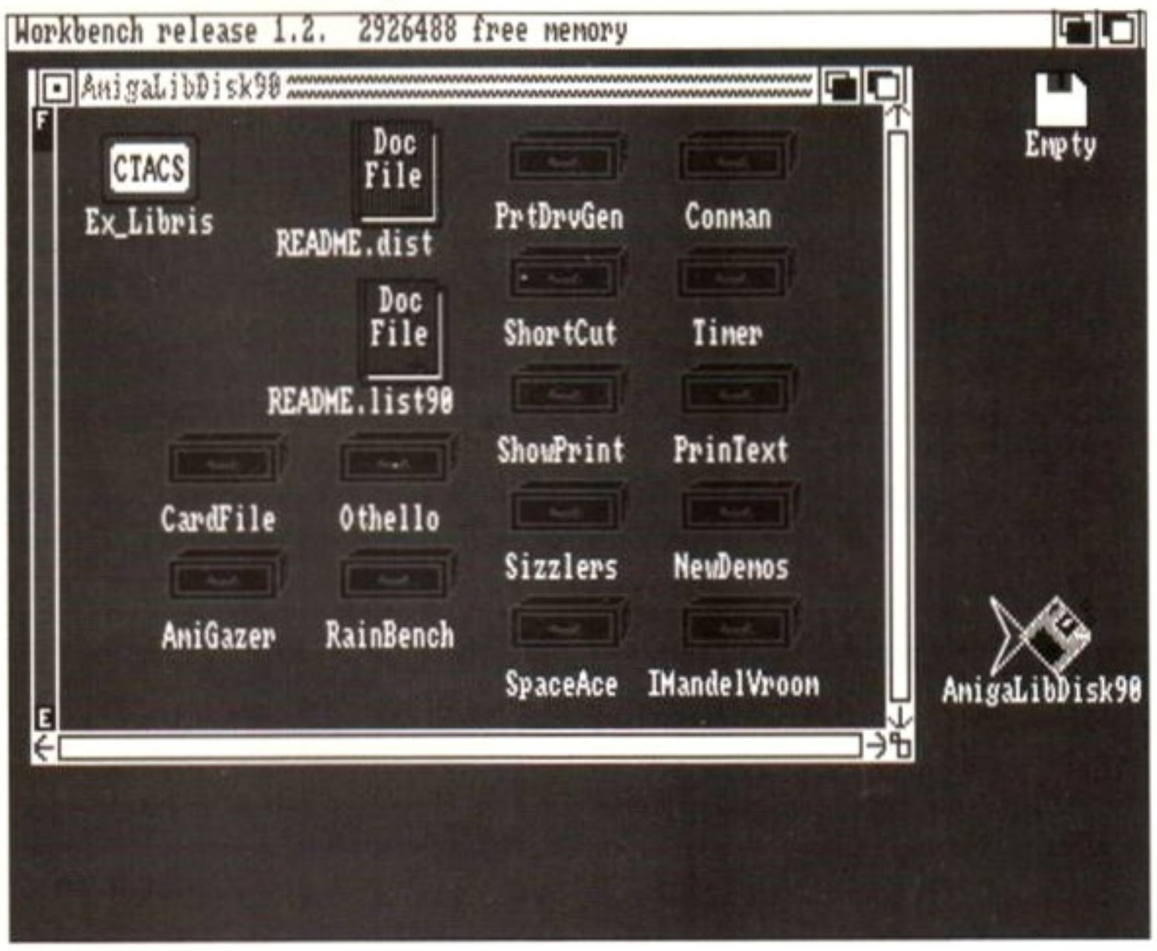
"There are many clubs and organizations who deal with P.D disks and programs and prices vary"

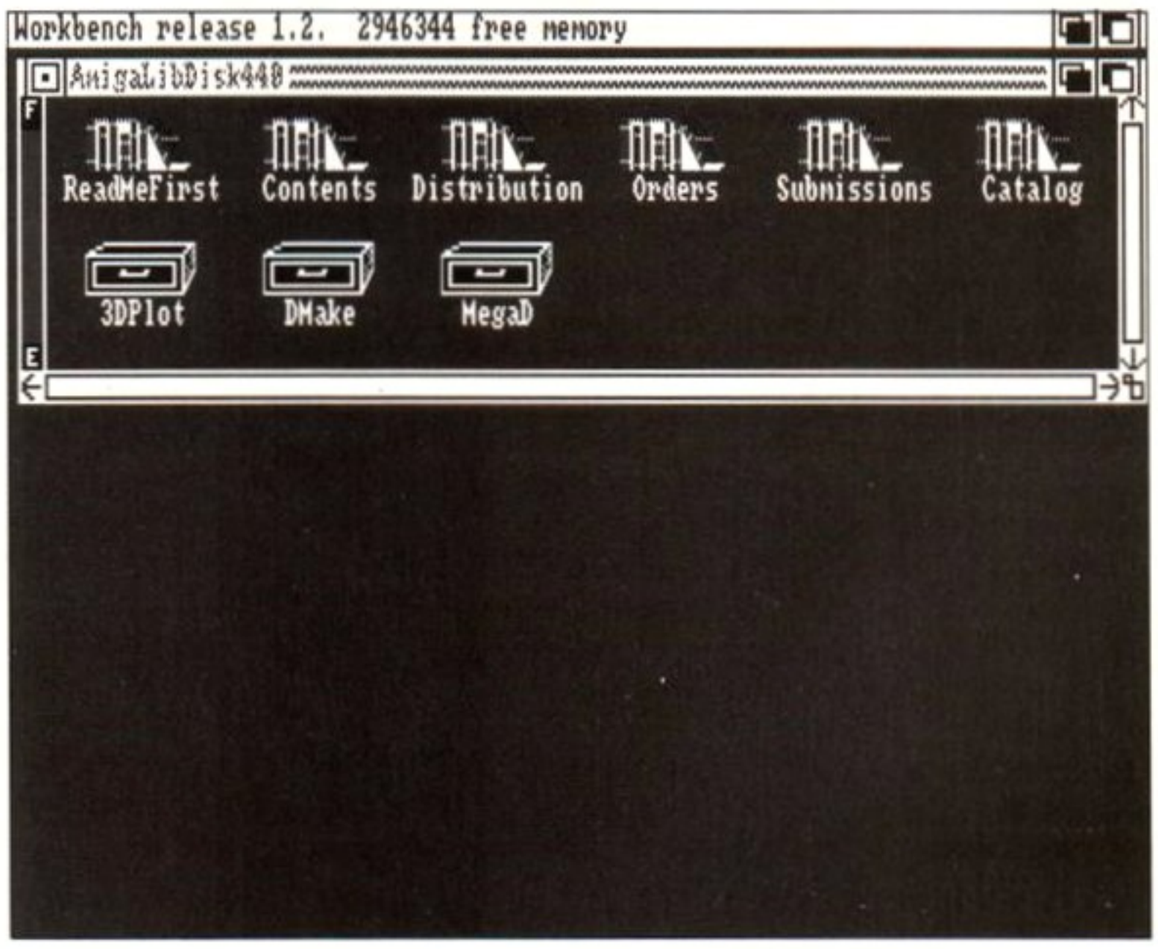
PD for Free

There are many clubs and organizations who deal with P.D disks and programs and prices vary. Some just charge a membership fee once a year and you supply the disks and postage and the copying of the P.D programs is not charged, one of these groups is called ICPUG (see AUI June), others do not charge a membership fee but instead place a charge on the disks supplied with the programs. If you require a lot of P.D disks and would also like to receive several newsletters each year, then ICPUG would be a good bet but if you only want the odd few then perhaps a club or group that charges just for the programs on the disks might be a better option. It would be well to compare prices as some groups seem to be somewhat excessive with their costs for disks but this seems to be only a small number. One thing to remember is taht as P.D stands for Public Domain and in general the programmers and authors place their programs in the P.D library on the understanding they are not sold for profit.

With the arrival of the Workbench 2.0 in America there are now quite a few programs around which will only work with Workbench 2.0. This has two effects one good and the other bad, the good effect is that there are new types of programs for the Workbench 2.0 and not only revisions or updates of previous programs. The bad news is pretty obvious there are a lot of people without Workbench 2.0 and if you are one of them, you had better start saving your pennies for an upgrade, if you want to enjoy the full riches of futute PD.

For full details of ICPUG and its Fish library, contact address is advertised in this issue of ***AUI.***





TEST DRIVE

QUAD

The welcome return of an old favourite, as Reggy Staire explains the *QU*ick *A*nd *D*irty way of getting text onto the screen.

Welcome to the machine, my friends. You have just entered the QUAD zone, where assembly language hacks and C programs rub shoulders with the hardware. There's a signpost up ahead, and it says "Intuition? Wassat?". It's your warning not to expect any user-friendly mollycoddling code structures here. All I can promise is that I won't read any Write Only registers. The rest is at your own risk.

As any Amiga coder knows, it is totally possible to use directly the custom chips without trashing the operating system. There are many advantages for using Forbid() and Permit() to tap Intuition politely on the shoulder and use the chips when he's looking in the other direction. For a start, you have the programming simplicity of a machine like a Commodore64 with all the power which the coolest chip set on the planet can supply. By being nice to Mr OS you even get to retain your own Workbench, which means assemblers like DevPac are ideally suited to speedy development. No need to buy another Amiga just to run your object code on!

There are disadvantages of course. No multi-tasking. No windows. No graphic routines. No sound routines, and above all no way of putting text onto the screen. Bit of a bummer, eh? Thank goodness for the QUAD file then, where today, my little hackers, we're going to find a way of putting "Hello World" somewhere were you can actually see it.

This month's routine will use the blitter to zap a block of text directly to a bitplane. Typical example: you are writing a game, and the height of your text display is a simple message saying the words everyone loves to see - "Game Over" - on the screen. How to do it?

There are two ways that spring to mind (if you discount using Letraset on the monitor). The most obvious is to blast a block of memory containing the image of the words onto the screen using the blitter. It's a fast, no-nonsense approach and here's how you do it.

First off, you need the data which contains the words. The easiest way of creating this is to use a package such as Deluxe Paint to design your message using the system fonts (in low resolution mode for simplicity's sake). You can use italics, bold, underline - anything you like. As long as the image is one colour only (i.e. using one bitplane) it will suit our purposes. Make sure the words start at the very top left of the screen, because that will make things easier later on. Count the number of lines the words take up, and also many pixels across. Now save the picture.

DPaint saves the pictures in a compressed format which is of little use to us, so we'll employ a program such as PixMate or a PD variant to re-save the image in RAW format. The RAW image is nothing more than a file of bytes with no header or body information. Although completely against the grain of Amiga IFF user-friendliness, it's just what we want. Now we need to create a program to extract just the area with the word graphics in it.

You can use any language you want for this part, even AmigaBASIC. Personally, I'm a C fan so I use a program like this:

"As any Amiga coder knows, it is totally possible to use directly the custom chips without trashing the operating system."

```
/* Convert */
#include <stdio.h>
main(argc,argv)
int argc;
char *argv[];
{
FILE *fp_in,*fp_out;
char ch;
int countx,county;
if (argc!=3) {
/* Check for all CLI arguments */
printf("Convert needs an Input file and
an Output file\n");
exit(0);
}
if ((fp_in=fopen(argv[1],"r"))==NULL) {
/* Try and open input file */
printf("Cannot find input file!\n");
exit(0);
}
if ((fp_out=fopen(argv[2],"w"))==NULL)
{
/* Try and open output file */
printf("Cannot open output file!\n");
fclose(fp_in);
exit(0);
}
printf("Working...");
for (county=0;county<14;county++)
{
for (countx=0;countx<40;countx++)
{
ch=getc(fp_in);
if (countx<18) putc(ch,fp_out);
}
}
printf("OK, finished\n\n");
fclose(fp_in);
fclose(fp_out);/* Close the files behind us
*/
}
```

In this case, the program assumes that the part of the screen data we want is 14 lines high and 18 bytes (that's 18 * 8 pixels) wide. To use the program (after it has been compiled by any old C system) type something like:

convert rawpicture text.bin

where 'rawpicture' is the full-screen image which has been resaved in raw format, and 'text.bin' is the name of the file which will contain only the important image data.

Now we have the graphics data, all we need is a routine to print it out. Remember that the data can be included in a source file by using the directive 'incbin "text.bin"' and if a label is defined immediately preceding it we can refer to it by that name. Here's the assembly code:

```
Print_gameover
move.l #textdata,a0
move.l #SCREEN+$faa,a1
jsr waitblit
move.w #0,BLTCON1+CUSTOM
move.w #$9f0,BLTCON0+CUSTOM
move.l a0,BLTAPTH+CUSTOM
move.w #0,BLTAMOD+CUSTOM
move.l a1,BLTDPTH+CUSTOM
move.w #22,BLTDMOD+CUSTOM
move.w #$389,BLTSIZE+CUSTOM
rts
Erase_text
move.l #SCREEN+$faa,a1
jsr waitblit
move.w #0,BLTCON1+CUSTOM
move.w #$100,BLTCON0+CUSTOM
move.l a1,BLTDPTH+CUSTOM
move.w #22,BLTDMOD+CUSTOM
move.w #$389,BLTSIZE+CUSTOM
rts
textdata
incbin "text.bin"
```

Several assumptions are made:

(1) The text is to be printed in the bitplane pointed to by SCREEN, and it is placed somewhere in the middle by adding $faa.

(2) A routine 'waitblit' exists to make sure the blitter isn't busy. (It can be taken directly from the Hardware manual.)

(3) The hardware registers have all been defined in an Include file somewhere. To speed things up, CUSTOM can be loaded into an unused address register and then an offset addressing mode used, for example:

mode.w #$389,BLTSIZE(a5)

The code which activates the blitter is quite simple. First we set the to control registers BLTCON0 and BLTCON1 to make sure we are not in line drawing mode, not shifting anything and in fact only performing a simple data copy with one source (or no sources in the erase routine) and one destination. The modulo value written into BLTAMOD depends on the size of the graphics data and the size of the screen. Here it's 22 because the screen is 40 bytes wide and the text data is 18 bytes wide (40 - 18 = 22).

We then define the addresses for source and destination and finally write the size of the data block to move. The size always comes last, for it is the act of writing this register that triggers the blitter. In this case the size works out to be #$389. If you check your Hardware guide, you'll see that the size is worked out thus:

Bits 0-5: The width of the data in words (n.b. NOT BYTES)

Bits 6-15: The height of the data in lines

When you work out the binary value and convert to hex you get #$389.

The matching routine to remove the text is even simpler. We make use of the fact that if you disable the blitter's source registers, it will fill the destination with zeros. Easy.

If you want a nice drop shadow effect, try making use of two bitplanes and copying the data into both, with the second block moved up a line or two. The hardware manual also explains how you can shift the data a pixel to the left or right, which results in an even prettier drop shadow. Happy blitting!

Next month: A more flexible method of getting text onto the screen, which will allow user-definable text and numbers.

"If you want a nice drop shadow effect, try making use of two bitplanes and copying the data into both."

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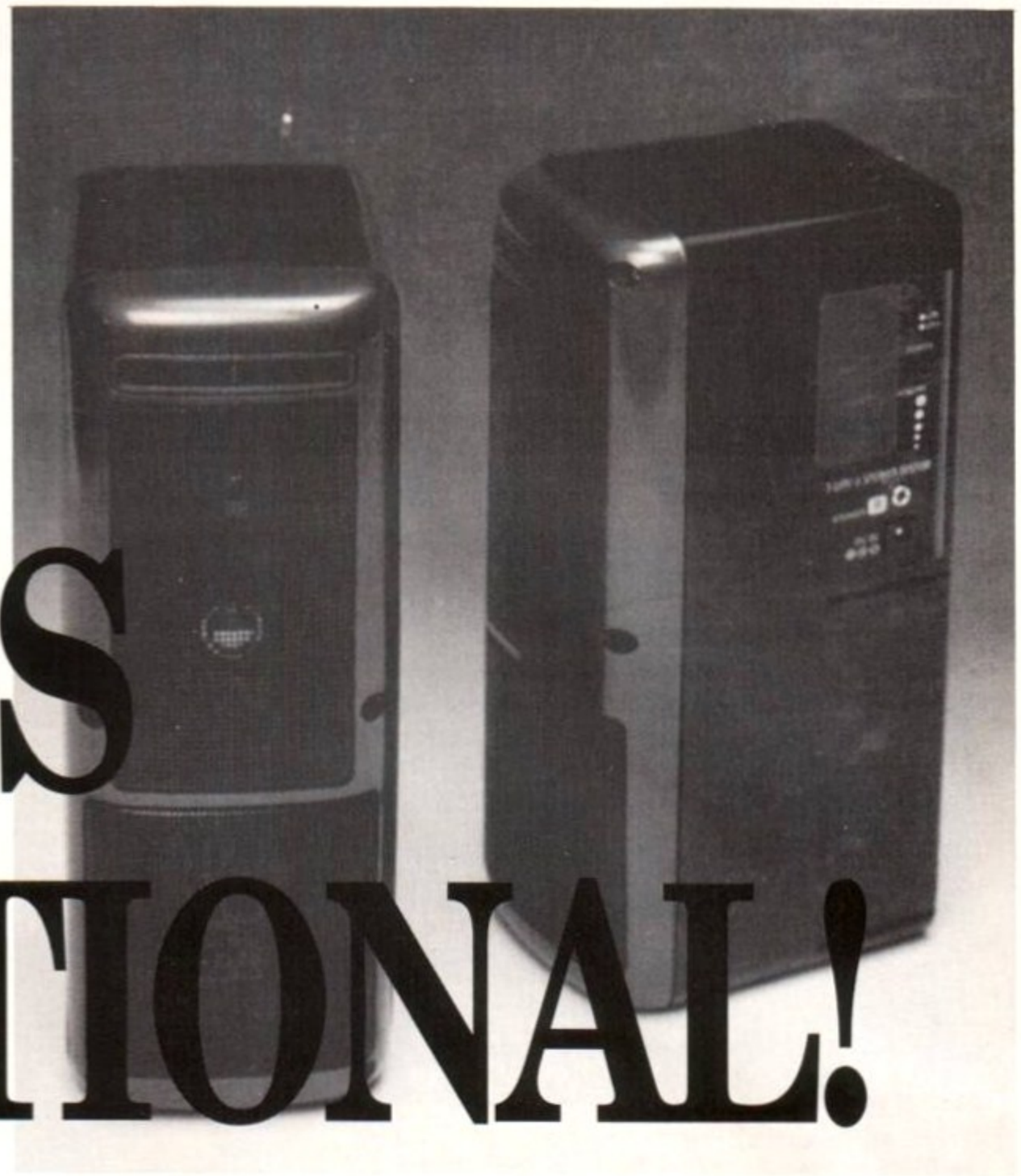

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Some more pre-code planning from Paul Overaa as the ***AUI***-SPELL spelling checker program reduce one operation from 1200 to five . . .

PART VII

We can kick off this month with some good news for those of you who have been worried by the amount of typing required to enter the ***AUI***-SPELL source listings - on the cover disk you will find a folder containing the C source code for the first release of a CLI based 'rapid scan' test version, the assembler code patch that we've developed during earlier instalments and a runable version of the program. You will also find a dictionary and a document file which will explain how to run the test program.

You may be a little surprised that Intuition, gadgets and menus have not entered into the picture yet. These issues, although important for producing an easily useable final program, are of little consequence during the development stages. In fact it would have been a mistake even to start thinking along these user-interface lines.

What we are aiming for at the moment is to get the underlying basis of the program on a sure footing. By working with a reasonably-sized dictionary the test release not only allows the routines to be checked to ensure that they work but it also enables us to carry out some detailed timing tests.

We said that this month we would tackle an area that, right from the start of the project, we knew would be reasonably difficult. The topic? Developing a dictionary ADT. Before making a start let's explain one problem that the current test release suffers from. If you create this three word text file...

I like Zebras

and use the current ***AUI***-SPELL program to check for spelling errors you will find that it takes quite a time to 'rapid scan' the file. Here are some figures of the time take to load, sort, analyse, check and then highlight display some typical textfiles...

Filesize	Text File	Dictionary	Scan Time
13 bytes	3 words	12200 words	17 seconds
9405 bytes	1068 words	12200 words	21 seconds
29542 bytes	3669 words	12200 words	27 seconds

One obvious area for concern is the fact that it takes as almost as much time to check a three word file as it does to check a thousand word file! To see why this is so we need to look at what the program is doing after the text file words have been sorted they are sequentially compared to the sorted list of words in the dictionary file. A word such as Zebra, because it will be near the end of the dictionary file, therefore results in the program having to read virtually the whole of the dictionary before it can tell whether the word is present or not.

This is a problem directly related to the use of a dictionary based on sequential access to an ordered word list and, as I mentioned early on in the series, a more sophisticated approach is called for. Ideally we would like a situation whereby the program could always look into the right part of the dictionary file and so decide whether a word is present or not without having to do any searching at all. Believe it or not, this is 'almost' possible. The magic technique in question is called Hashing or, to give it its proper name, 'key to address transformation'.

In this offering I would like to look at some of the underlying principles of hash file access in a way which is different from the usual textbook approach. The object of the exercise is not to examine every possible variation of every hash method but to try to identify some underlying and useful concepts.

Let's go right back to first principles and introduce the subject with a straightforward example; suppose that an address book program was being written which had to include the ability to search for a person's address details by just supplying a name. If the name Jones F. J. were entered, the program would respond by supplying details of the person on file whose name was Jones F. J.

Now imagine that some rule could be found which took the letters present in the name and converted them into a unique number which corresponded to the location of the record containing the required information. The existence of such a function would mean that firstly it would be possible to calculate whereabouts in the data file a given set of details should be stored, and secondly, it would mean that this information could be retrieved simply by calculating the record number from the name. In other words such a scheme would enable us to find any one of these records without doing any real searching at all!

Do such rules exist ? Yes, believe it or not, they do. For keys, such as names, which consist of a string of characters the binary forms of the ASCII codes could be used to convert the string like this...

J	O	N	E	S	F	J	Character
4A	4F	4E	45	53	46	4A	Hex
1001010	1001111	1001110	1000101	1010011	1000110	1001010	7 bit binary

If this approach were adopted every different name would certainly be converted to a unique number but in solving this problem another would be created. At seven bits per character 'Jones FJ' produces a 49 bit number, 'Worthington R' would produce an 84 bit number. If we were only going to deal with upper case characters, a five bit code conversion would be more compact but it would not actually help the situation that much because although the numerical equivalents would still all be different... the resulting numbers are still going to be too large to be easily handled. Even if these types of large numbers could be dealt with there would be other difficulties - imagine using this sort of arrangement to identify a memory location. With 24 bit addressing we have a 16 megabyte address space available. With 84 bits the range of addresses is from 0 to about 2 times 10 to the power 25. The result - at the end of the day we would need vast amounts of memory, i.e. an enormous address space, and very little of this space would actually be used. In short, then, this type of direct approach is only useful in a few cases, namely where the resulting range of numbers produced is small.

How do we get around this? Going back to the name/address example suppose we want to allow space for 1000 records, what is needed is a function that would take a name and convert it into a unique number between 1 and 1000...

f(key) ——> { 1,2,3,4... 1000 }

It should fairly obvious that, in general, such rules do not exist. If however we relax the condition that the function produces unique values then several possibilities present themselves. The names could be converted into number form as originally suggested but with the modulus function limiting the numerical values to a suitable range, like this...

(numerical equivalent of the name) MOD 1000)+1

This will always produce a number between 1 and 1000. The difficulty now is that we can no longer guarantee that every name will produce a different computed record number.

What would this lack of a unique key—>hash-value correspondence mean in practice as far as our name/address example was concerned? When different search keys result in the production of the same computed record number the possibility arises that we may try to retrieve the wrong record. These occurrences are termed 'collisions' and one solution to the collision handling problem is to try a further calculation, i.e. make a second attempt to locate the record. If this also produced a collision then further attempts would have to be made until either the correct record was found, or we became certain that the record did not exist. For obvious reasons it is important that, in the worst possible cases, every record in the file was examined. To add data to such a file we would use the same hash rules that were used to retrieve data, but during data addition we would search for empty records rather than particular key fields. If the record corresponding to the first calculated record number contained data already, then further attempts would have to be made until such time as an empty record was found.

It is this hash-based approach that is going to be used for implementing a dictionary ADT. In effect we shall be developing an ADT interface which allows the main ***AUI***-SPELL application program to ask whether a particular word is present in a particular dictionary, and be given a yes/no answer, without the main program knowing anything about how it is done. I shall be dealing with the necessary code next month so the important thing for this instalment is just to understand the basis of the method.

Mechanisms are going to be required for converting (mapping) a text word into an integer which lies within a specified numerical range. As already mentioned, it is text strings that tend to cause difficulties because they often correspond to very long binary numbers. There is a well established technique called Horner's Method which essentially uses a loop to handle the string -> mod N number conversion on a byte-by-byte basis. This allows the conversion to be carried out without any number overflow problems.

The other pressing need is to develop a sound basis for handling collisions. This is historically the most important of the hashing problems and a lot of mathematical attention has been concentrated in this area. My approaches here, at least as far as explanations are concerned, are fairly unconventional and are based around a notational device which I call the circular file model...

The Circular File Collision Handling Model

This is a useful aid for understanding the mathematical principles of hash collision handling: As figure 1 shows it just requires that you regard a file of N records as being wrapped around the circumference of a circle and that you number these records from 0 to (N-1). An important connection can be discovered by stepping around this circular file using a fixed step-length. Rather than just quote the mathematical results which can be deduced with this arrangement, try these experiments...

Sketch out a circle and mark six points on it. Number these 'records' from 0 to 5 and pick any one of those points as a 'starting point'. Having done that... choose any fixed (non-zero) step-length, mark your starting point as being 'visited', and then move on to the next record using your chosen step-length. Mark that record as having been visited and then keep repeating the process until you get back to the starting point. The object of the exercise is for you to find out which step-lengths let you visit every record location?

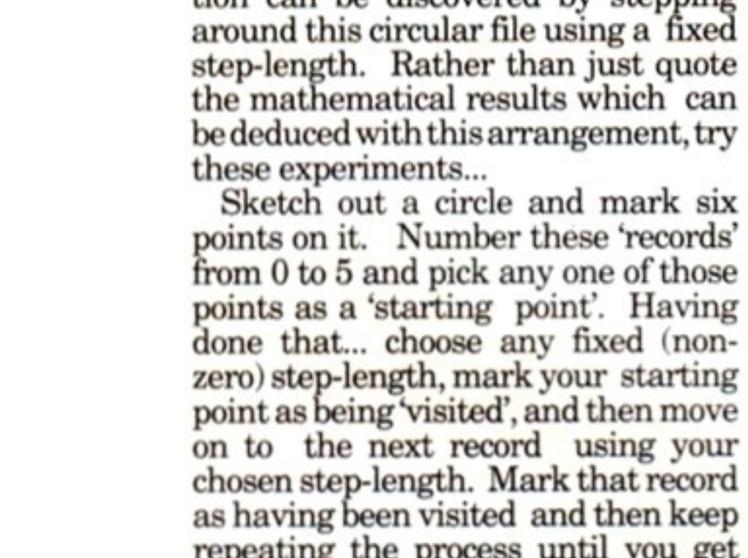

Figure 1: Two alternative ways of looking at a set of N records

Figure 2 gives some example search paths. The complete results are these: If you choose step lengths of 1 or 5 you will eventually visit every record in the circular file. If 2, 3 or 4, are used you will miss some of the records no matter how many times you step around the file.

Why? Is it something to do with using odd numbers or is it connected with the fact that 1 and 5 are prime numbers? Both suggestions may look like reasonable starting hypotheses but, perhaps surprisingly, neither stand up to more rigorous investigations.

Go back to the circular file diagram but use step-lengths which are double the values of those that worked, i.e. use 2 and 10. We already know that 2 produce an incomplete search, and you will find now that the value 10 also fails.

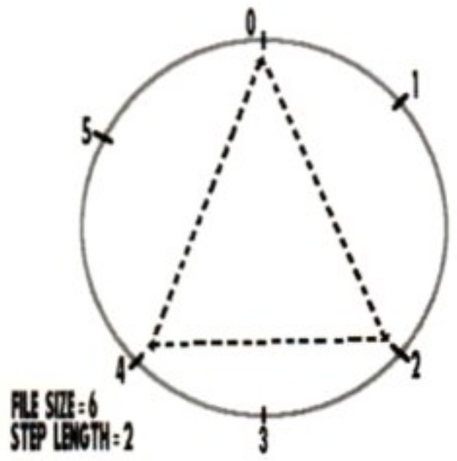

Figure 2: An incomplete search

Perhaps we cannot use multiples of successful search values? That is not true either because if you multiply 1 and 5 by five and try 5 (which we already know works) and 25 you will find they both produce complete searches. Multiply the original successful values by four though and none of the new step-lengths will succeed.

What is the link between the step-length and the file size? The bottom line is that if N is the file-size and S is the step-length then the file can only be completely searched in cases where N and S have no common factors other than unity! This result, which has a particularly awkward formal proof, is based on the fact that if S is a member of the set {0,1... (N-1)} and S and N have no common factor other than unity then S has a multiplicative inverse modulo N. This condition is essential if an S-stepping search of a modulo N based system is to be complete. A similar proof can show the converse... namely that if a file of size N can be completely searched then S and N can have no common factors other than unity.

These results lead to two important hash-search conditions...

A: If any starting point and any fixed step-length are to be used then it is only possible to guarantee a complete search of the file if the filesize is a prime number - simply because this is the only way to ensure that there are no common factors other than unity.

B: If the step-length used is a prime number then the file can be any size which is not a multiple of the step-length.

Whilst, admittedly, there are some interesting hash variations available, these basic conditions underpin almost all of the effective hash schemes in common use today. There is however one important exception. One way of avoiding collisions is not to regard the hash file as a directory which points to a set of records that all have the same hashed key value. The most common method is to chain these groups of records together, i.e. use a linked list arrangement. This technique, which for obvious reasons is usually called 'separate-chaining, has one main disadvantage... the performance deteriorates as the chain lengths increase and the hashing part of the method makes no real effort to minimize this effect.

Collision-orientated hash techniques, which will be the method adopted for the ***AUI***-SPELL dictionary ADT, take a somewhat different approach closely related to the circular file model I have just dealt with. The idea is that when a collision occurs further attempts are made. Linear Probe hashing is the simplest technique - if the first hash location is not the right one you just increment the location by one, in other words try the next location. This corresponds to stepping around the circular file with a step-length of one.

There are major disadvantages with linear probe hashing techniques - if you get a situation where several items are hashing to the same calculated location then a build up occurs in that particular part of the file. This effect, called clustering, again reduces the performance of the technique because it means that additional attempts have to be made to locate the records in those areas. If some way could be found to spread out the keys more evenly around the file it might be possible to avoid creating those high density pockets. This is exactly what Double Hashing is designed to accomplish...

The strategy with double hashing is that if a second attempt has to be made. We use a second hash function to calculate an increment value. Further attempts continue to use this increment, in conjunction with the modulus function to keep it within a suitable range. This corresponds directly to the procedure we adopted for stepping around a circular file. If the second function can use some independent quality of the key (string length, number of consonants in a name etc.) or make use of only a selected part of the original key, then the keys which produced the same starting point are almost certain to produce different step-lengths. The result is that because different collision paths are followed, the tendency towards clustering is reduced.

Collision based techniques which map an infinite number of keys to a fixed hash space are powerful but they can be inconvenient in dynamic situations, where a large number of insertions and deletions have to be processed. As the hashed access address space gets full the likelihood of collisions increases and the retrieval performance characteristics suffer. Because of this you always have to allow some extra space - a good rule of thumb is never to let a hash table get more than 80% full! For critical applications I have found that it is sometimes better to aim for loadings nearer 70% because, in many cases, this can reduce collisions to a very low level indeed.

With all of the approaches which step around the file using the modulus function you also have to be very careful with the way that deletions are handled. A deleted record must not look like an empty record or the hash search will terminate prematurely. One method which has found almost universal acceptance is to use a marker field (which need only be a single bit) to differentiate between empty and deleted records.

Things to Come Next Month

We have already developed two hash orientated dictionary ADT schemes and modified the appropriate sections of the ***AUI***-SPELL code. The benefits are an immediate simplification in that the main code no longer needs to concern itself with how the dictionary scheme works. It needs only to create, kill, and use some specified dictionary. Here, by way of a preview, is the code fragment which shows how my dictionary ADT's IsPresent() function being used to determine whether the words present on ***AUI***-SPELL's tree structure are present in a specified dictionary or not...

```
DICTIONARY *dictionary_p;
dictionary_p=CreateDictionary(dictionary_name_p);
if(dictionary_p)
{
node_p=FindLowest(node_p);
do {
/* identify node words present in dictionary file */
if(!IsPresent(dictionary_p, node_p->word, node_p->count))
{/* word is not present in dictionary */
CODE AS PER AUI-SPELL version 0.10
}
}
if(!(node_p=FindNext(node_p)))
exit_compare_flag=TRUE;
}while(!exit_compare_flag);
KillDictionary(dictionary_p);
}
```

Obviously this ADT approach is cleaner, and potentially far more powerful since it allows any number of dictionaries to be open at any one time. Speed is high on my list of priorities here and I have done many trials (and plotted numerous graphs) which show the timing and efficiency trends for the various search scheme alternatives. There have been a few surprises but the end result is that we have produced a dictionary scheme that, even in its early development stages is able to access any word in a file of ANY size with an average access requirement of only 1.5 seeks.

Let's put this in perspective to whet your appetite for next month's code. The earlier example...

I like Zebras

required almost the whole of the dictionary file to be examined. With the current dictionary this is equivalent to about 12000 seeks. The new scheme reduces the search overhead on the same three words to less than 5 seeks! In fact a preliminary test using a 12000+ (100K size) dictionary, and a 5319 word (36K size) text file the whole of the loading, sorting, analysis, duplicate marking and dictionary file checking was achieved in under 10 seconds. Next month we will show you how this dictionary ADT code has been written.

To be continued...

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AMIGA ANSWERS

Andy Eskelson searches out the answers to your tough technical questions

Dear AUI,

Having recently acquired an Amiga 500, I was slightly disappointed to find that the Basic supplied only has an interpreter rather than a compiler. Bearing in mind that price is important , indeed PD would be favourite, could you recommend a good compiler , one that preferably , but not essentially, incorporates the extra graphics commands of the Commodore interpreter?

Also, which language do you consider best for writing a) games, b) business software . Which compilers would you recommend for these?

Two specific queries

i) If I create a picture with DeluxePaint2 and save it, can I read this into a Basic program and display it on the screen, and if so, how?

ii) The Basic manual supplied by Commodore gives an example, in the reference section for the OBJECT.SHAPE command, for moving a ball in the Output window. I presume it is intended that the ball should he in Window 4, yet when I try, it is in Window 1. Why is this ?

Steve Smith,
Sunderland

Dear Steve,

Have a look at Cursor (Fish 347) It does not support all of the AmigaBASIC commands but it could get you going. There are several other options, the best I think would be to invest in a copy of AMOS (£40). That will cover most of what you want. I'm not sure if it is compiled but it is very efficient at graphics work. HiSoft Basic, which is compiled, costs £75 and is also very good. (See also, John Kennedy's BASIC article in this issue of ***AUI****).*

The problem with your OBJECT.SHAPE demo, I think that you have made the common mistake of assuming that the command WINDOW(1) refers to window 1, well, it does not. There are a number of pieces of information about the status and size of an output window that you can get form AmigaBasic. WINDOW(1) returns the window ID of the current output window. WINDOW(4) gives the x coordinate in the current output window where the next character will be drawn. For a full list of these commands see the section on the window command in the reference section of the handbook. (Page 8-160 in my copy)

Your question about Dpaint files: look in your Basic demos directory, the program that you need is LoadILBM-SaveACBM. Read the rems and prints carefully. It is a complex program. Also look at the LoadACMB program which works a lot faster, but you need to convert the ILBM file first (that's what LoadILMB-SaveACBM is really for)

Which language do I consider best for....

I get asked that question quite a lot, so the BEST language for ANY application is Machine Code (Assembly) providing that you have the time to debug it properly. This will yield the best speed/code size performance. I use quite a range of tools for my own development projects (when I get the time that is..) I mainly use C for the main body of the program, Assembler for the bits that NEED to be fast (such as image enhancement) and I use a multimedia program (CanDo) for the user interface. I normally glue the whole lot together with Arexx message ports.

Many languages are suited for different tasks. C is most suitable for the Amiga because the majority of the operating system is written in C. Modula 2 has its place, as does Pascal, Cobol, Fortran etc.. And there are implementations of most of these available for the Amiga. It depends on what YOU want to do. Don't worry about the high powered languages if you don't need them. A good BASIC will do a lot of donkey work and it is normally a lot quicker to develop in BASIC than most other languages.

As you progress you will find out the limitations of the programming system that you are using and then you will be able to decide on a development system that suits you, rather than using my system or someone else's.

Dear AUI ,

Whilst playing some games on my Amiga 500 computer, vertical lines appear/flash onto the screen (see enclosed photograph).

The problem does not occur on every piece of software I have, and those which are affected run without the lines appearing on a friend's computer. (I have a feeling it is a possible scrolling fault).

Please could you possibly tell me what the cause of this problem is, and how it can he solved?

Nick Garrod,
Rainham Kent

Dear Nick,

I've not seen this problem for a long while, from memory it is a program problem and not a machine problem. It occurred when the new A500s came out, and was normally caused by one of three things; the extra half meg of RAM in the trapdoor, the new chipset, or the version of Workbench.

If your friend's machine is fairly old or unexpanded, there is your problem. You could also try running the NoFastMem program first to disable the extra Ram or even try removing the expansion from the trapdoor as a test. If that cures the problem then you have found the reason. There is no real solution other than scrapping the programs. (I would guess that the programs are quite old versions)

Dear AUI

After being a regular reader of your excellent magazine for two years now and being an Amiga user for about the same time, I have become interested in interfacing the Amiga with the outside world, through the parallel and serial ports. However, although I am familiar with interfacing with the BBC computers, I am afraid that the Amiga has me baffled, especially after reading the manuals supplied with the machine! Please could you help by giving me any circuit diagrams or information on how to access these port on the Amiga, from BASIC, as this is the only language I have at present.

Also, could you point me in the direction of some good books on the subject. Thanks for a great mag!

C. Ledger,
Dunstable

Dear C. Ledger,

Programming the hardware is not the simplest of tasks in BASIC, but it can be done with some perseverance, depending on what you want to do. The Amiga already has a good selection of I/O handling built in and that can be used to advantage. However you will need the Amiga Hardware Manual, and probably the Rom Kernal Libs and devices. On top of that you will need an understanding of the C language. (Most examples are in C or Assembler) The Abacus books are also a good source of information. You have the circuit diagrams in the back of the CBM handbooks. The Hardware Reference Manual gives the full information on how to drive the chips. Be warned, the I/O chips are a bit touchy, and easy to blow up!.

Dear AUI,

I own an Amiga 500 plus a Citizen l20D Printer. I have a text file which I have written in French (using keymap F) but when I try to print the text the accented letters won't appear on my printout. What should I do? How can I use the DIP switches in my printer to download the French characters or foreign languages?

I would appreciate your comments.

Kamshad Kaviani,
Isfahan IRAN

Dear Kaviani,

This problem should be easy to fix. Look up, in your printer manual, the section on character sets. Find the settings that select the international character sets. You should find settings for USA England, Denmark and France etc. Set the switches for France, normally you will have to set a few switches, because the printer manufacturers will make a few switches do a lot of work. i.e. you might have the set a bank of three switches to Off Off Off, for USA, and On Off On for France; read the setup table in the manual carefully.

Once you have done that you should find that you will get the correct output. If you do not get the correct output it might be down to your wordprocessor. You might have to change to a program that supports different language sets (Protext is such a program)

Dear AUI,

I find myself in a bit of a tricky situation.

Due to a fair amount of gross stupidity on my behalf I find myself without any software to get my hard drive going. I know that I should have made several back-ups, and all that, but we all make mistakes. Why didn't I just write to the manufacturer? Yes you've guessed it I've lost the address. The drive is a Seagate ST-225N and the interface is manufactured by a company called C Ltd. (model SCSI 500) I can't find the manufacturers address or any trace of them. Does anyone out there know their address or even know of any software that can get my drive going.

S.M. Smith,
Manchester.

Dear S.M. Smith,

If you had not said it all in your letter I would have...I bet you will make backups in future!.

Try:

C Ltd, 723 East Skinner, Wichita, KS 67211, U.S.A.

However, we have heard that there have been changes, possibly terminal ones in the structure of C Ltd., and a company called Micro-Dyn have taken on C Ltd's products. If you get no joy from C Ltd, try:

Micro-Dyn 2011, S.Washington, Wichita, KS 67211.

Tel: 010-316-265-2661.

Dear AUI,

I wondered if you could help me with locating an Amiga Users Club in my area?

Jaques van Tilburg,
Bristol.

Dear Jaques,

The nearest one that I know about is the ICPUG South West Regional Group, in Charmouth which is a good 50+ miles from Bristol. They meet on the 2nd Sunday of the month. Contact ICPUG for more information / membership. (see advertising in most current issues of ***AUI****)*

Dear AUI,

I currently have an Amiga B2000 (with fatter Agnus), a Cumana external 3.5 floppy drive, a Star LC24-200 printer, a Spirit Octobyte memory board populated to 2Mb , a 40Mb Seagate Hard Drive and an HDA-506 card with Omti disk controller. I am considering the possibility of upgrading my computer to an Amiga 3000 but I am a little concerned about its compatibility with both my hardware and software. Also given the current state of accelerator cards for the B2000 I am not sure if there is anything to be gained from such an upgrade. I would be grateful if you could let me know what benefits the 3000 has over the 2000 in addition to speed, and to what extent I would be affected by compatibility problems. (including games software).

Julian Segal,
Stanmore, Middlesex.

Dear Julian,

Your printer will be usable on the 3000, but very little else. The 3000 comes with a hard disk, so there is not much point in keeping yours. The memory expansion is no use to you.

The 3000 uses 32 bit wide memory, and that makes a considerable difference to any graphics work. (The 2000 is 16 bit wide.) This difference is particularly important if you are considering the accelerator cards. Accelerator cards often posses the ability to have 32 bit wide ram fitted to them. (I use the CBM 2630 card that has 4Mb of 32 bit ram on it). This is fine, as I can load the system software into this RAM and run everything from there. However what happens when I want to do some I/O, like read the disk, draw some text on the screen? Well, the card must slow down to access the normal 68000 bus in order to get to the I/O subsystem.

In practice this is not as bad as it seems, I do not notice any real problems in the normal course of events. (I notice the effect of the maths co-processor more than anything else.) You simply do not get these problems with the 3000.

With many accelerators you can switch back to 68000 mode without any problems. This is useful for compatibility, with the 3000 you cannot do this as it does not have a 68000 that you can switch to!.

Compatibility will always be a problem as we are constantly inventing new machines. The Amiga software is more portable than most, but there will still be problems. Games are likely to be one of the worst areas, as many software tricks are used in order to get the best performance, and if the software author has broken the rules, then you can expect trouble. Many applications work without any problems, but it is impossible to give a definitive list, it is very much a process of trial and error. Some advice on this, if you do upgrade and purchase any software, make it perfectly clear that you will demand a refund, if the software is incompatible with your machine. Many suppliers say they will not refund on software that has been opened, but good suppliers will understand the problems of compatibility providing that you tell them first.

The 3000 comes with a couple of megs of memory, but many users find that this is nowhere near enough, so consider buying a few more megs, do this at the start because the machine has to be stripped down to fit the extra memory. This would be best done by the supplier.

Dear AUI,

This may be a simple matter compared to some. I want to use my Amiga 500 plus extra drive on a boat with a 12V supply. A colour TV is no problem but what must be done to achieve a semi portable Amiga (it is out of warranty). Lots of people have caravans etc. who may also want to achieve this and not want to go to the trouble and cost of a 12v to 240v invertor. Any ideas?

A second question, do you know of any Amiga Radio Amateur groups in the UK or US? If so where are they?

Tony Tavinor,
Truro, Cornwall.

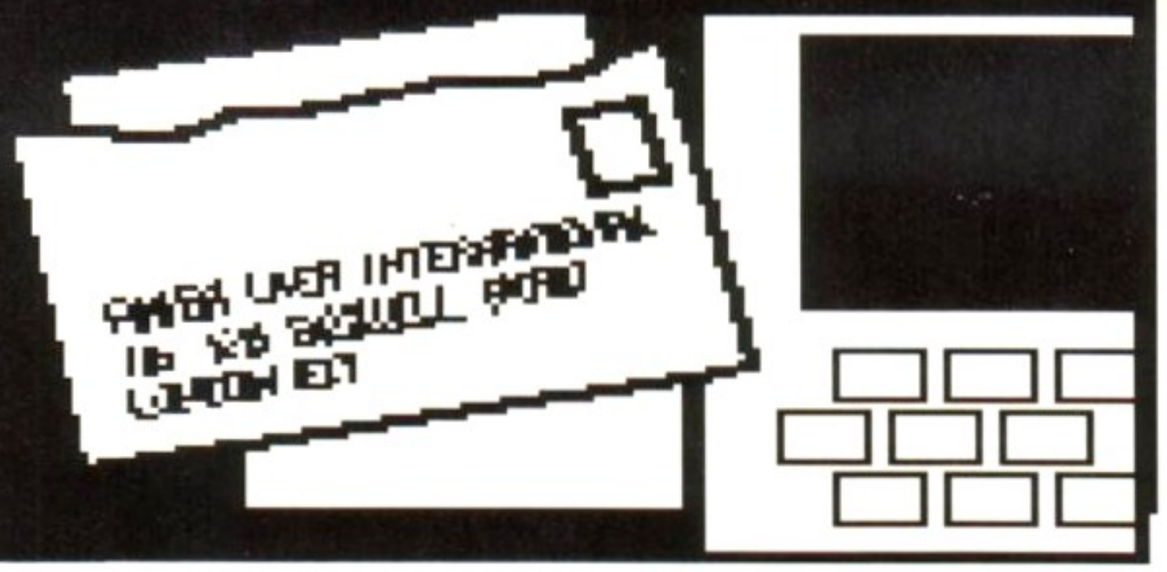
Dear Tony,

I have a couple of ideas on this subject, The Amiga takes quite a lot of power and when used with a TV as well the 12v supply would not last to long. You could be talking of a total load of 250VA, and as a standard car battery has a capacity of about 35 Amp Hours you would only be able to run the system for 2.8 hours, not including any losses or anything else that you would be using, such as lighting, radios etc.

You could go the invertor route and press into service a small Uninterruptable Power Supply (UPS) and wire its battery to the main boat supply. They are very quiet and would be the easy way at a price (about £200). Another possibility is to build a special supply. A very good starting point would be the GS-R 51212 from Farnell Components. This will supply +-12v and 5V and is about 75% efficient. You would need to ▶

AMIGA ANSWERS

CONTINUED



◀ *build it into a case with suitable protection. The other problem is that the Amiga uses the supply frequency for several functions. You may have to provide a 50Hz signal to make the system function properly. This unit is about £50.*

For the Amiga Amateur Radio User Group, try contacting Bob G3LMH (QTHR) or on packet at GB7AEU. The group was fairly active and had a few disks available and a fair amount of information.

Dear ***AUI***,

I have a problem with my disk 'Deluxe Paint II'. When I put the disk in it says 'Error Validating disk, Disk is unreadable'. When I press cancel, it says ' Disk structure corrupt use DISKDOCTOR to correct it~ When I press it again, it says 'Not a DOS disk in unit 0' Could you tell me what a diskdoctor is and how to fix the disk.

Shane O'Neill,
(aged 10)
Highgate, London.

Dear Shane,

The messages that you are getting from the Amiga are saying 'Help I cannot make sense of this disk.' The most common cause of this problem is taking the disk out of the drive before the light has gone out. (It can often take a few seconds for the Amiga to get round to writing the last few bytes onto the disk, so when the disk light goes out it often comes on again for a second. The best thing to do is to count to twenty before taking the disk out of the drive)

Diskdoctor is a program that you will find in the C directory. To use it you open a CLI or a Shell window and type Diskdoctor df0: then follow the instructions. (You will need a blank disk.) However that can ruin commercial disks especially if they have any special formatting on them. The best thing to do is to make a copy of the corrupt disk with a disk copy program such as X-Copy, and then work on that with diskdoctor. If that does not work then you will have to contact the publishers of the original for a replacement.

This is one of the reasons that you should only ever work from a BACKUP copy of any disk (providing that it is not protected against copying) just in case this kind of problem occurs.

Dear ***AUI***

I have been an Amiga user for twoyears now and during this time I feel I have become quite competent in the use of AmigaBasic, the particular feature of this language which has never failed to impress me is the marvellous file related commands, these are very powerful and easy to use.

However recently I have had an idea for a utility program to program small ram chips for use with microprocessors. This requires access to the serial port and sadly this is where BASIC fails. I have thought about buying Devpac 2.0 but do not know whether this will be any better and so would appreciate any help. Also it would help if you could list any books which might be useful.

Please note that I am printing this letter using a Star LC 10 mono printer. I have had this for about one and a half years now and have a sneaky suspicion that the print head may give up the ghost soon. Please could you tell me whether I am just tempting fate or whether I will need a new printhead soon. If I do need one where can I get one from and how much will it bankrupt me by?

C. Ledger
Dunstable, Beds

Dear C. Ledger,

Basic is quite capable of accessing the serial port. Have a look at the basic demo program TERMINAL which shows just how easy this is. No, never mind looking at it, it is so simple I'll type it in here..

```
OPEN "com1:9600,n,8,1" AS 1
WHILE 1
WHILE LOC(1)<>0
PRINT INPUT$(1,1);
WEND
i$=INKEY$
IF i$<>"" THEN PRINT #1,i$;
WEND
```

If you do want to get into machine code, then Devpac 2.0 is a very good starting point. The assembler is quick and efficient and you get the debugging tools as well. What you do not get is the system documentation. The Rom Kernal Manuals (RKMs) are a must. You will find that several of the Abacus books will also be useful.

Your printer should be good for quite a while. I used a Canon 1080A for a LONG time (about five years) and put at least 6 boxes of paper through it, and that printer is still going strong. Have you left the impact position adjustment too far back?. I cannot see any signs of head wear, but you could do with a better ribbon!. You will have to contact your local Star dealer about current prices for heads. The last time I asked about this (another make of printer) the cost was about £40, but that was quite a few years ago.

Dear ***AUI***,

I have an old PC clone and would like to use the 5 1/4 inch floppy and 40Mbyte hard drives with my Amiga 500. What additional hardware and or software will I need? I was told by a friend that I just needed to wire it up and this resulted in the 'smoking of my Amiga...My new Amiga has a different keyboard to the one on the Workbench Disk, so could you tell me how to obtain the correct keymap?

Robert Hart .
Workingham , Berks.

P.S. How about an animation Coverdisk

Dear Robert,

With friends like that who needs enemies!!

You cannot just wire things up, all sorts of things have to be taken into account. As for the keymap, you will have to include the line
setmap gb
somewhere in your startup sequence, located in the S: directory. make sure that have the setmap program on your Workbench disk.

P.S. you have an animation coverdisk TBAS!

Dear ***AUI***,

Could you please help me with a rather strange request? (No, not that kind of request).

I'd like to be able to save certain ASCII files onto a disk in a suitable format for an IBM PC running DOS 3.3 or higher to read it. I realise this means formatting the disk in MSDOS, which of course poses the problem.

At the moment, I haven't got the dosh to buy a 5.25 inch floppy drive to be able to use those programs provided on the Workbench disk, so I wonder if there's any software available that will turn my trusty old 3.5 inch DF1: into a PC-format 3.5 double-density floppy? (Or something that will at least be readable on a High- Density drive).

Please don't tell me it's going to need an XT bridgeboard (unless you're feeling really generous!). If possible, I'd like to keep hardware modifications down to a cost-effective minimum 'cos times - as I'm sure you know - is 'ard.

Marc Foreman
Leeds

Dear Marc,

OK.. YOU DO NOT NEED AN XT, or AT BRIDGEBOARD..

I wonder how much you can afford ?????

I'll play safe and assume that you are skint!. Have a look at Messydos and (Dos2Dos demo version) both will do what you need and are available from several PD sources also for download on many BBS systems such as CIX. If you feel a bit flush you could fork out for the full version of Dos2Dos for about £35.

When you use these systems remember to format the disk for 720K that will be readable on just about any 3.5 PC system.

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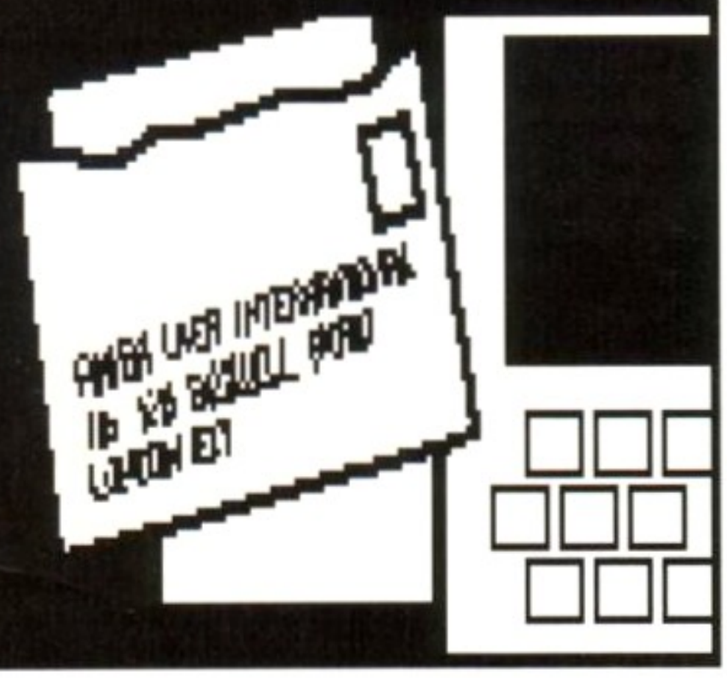
WRITE TO REPLY

WRITE TO REPLY

This is where you get your chance to speak – or write – your mind about what's bugging you – or your computer. Bud Vennos fields the bouquets and the brickbats.



Dear AUI,
Having recently purchased a binder from you to hold "a complete year's issues" of your magazine, I find that you have changed the size of the magazine so that it will no longer fit in the binder. I would therefore request either a) a replacement binder, at no cost, which will properly hold both sizes of magazine; or b) a refund of the £5.95 I paid for the binder I love.

I would also like to point out that not everyone can afford £2.95 per month for a magazine, and that when my subscription comes up for renewal (in almost a year's time, luckily) I shall probably be unable to renew. What about an option to buy the magazine for a reduced price without the coverdisk?

Andrew.D.Williams

Dear Andrew,
Your binder will hold the new size of ***AUI****, but the ends will stick out a bit. If you love the binder as you say you do, you'll surely want to keep it as is. Just be grateful that you've not got 500 of the things! As a prize winner expect to receive 10 old size binders in the post - absolutely free!*

If you won't pay for the new improved ***AUI*** *why not buy Your Amiga - it's only £1.95. But it is a question of value for money and we believe at £2.95, especially with* ***AUI****'s exclusive Hyperdisks,* ***AUI*** *loses the others and is well worth the price.*

Dear AUI,
"Oh Calamity!" as Robertson Hare would have said, which will give some indication of the age group of Amiga user that I belong to. When I saw the editorial in the May edition about the forthcoming cover disk which was to accompany ***AUI*** from June onwards I thought "no, this can't be true, the people at ***AUI*** are far to smart to think that a cover disk is what their loyal readers desire, and it is April perhaps it's just an April fool's joke". But I was wrong! Today the June issue fell onto my doormat complete with ***AUI*** Userdisk No.1, now I am the proud owner of a demonstration program which is not complete, as you cannot access disk from it, and which I would not have wanted even if it was complete. In fact the program having parts disabled i.e. disk access makes it no more than an advert for Alternative Image this being so why does the reader have to bear the cost of it? I'm all for the magazine carrying adverts, they are a very real source of information, but play the white man, let the advertisers pay for his own adverts.

Another magazine that I take which I shall not name but suffice to say that it is about the Amiga and concerned with computing took the same foolish decision and added a cover disk to their magazine. After several months of complaints they held a referendum of their readers, the result of which made them drop the cover disk stating in their editorial that they would stick to what they did best i.e. producing a magazine. But alas by this time it was too late they had lost all of their serious readers and gained a following of those game players who will buy any magazine if they think they are getting something for nothing, and in their eyes the cover disk is just that. This being the case they had to revert to the cover disk just to keep the circulation of the magazine. Or could it be they had forgotten how to do what they claimed to do best? Who knows?

Dear Mr. Richards,
We can't be held responsible for what other magazines say or do. But more importantly, from your language you appear racist, and a male chauvinist, and you read THAT magazine - you've more to worry about than our Userdisk - haven't you?

We offerred that particular disk because we believe that it is important for Amiga users to stretch themselves into areas which they might not otherwise approach. The Big Scroller was complete except that it did not permit full saving. At nearly £50 each, the commercial version of The Big Scroller has to have something extra: Give Alternative Image a break!

Dear AUI,
I read most of the British Amiga magazines (including the one which also claimed to be "The Longest Running".)

The changes you've made to ***AUI*** are excellent but why did you change the size of the pages? There seems to be more colour as well, and more pages. The front cover stands out on the shelf in the newsagents with its large new logo. Maybe you ought to have "THE First, THE Best" printed above the logo.

All in all, I think that ***AUI*** is well worth £2.95, especially as your reviews and articles have more depth. Keep up the good work.

Trevor Booth,
Burwash.

Dear Trevor,
The so-called "Longest Running" magazine very nearly had its issues pulled off the shelves. And many, not just us, in the Amiga community resented such uncorrect and unnecessary claims.

The changes in the format of ***AUI*** *were made to give more space both for aesthetic, i.e. design reasons, but also to allow us to provide more material in an easy to read and attractive form.*

We certainly intend to continue to improve and as you say, ensure our material carries depth, is generally informative, and entertaining.

Dear AUI,
This letter is to describe a game I have designed, it is called FLIGHT. In the game you can pilot a Sopwith Camel, Spitfire, or RAF Tornado. When you have chosen one of these planes you go into a room for a briefing on what you have to do.

If you have chosen the Sopwith Camel then you will see a commanding officer pointing out several targets on a map of France you will have to bomb these with Cooper bombs to complete the mission.

If you chose the Spitfire you will see the same thing but at a different angle you will also see out of a window radar towers instead of just the runway.

If you chose the Tornado mission then you will see yet again the same thing only you can see your own plane out of the window with your co-pilot standing beside it, the window will also be open and you can hear the jet engine warming up.

By the way you do not hear the people talk but you do see the speech bubbles on the screen.

Then you can decide if you want to fly in formation or not if you do then goto yes it is better to fly on your own because you have less chance of collision with other planes but if you are in formation then you can be warned by other planes that enemy planes are approaching, this is done by rocking of the planes wings on Camels and over the radio on the other two.

When you have bombed the targets you can press R this will pause the game and you can type in a message saying what you have done, you will then hear "good work" and you can return home.

You can eject if you want to but only if you are in the Tornado you do this by pressing E if you eject over enemy territory then you will be shot some times.

The planes if you are on the Camel mission will be SE,5's (on your side) and Albertrosses (on their side).

If its the spitfire mission then they will be Messerschmitt's (on their side).

Or if its the Tornado mission then they will be Mig 29's.

P.S. I hold the copywrite.

Robert Davis,
Staines.

Dear Robert,
Don't give up your day job!

Dear AUI,
Contrary to what you may think while reading this letter, I am

not the type to make complaint's willy nilly (as we say up here) and indeed this complaint has nothing to do with the utterly splendid, funfilled, action-packed, truly wonderful ***AUI*** mag. NO! This complaint is about one particular mail order company - to which we'll just refer to as the Chiswick Liars - who failed miserably in my good service to the Amiga user and me in particular test. Firstly it took two months and several mythering phone calls until my software actually arrived, but what is worse is that they failed to include my free game. It clearly states in all their adverts "A FREE GAME OF OUR CHOICE WITH EVERY £20 SPENT".

I immediately wrote to them pointing out this mistake on their part, and after a month with no reply. I telephoned. "It's on its way" was the reply. This was three weeks ago. So I have wrote this letter for you and your readers. This company doesn't come very high on my ratings list and are far from LEGENDary and will be receiving no more SOFTWARE orders from me.

I would like to point out that this is in no way a slur on the other companies which I have found to be excellent. But if you have guessed which company the Chiswick Liars are I would urge you to avoid them like the plague.

S.Lingard,
Manchester

Dear Mr.Lingard,
I haven't guessed to whom you are referring to. Last month we published guidelines for mail-ordering. I suggest you read them. (And what does 'mythering' mean?)

Dear AUI,

You have asked for experiences with repairs, so here goes!

My Amiga 500, within the guarantee period, started to reject disks, complaining of read/write error, even with the original (master) disks. So it was returned to the dealer, who sent it back for repair, quoting 10 to 12 days for return. After 3 weeks I began to ask the dealer when it could be expected, and after 4 weeks I wrote to CBM asking for some action. It is now 5 weeks since it was sent for repair, and still no word from either CBM or the dealer.

I would guess that the repair is more extensive than usual, and am now beginning to worry that when subjecting the Amiga to their repair processes they will ruin the KCS Power Board fitted in the expansion slot.

It is somewhat ironic to see the full-page advert on p.33 of the April ***AUI*** - "And each repair will be carried out within 12 working days!" You don't know whether to laugh, cry, or refer it to the Advertising Standards Authority for misleading advertising.

12 working days! Hah!

Peter D.Tudhope,
Waterlooville.

Dear Peter,
Your grievance is not with the repair company, but with the dealer who sent them your Amiga - what if they sent it to the wrong place! Don't bad mouth people with whom you have no direct involvement. Why don't you contact the dealer.

Dear AUI,

I use my Amiga mainly for video graphics so I bought the June issue of ***AUI*** thinking the cover disk featuring the Big Alternative Scroller might be of use to me. How wrong could I be! The documentation on page 8 states that the demo is limited to 100 characters - mine seems limited to only 35 characters. Which makes either the disk faulty or the documentation incorrect or incomplete.

A 100 character demo disk would be of some use, but if this really is limited to 35 characters I am not interested in paying £2.95 for what amounts to an advertising disk. Still, I think a megabyte cover disk is a great idea - a great improvement to an already interesting magazine. But please, please give us something useable.

Mary Milton,
Swindon.

Dear Mary,
I think that your criticism is a little unjust. Don't you think that you're making a mountain out of a molehill? If you don't want the splendid disk see the holiday in Hong Kong offer on page 9 of the same issue!

Dear AUI,

I have just finished reading your "new look" mag and found the review of Evesham Micros 1.5 Meg board very interesting.

After scanning the pages of various Amiga magazines I opted for this very unit. MY decision proved to be a wise one.

The unit itself, as delivered, did not initially fit into my machine due to the presence of the CIA chip which prevented the GARY extension board from fully pushing into place. A phone call from Evesham however resulted in an extra set of legs being delivered, free of charge, within a few days.

Fitting the whole unit took about 20 minutes due to my unfamiliarity with this type of work.

Subsequent to this, and following a crash during Deluxe Paint, the machine on Boot-up refused to recognise the clock unit. Using the SETCLOCK command didn't help. Again, a phone call to Evesham resolved the problem.

Certain programs when crashing seem to disrupt the clock unit. It seems that a bug exists in the SETCLOCK command 1.3 version which cannot cope with this. But the time can be easily reset by using the 1.2 version, (which I just happened to have).

All in all, I am extremely pleased, not only with the board, which gives me the most amazing freedom when multi-tasking, but also with the company.

I endorse your report and would not hesitate to recommend the unit.

J.Leebody,
Blackpool.

Dear Mr Leebody,
Yes, plenty of suppliers of Amigaware are expert and helpful - although some are niether. It just proves you'll not go wrong with a copy of ***AUI****.*

Dear AUI,

I, like M.Reza Molaui of Iran, have noticed you've done it again! Printed an article twice that is. This time it is a letter from Paul Bridgens of Wiltshire, but why have you gone on about printers in the first answer? Did you print this letter twice as a test, like you did in the January 91 repeat? Or are you short of letters to print? If so here is one for you now.

Can I take this opportunity to plug my BBS. It's called E.F.A.M. The phone number is Hull (0482) 472364. Speeds are 1200/75 and 300/300, and it is on-line from 10pm-10am, 7 days a week.

I would not ask you for the "plug", but I have only been running the BBS for a couple of months, and am a bit short of users. Thank you.

Also may I say, it was good to see the "How to use a modem" section in your magazine. When I started out in Comms I was totally baffled by all the jargon.

Keep up the good work, and let's get more people into comms. It's not as bewildering as they may first think.

Owen Evers, Hull.

Dear Owen,
No, we are not short of letters, it was those vicious gremlins again (what were the called 'careless, careless, and careless'? Ed) You are right most users are unfamiliar and so very nervous about comms, so it is not surprising that it is one of the less frequent used areas of computing. As you caught us out on the letter, on the letter, on the (okay! okay!), we are happy to give you a free plug for your BBS.

THE FAT LADY SINGS

Vol.51 No.73½

The page that brings you the undiluted, undenied, unreliable truth!

Look out, it's coming! This month ***AUI*** gets an exclusive sneak preview of the top secret operating system everyone is talking about - Workbench 3. No other magazine dares to reveal the details about, so remember: you read it here first!

Even as version two of Workbench is slowly filtering through the Amiga community at large, details of Workbench version three have been leaked to ***AUI*** through an impromtu press conference held at the bar of the last Commodore Show by a nameless PR person called Irving Copperball.

Here is a complete a list of the new features (or as complete a list as half a lager and a packet of peanuts got us) which will make Workbench 3 the most powerful GUI on any micro in the world.

Workbench 3 - The Major Features

★ Instead of the minimilist four colours allowed by Workbench 1.3, or the miserly sixteen available from Workbench 2, Workbench 3 supports HAM mode for up to 4096 colours on-screen at once. The standard Workbench colours remain light grey, dark grey and medium grey. The pointer is also grey, with a grey drop shadow.

★ The FFS (Fast File System) has been replaced by the BFFS (Bloody Fast File System). The BFFS runs ten times as fast as the FFS, which means the Amiga can load and save programs from floppy nearly as quickly as the tape system of the ZX Spectrum. (Because the orginal Spectrum code is used, a new driver - Rubber_Keyboard.device - must be copied into the DEVs directory).

★ The overscan system used is so intelligent that the Workbench is not only displayed using the full area of the monitor, but also appears on the screens of any other monitors sitting nearby.

★ There is full support for Micons (Moving Icons). Thus standard drawer icons open and shut, document files flash "Read me!" and the Hard disk icons fall down the screen and explode in flames. Rumours of a secret key combination which produces an animated picture of ex CBM President Tom Rattigan screaming about nine million dollars have been denied. (Press F1, CTRL and then type "unfair dismissal").

★ AmigaDOS has been completely re-written in AmigaBASIC. To make it technically more advanced.

★ The Guru has been joined by a new alert - the Franklin. Both appear when something terrible is about to happen. The Amiga can be re-started after a Franklin by clicking on the "Jack Daniels and Coke" icon.

★ The Utilities drawer now includes a program called "Yah Boo Sucks". When you click on it it opens six Shells, uses the speech synthesiser to say "Bet you can`t do this on an Apple!" and then does a Franklin.

★ The Speech Synthesiser has been improved, and now sounds like a drunk

Australian Dalek with a lisp.

★ The Preferences drawer now allows you to change the colour of any windows, the colour of the Workbench screen, the colour of the sky and the colour of the inside of your disk drive.

★ AmigaBASIC has been completely re-written in ARexx. To make it technically more advanced.

★ Workbench 3 Intuition menus now include full support for all European languages. When you hit the Help key a window appears which says "Why don`t you learn English?" and "Mi Amiga te jodea".

★ Workbench 3 automatically selects a random Keymap on power-up. Now you don't have to select the wrong one yourself.

★ ARexx has been completely re-written in AmigaDOS.

★ The range of Printer drivers has been enlarged to include: the NovaTron Maser Printer; the MicroQuibbles BubbleBath Deluxe; the ElectroBlast HyperDump; the InkPlex TurboJumpJet and the Sinclair Thermal printer (Rubber_keyboard.device required).

★ The Shell can detect when you mistakenly type into it when it isn't highlighted, and will smirk at you.

★ The start-up screens of Workbench 1.3

(a hand holding a disk) and Workbench2 (a disk popping into a drive) have been replaced by a full-colour, full motion animation, digital sound, fifteen minutecommercial for an American soft-drink (the new KickStart ROM has been increased slightly to 18Mb).

★ Workbench execution times have been improved upon by means of clever software emulation. Instead of running programs written for (the now out-dated and very slow) 7Mhz 68000, the Workbench emulates code written for a 50Mhz 68040 with 68882 maths co-pro. (68040's will be available as an upgrade: send your old Fatter Agnus and a 50p stamp c/o CBM).

★ The clock has been improved and includes "digital", "analogue" and "Mickey Mouse" options. The "Mickey Mouse" clock can be dragged off-screen and worn on the wrist.

★ An extra command is available from the CLI. Called "DestroyCIA", it immediately causes both the odd and even CIA chips to explode, thus saving all the fiddling around with printers, disk drives and digitisers needed to destroy the CIAs on earlier systems.

★ The Dustbin has an automatic collection facility. Every Thursday the bin will be emptied, scattering files all over your driveway.

Although Workbench3 has been finished

FFLS icon created specially for Workbench 3

for over a year now, it will probably be 1996 before the first copies are sent out to registered developers. When asked if Workbench3 was compatible with the CDTV, Copperball replied "Why should it be? Nothing else is."

★ ★ ★

Have you any suggestions for features that should be included in Workbench 3? Send them c/o: The Fat Lady Sings, and we'll see that Commodore get the best.

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Actual unretouched digitised screenshot

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Amiga Computing: The best Amiga digitiser has had the technicolour treatment. Vidi must be one of the most exciting peripherals you can buy for your Amiga.

Micro Mart: When I first saw Vidi "in the flesh" as it were, at the CES show last September it looked to be the answer to a frustrated Digi View owner's dreams – in fact to see pictures appearing on screen without the customary two minues wait seemed almost too good to be true. I have consistently produced more good quality pictures in the short time I have had Vidi than I ever did with Digiview.

Zero: Now under normal circumstances cheap usually means poor quality but this is not the case with Rombo. Why? cos Vidi-Amiga is the best digitiser for under £500 and I've tried them all.

Amiga Format: Where quality is concerned, Vidi produces some of the best results I've seen on any digitiser at any price.

Amiga User International: The latest addition to the Rombokit is called Vidi-RGB and brings this already impressive package to the realms of totally amazing. CONCLUSION: Who will find Vidi-Amiga useful? The answer to this is almost anyone with a video recorder or camera and a passing interest in graphics.

Visit us at the 16 Bit Computer Show Novotel Hotel, Hammersmith
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Just The Facts:

What Makes Digi-Paint 3 the Ultimate Paint Program?

"Finding the best paint program for your Amiga can be confusing, but once you have the facts it's simple."

Laura Longfellow
Sales Manager
NewTek Inc.

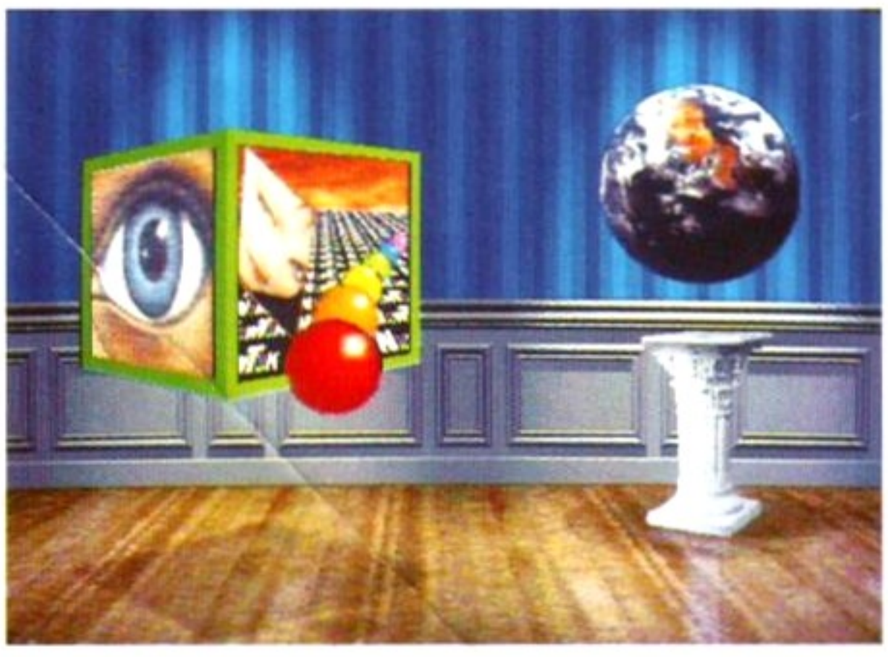
"Why is Digi-Paint 3 better than DeluxePaint III™?"

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

"What makes Digi-Paint 3 better than other HAM paint programs?"

Digi-Paint 3 is the only Amiga paint program written in 100% assembly language. Although challenging to program (taking up to 10 times longer than other computer languages), it's the only way to achieve the incredible speed found in Digi-Paint 3. AMIGAWORLD calls it "the fastest HAM paint program yet" and AMIGA SENTRY estimates it's, "6-10 times faster" than the nearest contender.

Other advanced features found *only* in Digi-Paint 3 include: anti-aliased texture mapping, anti-aliased fonts, ARexx support, 1024 x 1024 super bitmaps with auto-scrolling and dithering to 30 bits per pixel (over a billion colors internally, giving you tens of thousands of apparent colors). COMPUTER SHOPPER magazine reports "Digi-Paint 3 is without a doubt the most advanced HAM paint program to date!"



"But is Digi-Paint 3 easy to use?"

I've learned that no matter how powerful a program is, if it's not friendly it's not worth my time. We designed Digi-Paint 3 with all users in mind – from the beginner just starting out with computers, to the "power user" who demands the most advanced features possible. The spiral-bound manual contains a step-by-step Guided Tour, 11 hands-on tutorials, a color coded reference card, and almost one hundred example photos.

Digi-Paint 3's intuitive user interface was created by Digi-View designer (and NewTek Founder) Tim Jenison and renowned Amiga artist Jim Sachs. It features innovative "Dashboard" controls which AMIGAWORLD regards as "a joy to use" and "very easy to learn and understand". INFO MAGAZINE says the new interface "looks great and works logically".

"What is the Transfer 24 program included with Digi-Paint 3?"

Transfer 24 is a separate program disk included in the Digi-Paint 3 package, allowing you to alter any picture's brightness, color saturation, contrast, hue and sharpness, almost as easily as adjusting the controls on your television set. Transfer 24 also lets you modify the size, palette, and resolution of any picture. These powerful features, known as "Image Processing", give you incredible control over your final artwork. You can also save your image in any of the Amiga's 24 resolution modes (up to 768x480) making it compatible with all Amiga graphics software. AX MAGAZINE notes that "Transfer 24 gives you even more options as to the final appearance of your work". AMIGAWORLD declares, "Transfer 24 is great for making overall changes."

For a NewTek authorised dealer near you contact **HB Marketing Ltd.** at **0753 686000.**

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